Desire, wish, will, are states of mind which everyone knows, and which no definition can make plainer. We desire to feel, to have, to do, all sorts of things which at the moment are not felt, had, or done. If with the desire there goes a sense that attainment is not possible, we simply wish; but if we believe that the end is in our power, we feel that the desired feeling, having, or doing shall be real; and real it presently becomes, either immediately upon the willing or after certain preliminaries have been fulfilled.

The only ends which follow immediately upon our willing seem to be movements of our own bodies. Whatever feelings and having we may wish to get, come in as results of preliminary movements which we make for the purpose. This fact is too familiar to need illustration; so that we may start with the proposition that the only direct outward effects of our will are bodily movements. The mechanism of production of these voluntary movements is what befalls us to study now. The subject involves a good many separate points which it is difficult to arrange in any continuous logical order. I will treat of them successively in the mere order of convenience; trusting that at the end the reader will gain a clear and connected view.

The movements we have studied hitherto have been automatic and reflex, and (on the first occasion of their performance, at any rate) unforeseen by the agent. The movements to the study of which we now address ourselves, being desired and intended beforehand, are of course done with full prevision of what they are to be. It follows from this that voluntary movements must be secondary, not primary functions of our organism. This is the first point to understand in the psychology of Volition. Reflex, instinctive, and emotional movements are all primary performances. The nerve-centres are so organized that certain stimuli pull the trigger of certain explosive parts; and a creature going through one of these explosions for the first time undergoes an entirely novel experience. The other day I was standing at a railroad station with a little child, when an express-train went thundering by. The child, who was near the edge of the platform, started, winked, had his breathing convulsed, turned pale, burst out crying, and ran frantically towards me and hid his face. I have no doubt that this youngster was almost as much astonished by his own behavior as he was by the train, and more than I was, who stood by. Of course if such a reaction has many times occurred we learn what to expect of ourselves, and can then foresee our conduct, even though it remain as involuntary and uncontrollable as it was before. But if, in voluntary action properly so-called, the act must be foreseen, it follows that no creature not endowed with divinatory power can perform an act voluntarily for the first time. Well, we are no more endowed with prophetic vision of what movements lie in our power, than we are endowed with prophetic vision of what sensations we are capable of receiving. As we must wait for the sensations to be given us, so we must wait for the movements to be performed involuntarily,* before we can frame ideas of what either of these things are. We learn all our possibilities by the way of experience. When a particular movement, having once occurred in a random, reflex, or involuntary way, has left an image of itself in the memory, then the movement can be desired again, proposed as an end, and deliberately willed. But it is impossible to see how it could be willed before.

A supply of ideas of the various movements that are possible left in the memory by experiences of their involuntary performance is thus the first prerequisite of the voluntary life.

Now the same movement involuntarily performed may leave many different kinds of ideas of itself in the memory. If performed by another person, we, of course, see it, or we feel it if the moving part strikes another part of our own body. Similarly we have an auditory image of its effects if it produces sounds, as for example when it is one of the movements made in vocalization, or in playing a musical instrument. All these remote effects of the movement, as we may call them, are also produced by movements which we ourselves perform; and they leave innumerable ideas in our mind by which we distinguish each movement from the rest. It looks distinct; it feels distinct to some distant part of the body which it strikes; or it sounds distinct. These remote effects would then, rigorously speaking, suffice to furnish the mind with the supply of ideas required.

But in addition to these impressions upon remote organs of sense, we have, whenever we perform a movement ourselves, another set of impressions, those, namely, which come up from the parts that are actually moved. These kinesthetic impressions, as Dr. Bastian has called them, are so many resident effects of the motion. Not only are our muscles supplied with afferent as well as with efferent nerves, but the tendons, the ligaments, the articular surfaces, and the skin about the joints are all sensitive, and, being stretched and squeezed in ways characteristic of each particular movement, give us as many distinctive feelings as these movements possible to perform.

It is by these resident impressions that we are made conscious of passive movements—movements communicated to our limbs by others. If you lie with closed eyes, and another person noiselessly places your arm or leg in any arbitrarily chosen attitude, you receive an accurate feeling of what attitude it is, and you immediately reproduce it yourself in the arm or leg of the opposite side. Similarly a man waked suddenly from sleep in the dark is aware of how he finds himself lying. At least this is what happens when the nervous apparatus is normal. But in cases of disease we sometimes find that the resident impressions do not normally excite the centres, and that then the sense of attitude is lost. It is only recently that pathologists have begun to study these anesthesias with the delicacy which they require; and we have doubtless yet a great deal to learn about them. The skin may be anesthetic, and the muscles may not feel the cramp-like pain which is produced by faradic currents sent through them, and yet the sense of passive movement may be retained. It seems, in fact, to persist more obstinately than the other forms of sensibility, for cases are comparatively common in which all the other feelings in the limb but one of attitude are lost. In Chapter XX I have tried to make it appear that the articular surfaces are probably the most important source of the resident kinesthetic feelings. But the determination of their special organ is indifferent to our present quest. It is enough to know that the existence of these feelings cannot be denied.

When the feelings of passive movement as well as all the other feelings of a limb are lost, we get such results as are given in the following account by Professor A. Strümpell of his wonderful anaesthetic boy, whose only sources of feeling were the right eye and the left ear:

"Passive movements could be imprinted on all the extremities to the greatest extent, without attracting the patient's notice. Only in violent forced hyperextension of the joints, especially of the knees, there arose a dull vague feeling of strain, but this was seldom precisely localized. We have often, after bandaging the eyes of the patient, carried him about the room, laid him on a table, given to his arms and legs the most fantastic and apparently the most inconvenient attitudes, without his having a suspicion of it. The expression of astonishment in his face, when all at once the removal of the handkerchief revealed his situation, is indescribable in words. Only when his head was made to hang away down he immediately spoke of dizziness, but could not assign its ground. Later he sometimes inferred from the sounds connected with the manipulation that something special was being done with him . . . He had no feelings of muscular fatigue. If, with his eyes shut, we told him to raise his arm and to keep it up, he did so without trouble. After one or two minutes, however, the arm began to

tremble and sink without his being aware of it. He asserted still his
ability to keep it up. ... Passively holding still his fingers did not
affect him. He thought constantly that he opened and shut his hand,
whereas it was really fixed."

Or we read of cases like this:

"Voluntary movements cannot be estimated the moment the patient
cases to take note of them by his eyes. Thus, after having made him
close his eyes, if one asks him to move one of his limbs either wholly or
in part, he does it but cannot tell whether the effected movement is
large or small, strong or weak, or even if it has taken place at all. And
when he opens his eyes after moving his leg from right to left, for
example, he declares that he had a very inexact notion of the extent
of the effected movement. ... If, having the intention of executing a
certain movement, I present him, he does not perceive it, and supposes
the limb to have taken the position he intended to give it."*

Or this:

"The patient, when his eyes were closed in the middle of an
unpractised movement, remained with the extremity in the position it
had when the eyes closed and did not complete the movement properly.
Then after some oscillations the limb gradually sank by reason of its
weight (the sense of fatigue being absent). Of this the patient was not
aware, and wondered, when he opened his eyes, at the altered position
of his limb."†

A similar condition can be readily reproduced experimentally in many hypnotic subjects. All that is needed is
tell a suitably predisposed person during the hypnotic trance that he cannot feel his limb, and he will be quite
unaware of the attitudes into which you may throw it.†

All these cases, whether spontaneous or experimental,
show the absolute need of guiding sensations of some kind
for the successful carrying out of a concatenated series of
movements. It is, in fact, easy to see that, just as where the
chain of movements is automatic (see above, Vol. I. p. 116),
each later movement of the chain has to be discharged by
the impression which the next earlier one makes in being

*Landry: Mémoire sur la Paralysie du Sens Musculaire, Gazette des
Hôpitaux, 1855, p. 269.
†Taldes: Ueber die Verspätung der Empfindungsleitung, Archiv für
Psychiatrie, Bd. x. Heft 2, p. 403. Concerning all such cases see the re-
marks made above on pp. 290-5.
‡Proceedings of American Soc. for Psychical Research, p. 95.

executed, so also, where the chain is voluntary, we need to
know at each movement just where we are in it, if we are to
will intelligently what the next link shall be. A man with
no feeling of his movements might lead off never so well,
and yet be sure to get lost soon and go astray. * But
patients like those described, who get no kinesthetic
impressions, can still be guided by the sense of sight.
Thus Strümpell says of his boy:

"One could always observe how his eye was directed first to the
object held before him, then to his own arm; and how it never ceased

*In reality the movement cannot even be started correctly in some
cases without the kinesthetic impression. Thus Dr. Strümpell relates
how turning over the boy’s hand made him bend the little finger instead of
the forefinger, when his eye was closed. "Ordered to point, e.g., towards
the left with his left arm, the arm was usually raised straight forward, and
then wandered about in groping uncertainty, sometimes getting the right
position and then leaving it again. Similarly with the lower limbs. If the
patient was able to walk, he would walk backwards and forwards with
the left leg over the right; and if the movement impelled towards the left,
and even then, he would cross the left leg over the right for the slightest
wobble.” In another anesthetic of Dr. Strümpell’s (described in the same
essay) the arm could not be moved at all unless the eyes were opened,
however energetic the volition. The variations in these hysterical cases are
great. Some patients cannot move the anaesthetic part at all when the eyes
are closed. Others it perfectly well, and can even write continuous
sentences with the anaesthetic hand. The causes of such differences are as
yet incompletely explored. M. Binet suggests (Revue Philosophique,
xxv. 479) that in those who cannot move the hand at all the sensation
of light is required as a ‘dynamogenic’ agent (see above, p. 377); and that in
those who can move it skillfully the anaesthesia is only a pseudo-insens-
sibility and that the limb is in reality governed by a dissociated or secondary
conscience. This latter explanation is certainly correct. Professor
G. E. Müller (Pflüger’s Archiv, xlv. 90) invokes the fact of individual
differences of imagination to account for the cases who cannot write at all.
Their kinesthetic images properly so called may be weak, he says, and
their optical images insufficiently powerful to supplement them without a
‘fillip’ from sensation. Janet’s observation that hysteric anaesthesias may
carry amnesia with them would perfectly legitimate Müller’s supposition.
What we now want is a minute examination of the individual cases.
Meanwhile Binet’s article above referred to, and Bastian’s paper in Brain
for April 1887, contain important discussions of the question. In a later
note I shall return to the subject again (see p. 330),
to follow the latter during its entire movement. All his voluntary movements took place under the unerring lead of the eye, which, as an indispensable guide, was never untrue to its functions."

So in the Landry case:

"With his eyes open, he easily opposes the thumb to each of the other fingers; with his eyes closed, the movement of opposition occurs, but the thumb only by chance meets the finger which it seeks. With his eyes open he is able, without hesitation, to bring his two hands together; but when his eyes are closed his hands seek one another in space, and only meet by chance."

In Charles Bell's well-known old case of anæsthesia the woman could only hold her baby safely in her arms so long as she looked at it. I have myself reproduced a similar condition in two hypnotic subjects whose arm and hand were made anæsthetic without being paralyzed. They could write their names when looking, but not when their eyes were closed. The modern mode of teaching deaf mutes to articulate consists in making them attentive to certain laryngeal, labial, thoracic, and other sensations, the reproduction of which becomes a guide to their vocalization. Normally it is the remoter sensations which we receive by the ear which keep us from going astray in our speech. The phenomena of aphasia show this to be the usual case.*

This is perhaps all that need be said about the existence of passive sensations of movement and their indispensability for our voluntary activity. We may consequently set it down as certain that, whether or no there be anything else in the mind at the moment when we consciously will a certain act, a mental conception made up of memory-images of those sensations, defining which special act it is, must be there.

Now is there anything else in the mind when we will to do an act? We must proceed in this chapter from the simpler to the more complicated cases. My first thesis accordingly is, that there need be nothing else, and that in perfectly simple vol-

* Professor Beaunis found that the accuracy with which a certain tenor sang was not lost when his vocal cords were made anæsthetic by cocaine. He concludes that the guiding sensations here are resident in the laryngeal muscles themselves. They are much more probably in the ear. (Beaunis, Les Sensations Internes (1889), p. 253).

untary acts there is nothing else, in the mind but the kinaesthetic idea, thus defined, of what the act is to be.

A powerful tradition in Psychology will have it that something additional to these images of passive sensation is essential to the mental determination of a voluntary act. There must, of course, be a special current of energy going out from the brain into the appropriate muscles during the act; and this outgoing current (it is supposed) must have in each particular case a feeling sui generis attached to it, or else (it is said) the mind could never tell which particular current, the current to this muscle or the current to that one, was the right one to use. This feeling of the current of outgoing energy has received from Wundt the name of the [feeling of innervation]. I disbelieve in its existence, and must proceed to criticize the notion of it, at what I fear may to some prove tedious length.

At first sight there is something extremely plausible in the feeling of innervation. The passive feelings of movement with which we have hitherto been dealing all come after the movement's performance. But wherever a movement is difficult and precise, we become, as a matter of fact, acutely aware in advance of the amount and direction of energy which it is to involve. One has only to play tenpins or billiards, or throw a ball, to catch his will in the act, as it were, of balancing tentatively its possible efforts, and ideally rehearsing various muscular contractions nearly correct, until it gets just the right one before it, when it says 'Now go!' This premonitory weighing feels so much like a succession of tentative sallies forth of power into the outer world, followed by correction just in time to avoid the irrevocable deed, that the notion that outgoing nerve-currents rather than mere vestiges of former passive sensibility accompany it, is a most natural one to entertain.

We find accordingly that most authors have taken the existence of feelings of innervation as a matter of course. Bain, Wundt, Helmholtz, and Mach defend them most explicitly. But in spite of the authority which such writers deservedly wield, I cannot help thinking that they are in one instance wrong,—that the discharge into the motor nerves is insentient, and that all our ideas of movement, in-
cluding those of the effort which it requires, as well as those of its direction, its extent, its strength, and its velocity, are images of peripheral sensations, either 'remote,' or resident in the moving parts, or in other parts which sympathetically act with them in consequence of the 'diffusive wave.'

A priori, as I shall show, there is no reason why there should be a consciousness of the motor discharge, and there is a reason why there should not be such a consciousness. The presumption is thus against the existence of the feeling of innervation; and the burden of proving it falls upon those who believe in it. If the positive empirical evidence which they offer prove also insuficient, then their case falls to the ground, and the feeling in question must be ruled out of court.

In the first place, then, let me show that the assumption of the feeling of innervation is unnecessary.

I cannot help suspecting that the scholastic prejudice that 'the effect must be already in some way contained in the cause' has had something to do with making psychologists so ready to admit the feeling of innervation. The outgoing current being the effect, what psychic antecedent could contain or prefigure it better than a feeling of it? But if we take a wide view, and consider the psychic antecedents of our activities at large, we see that the scholastic maxim breaks down everywhere, and that its verification in this instance would rather violate than illustrate the general rule. In the diffusive wave, in reflex action, and in emotional expression, the movements which are the effects are in no manner contained by anticipation in the stimuli which are their cause. The latter are subjective sensations or objective perceptions, which do not in the slightest degree resemble or prefigure the movements. But we get them, and, presto! there the movements are! They are knocked out of us, they surprise us. It is just cause for wonder, as our chapter on Instinct has shown us, that such bodily consequences should follow such mental antecedents. We explain the mystery *tant bien que mal* by our evolutionary theories, saying that lucky variations and heredity have gradually brought it about that

this particular pair of terms should have grown into a uniform sequence. Meanwhile why any state of consciousness at all should precede a movement, we know not—-the two things seem so essentially discontinuous. But if a state of consciousness there must be, why then it may, for aught we can see, as easily be one sort of a state as another. It is swallowing a camel and straining at a gnat for a man (all of whose muscles will on certain occasions contract at a sudden touch or sound) to suppose that on another occasion the idea of the feelings about to be produced by their contraction is an insufficient mental signal for the latter, and to insist that an additional antecedent is needed in the shape of 'a feeling of the outgoing discharge.'

No! for aught we can see, and in the light of general analogy, the kinesthetic ideas, as we have defined them, or images of incoming feelings of attitude and motion, are as likely as any feelings of innervation are, to be the last psychic antecedents and determiners of the various currents downwards into the muscles from the brain. The question "What are the antecedents and determinants?" is a question of fact, to be decided by whatever empirical evidence may be found.*

* As the feeling of heat, for example, is the last psychic antecedent of sweating, as the feeling of bright light is that of the pupil's contraction, as the sight or smell of carrion is that of the movements of disgust, as the remembrance of a blunder may be that of a blush, so the idea of a movement's sensible effects might be that of the movement itself. It is true that the idea of sweating will not commonly make us sweat, nor that of blushing make us blush. But in certain nauseated states the idea of vomiting makes us vomit; and a kind of sequence which is in this case realized only exceptionally might be the rule with the so-called voluntary muscles. It all depends on the nervous connections between the centres of idea and the discharging paths. These may differ from one sort of centre to another. They do differ somewhat from one individual to another. Many persons never blush at the idea of their blunders, but only when the actual blunder is committed; others blush at the idea; and some do not blush at all. According to Lotze, with some persons "It is possible to weep at will by trying to recall that peculiar feeling in the trigeminal nerve which habitually precedes tears. Some can even succeed in sweating voluntarily, by the lively recollection of the characteristic skin-sensations, and the voluntary reproduction of an indescribable sort of feeling of relaxation, which ordinarily precedes the flow of perspiration." (Med. Psych., p. 303.) The commoner type of exceptional case is that in which the idea of the stimulus, not that of the effects, provokes the effects. Thus we
But before considering the empirical evidence, let me go on to show that there is a certain a priori reason why the kinaesthetic images ought to be the last psychic antecedents of the outgoing currents, and why we should expect these currents to be insentient; why, in short, the so-called feelings of innervation should not exist.

It is a general principle in Psychology that consciousness deserts all processes where it can no longer be of use. The tendency of consciousness to a minimum of complication is in fact a dominating law. The law of parsimony in logic is only its best known case. We grow unconscious of every feeling which is useless as a sign to lead us to our ends, and where one sign will suffice others drop out, and that one remains, to work alone. We observe this in the whole history of sense-perception, and in the acquisition of every art. We ignore which eye we see with, because a fixed mechanical association has been formed between our motions and each retinal image. Our motions are the ends of our seeing, our retinal images the signals to those ends. If each retinal image, whichever it be, can suggest automatically a motion in the right direction, what need for us to know whether it be in the right eye or the left?

That knowledge would be superfluous complication. So in acquiring any art or voluntary function, the marksman ends by thinking only of the exact position of the goal, the singer only of the perfect sound, the balancer only of the point of the pole whose oscillations he must counteract. The associated mechanism has become so perfect in all these persons that each variation in the thought of the end is functionally correlated with the one movement fitted to bring the latter about. Whilst they were tyros, they thought of their means as well as their end: the marksman of the position of his gun or bow, or the weight of his stone; the pianist of the visible position of the note on the keyboard; the singer of his throat or breathing; the balancer of his feet on the rope, or his hand or chin under the pole. But little by little they succeeded in dropping all this supernumerary consciousness, and they became secure in their movements exactly in proportion as they did so.

Now if we analyze the nervous mechanism of voluntary action, we shall see that by virtue of this principle of parsimony in consciousness the motor discharge ought to be devoid of sentience. If we call the immediate psychic antecedent of a movement the latter's mental cue, all that is needed for invariability of sequence on the movement's part is a fixed connection between each several mental cue, and one particular movement. For a movement to be produced with perfect precision, it suffices that it obey instantly its own mental cue and nothing else, and that this mental cue be incapable of awakening any other movement. Now the simplest possible arrangement for producing voluntary movements would be that the memory-images of the movement's distinctive peripheral effects, whether resident or remote, themselves should severally constitute the mental cues, and that no other psychic facts should intervene or be mixed up with them. For a million different voluntary movements, we should then need a million dis-
tinct processes in the brain-cortex (each corresponding to the idea or memory-image of one movement), and a million distinct paths of discharge. Everything would then be unambiguously determined, and if the idea were right, the movement would be right too. Everything after the idea might then be quite insentient, and the motor discharge itself could be unconsciously performed.

The partisans of the feeling of innervation, however, say that the motor discharge itself must be felt, and that it, and not the idea of the movement's distinctive effects, must be the proper mental cue. Thus the principle of parsimony is sacrificed, and all economy and simplicity are lost. For what can be gained by the interposition of this relay of feeling between the idea of the movement and the movement? Nothing on the score of economy of nerve-tracts; for it takes just as many of them to associate a million ideas of movement with a million motor centres, each with a specific feeling of innervation attached to its discharge, as to associate the same million ideas with a million insentient motor centres. And nothing on the score of precision; for the only conceivable way in which the feelings of innervation might further precision would be by giving to a mind whose idea of a movement was vague, a sort of halting stage with sharper imagery on which to collect its wits before uttering its fiat. But not only are the conscious discriminations between our kinesthetic ideas much sharper than any one pretends the shades of difference between feelings of innervation to be, but even were this not the case, it is impossible to see how a mind with its idea vaguely conceived could tell out of a lot of Innervationsgefühle, were they never so sharply differentiated, which one fitted that idea exactly, and which did not. A sharply conceived idea will, on the other hand, directly awaken a distinct movement as easily as it will awaken a distinct feeling of innervation. If feelings can go astray through vagueness, surely the fewer steps of feeling there are interposed the more securely we shall act. We ought then, on a priori grounds alone, to regard the Innervationsgefühl as a pure encumbrance, and to presume that the peripheral ideas of movement are sufficient mental cues.

The presumption being thus against the feelings of innervation, those who defend their existence are bound to prove it by positive evidence. The evidence might be direct or indirect. If we could introspectively feel them as something plainly distinct from the peripheral feelings and ideas of movement which nobody denies to be there, that would be evidence both direct and conclusive. Unfortunately it does not exist.

There is no introspective evidence of the feeling of innervation. Wherever we look for it and think we have grasped it, we find that we have really got a peripheral feeling or image instead—an image of the way in which we feel when the innervation is over, and the movement is in process of doing or is done. Our idea of raising our arm, for example, or of crooking our finger, is a sense, more or less vivid, of how the raised arm or the crooked finger feels. There is no other mental material out of which such an idea might be made. We cannot possibly have any idea of our ears' motion until our ears have moved; and this is true of every other organ as well.

Since the time of Hume it has been a commonplace in psychology that we are only conversant with the outward results of our volition, and not with the hidden inner machinery of nerves and muscles which are what it primarily sets at work.* The believers in the feeling of innervation readily admit this, but seem hardly alive to its consequences. It seems to me that one immediate consequence ought to be to make us doubt the existence of the feeling in dispute. Whoever says that in raising his arm he is ignorant of how many muscles he contracts, in what order of sequence, and in what degrees of intensity, expressively avows a colossal amount of unconsciousness of the processes of motor discharge. Each separate muscle at any rate cannot have its distinct feeling of innervation. Wundt,† who makes such enormous use of these hypo-

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theoretical feelings in his psychologic construction of space, is himself led to admit that they have no differences of quality, but feel alike in all muscles, and vary only in their degrees of intensity. They are used by the mind as guides, not of which movement, but of how strong a movement, it is making, or shall make. But does not this virtually surrender their existence altogether?*

For if anything be obvious to introspection it is that the degree of strength of our muscular contractions is completely revealed to us by afferent feelings coming from the muscles themselves and their insertions, from the vicinity of the joints, and from the general fixation of the larynx, chest, face, and body, in the phenomenon of effort, objectively considered. When a certain degree of energy of contraction rather than another is thought of by us, this complex aggregate of afferent feelings, forming the material of our thought, renders absolutely precise and distinctive our mental image of the exact strength of movement, to be made, and the exact amount of resistance to be overcome.

Let the reader try to direct his will towards a particular movement, and then notice what constituted the direction of the will. Was it anything over and above the notion of the different feelings to which the movement when effected would give rise? If we abstract from these feelings, will any sign, principle, or means of orientation be left by which the will may innervate the right muscles with the right intensity, and not go astray into the wrong ones? Strip off these images of result, and see how far we are left with a complete assortment of directions into which our will may launch itself, you leave our consciousness in an absolute and total vacuum. If I will to write "Peter" rather than "Paul," it is the thought of certain digital sensations, of certain alphabetic sounds, of certain appearances on the paper, and of no others, which immediately precedes the motion of my pen.

* Professor Feuillié, who defends them in the Revue Philosophique, xxviii., 501 ff., also admits (p. 574) that they are the same whatever be the movement, and that all our discrimination of which movement we are innervating is afferent, consisting of sensations after, and of sensory images before, the act.

If I will to utter the word Paul rather than Peter, it is the thought of my voice falling on my ear, and of certain muscular feelings in my tongue, lips, and larynx, which guide the utterance. All these are incoming feelings, and between the thought of them, by which the act is mentally specified with all possible completeness, and the act itself, there is no room for any third order of mental phenomenon. There is indeed the fiat, the element of consent, or resolve that the act shall ensue. This, doubtless, to the reader's mind, as to my own, constitutes the essence of the voluntariness of the act. This fiat will be treated of in detail farther on. It may be entirely neglected here, for it is a constant coefficient, affecting all voluntary actions alike, and incapable of serving to distinguish them. No one will pretend that its quality varies according to the right arm, for example, or the left is used.

An anticipatory image, then, of the sensorial consequences of a movement, plus (on certain occasions) the fiat that these consequences shall become actual, is the only psychic state which introspection lets us discern as the forerunner of our voluntary acts. There is no introspective evidence whatever of any still later or concomitant feeling attached to the efferent discharge. The various degrees of difficulty with which the fiat is given form a complication of the utmost importance, to be discussed farther on.

Now the reader may still shake his head and say: "But can you seriously mean that all the wonderfully exact adjustment of my action's strength to its ends is not a matter of outgoing innervation? Here is a cannon-ball, and here a pasteboard box: instantly and accurately I lift each from the table, the ball not refusing to rise because my innervation was too weak, the box not flying abruptly into the air because it was too strong. Could representations of the movement's different sensory effects in the two cases be so delicately foreshadowed in the mind? or being there, is it credible that they should, all unaided, so delicately graduate the stimulation of the unconscious motor centres to their work?" Even so! I reply to both queries. We have a most extremely delicate foreshadowing of the sensory effects. Why else the
start of surprise that runs through us if some one has filled the light-seeming box with sand before we try to lift it or has substituted for the cannon-ball which we know a painted wooden imitation? *Surprise* can only come from getting a sensation which differs from the one we expect. But the truth is that when we know the objects well, the very slightest difference from the expected weight will surprise us, or at least attract our notice. With unknown objects we begin by expecting the weight made probable by their appearance. The expectation of this sensation innervates our lift, and we 'set' it rather small at first. An instant verifies whether it is too small. Our expectation rises, i.e., we think in a twinkling of a setting of the chest and teeth, a bracing of the back, and a more violent feeling in the arms. Quicker than thought we have them, and with them the burden ascends into the air.*

Bernhardt *†* has shown in a rough experimental way that our estimation of the amount of a resistance is as delicately graduated when our wills are passive, and our limbs made to contract by direct local faradization, as when we own...

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* Cf. Souriau in Rev. Philosophique, xxii. 454.—Professor G. E. Müller thus describes some of his experiments with weights: If, after lifting a weight of 3000 grams a number of times we suddenly get a weight of only 500 grams to lift, 'this latter weight is then lifted with a velocity which strikes every onlooker, so that the receptacle for the weight with all its contents often flies high up as if it carried the arm along with it, and the energy with which it is raised is sometimes so entirely out of proportion to the weight itself, that the contents of the receptacle are lumped out upon the table in spite of the mechanical obstacles with which such a result has to overcome. A more palpable proof that the trouble here is a wrong adaptation of the motor impulse could not be given.' Pflüger's Archiv, xxv. 47. Compare also p. 97, and the quotation from Hering on the same page.

† Archiv für Psychiatrie, iii. 618-635. Bernhardt strangely enough seems to think that what his experiments disprove is the existence of afferent muscular feelings, not those of efferent innervation—apparently because he deems that the peculiar thrill of the electricity ought to overpower all other afferent feelings from the part. But it is far more natural to interpret his results the other way, even aside from the certainty yielded by pret his results the other way, even aside from the certainty yielded by pret. His evidence is that efferent muscular feelings exist. This other evidence, other evidence, other evidence, other evidence that efferent muscular feelings exist. This other evidence, other evidence, other evidence, other evidence (Bolz, Archiv 1874, pp. 174-188, is, as far as the anatomical and physiological grounds go, again thrown into doubt by Mays, Zeitschrift für Biologie, Bd. xx."

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selves innervate them. Ferrier *‡* has repeated and verified the observations. They admit of no great precision, and too much stress should not be laid upon them either way; but at the very least they tend to show that no added delicacy would accrue to our perception from the consciousness of the efferent process, even if it existed.

Since there is no direct introspective evidence for the feelings of innervation, is there any indirect or circumstantial evidence? Much is offered; but on critical examination it breaks down. Let us see what it is. Wundt says that were our motor feelings of an afferent nature,

"it ought to be expected that they would increase and diminish with the amount of outer or inner work actually effected in contraction. This, however, is not the case, but the strength of the motor sensation is purely proportional to the strength of the impulses to movement, which starts from the central organ innervating the motor nerves. This may be proved by observations made by physicians in cases of morbid alteration in the muscular effect. A patient whose arm or leg is half paralyzed, so that he can only move the limb with great effort, has a distinct feeling of this effort: the limb seems to him heavier than before, appearing as if weighted with lead; he has, therefore, a sense of more work effected than formerly, and yet the effected work is either the same or even less. Only he must, to get even this effect, exert a stronger innervation, a stronger motor impulse, than formerly."

In complete paralysis, also, patients will be conscious of putting forth the greatest exertion to move a limb which remains absolutely still on the bed, and from which of course no afferent muscular or other feelings can come.‡

But Dr. Ferrier in his Functions of the Brain (Am. Ed.

* Functions of the Brain, p. 238.
‡ Vorlesungen über Menschcn und Thiereeile, i. 223.
† In some instances we get an opposite result. Dr. H. Charlton Bastian (British Medical Journal 1889, p. 461, note), says:

"Ask a man whose lower extremities are completely paralyzed, whether, when he ineffectually wills to move either of these limbs, he is conscious of an expenditure of energy in any degree proportionate to that which he would have experienced if his muscles had naturally responded to his volition. He will tell us rather that he has a sense only of his utter powerlessness, and that his volition is a mere mental act, carrying with it no feelings of expended energy such as he is accustomed to experience when his muscles are in powerful action, and from which action and its consequences alone, as I think, he can derive any adequate notion of resistance."
pp. 222-4) disposes very easily of this line of argument. He says:

"It is necessary, however, to exclude movements altogether before such an explanation [as Wundt's] can be adopted. Now, though the hemiplegic patient cannot move his paralyzed limb, though he is conscious of trying hard, yet he will be found to be making powerful muscular exertion of some kind. Vulpian has called attention to the fact, and I have repeatedly verified it, that when a hemiplegic patient is desired to close his paralyzed fist, in his endeavors to do so he unconsciously performs this action with the sound one. It is, in fact, almost impossible to exclude such a source of complication, and unless this is taken into account very erroneous conclusions as to the cause of the sense of effort may be drawn. In the fact of muscular contraction and the concomitant centripetal impressions, even though the action is not such as is desired, the conditions of the consciousness of effort exist without our being obliged to regard it as depending on central innervation or outgoing currents.

"It is, however, easy to make an experiment of a simple nature which will satisfactorily account for the sense of effort, even when these unconscious contractions of the other side, such as hemiplegia make, are entirely excluded.

"If the reader will extend his right arm and hold his forefinger in the position required for pulling the trigger of a pistol, he may without actually moving his finger, but by simply making believe, experience a consciousness of energy put forth. Here, then, is a clear case of consciousness of energy without actual contraction of the muscles either of the one hand or the other, and without any perceptible bodily strain. If the reader will again perform the experiment, and pay careful attention to the condition of his respiration, he will observe that his consciousness of effort coincides with a fixation of the muscles of his chest, and that in proportion to the amount of energy he feels he is putting forth, he is keeping his glottis closed and actively contracting his respiratory muscles. Let him place his finger as before, and continue breathing all the time, and he will find that however much he may direct his attention to his finger, he will experience not the slightest trace of consciousness of effort until he has actually moved the finger itself, and then it is referred locally to the muscles in action. It is only when this essential and ever-present respiratory factor is, as it has been, overlooked, that the consciousness of effort can with any degree of plausibility be ascribed to the outgoing current. In the contraction of the respiratory muscles there are the necessary conditions of centripetal impressions, and these are capable of originating the general sense of effort. When these active efforts are withheld, no consciousness of effort ever arises, except in so far as it is conditioned by the local contraction of the group of muscles towards which the attention is directed, or by other muscular contractions called unconsciously into play in the attempt.

"I am unable to find a single case of consciousness of effort which is not explicable in one or other of the ways specified. In all instances the consciousness of effort is conditioned by the actual fact of muscular contraction. That it is dependent on centripetal impressions generated by the act of contraction, I have already endeavored to show. When the paths of the centripetal impressions or the cerebral centres of the same are destroyed, there is no vestige of a muscular sense. That the central organs for the appreciation of the impressions originating from muscular contraction are different from those which send out the motor impulse, has already been established. But when Wundt argues that this cannot be so, because then the sensation would always keep pace with the energy of muscular contraction, he overlooks the important factor of the fixation of the respiratory muscles, which is the basis of the general sense of effort in all its varying degrees."

To these remarks of Ferrier's I have nothing to add.* Any one may verify them, and they prove conclusively that the consciousness of muscular exertion, being impossible without movement effected somewhere, must be an affereut and not an effereut sensation; a consequence, and not an antecedent, of the movement itself. An idea of the amount of muscular exertion requisite to perform a certain movement can consequently be nothing other than an anticipatory image of the movement's sensible effects.

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* Münsterberg's words may be added: "In lifting an object in the hand I can discover no sensation of volitional energy. I perceive in the first place a slight tension about the head, but that this results from contraction in the head muscles, and not from a feeling of the brain-discharge, is shown by the simple fact that I get the tension on the right side of the head when I move the right arm, whereas the motor discharge takes place in the opposite side of the brain. . . . In maximal contractions of body- and limb-muscles there occur, as if it were to reinforce them, those special contractions of the muscles of the face [especially frowning and clinching teeth] and those tensions of the skin of the head. These sympathetical movements, felt particularly on the side which makes the effort, are perhaps the immediate ground why we ascribe our awareness of maximal contraction to the region of the head, and call it a consciousness of force, instead of a peripheral sensation." (Die Willenshandlung (1888), pp. 78, 83.) Herr Münsterberg's work is a little masterpiece, which appeared after my text was written. I shall have repeatedly to refer to it again, and cordially recommend to the reader its most thorough refutation of the Innervationsgefühl-theory.
Driven thus from the body at large, where next shall the circumstantial evidence for the feeling of innervation lodge itself? Where but in the muscles of the eye, from which small retreat it judges itself inexpugnable. Nevertheless, that fastness too must fail, and by the lightest of bombardments. But, before trying the bombardment, let us recall our general principles about optical vertigo, or illusionary appearance of movement in objects.

We judge that an object moves under two distinct sets of circumstances:

1. When its image moves on the retina, and we know that the eye is still.
2. When its image is stationary on the retina, and we know that the eye is moving. In this case we feel that we follow the object.

In either of these cases a mistaken judgment about the state of the eye will produce optical, vertigo.

If in case 1 we think our eye is still when it is really moving, we get a movement of the retinal image which we judge to be due to a real outward motion of the object. This is what happens after looking at rushing water, or through the windows of a moving railroad car, or after turning on one's heel to giddiness. The eyes, without our intending to move them, go through a series of involuntary rotations, continuing those they were previously obliged to make to keep objects in view. If the objects had been whirling by to our right, our eyes when turned to stationary objects will still move slowly towards the right. The retinal image upon them will then move like that of an object passing to the left. We then try to catch it by voluntarily and rapidly rotating the eyes to the left, when the involuntary impulse again rotates the eyes to the right, continuing the apparent motion; and so the game goes on. (See above, pp. 89–91.)

If in case 2 we think our eyes moving when they are in reality still, we shall judge that we are following a moving object when we are but fixating a steadfast one. Illusions of this kind occur after sudden and complete paralysis of special eye muscles, and the partisans of feelings of effarent innervation regard them as experimenta cruces. Helmholtz writes: *

"When the external rectus muscle of the right eye, or its nerve, is paralyzed, the eye can no longer be rotated to the right side. So long as the patient turns it only to the nasal side it makes regular movements, and he perceives correctly the position of objects in the visual field. So soon, however, as he tries to rotate it outwardly, i.e., towards the right, it ceases to obey his will, stands motionless in the middle of its course, and the objects appear flying to the right, although position of eye and retinal image are unaltered.†

"In such a case the exertion of the will is followed neither by actual movement of the eye, nor by contraction of the muscle in question, nor even by increased tension in it. The act of will produced absolutely no effect beyond the nervous system, and yet we judge of the direction of the line of vision as if the will had exercised its normal effects. We believe it to have moved to the right, and since the retinal image is unchanged, we attribute to the object the same movement we have erroneously ascribed to the eye... These phenomena leave no room for doubt that we only judge the direction of the line of sight by the effort of will with which we strive to change the position of our eyes. There are also certain weak feelings in our eyelids, and furthermore in excessive lateral rotations we feel a fatiguing strain in the muscles. But all these feelings are too faint and vague to be of use in the perception of direction. We feel then what impulse of the will, and how strong a one, we apply to turn our eye into a given position."

Partial paralysis of the same muscle, paresis, as it has been called, seems to point even more conclusively to the same inference, that the will to innervate is felt independently of all its afferent results. I will quote the account given by a recent authority, ‡ of the effects of this accident:

"When the nerve going to an eye muscle, e.g., the external rectus of one side, falls into a state of paresis, the first result is that the same volitional stimulus, which under normal circumstances would have perhaps rotated the eye to its extreme position outwards, now is competent to effect only a moderate outward rotation, say of 20°. If now, shutting the sound eye, the patient looks at an object situated just so far out-

* Physiologische Optik, p. 600.
† [The left and sound eye is here supposed covered. If both eyes look at the same field there are double images which still more perplex the judgment. The patient, however, learns to see correctly before many days or weeks are over.—W. J.]
‡ Alfred Graefe, in Handbuch der gesamten Augenhllkunde, Bd. VI, pp. 18–21.
wards from the paretic eye that this latter must turn 20° in order to see it distinctly, the patient will feel as if he had moved it not only 20° towards the side, but into its extreme lateral position, for the impulse of innervation requisite for bringing it into view is a perfectly conscious act, whilst the diminished state of contraction of the paretic muscle lies for the present out of the ken of consciousness. The test proposed by von Graefe, of localization by the sense of touch, serves to render evident the error which the patient now makes. If we direct him to touch rapidly the object looked at, with the fore-finger of the hand of the same side, the line through which the finger moves will not be the line of sight directed 20° outward, but will approach more nearly to the extreme possible outward line of vision."

A stone-cutter with the external rectus of the left eye paralyzed, will strike his hand instead of his chisel with his hammer, until experience has taught him wisdom.

It appears as if here the judgment of direction could only arise from the excessive innervation of the rectus when the object is looked at. All the afferent feelings must be identical with those experienced when the eye is sound and the judgment is correct. The eyeball is rotated just 20° in the one case as in the other, the image falls on the same part of the retina, the pressures on the eyeball and the tensions of the skin and conjunctiva are identical. There is only one feeling which can vary, and lead us to our mistake. That feeling must be the effort which the will makes, moderate in the one case, excessive in the other, but in both cases an afferent feeling, pure and simple.

Beautiful and clear as this reasoning seems to be, it is based on an incomplete inventory of the afferent data. The writers have all omitted to consider what is going on in the other eye. This is kept covered during the experiments, to prevent double images, and other complications. But if its condition under these circumstances be examined, it will be found to present changes which must result in strong afferent feelings. And the taking account of these feelings demolishes in an instant all the conclusions which the authors from whom I have quoted base upon their supposed absence. This I will now proceed to show.*

* Professor G. E. Müller (Zur Grundlegung der Psychophysik (1878), p. 318, was the first to explain the phenomenon after the manner advocated

in the text. Still unacquainted with his book, I published my own similar explanation two years later.

"Professor Mach in his wonderfully original little work 'Beiträge zur Analyse der Empfindungen,' p. 87, describes an artificial way of getting translocation, and explains the effect likewise by the feeling of innervation. 'Turn your eyes,' he says, 'as far as possible towards the left and press against the right sides of the orbits two large lumps of putty. If you then try to look as quickly as possible towards the right, this succeeds, on account of the incompletely spherical form of the eyes, only imperfectly, and the objects consequently appear translated very considerably towards the right. The bare will to look towards gives to all images on the retina a greater rightwards value, to express it shortly. The experiment is at first surprising.'—I regret to say that I cannot myself make it succeed—I know not for what reason. But even where it does succeed it seems to me that the conditions are much too complicated for Professor Mach's theoretic conclusions to be safely drawn. The putty squeezed into the orbit, and the pressure of the eyeball against it must give rise to peripheral sensations strong enough, at any rate (if only of the right kind), to justify any amount of false perception of our eyeball's position, quite apart from the innervation feelings which Professor Mach supposes to coexist.
case of simple paresis with apparent translocation of the field.

Here the right eye succeeds in fixating the object, but observation of the left eye will reveal to an observer the fact that it squints just as violently inwards as in the former case. The direction which the finger of the patient takes in pointing to the object, is the direction of this squinting and covered left eye. As Graefe says (although he fails to seize the true import of his own observation), "It appears to have been by no means sufficiently noticed how significantly the direction of the line of sight of the secondarily deviating eye [i.e., of the left,] and the line of direction of the pointed finger agree."

The translocation would, in a word, be perfectly explained could we suppose that the sensation of a certain degree of rotation in the left eyeball were able to suggest to the patient the position of an object whose image falls on the right retina alone.* Can, then, a feeling in one eye

be confounded with a feeling in the other? It most assuredly can, for not only Donders and Adamik, by their vivisections, but Hering by his exquisite optical experiments, have proved that the apparatus of innervation for both eyes is single, and that they function as one organ—a double eye, according to Hering, or what Helmholtz calls a Cyclopaugue. The retinal feelings of this double organ, singly innervated, are naturally undistinguished as respects our knowing whether they belong to the left retina or to the right. We use them only to tell us where their objects lie. It takes long practice directed specially ad hoc to teach us on which retina the sensations severally fall. Similarly the different sensations which arise from the positions of the eyeballs are used exclusively as signs of the position of objects; an object directly fixated being localized habitually at the intersection of the two optical axes, but without any separate consciousness on our part that the position of one axis is different from another. All we are aware of is a consolidated feeling of a certain ‘strain’ in the eyeballs, accompanied by the perception that just so far in front and so far to the right or to the left there is an object which we see. So that a ‘muscular’ process in one eye is as likely to combine with a retinal process in the other eye to effect a perceptive judgment, as two processes in one eye are likely so to combine.

Another piece of circumstantial evidence for the feelings of innervation is that adduced by Professor Mach, as follows:

"If we stand on a bridge, and look at the water flowing beneath, we usually feel ourselves at rest, whilst the water seems in motion. Prolonged looking at the water, however, commonly has for its result to make the bridge with the observer and surroundings suddenly seem to move in the direction opposed to that of the water, whilst the water itself assumes the appearance of standing still. The relative motion of the objects is in both cases the same, and there must therefore be some

lies. The open eye remaining fixed, and the closed eye moving towards the right or left, the object seen by the open eye appears also to move towards the right or left." (Physiol. Optik, pp. 607-8.)
adequate physiological ground why sometimes one, sometimes the other part of them is felt to move. In order to investigate the matter conveniently, I had the simple apparatus constructed which is represented in Fig. 86. An oil-cloth with a simple pattern is horizontally stretched over two cylinders (each 3 metres long and 3 feet apart) and kept in uniform motion by the help of a crank. Across the cloth, and some 30 cm. above it, is stretched a string, with a knot $\alpha$, which serves as a fixation-point for the eye of the observer. If the observer follow with his eyes the pattern of the cloth as it moves, he sees it in movement, himself and the surroundings at rest. But if he looks at the knot, he soon feels as if the entire room were moving contrary to the direction of the cloth, whilst the latter seems to stand still. This change in the mode of looking comes about in more or less time according to one's momentary disposition, but usually it takes but a few seconds. If one once understands the point, one can make the two appearances alternate at will. Every following of the oil-cloth makes the observer stationary; every fixation of the knot or inattention to the oil-cloth, so that its pattern becomes blurred, sets him in apparent motion.$^{*}$

Professor Mach proceeds to explain the phenomenon as follows:

"Moving objects exert, as is well known, a peculiar motor stimulation upon the eye, they draw our attention and our look after them. If the look really follows them . . . we assume that they move. But if the eye, instead of following the moving objects, remains steadfastly at rest, it must be that the constant stimulus to motion which it receives is neutralized by an equally constant current of innervation flowing into its motor apparatus. But this is just what would happen if the steadfastly fixated point were itself moving uniformly in the other direction, and we were following it with our eyes. When this comes about, whatever motionless things are looked at must appear in motion."$^{†}$

The knot $\alpha$, the string, we ourselves, and all our sta-

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$^{*}$ Beiträge zur Analyse der Empfindungen, p. 65.
$^{†}$ P. 68.
cannot, therefore, regard the observation of Prof. Mach as any proof that the latter feelings exist.*

The circumstantial evidence for the feeling of innervation thus seems to break down like the introspective evidence. But not only can we rebut experiments intended to prove it, we can also adduce experiments which disprove it. A person who moves a limb voluntarily must innervate it in any case, and if he feels the innervation he ought to be able to use the feeling to define what his limb is about, even though the limb itself were anaesthetic. If, however, the limb be totally anaesthetic, it turns out that he does not know at all how much work it performs in its contraction—in other words, he has no perception of the amount of innervation which he exerts. A patient examined by Messrs. Gley and Marillier beautifully showed this. His entire arms, and his trunk down to the navel, were insensible both superficially and deeply, but his arms were not paralyzed:

"We take three stone bottles—two of them are empty and weigh each 350 grams; the third is full of mercury and weighs 1850 grams. We ask L... to estimate their weight and tell us which is heaviest. He declares that he finds them all three alike. With many days of interval we made two series of six experiments each. The result was always the same. The experiment, it need hardly be said, was arranged in such wise that he could be informed neither by sight nor by hearing. He even declared, holding in his hand the bottleful of mercury, that he found it to have no weight. ... We place successively in his hand (his eyes being still bandaged) a piece of modelling wax, a stick of hard wood, a thick India-rubber tube, a newspaper folded up lengthwise and rumpled, and we make him squeeze these several objects. He feels no difference of resistance and does not even perceive that anything is in his hand."*

M. Gley in another place † quotes experiments by Dr. Bloch which prove that the sense which we have of our limbs' position owes absolutely nothing to the feeling of innervation put forth. Dr. Bloch stood opposite the angle of a screen whose sides made an angle of about 90°, and tried to place his hands symmetrically, or so that both should fall on corresponding spots of the two screen-sides, which were marked with squares for the purpose. The average error being noted, one hand was then passively carried by an assistant to a spot on its screen-side, and the other actively sought the corresponding spot on the opposite side. The accuracy of the correspondence proved to be as great as when both arms were innervated voluntarily, showing that the consciousness of innervation in the first of the two experiments added nothing to the sense of the limbs' position. Dr. Bloch then tried, pressing a certain number of pages of a book between the thumb and forefinger of one hand, to press an equal number between the same fingers of the other hand. He did this just as well when the fingers in question were drawn apart by India-rubber bands as when they were uninterfered with, showing that the physiologically much greater innervation-current required in the former case had no effect upon the consciousness of the movement made, so far as its spatial character at any rate was concerned.‡

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* I owe the interpretation in the text to my friend and former student, Mr. E. S. Brown, whom I set to observe the phenomenon before I had observed it myself. Concerning the oscillations in our interpretation of relative motion over retina and skin, see above, p. 173.

Herr Münsterberg gives additional reasons against the feeling of innervation, of which I will quote a couple. First, our ideas of movement are all faint ideas, resembling in this the copies of sensations in memory. Were they feelings of the outgoing discharge, they would be original states of consciousness, not copies; and ought by analogy to be vivid like other original states. Second, our unstripped muscles yield no feelings in contracting, nor can they be contracted at will, differing thus in two peculiarities from the voluntary muscles. What more natural than to suppose that the two peculiarities hang together, and that the reason why we cannot contract our intestines, for example, at will, is, that we have no memory-images of how their contraction feels? Were the supposed innervation-feeling always the 'mental cue,' one doesn't see why we might not have it even where, as here, the contractions themselves are unfelt, and why it might not bring the contractions about. (Die Willestheorie, pp. 87-8.)

† Revue Philosophique, xxil. 445.

‡ Herr Sternberg (Pflüger's Archiv, xxxvii. p. 1) thinks that he proves the feeling of innervation by the fact that when we have willed to make a movement we generally think that it is made. We have already seen some of the facts on pp. 105-6, above. S. cites from Exner the fact that if we put a piece of hard rubber between our back teeth and bite, our front teeth seem actually to approach each other, although it is physically impossible
On the whole, then, it seems as probable as anything can well be, that these feelings of innervation do not exist for them to do so. He proposes the following experiment: Lay the palm of the hand on a table with the forefinger overlapping its edge and flexed back as far as possible, whilst the table keeps the other fingers extended; then try to flex the terminal joint of the forefinger without looking. You do not do it, and yet you think that you do. Here again the innervation, according to the author, is felt as an executed movement. It seems to me, as I said in the previous place, that the illusion is in all these cases due to the ineviter association of ideas. Normally our will to move has always been followed by the sensation that we have moved, except when the simultaneous sensation of an external resistance was there. The result is that whereas we feel no external resistance, and the muscles and tendons tighten, the invariably associated idea is intense enough to be hallucinatory. In the experiment with the teeth, the resistance customarily met with when our masseters contract is a soft one. We do not close our teeth on a thing like hard rubber once in a million times; so when we do so, we imagine the habitual result. Persons with amputated limbs more often than not continue to feel them as if they were still there, and can, moreover, give themselves the feeling of moving them at will. The life-long sensorial association of the idea of 'working one's toe,' e.g. (uncorrected by any opposite sensation, since no real sensation of non-movement can come from non-existing toes), follows the idea and swallows it up. The man thinks that his toes are 'working' (cf. Proceedings of American Soc. for Psych. Research, p. 240).

Herr Loeb also comes to the rescue of the feeling of innervation with observations of his own made after my text was written, but they convince me more than the arguments of others. Loeb's facts are these (Pflüger's Archiv, xliv. p. 1): If we stand before a vertical surface, and if, when our hands at different heights, we simultaneously make with them what seem to us equally extensive movements, that movement always turns out really shorter which is made with the arm whose muscles (in virtue of the arm's position) are already the more contracted. The same result ensues when the movements are not laterally unsymmetric. Loeb assumes that both arms contract by virtue of a common Innervation, but that although this innervation is relatively less effective upon the more contracted arm, our feeling of its equal strength overpowers the disparity of the incoming sensations of movement which the two limbs send back, and makes us think that the spaces they traverse are the same. 'The sensation of the extent and direction of our voluntary movements depends accordingly upon the impulses of our will to move, and not upon the feelings set up by the motion in the active organ.' Now, is the elementary law which Loeb calls it, why does it only manifest its effect when both hands are moving simultaneously? Why not when the same hand makes successive movements? and especially why not when both hands move symmetrically or at the same level, but one of them is weighted? A weighted hand surely requires a stronger innervation than an unweighted one to move an equal distance upwards; and still, though Loeb confesses, we do not tend to overestimate the path which it traverses under these circumstances. The fact is that the illusion which Loeb has studied is a complex resultant of many factors. One of them, it seems to me, is the instinctive tendency to revert to the type of the bilateral movements of childhood. In adult life we move our arms for the most part in alternation; but in infancy the free movements of the arms are almost always similar on both sides, symmetrical when the direction of motion is horizontal, and with the hands on the same level when it is vertical. The most natural innervation, when the movements are rapidly performed, is one which takes the movement back to this form. Our estimation may be that the limbs severally traversed by the two hands is mainly based, as such estimations with closed eyes usually are (see Loeb's own earlier paper, Untersuchungen über den Führbraum der Hand, in Pflüger's Archiv, xli. 107), upon the apparent velocity and duration of the movement. The duration is the same for both hands, since the movements begin and end simultaneously. The velocities of the two hands are under the experimental conditions almost impossible of comparison. It is well known how imperfect a discrimination of weights we have when we 'left' them simultaneously, one in either hand; and G. K. Müller has well shown (Pflüger's Archiv, xlv. 57) that the velocity of the lift is the main factor in determining our judgment of weight. It is hardly possible to conceive of more unfavorable conditions for making an accurate comparison of the length of two movements than those which govern the experiments which are under discussion. The only prominent sign is the duration, which would lead us to infer the equality of the two movements. We consequently regard them equal, though a native tendency in our motor centres keeps them from being so.

* This is by no means an unplausible opinion. See Vol I. p. 65.
to be said, that the advocates of inward spontaneity may be turning their backs on its real citadel, when they make a fight, on its behalf, for the consciousness of energy put forth in the outgoing discharge. Let there be no such consciousness; let all our thoughts of movements be of sensational constitution; still in emphasizing, choosing, and espousing of one of them rather than another, in the saying to it, ‘be thou the reality for me,’ there is ample scope for our inward initiative to be shown. Here, it seems to me, the true line between the passive materials and the activity of the spirit should be drawn. It is certainly false strategy to draw it between such ideas as are connected with the outgoing and such as are connected with the incoming neural wave.*

If the ideas by which we discriminate between one movement and another, at the instant of deciding in our mind which one we shall perform, are always of sensorial origin, then the question arises, “Of which sensorial order need they be?” It will be remembered that we distinguished two orders of kinesthetic impression, the remote ones, made by the movement on the eye or ear or distant skin, etc., and the resident ones, made on the moving parts themselves, muscles, joints, etc. Now do resident images, exclusively, form what I have called the mental one, or will remote ones equally suffice?

There can be no doubt whatever that the mental cue may be either an image of the resident or of the remote kind. Although, at the outset of our learning a movement, it would seem that the resident feelings must come strongly before consciousness (cf. p. 487), later this need not be the case. The rule, in fact, would seem to be that they tend to lapse

* Maine de Brier, Roger Collard, Sir John Herschel, Dr. Carpenter. Dr. Martineau, all seem to post a force-sense by which, in becoming aware of an outer resistance to our will, we are taught the existence of an outer world. I hold that every peripheral sensation gives us an outer world. An insect crawling on our skin gives us as ‘outward’ an impression as a hundred pounds weighing on our back. —I have read M. A. Bertrand’s criticism of my views (La Psychologie de l’Effort, 1869); but he seems to think that I deny the feeling of effort altogether, I can get no profit from it, despite his charming way of saying things.

more and more from consciousness, and that the more practised we become in a movement, the more ‘remote’ do the ideas become which form its mental cue. What we are interested in is what sticks in our consciousness; everything else we get rid of as quickly as we can. Our resident feelings of movement have no substantive interest for us at all, as a rule. What interest us are the ends which the movement is to attain. Such an end is generally an outer impression on the eye or ear, or sometimes on the skin, nose, or palate. Now let the idea of the end associate itself definitely with the right motor innervation, and the thought of the innervation’s resident effects will become as great an encumbrance as we formerly concluded that the feeling of the innervation itself would be. The mind does not need it; the end alone is enough.

The idea of the end, then, tends more and more to make itself all-sufficient. Or, at any rate, if the kinesthetic ideas are called up at all, they are so swamped in the vivid kinesthetic feelings by which they are immediately overtaken that we have no time to be aware of their separate existence. As I write, I have no anticipation, as a thing distinct from my sensation, of either the look or the digital feel of the letters which flow from my pen. The words chime on my mental ear, as it were, before I write them, but not on my mental eye or hand. This comes from the rapidity with which often-repeated movements follow on their mental cue. An end consented to as soon as conceived innervates directly the centre of the first movement of the chain which leads to its accomplishment, and then the whole chain rattles off quasi-reflexly, as was described on pp. 115-6 of Vol. I.

The reader will certainly recognize this to be true in all fluent and unhesitating voluntary acts. The only special flat there is at the outset of the performance. A man says to himself, “I must change my shirt,” and involuntarily he has taken off his coat, and his fingers are at work in their accustomed manner on his waistcoat-buttons, etc.; or we say, “I must go downstairs,” and ere we know it we have risen, walked, and turned the handle of the door;—all through the idea of an end coupled with a series of guiding
sensations which successively arise. It would seem indeed that we fail of accuracy and certainty in our attainment of the end whenever we are preoccupied with much ideal consciousness of the means. We walk a beam the better the less we think of the position of our feet upon it. We pitch or catch, we shoot or chop the better the less tactile and muscular (the less resident), and the more exclusively optical, (the more remote) our consciousness is. Keep your eye on the place aimed at, and your hand will fetch it; think of your hand, and you will very likely miss your aim. Dr. Southard found that he could touch a spot with a pencil-point more accurately with a visual than with a tactile mental cue. In the former case he looked at a small object and closed his eyes before trying to touch it. In the latter case he placed it with closed eyes, and then after removing his hand tried to touch it again. The average error with touch (when the results were most favorable) was 17.13 mm. With sight it was only 12.37 mm.*—All these are plain results of introspection and observation. By what neural machinery they are made possible we need not, at this present stage, inquire.

In Chapter XVIII we saw how enormously individuals differ in respect to their mental imagery. In the type of imagination called tactile by the French authors, it is probable that the kinaesthetic ideas are more prominent than in my account. We must not expect too great a uniformity in individual accounts, nor wrangle overmuch as to which one 'truly' represents the process.†

* Bowditch and Southard in Journal of Physiology, vol. iii. No. 3. It was found in these experiments that the maximum of accuracy was reached when two seconds of time elapsed between locating the object by eye or hand and starting to touch it. When the mark was located with one hand, and the other hand had to touch it, the error was considerably greater than when the same hand both located and touched it.

† The same caution must be shown in discussing pathological cases. There are remarkable discrepancies in the effects of peripheral anaesthesia upon the voluntary power. Such cases as I quoted in the text (p. 490) are by no means the only type. In those cases the patients could move their limbs accurately when the eyes were open, and inaccurately when they were shut. In other cases, however, the anaesthetic patients cannot move their limbs at all when the eyes are shut. (For reports of two such cases see Bastian in 'Brain,' Binet in Rev. Philos., xxv. 478.) M. Binet explains these (hysterical) cases as requiring the 'dynamogenic' stimulus of light (see above, p. 377). They might, however, be cases of such congenitally defective optical imagination that the 'mental cue' was normally 'tactile'; and that when this tactile cue failed through functional inertness of the kinaesthetic centres, the only optical cue strong enough to determine the discharge had to be an actual sensation of the eye.—There is still a third class of cases in which the limbs have lost all sensibility, even for movements passively imprinted, but in which voluntary movements can be accurately executed even when the eyes are closed. M. Binet and Pécé have reported some of these interesting cases, which are found amongst the hysterical hemianesthesics. They can, for example, write accurately at will, although their eyes are closed and they have no feeling of the writing taking place, and many of them do not know when it begins or stops. Asked to write repeatedly the letter a, and then say how many times they have written it, some are able to assign the number and some are not. Some of them admit that they are guided by visual imagination of what is being done. (Cf. Archives de Physiologie, Oct. 1887, pp. 363-6. Now it would seem at first sight that feelings of outgoing innervation must exist in these cases and be kept account of. There are no other guiding impressions, either immediate or remote, of which the patient is conscious; and unless feelings of innervation be there, the writing would seem miraculous. But if such feelings are present in these cases, and suffice to direct accurately the succession of movements, why do they not suffice in those other anaesthetic cases in which movement becomes disorderly when the eyes are closed? Innervation is there, or there would be no movement; why is the feeling of the innervation gone? The truth seems to be, as M. Binet supposes (Rev. Philos., xxviii, p. 479), that these cases are not arguments for the feeling of innervation. They are pathological curiosities; and the patients are not really anaesthetic, but victims of that curious dissociation or splitting-off of one part of their consciousness from the rest which we have already begun to understand, thanks to Messrs. Janet, Binet, and Gurney, and in which the split-off part (in this case the kinaesthetic sensations) may nevertheless remain to produce its usual effects. Compare what was said above, p. 491. 
psychology of the Will. It can be the more easily treated now that we have got rid of so much tedious preliminary matter.

IDEO-MOTOR ACTION.

The question is this: Is the bare idea of a movement’s sensible effects its sufficient mental cue (p. 497), or must there be an additional mental antecedent, in the shape of a flat decision, consent, volitional mandate, or other synonymous phenomenon of consciousness, before the movement can follow?

I answer: Sometimes the bare idea is sufficient, but sometimes an additional conscious element, in the shape of a flat, mandate, or express consent, has to intervene and precede the movement. The cases without a flat constitute the more fundamental, because the more simple, variety. The others involve a special complication, which must be fully discussed at the proper time. For the present let us turn to ideo-motor action, as it has been termed, or the sequence of movement upon the mere thought of it, as the type of the process of volition.

Wherever movement follows unhesitatingly and immediately the notion of it in the mind, we have ideo-motor action. We are then aware of nothing between the conception and the execution. All sorts of neuro-muscular processes come between, of course, but we know absolutely nothing of them. We think the act, and it is done; and that is all that introspection tells us of the matter. Dr. Carpenter, who first used, I believe, the name of ideo-motor action, placed it, if I mistake not, among the curiosities of our mental life. The truth is that it is no curiosity, but simply the normal process stripped of disguise. Whilst talking I become conscious of a pin on the floor, or of some dust on my sleeve. Without interrupting the conversation I brush away the dust or pick up the pin. I make no express resolve, but the mere perception of the object and the fleeting notion of the act seem of themselves to bring the latter about. Similarly, I sit at table after dinner and find myself from time to time taking nuts or raisins out of the dish and eating them. My dinner properly is over, and in the heat of the conversation I am hardly aware of what I do, but the perception of the fruit and the fleeting notion that I may eat it seem fatally to bring the act about. There is certainly no express flat here; any more than there is in all those habitual goings and comings and rearrangements of ourselves which fill every hour of the day, and which incoming sensations instigate so immediately that it is often difficult to decide whether not to call them reflex rather than voluntary acts. We have seen in Chapter IV that the intermediary terms of an habitual series of acts leading to an end are apt to be of this quasi-automatic sort. As Lotze says:

"We see in writing or piano-playing a great number of very complicated movements following quickly one upon the other, the instigative representations of which remained scarcely a second in consciousness, certainly not long enough to awaken any other volition than the general one of resigning one's self without reserve to the passing over of representation into action. All the acts of our daily life happen in this wise: our standing up, walking, talking, all this never demands a distinct impulse of the will, but is adequately brought about by the pure flux of thought."

In all this the determining condition of the unhesitating and resistless sequence of the act seems to be the absence of any conflicting notion in the mind. Either there is nothing else at all in the mind, or what is there does not conflict. The hypnotic subject realizes the former condition. Ask him what he is thinking about, and ten to one he will reply 'nothing.' The consequence is that he both believes everything he is told, and performs every act that is suggested. The suggestion may be a vocal command, or it may be the performance before him of the movement required. Hypnotic subjects in certain conditions repeat whatever they

* Medizinische Psychologie, p. 383. In his admirably acute chapter on the Will this author has most explicitly maintained the position that what we call muscular exertion is an afferent and not an efferent feeling; "We must affirm universally that in the muscular feeling we are not sensible of the force on its way to produce an effect, but only of the suffurance already produced in our movable organs, the muscles, after the force has, in a manner unobservably by us, exerted upon them its causality." (p. 311). How often the battles of psychology have to be fought over again, each time with heavier armories and bigger trains, though not always with such able generals!
hear you say, and imitate whatever they see you do. Dr. Féré says that certain waking persons of neurotic type, if one repeatedly close and open one’s hand before their eyes, soon begin to have corresponding feelings in their own fingers, and presently begin irresistibly to execute the movements which they see. Under these conditions of ‘preparation’ Dr. Féré found that his subjects could squeeze the hand-dynamometer much more strongly than when abruptly invited to do so. A few passive repetitions of a movement will enable many enfeebled patients to execute it actively with greater strength. These observations beautifully show how the mere quickening of kinesthetic ideas is equivalent to a certain amount of tension towards discharge in the centres.*

We know what it is to get out of bed on a freezing morning in a room without a fire, and how the very vital principle within us protests against the ordeal. Probably most persons have lain on certain mornings for an hour at a time unable to brace themselves to the resolve. We think how late we shall be, how the duties of the day will suffer; we say, “I must get up, this is ignominious,” etc.; but still the warm couch feels too delicious, the cold outside too cruel, and resolution fainth away and postpones itself again and again just as it seemed on the verge of bursting the resistance and passing over into the decisive act. Now how do we ever get up under such circumstances? If I may generalize from my own experience, we more often than not get up without any struggle or decision at all. We suddenly find that we have got up. A fortunate lapse of consciousness occurs; we forget both the warmth and the cold; we fall into some reverie connected with the day’s life, in the course of which the idea flashes across us, “Hollo! I must lie here no longer”—an idea which at that lucky instant awakens no contradictory or paralyzing suggestions, and consequently produces immediately its appropriate motor effects. It was our acute consciousness of both the warmth and the cold during the period of struggle, which paralyzed our activity then and kept our idea of rising in the condition of wish and not of will. The moment these inhibitory ideas ceased, the original idea exerted its effects.

This case seems to me to contain in miniature the data for an entire psychology of volition. It was in fact through meditating on the phenomenon in my own person that I first became convinced of the truth of the doctrine which these pages present, and which I need here illustrate by no farther examples.* The reason why that doctrine is not a self-evident truth is that we have so many ideas which do not result in action. But it will be seen that in every such case, without exception, that is because other ideas simultaneously present rob them of their impulsive power. But even here, and when a movement is inhibited from completely taking place by contrary ideas, it will incipiently take place. To quote Lotze once more:

“The spectator accompanies the throwing of a billiard-ball, or the thrust of the swordsman, with slight movements of his arm; the untaught narrator tells his story with many gesticulations; the reader while absorbed in the perusal of a battle-scene feels a slight tension run through his muscular system, keeping time as it were with the actions he is reading of. These results become the more marked the more we are absorbed in thinking of the movements which suggest them; they grow fainter exactly in proportion as a complex consciousness, under the dominion of a crowd of other representations, withstands the passing over of mental contemplation into outward action.”

The ‘willing-game,’ the exhibitions of so-called ‘mind-reading,’ or more properly muscle-reading, which have lately grown so fashionable, are based on this incipient obedience of muscular contraction to idea, even when the deliberate intention is that no contraction shall occur.†

* Professor A. Bain (Senses and Intellect, pp. 336-49) and Dr. W. B. Carpenter (Mental Physiology, chap. vi) give examples in abundance.
† For a full account, by an expert, of the ‘willing-game,’ see Mr. Stuart Cumberland’s article: A Thought-reader’s Experiences in the Nineteenth century, xx. 867. M. Gley has given a good example of ideomotor action in the Bulletin de la Société de Psychologie Physiologique for 1889. Tell a person to think intently of a certain name, and saying that you will then force her to write it, let her hold a pencil, and do you yourself hold her hand. She will then probably trace the name involuntarily, believing that you are forcing her to do it.

* Ch. Féré: Sensation et Mouvement (1887), chapter III.
We may then lay it down for certain that every representation of a movement awakens in some degree the actual movement which is its object; and awakens it in a maximum degree whenever it is not kept from so doing by an antagonistic representation present simultaneously to the mind.

The express flat, or act of mental consent to the movement, comes in when the neutralization of the antagonistic and inhibitory idea is required. But that there is no express flat needed when the conditions are simple, the reader ought now to be convinced. Lest, however, he should still share the common prejudice that voluntary action without exertion of will-power is Hamlet with the prince's part left out, I will make a few farther remarks. The first point to start from is in understanding voluntary action, and the possible occurrence of it with no flat or express resolve, is the fact that consciousness is in its very nature impulsive.* We do not have a sensation or a thought and then have to add something dynamic to it to get a movement. Every pulse of feeling which we have is the correlate of some neural activity that is already on its way to instigate a movement. Our sensations and thoughts are but cross-sections, as it were, of currents whose essential consequence is motion, and which no sooner run in at one nerve than they run out again at another. The popular notion that mere consciousness as such is not essentially a forerunner of activity, that the latter must result from some superadded will-force, is a very natural inference from those special cases in which we think of an act for an indefinite length of time without the action taking place. These cases, however, are not the norm; they are cases of inhibition by antagonistic thought. When the blocking is released we feel as if an inward spring were let loose, and this is the additional impulse or flat upon which the act effectively succeeds. We shall study anon the blocking and its release. Our higher thought is full of it. But where there is no blocking, there is naturally no hiatus between the thought-process and the motor discharge. Movement is the natural immediate effect of feeling, irrespective of what the quality of the feeling may be. It is so in reflex action, it is so in emotional expression, it is so in the voluntary life. Ideo-motor action is thus no paradox; to be softened or explained away. It obeys the type of all conscious action, and from it one must start to explain action in which a special flat is involved.

It may be remarked in passing, that the inhibition of a movement no more involves an express effort or command than its execution does. Either of them may require it. But in all simple and ordinary cases, just as the bare presence of one idea prompts a movement, so the bare presence of another idea will prevent its taking place. Try to feel as if you were crooking your finger, whilst keeping it straight. In a minute it will fairly tingle with the imaginary change of position; yet it will not sensibly move, because its not really moving is also a part of what you have in mind. Drop this idea, think of the movement purely and simply, with all brakes off; and, presto! it takes place with no effort at all.

A waking man's behavior is thus at all times the resultant of two opposing neural forces. With unimaginable fineness some currents among the cells and fibres of his brain are playing on his motor nerves, whilst other currents, as unimaginably fine, are playing on the first currents, damming or helping them, altering their direction or their speed. The upshot of it all is, that whilst the currents must always end by being drained off through some motor nerves, they are drained off sometimes through one set and sometimes through another; and sometimes they keep each other in equilibrium so long that a superficial observer may think they are not drained off at all. Such an observer must remember, however, that from the physiological point of view a gesture, an expression of the brow, or an expul-

* I abstract here from the fact that a certain intensity of the consciousness is required for its impulsiveness to be effective in a complete degree. There is an inertia in the motor processes as in all other natural things. In certain individuals, and at certain times (disease, fatigue), the inertia is unusually great, and we may then have ideas of action which produce no visible act, but discharge themselves into merely nascent dispositions to activity or into emotional expression. The inertia of the motor parts here plays the same rôle as in elsewhere played by antagonistic ideas. We shall consider this restrictive inertia later on; it obviously introduces no essential alteration into the law which the text lays down.
sion of the breath are movements as much as an act of locomotion is. A king's breath slays as well as an assassin's blow; and the outpouring of those currents which the magic imponderable streaming of our ideas accompanies need not always be of an explosive or otherwise physically conspicuous kind.

**ACTION AFTER DELIBERATION.**

We are now in a position to describe what happens in deliberate action, or when the mind is the seat of many ideas related to each other in antagonistic or in favorable ways.* One of the ideas is that of an act. By itself this idea would prompt a movement; some of the additional considerations, however, which are present to consciousness block the motor discharge, whilst others, on the contrary, solicit it to take place. The result is that peculiar feeling of inward unrest known as *indecision*. Fortunately it is too familiar to need description, for to describe it would be impossible. As long as it lasts, with the various objects before the attention, we are said to **deliberate**, and when finally the original suggestion either prevails and makes the movement take place, or gets definitively quenched by its antagonists, we are said to **decide**, or to **utter our voluntary fiat** in favor of one or the other course. The reinforcing and inhibiting ideas meanwhile are termed the **reasons or motives** by which the decision is brought about.

The process of deliberation contains endless degrees of complication. At every moment of it our consciousness is on an extremely complex object, namely the existence of the whole set of motives and their conflict, as explained on p. 275 of Vol. I. Of this object, the totality of which is realized more or less dimly all the while, certain parts stand out more or less sharply at one moment in the foreground, and at another moment other parts, in consequence of the oscillations of our attention, and of the 'associative' flow of our ideas. But no matter how sharp the foreground-reasons may be, or how imminently close to bursting through the dam and carrying the motor consequences their own way, the background, however dimly felt, is always there; and its presence (so long as the indecision actually lasts) serves as an effective check upon the irrevocable discharge. The deliberation may last for weeks or months, occupying at intervals the mind. The motives which yesterday seemed full of urgency and blood and life to-day feel strangely weak and pale and dead. But as little to-day as to-morrow is the question finally resolved. Something tells us that all this is provisional; that the weakened reasons will wax strong again, and the stronger weaken; that equilibrium is unachieved; that testing our reasons, not obeying them, is still the order of the day, and that we must wait awhile, patient or impatiently, until our mind is made up 'for good and all.' This inclining first to one then to another future, both of which we represent as possible, resembles the oscillations to and fro of a material body within the limits of its elasticity. There is inward strain, but no outward rapture. And this condition, plainly enough, is susceptible of indefinite continuance, as well in the physical mass as in the mind. If the elasticity give way, however, if the dam ever do break, and the currents burst the crust, vacillation is over and decision is irrevocably there.

The decision may come in either of many modes. I will try briefly to sketch the most characteristic types of it, merely warning the reader that this is only an introspective account of symptoms and phenomena, and that all questions of causal agency, whether neural or spiritual, are relegated to a later page.

The particular reasons for or against action are of course infinitely various in concrete cases. But certain motives are more or less constantly in play. One of these is the **impatience of the deliberative state**; or to express it otherwise, proneness to act or to decide merely because action and

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* I use the common phraseology here for 'mere convenience' sake. The reader who has made himself acquainted with Chapter IX will always understand, when he hears of many ideas simultaneously present to the mind and acting upon each other, that what is really meant is a mind with one idea before it, of many objects, purposes, reasons, motives related to each other, some in a harmonious and some in an antagonistic way. With this caution I shall not hesitate from time to time to fall into the popular Lockian speech, erroneous though I believe it to be.
decision are, as such, agreeable, and relieve the tension of doubt and hesitancy. Thus it comes that we will often take any course whatever which happens to be most vividly before our minds, at the moment when this impulse to decisive action becomes extreme.

Against this impulse we have the dread of the irrevocable, which often engenders a type of character incapable of prompt and vigorous resolve, except perhaps when surprised into sudden activity. These two opposing motives twine round whatever other motives may be present at the moment when decision is imminent, and tend to precipitate or retard it. The conflict of these motives so far as they alone affect the matter of decision is a conflict as to when it shall occur. One says 'now,' the other says 'not yet.'

Another constant component of the web of motivation is the impulse to persist in a decision once made. There is no more remarkable difference in human character than that between resolute and irresolute natures. Neither the physiological nor the psychical grounds of this difference have yet been analyzed. Its symptom is that whereas in the irresolute all decisions are provisional and liable to be reversed, in the resolute they are settled once for all and not disturbed again. Now into every one's deliberations the representation of one alternative will often enter with such sudden force as to carry the imagination with itself exclusively, and to produce an apparently settled decision in its own favor. These premature and spurious decisions are of course known to everyone. They often seem ridiculous in the light of the considerations that succeed them. But it cannot be denied that in the resolute type of character the accident that one of them has once been made does afterwards enter as a motive additional to the more genuine reasons why it should not be revoked, or if provisionally revoked, why it should be made again. How many of us persist in a precipitately course which, but for a moment of heedlessness, we might never have entered upon, simply because we hate to 'change our mind.'

Turning now to the form of the decision itself, we may distinguish four chief types. The first may be called the reasonable type. It is that of those cases in which the arguments for and against a given course seem gradually and almost insensibly to settle themselves in the mind and to end by leaving a clear balance in favor of one alternative, which alternative we then adopt without effort or constraint. Until this rational balancing of the books is consummated we have a calm feeling that the evidence is not yet all in, and this keeps action in suspense. But some day we wake with the sense that we see the thing rightly, that no new light will be thrown on the subject by farther delay, and that the matter had better be settled now. In this easy transition from doubt to assurance we seem to ourselves almost passive; the 'reasons which decide us appearing to flow in from the nature of things, and to owe nothing to our will. We have, however, a perfect sense of being free, in that we are devoid of any feeling of coercion. The conclusive reason for the decision in these cases usually is the discovery that we can refer the case to a class upon which we are accustomed to act unhesitatingly in a certain stereotyped way. It may be said in general that a great part of every deliberation consists in the turning over of all the possible modes of conceiving the doing or not doing of the act in point. The moment we hit upon a conception which lets us apply some principle of action which is a fixed and stable part of our Ego, our state of doubt is at an end. Persons of authority, who have to make many decisions in the day, carry with them a set of heads of classification, each bearing its motor consequence, and under these they seek as far as possible to range each new emergency as it occurs. It is where the emergency belongs to a species without precedent, to which consequently no cut-and-dried maxim will apply, that we feel most at a loss, and are distressed at the indeterminateness of our task. As soon, however, as we see our way to a familiar classification, we are at ease again. In action as in reasoning, then, the great thing is the guest of the right conception. The concrete dilem
mas do not come to us with labels gummed upon their backs. We may name them by many names. The wise man is he who succeeds in finding the name which suits the needs of the particular occasion best. A 'reasonable' character is one who has a store of stable and worthy ends, and who does not decide about an action till he has calmly ascertained whether it be ministerial or detrimental to any one of these.

In the next two types of decision, the final fiat occurs before the evidence is all 'in.' It often happens that no paramount and authoritative reason for either course will come. Either seems a case of a Good, and there is no umpire as to which good should yield its place to the other. We grow tired of long hesitation and inconclusiveness, and the hour may come when we feel that even a bad decision is better than no decision at all. Under these conditions it will often happen that some accidental circumstance, supervening at a particular movement upon our mental weariness, will upset the balance in the direction of one of the alternatives, to which then we feel ourselves committed, although an opposite accident at the same time might have produced the opposite result.

In the second type of case our feeling is to a certain extent that of letting ourselves drift with a certain indifferent acquiescence in a direction accidentally determined from without, with the conviction that, after all, we might as well stand by this course as by the other, and that things are in any event sure to turn out sufficiently right.

In the third type the determination seems equally accidental, but it comes from within, and not from without. It often happens, when the absence of imperative principle is perplexing and suspense distracting, that we find ourselves acting, as it were, automatically, and as if by a spontaneous discharge of our nerves, in the direction of one of the horns of the dilemma. But so exciting is this sense of motion after our intolerable pent-up state, that we eagerly throw ourselves into it. 'Forward now!' we inwardly cry, 'though the heavens fall.' This reckless and exultant espousal of an energy so little premeditated by us that we feel rather like passive spectators cheering on the display of some extraneous force than like voluntary agents, is a type of decision too abrupt and tumultuous to occur often in humdrum and cool-blooded natures. But it is probably frequent in persons of strong emotional endowment and unstable or vacillating character. And in men of the world-shaking type, the Napoleons, Luthers, etc., in whom tenacious passion combines with ebullient activity, when by any chance the passion's outlet has been dammed by scruples or apprehensions, the resolution is probably often of this catastrophic kind. The flood breaks quite unexpectedly through the dam. That it should so often do so is quite sufficient to account for the tendency of these characters to a fatalistic mood of mind. And the fatalistic mood itself is sure to reinforce the strength of the energy just started on its exciting path of discharge.

There is a fourth form of decision, which often ends deliberation as suddenly as the third form does. It comes when, in consequence of some outer experience or some inexplicable inward charge, we suddenly pass from the easy and careless to the sober and strenuous mood, or possibly the other way. The whole scale of values of our motives and impulses then undergoes a change like that which a change of the observer's level produces on a view. The most sobering possible agents are objects of grief and fear. When one of these affects us, all 'light fantastic' notions lose their motive power, all solemn ones find theirs multiplied many-fold. The consequence is an instant abandonment of the more trivial projects with which we had been dallying, and an instant practical acceptance of the more grim and earnest alternative which till then could not extort our mind's consent. All those changes of heart, 'awakenings of conscience,' etc., which make new men of so many of us, may be classed under this head. The character abruptly rises to another 'level,' and deliberation comes to an immediate end.*

* My attention was first emphatically called to this class of decisions by my colleague, Professor C. C. Everett.
In the fifth and final type of decision, the feeling that
the evidence is all in, and that reason has balanced the
books, may be either present or absent. But in either case
we feel, in deciding, as if we ourselves by our own willing
act inclined the beam; in the former case by adding our
living effort to the weight of the logical reason which,
taken alone, seems powerless to make the act discharge;
in the latter by a kind of creative contribution of something
instead of a reason which does a reason's work. The slow
dead heave of the will that is felt in these instances makes
of them a class altogether different subjectively from all
the three preceding classes. What the heave of the will
betokens metaphysically, what the effort might lead us to
infer about a will-power distinct from motives, are not
matters that concern us yet. Subjectively and phenomenally,
the feeling of effort is absent from the former decisions,
accompanies these. Whether it be the dreary resignation
for the sake of austere and naked duty of all sorts of rich
mundane delights, or whether it be the heavy resolve that
of two mutually exclusive trains of future fact, both sweet
and good, and with no strictly objective or imperative
principle of choice between them, one shall forevermore
become impossible, while the other shall become reality,
it is a desolate and acrid sort of act, an excursion into a lonesome
moral wilderness. If examined closely, its chief difference
from the three former cases appears to be that in those
cases the mind at the moment of deciding on the triumphant alternative dropped the other one wholly or nearly out of sight, whereas here both alternatives are steadily
held in view, and in the very act of murdering the vanquished possibility the chooser realizes how much in that
instant he is making himself lose. It is deliberately
driving a thorn into one's flesh; and the sense of inward
effort, with which the act is accompanied is an element
which sets the fourth type of decision in strong contrast
with the previous three varieties, and makes of it an altogether peculiar sort of mental phenomenon. The immense
majority of human decisions are decisions without effort. In
comparatively few of them, in most people, does effort accompany the final act. We are, I think, misled into supposing that
effort is more frequent than it is, by the fact that during
deliberation we so often have a feeling of how great an effort
it would take to make a decision now. Later, after the deci-
sion has made itself with ease, we recollect this and erroneously suppose the effort also to have been made then.

The existence of the effort as a phenomenal fact in our
consciousness cannot of course be doubted or denied. Its
significance, on the other hand, is a matter about which the
greatest difference of opinion prevails. Questions as mo-
mentous as that of the very existence of spiritual causality,
as vast as that of universal predestination or free-will, de-
pend on its interpretation. It therefore becomes essential
that we study with some care the conditions under which
the feeling of volitional effort is found.

THE FEELING OF EFFORT.

When, awhile back (p. 526), I said that consciousness (or
the neural process which goes with it) is in its very nature
impulsive, I added in a note the proviso that it must be
sufficiently intense. Now there are remarkable differences
in the power of different sorts of consciousness to excite
movement. The intensity of some feelings is practically
apt to be below the discharging point, whilst that of others
is apt to be above it. By practically apt, I mean apt under
ordinary circumstances. These circumstances may be
habitual inhibitions, like that comfortable feeling of the
dolce far niente which gives to each and all of us a certain
dose of laziness only to be overcome by the acuteness of
the impulsive spur; or they may consist in the native
inertia, or internal resistance, of the motor centres them-
selves making explosion impossible until a certain inward
tension has been reached and overpassed. These conditions
can vary from one person to another and in the same per-
son from time to time. The neural inertia may wax or wane,
and the habitual inhibitions dwindle or augment. The in-
tensity of particular thought-processes and stimulations
may also change independently, and particular paths of
association grow more pervious or less so. There thus re-
sult great possibilities of alteration in the actual impul-
sive efficacy of particular motives compared with others. It is where the normally less efficacious motive becomes more efficacious and the normally more efficacious one less so that actions ordinarily effortless, or abstinences ordinarily easy, either become impossible or are effected, if at all, by the expenditure of effort. A little more description will make it plainer what these cases are.

There is a certain normal ratio in the impulsive power of different sorts of motive, which characterizes what may be called ordinary healthiness of will, and which is departed from only at exceptional times or by exceptional individuals. The states of mind which normally possess the most impulsive quality are either those which represent objects of passion, appetite, or emotion—objects of instinctive reaction, in short; or they are feelings or ideas of pleasure or of pain; or ideas which for any reason we have grown accustomed to obey so that the habit of reacting on them is ingrained; or finally, in comparison with ideas of remoter objects, they are ideas of objects present or near in space and time. Compared with these various objects, all far-off considerations, all highly abstract conceptions, unaccustomed reasons, and motives foreign to the instinctive history of the race, have little or no impulsive power. They prevail, when they ever do prevail, with effort; and the normal, as distinguished from the pathological, *sphere of effort is thus found wherever non-instinctive motives to behavior are to rule the day.*

Healthiness of will moreover requires a certain amount of complication in the process which precedes the flat or the act. Each stimulus or idea, at the same time that it awakens its own impulse, must arouse other ideas (associated and consequential) with their impulses, and action must follow, neither too slowly nor too rapidly, as the resultant of all the fores exertions. Even when the decision is very prompt, there is thus a sort of preliminary survey of the field and a vision of which course is best before the flat comes. And where the will is healthy, the vision must be right (i.e., the motives must be on the whole in a normal

or not too unusual ratio to each other), and the action must obey the vision's lead.

*Unhealthiness of will may thus come about in many ways. The action may follow the stimulus or idea too rapidly, leaving no time for the arousal of restraining associates—we then have a precipitate will. Or, although the associates may come, the ratio which the impulsive and inhibitory forces normally bear to each other may be distorted, and we then have a will which is perverse. The perverseness, in turn, may be due to either of many causes—too much intensity, or too little, here; too much or too little inertia there; or elsewhere too much or too little inhibitory power. If we compare the outward symptoms of perverseness together, they fall into two groups, in one of which normal actions are impossible, and in the other abnormal ones are irrepressible. Briefly, we may call them respectively the obstructed and the explosive will.*

It must be kept in mind, however, that since the resultant action is always due to the ratio between the obstructive and the explosive forces which are present, we never can tell by the mere outward symptoms to what elementary cause the perversion of a man's will may be due, whether to an increase of one component or a diminution of the other. One may grow explosive as readily by losing the usual brakes as by getting up more of the impulsive steam; and one may find things impossible as well through the enfeeblement of the original desire as through the advent of new lions in the path. As Dr. Clouston says, "the driver may be so weak that he cannot control well-broken horses, or the horses may be so hard-mouthed that no driver can pull them up." In some concrete cases (whether of explosive or of obstructed will) it is difficult to tell whether the trouble is due to inhibitory or to impulsive change. Generally, however, we can make a plausible guess at the truth.

**THE EXPLOSIVE WILL.**

There is a normal type of character, for example, in which impulses seem to discharge so promptly into movements that inhibitions get no time to arise. These are the
'dare-devil' and 'mercurial' temperaments, overflowing with animation, and fizzing with talk, which are so common in the Latin and Celtic races, and with which the cold-blooded and long-headed English character forms so marked a contrast. Monkeys these people seem to us, whilst we seem to them reptilian. It is quite impossible to judge, as between an obstructed and an explosive individual, which has the greatest sum of vital energy. An explosive Italian with good perception and intellect will cut a figure as a perfectly tremendous fellow, on an inward capital that could be tucked away inside of an obstructed Yankee and hardly let you know that it was there. He will be the king of his company, sing all the songs and make all the speeches, lead the parties, carry out the practical jokes, kiss all the girls, fight the men, and, if need be, lead the forlorn hopes and enterprises, so that an onlooker would think he has more life in his little finger than can exist in the whole body of a correct judicious fellow. But the judicious fellow all the while may have all these possibilities and more besides, ready to break out in the same or even a more violent way, if only the brakes were taken off. It is the absence of scruples, of consequences, of considerations, the extraordinary simplification of each moment’s mental outlook, that gives to the explosive individual such motor energy and ease; it need not be the greater intensity of any of his passions, motives, or thoughts. As mental evolution goes on, the complexity of human consciousness grows ever greater, and with it the multiplication of the inhibitions to which every impulse is exposed. But this predominance of inhibition has a bad as well as a good side; and if a man’s impulses are in the main orderly as well as prompt, if he has courage to accept their consequences, and intellect to lead them to a successful end, he is all the better for his hair-trigger organization, and for not being ‘sickled o’er with the pale cast of thought.’ Many of the most successful military and revolutionary characters in history have belonged to this simple but quick-witted impulsive type. Problems come much harder to reflective and inhibitive minds. They can, it is true, solve much vaster problems; and they can avoid many a mistake to which the men of impulse are exposed. But when the latter do not make mistakes, or when they are always able to retrieve them, theirs is one of the most engaging and indispensable of human types.*

In infancy, and in certain conditions of exhaustion as well as in peculiar pathological states, the inhibitory power may fail to arrest the explosions of the impulsive discharge. We have then an explosive temperament temporarily realized in an individual who at other times may be of a relatively obstructed type. I cannot do better here than copy a few pages from Dr. Clouston’s excellent work: †

"Take a child of six months, and there is absolutely no such brain-power existent as mental inhibition; no desire or tendency is stopped by a mental act. . . . At a year old the rudiments of the great faculty of self-control are clearly apparent in most children. They will resist the desire to seize the gas-flame, they will not upset the milk-jug, they will obey orders to sit still when they want to run about, all through a higher mental inhibition. But the power of control is just as gradual a development as the motions of the hands. . . . Look at a more complicated act, that will be recognized by any competent physiologist to be automatic and beyond the control of any ordinary inhibitory power, e.g., irritate and tease a child of one or two years sufficiently, and it will suddenly strike out at you; suddenly strike at a man, and he will either perform an act of defence or offence, or both, quite automatically, and without power of controlling himself. Piece a bright tempting toy before a child of a year, and it will be instantly appropriated. Place cold water before a man dying of thirst, and he will take and drink it without power of doing otherwise. Ex-

* In an excellent article on ‘The Mental Qualities of an Athlete’ in the Harvard Monthly, vol. vi. p. 43, Mr. A. T. Dudley assigns the first place to the rapidly impulsive temperament. ‘Ask him how, in some complex trick, he performed a certain act, why he pushed or pulled at a certain instant, and he will tell you he does not know; he did it by instinct; or rather his nerves and muscles did it of themselves. . . . Here is the distinguishing feature of the good player: the good player, confident in his training and his practice, in the critical game trusts entirely to his Impulse, and does not think out every move. The poor player, unable to trust his impulsive actions, is compelled to think carefully all the time. He thus not only loses the opportunities through his slowness in comprehending the whole situation, but, being compelled to think rapidly all the time, at critical points becomes confused; while the first-rate player, not trying to reason, but acting as impulse directs, is continually distinguishing himself and plays the better under the greater pressure.’

haustion of nervous energy always lessens the inhibitory power. Who is not conscious of this? 'Irritability' is one manifestation of this. Many persons have so small a stock of reserve brain-power—that most valuable of all brain-qualities—that it is soon used up, and you see at once that they lose their power of self-control very soon. They are angels or demons just as they are fresh or tired. That surplus store of energy or repressive force which provides, in persons normally constituted, that moderate excesses in all directions shall do no great harm so long as they are not too often repeated, not being present in these people, overwork, over-drinking, or small debauches leave them at the mercy of their morbid impulses without power of resistance. . . . Woe to the man who uses up his surplus stock of brain-inhibition too near the bitter end, or too often! . . . The physiological word inhibition can be used synonymously with the psychological and ethical expression self-control, or with the will when exercised in certain directions. It is the characteristic of most forms of mental disease for self-control to be lost, but this loss is usually part of a general mental afflication with melancholia, maniacal, demented, or delusional symptoms as the chief manifestation of the disease. There are other cases, not so numerous, where the loss of the power of inhibition is the chief and by far the most marked symptom. . . . I shall call this form 'Inhibitory Insanity.' Some of these cases have uncontrollable impulses to violence and destruction, others to homicide, others to suicide prompted by no depressed feelings, others to acts of animal gratification (satyriasis, nymphomania, erotomania, bestiality), others to drinking too much alcohol (dipsomania), others towards setting things on fire (pyromania), others to stealing (kleptomania), and others towards immoralities of all sorts. The impulsive tendencies and morbid desires are innumerable in kind.

Many of these varieties of Insanity have been distinguished by distinct names. To dig up and eat dead bodies (necrophilism), to wander from home and throw off the restraints of society (planomania), to act like a wild beast (lycanthropia), etc. Action from impulse in all these directions may take place from a loss of controlling power in the higher regions of the brain, or from an over-development of energy in certain portions of the brain, which the normal power of inhibition cannot control. The driver may be so weak that he cannot control well-broken horses, or the horses may be so hard-mouthed that no driver can pull them up. Both conditions may arise from purely cerebral disorder . . . or may be reflex . . . The ego, the man, the will, may be non-existent for the time. The most perfect examples of this are murders done during somnambulism or epileptic unconsciousness, or acts done in the hypnotic state. There is no conscious desire to attain the object at all in such cases. In other cases there is consciousness and memory present, but no power of restraining action. The simplest example of this is where an imbecile or dement, seeing something glittering, appropriates it to himself, or when he commits indecent sexual acts. Through disease a previously sane and vigorous-minded person may get into the same state. The motives that would lead other persons not to do such acts do not operate in such persons. I have known a man steal who said he had no intense longing for the article he appropriated at all, at least consciously, but his will was in abeyance, and he could not resist the ordinary desire of possession common to all human nature."

It is not only those technically classed imbeciles and demented who exhibit this promptitude of impulse and tardo-
ness of inhibition. Ask half the common drunkards you know why it is that they fall so often a prey to temptation, and they will say that most of the time they cannot tell. It is a sort of vertigo with them. Their nervous centres have become a sluice-way pathologically unlocked by every passing conception of a bottle and a glass. They do not thirst for the beverage; the taste of it may even appear repug-nant; and they perfectly foresee the morrow's remorse. But when they think of the liquor or see it, they find themselves preparing to drink, and do not stop themselves: and more than this they cannot say. Similarly a man may lead a life of incessant love-making or sexual indulgence, though what spurs him thereto seems rather to be suggestions and notions of possibility than any overweening strength in his affections or lusts. He may even be physically impotent all the while. The paths of natural (or it may be unnatural) impulse are so pervious in these charac-
ters that the slightest rise in the level of innervation produces an overflow. It is the condition recognized in pathol-
ogy as 'irritable weakness.' The phase known as nascent or latency is so short in the excitement of the neural tissues that there is no opportunity for strain or tension to accumulate within them; and the consequence is that with all the agitation and activity, the amount of real feeling engaged may be very small. The hysterical temperament is the playground par excellence of this unstable equilibrium. One of these subjects will be filled with what seems the most genuine and settled aversion to a certain line of conduct, and the very next instant follow the stirring of temptation and plunge in it up to the neck. Professor Ribot well gives the name of 'Le Règne des Caprices' to the chapter in which he describes the hysterical temperament in his interesting little monograph 'The Diseases of the Will.'
Disorderly and impulsive conduct may, on the other hand, come about where the neural tissues preserve their proper inward tone, and where the inhibitory power is normal or even unusually great. In such cases the strength of the impulsive idea is preternaturally exalted, and what would be for most people the passing suggestion of a possibility becomes a gnawing, craving urgency to act. Works on insanity are full of examples of these morbid insistent ideas, in obstinately struggling against which the unfortunate victim's soul often sweats with agony, ere at last it gets swept away. One instance will stand for many; M. Ribot quotes it from Calmeil: *

"Glénadal, having lost his father in infancy, was brought up by his mother, whom he adored. At sixteen, his character, till then good and docile, changed. He became gloomy and taciturn. Pressed with questions by his mother, he decided at last to make a confession. 'To you,' said he, 'I owe everything; I love you with all my soul; yet for some time past an incessant idea drives me to kill you. Prevent so terrible a misfortune from happening, in case some day the temptation should overpower me: allow me to enlist.' Notwithstanding pressing solicitations, he was firm in his resolve, went off, and was a good soldier. Still a secret impulse stimulated him without cessation to desert in order to come home and kill his mother. At the end of his term of service the idea was as strong as on the first day. He enlisted for another term. The murderous instinct persisted, but substituted another victim. He no longer thought of killing his mother—the horrible impulse pointed day and night towards his sister-in-law. In order to resist the second impulse, he condemned himself to perpetual exile. At this time one of his old neighbors arrived in the regiment. Glénadal confesses all his trouble. 'Be at rest,' said the other. 'Your crime is impossible; your sister-in-law has just died.' At these words Glénadal rises like a delivered captive. Joy fills his heart. He travels to the home of his childhood, unvisited for so many years. But as he arrives he sees his sister-in-law living. He gives a cry, and the terrible impulse seizes him again as a prey. That very evening he makes his brother tie him fast. 'Take a solid rope, bind me like a wolf in the barn, and go and tell Dr. Calmeil.' From him he got admission to an insane asylum. The evening before his entrance he wrote to the director of the establishment: 'Sir, I am to become an inmate of your house. I shall behave there as if I were in the regiment. You will think me cured. At moments perhaps I shall pretend to be so. Never believe me. Never let me out on any pretext. If I beg to be released, double your watchfulness; the only use I shall make of my liberty will be to commit a crime which I abhor.'" *

The craving for drink in real dipsomanies, or for opium or chloral in those subjugated, is of a strength of which normal persons can form no conception. "Were a keg of rum in one corner of a room and were a cannon constantly discharging balls between me and it, I could not refrain from passing before that cannon in order to get the rum;" "If a bottle of brandy stood at one hand and the pit of hell yawned at the other, and I were convinced that I should be pushed in as sure as I took one glass, I could not refrain;" such statements abound in dipsomanies' mouths. Dr. Mussey of Cincinnati relates this case:

"A few years ago a tippler was put into an almshouse in this State. Within a few days he had devised various expedients to procure rum, but failed. At length, however, he hit upon one which was successful. He went into the wood-yard of the establishment, placed one hand upon the block, and with an axe in the other, struck it off at a single blow. With the stump raised and streaming he ran into the house and cried, 'Get some rum! get some rum! my hand is off!' In the confusion and bustle of the occasion a bowl of rum was brought, into which he plunged the bleeding member of his body, then raising the bowl to his mouth, drank freely, and exultingly exclaimed, 'Now I am satisfied.' Dr. J. E. Turner tells of a man who, while under treatment for inebriety, during four weeks secretly drank the alcohol from six jars containing morbid specimens. On asking him why he had committed this loathsome act, he replied: 'Sir, it is as impossible for me to control this diseased appetite as it is for me to control the pulsations of my heart.'" †

The passion of love may be called a monomania to which all of us are subject, however otherwise sane. It can coexist with contempt and even hatred for the 'object' which inspires it, and whilst it lasts the whole life of the man is altered by its presence. Alferi thus describes the struggles of his unusually powerful inhibitive power with his abnormally excited impulses toward a certain lady:

"Contemptible in my own eyes, I fall into such a state of melancholy as would, if long continued, inevitably have led to insanity or

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* In his Maladie de la Volonté, p. 77.


* For other cases of 'Impulsive insanity,' see H. Maudsley's Responsibility in Mental Disease, pp. 133-170, and Forbes Winslow's Obscure Diseases of the Mind and Brain, chapters vi, vii, viii.
death. I continued to wear my disgraceful fetters till towards the end of January, 1775, when my rage, which had hitherto so often been restrained within bounds, broke forth with the greatest violence. On returning one evening from the opera (the most insipid and tiresome amusement in Italy), where I had passed several hours in the box of the woman who was by turns the object of my antipathy and my love, I took the firm determination of emancipating myself forever from her yoke. Experience had taught me that flight, so far from enabling me to persevere in my resolutions, tended on the contrary to weaken and destroy them: I was inclined therefore to subject myself to a still more severe trial, imagining from the obstinacy and peculiarity of my character that I should succeed most certainly by the adoption of such measures as would compel me to make the greatest efforts. I determined never to leave the house, which, as I have already said, was exactly opposite that of the lady; to gaze at her windows, to see her go in and out every day, to listen to the sound of her voice, though firmly resolved that no advances on her part, either direct or indirect, no tender remembrances, nor in short any other means which might be employed, should ever again tempt me to a revival of our friendship. I was determined to die or liberate myself from my disgraceful thraldom. In order to give stability to my purpose, and to render it impossible for me to waver without the imputation of dishonor, I communicated my determination to one of my friends, who was greatly attached to me, and whom I highly esteemed. He had lamented the state of mind into which I had fallen, but not wishing to give countenance to my conduct, and seeing the imposibility of inducing me to abandon it, he had for some time ceased to visit at my house. In the few lines which I addressed to him, I briefly stated the resolution I had adopted, and as a pledge of my constancy I sent him a long tress of my ugly red hair. I had purposely caused it to be cut off in order to prevent my going out, as no one but clowns and sailors then appeared in public with short hair. I concluded my billet by conjuring him to strengthen and aid my fortitude by his presence and example. Isolated in this manner in my own house, I prohibited all species of intercourse, and passed the first fifteen days in uttering the most frightful lamentations and groans. Some of my friends came to visit me, and appeared to commiserate my situation, perhaps because I did not myself complain; but my figure and whole appearance bespoke my sufferings. Wishing to read something I had recourse to the gazettes, whole pages of which I frequently ran over without understanding a single word. I passed more than two months till the end of March 1775, in a state bordering on frenzy; but about this time a new idea darted into my mind, which tended to assuage my melancholy."

This was the idea of poetical composition, at which Alfieri describes his first attempts, made under these diseased circumstances, and goes on:

"The only good that occurred to me from this whim was that of gradually detaching me from love, and of awakening my reason which had so long lain dormant. I no longer found it necessary to cause myself to be tied with cords to a chair, in order to prevent me from leaving my house and returning to that of my lady. This had been one of the expedients I devised to render myself wise by force. The cords were concealed under a large mantle in which I was enveloped, and only one hand remained at liberty. Of all those who came to see me, not one suspected I was bound down in this manner. I remained in this situation for whole hours; Elias, who was my jailer, was alone instructed with the secret. He always liberated me, as he had been enjoined, whenever the paroxysms of my rage subsided. Of all the whimsical methods which I employed, however, the most curious was that of appearing in masquerade at the theatre towards the end of the carnival. Habited as Apollo. I ventured to present myself with a lyre, on which I played as well as I was able and sang some bad verses of my own composing. Such effrontery was diametrically opposite to my natural character. The only excuse I can offer for such scenes was my inability to resist an impetuous passion. I felt that it was necessary to place an insuperable barrier between its object and me; and I saw that the strongest of all was the shame to which I should expose myself by renewing an attachment which I had so publicly turned to ridicule." *

Often the insistent idea is of a trivial sort, but it may wear the patient's life out. His hands feel dirty, they must be washed. He knows they are not dirty; yet to get rid of the idea he washes them. The idea, however, returns in a moment, and the unfortunate victim, who is not in the least deluded intellectually, will end by spending the whole day at the wash-stand. Or his clothes are not 'rightly' put on; and to banish the thought he takes them off and puts them on again, till his toilet consumes two or three hours of time. Most people have the potentiality of this disease. To few has it not happened to conceive, after getting into bed, that they may have forgotten to lock the front door, or to turn out the entry gas. And few of us have not on some occasion got up to repeat the performance, less because they believed in the reality of its omission than because only so could they banish the worrying doubt and get to sleep.†

† See a paper on Insistent and Fixed Ideas by Dr. Gowers in American Journal of Psychology, v. 333; and another on the so-called Insanity of Doubt by Dr. Knapp, ibid. ii. 1. The latter contains a partial bibliography of the subject.
THE OBSTRUCTED WILL.

In striking contrast with the cases in which inhibition is insufficient or impulsion in excess are those in which impulsion is insufficient or inhibition of in excess. We all know the condition described on p. 404 of Vol. I, in which the mind for a few moments seems to lose its focussing power and to be unable to rally its attention to any determinate thing. At such times we sit blankly staring and do nothing. The objects of consciousness fail to touch the quick or break the skin. They are there, but do not reach the level of effectiveness. This state of non-efficacious presence is the normal condition of some objects, in all of us. Great fatigue or exhaustion may make it the condition of almost all objects; and an apathy resembling that then brought about is recognized in asylums under the name of abulia as a symptom of mental disease. The healthy state of the will requires, as aforesaid, both that vision should be right, and that action should obey its lead. But in the morbid condition in question the vision may be wholly unaffected, and the intellect clear, and yet the act either fails to follow or follows in some other way. "Video meliora proboque, deteriora sequor" is the classic expression of the latter condition of mind. The former it is to which the name abulia peculiarly applies. The patients, says Guislain,

"are able to will inwardly, mentally, according to the dictates of reason. They experience the desire to act, but they are powerless to act as they should. . . . Their will cannot overpass certain limits; one would say that the force of action within them is blocked up: the I will does not transform itself into impulsive volition, into active determination. Some of these patients wonder themselves at the impotence with which their will is smitten. If you abandon them to themselves, they pass whole days in their bed or on a chair. If one speaks to them or excites them, they express themselves properly though briefly; and judge of things pretty well."*

In Chapter XXI, as will be remembered, it was said that the sentiment of reality with which an object appealed to the mind is proportionate (amongst other things) to its efficacy as a stimulus to the will. Here we get the

obverse side of the truth. Those ideas, objects, considerations, which (in these lethargic states) fail to get to the will, fail to draw blood, seem, in so far forth, distant and unreal. The connection of the reality of things with their effectiveness as motives is a tale that has never yet been fully told. The moral tragedy of human life comes almost wholly from the fact that the link is ruptured which normally should hold between vision of the truth and action, and that this pungent sense of effective reality will not attach to certain ideas. Men do not differ so much in their mere feelings and conceptions. Their notions of possibility and their ideals are not as far apart as might be argued from their differing fates. No class of them have better sentiments or feel more constantly the difference between the higher and the lower path in life than the hopeless failures, the sentimentalists, the drunkards, the schemers, the 'dead-beats,' whose life is one long contradiction between knowledge and action, and who, with full command of theory, never get to holding their limp characters erect. No one eats of the fruit of the tree of knowledge as they do; as far as moral insight goes, in comparison with them, the orderly and prosperous philistines whom they scandalize are sucking babes. And yet their moral knowledge, always there grumbling and rumbling in the background,—discerning, commenting, protesting, longing, half resolving,—never wholly resolves, never gets its voice out of the minor into the major key, or its speech out of the subjunctive into the imperative mood, never breaks the spell, never takes the helm into its hands. In such characters as Rousseau and Restif it would seem as if the lower motives had all the impulsive efficacy in their hands. Like trains with the right of way, they retain exclusive possession of the track. The more ideal motives exist alongside of them in profusion, but they never get switched on, and the man's conduct is no more influenced by them than an express train is influenced by a wayfarer standing by the roadside and calling to be taken aboard. They are an inert accompaniment to the end of time; and the consciousness of inward hollowness that accrues from habitually seeing the better only to do the worse, is one of

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* Quoted by Ribot, op cit. p. 39.
the saddest feelings one can bear with him through this vale of tears.

We now see at one view when it is that effort complicates volition. It does so whenever a rarer and more ideal impulse is called upon to neutralize others of a more instinctive and habitual kind; it does so whenever strongly explosive tendencies are checked, or strongly obstructive conditions overcome. The âme bien née, the child of the sunshine, at whose birth the fairies made their gifts, does not need much of it in his life. The hero and the neurotic subject, on the other hand, do. Now our spontaneous way of conceiving the effort, under all these circumstances, is as an active force adding its strength to that of the motives which ultimately prevail. When outer forces impinge upon a body, we say that the resultant motion is in the line of least resistance, or of greatest traction. But it is a curious fact that our spontaneous language never speaks of volition with effort in this way. Of course if we proceed a priori and define the line of least resistance as the line that is followed, the physical law must also hold good in the mental sphere. But we feel, in all hard cases of volition, as if the line taken, when the rarer and more ideal motives prevail, were the line of greater resistance, and as if the line of coarser motivation were the more pervious and easy one, even at the very moment when we refuse to follow it. He who under the surgeon’s knife represses cries of pain, or he who exposes himself to social obloquy for duty’s sake, feels as if he were following the line of greatest temporary resistance. He speaks of conquering and overcoming his impulses and temptations.

But the sluggard, the drunkard, the coward, never talk of their conduct in that way or say they resist their energy, overcome their sobriety, conquer their courage, and so forth. If in general we class all springs of action as propensities on the one hand and ideals on the other, the sensualist never says of his behavior that it results from a victory over his ideals, but the moralist always speaks of his as a victory over his propensities. The sensualist uses terms of inactivity, says he forgets his ideals, is deaf to duty, and so forth; which terms seem to imply that the ideal motives per se can be annulled without energy or effort, and that the strongest mere traction lies in the line of the propensities. The ideal impulse appears, in comparison with this, a still small voice which must be artificially reinforced to prevail. Effort is what reinforces it, making things seem as if, while the force of propensivity were essentially a fixed quantity, the ideal force might be of various amount. But what determines the amount of the effort when, by its aid, an ideal motive becomes victorious over a great sensual resistance? The very greatness of the resistance itself. If the sensual propensivity is small, the effort is small. The latter is made great by the presence of a great antagonist to overcome. And if a brief definition of ideal or moral action were required, none could be given which would better fit the appearances than this: It is action in the line of the greatest resistance.

The facts may be most briefly symbolized thus, I standing for the propensity, I for the ideal impulse, and E for the effort:

$$I_{\text{per se}} < P,$$
$$I + E > P.$$ 

In other words, if $E$ adds itself to $I$, $P$ immediately offers the least resistance, and motion occurs in spite of it. But the $E$ does not seem to form an integral part of the $I$. It appears adventitious and indeterminate in advance. We can make more or less as we please, and if we make enough we can convert the greatest mental resistance into the least. Such, at least, is the impression which the facts spontaneously produce upon us. But we will not discuss the truth of this impression at present; let us rather continue our descriptive detail.

PLEASURE AND PAIN AS SPRINGS OF ACTION.

Objects and thoughts of objects start our action, but the pleasures and pains which action brings modify its course and regulate it; and later the thoughts of the pleasures and the pains acquire themselves impulsive and in-
hibit power. Not that the thought of a pleasure need be itself a pleasure, usually it is the reverse—**nec sum mag. gior dolore**—as Dante says—and not that the thought of pain need be a pain, for, as Homer says, "griefs are often afterwards an entertainment." But as present pleasures are tremendous reinforcers, and present pains tremendous inhibitors of whatever action leads to them, so the thoughts of pleasures and pains take rank amongst the thoughts which have most impulsive and inhibitive power. The precise relation which these thoughts hold to other thoughts is thus a matter demanding some attention.

If a movement feels agreeable, we repeat and repeat it as long as the pleasure lasts. If it hurts us, our muscular contractions at the instant stop. So complete is the inhibition in this latter case that it is almost impossible for a man to cut or mutilate himself slowly and deliberately—his hand invincibly refusing to bring on the pain. And there are many pleasures which, when once we have begun to taste them, make it all but obligatory to keep up the activity to which they are due. So widespread and searching is this influence of pleasures and pains upon our movements that a premature philosophy has decided that these are our only spurs to action, and that wherever they seem to be absent, it is only because they are so far on among the 'remoter' images that prompt the action that they are overlooked.

This is a great mistake, however. Important as is the influence of pleasures and pains upon our movements, they are far from being our only stimuli. With the manifestations of instinct and emotional expression, for example, they have absolutely nothing to do. Who smiles for the pleasure of the smiling, or frowns for the pleasure of the frown? Who blushes to escape the discomfort of not blushing? Or who in anger, grief, or fear is actuated to the movements which he makes by the pleasures which they yield? In all these cases the movements are discharged fatally by the **vis a tergo** which the stimulus exerts upon a nervous system framed to respond in just that way. The objects of our rage, love, or terror, the occasions of our tears and smiles, whether they be present to our senses, or whether they be merely represented in idea, have this peculiar sort of impulsive power. The impulsive quality of mental states is an attribute behind which we cannot go. Some states of mind have more of it than others, some have it in this direction, and some in that. Feelings of pleasure and pain have it, and perceptions and imaginations of fact have it, but neither have it exclusively or peculiarly. It is of the essence of all consciousness (or of the neural process which underlies it) to instigate movement of some sort. That with one creature and object it should be of one sort, with others of another sort, is a problem for evolutionary history to explain. However the actual impulsions may have arisen, they must now be described as they exist; and those persons obeying curiously narrow teleological superstition who think themselves bound to interpret them in every instance as effects of the secret solicitude of pleasure and repugnancy of pain.*

* The silliness of the old-fashioned pleasure-philosophy naio me au vos. Take, for example, Prof. Bain's explanation of sociability and parental love by the pleasures of touch. "The touch of the head..." This is the fundamental and generic sense... Even after the remaining senses are differentiated, the primary sense continues to be a leading susceptibility of the mind. The soft warm touch of a child's arm has a psychological height, which in case, however, there may be concurrent sensations and ideas... In mere tender emotion not sexual, there is nothing but the sense of touch to gratify, unless we assume the occult magnetic influences... In a word, our love pleasures begin and end in sensual contact. Touch is both the alpha and omega of affection. As the terminal and satisfying sensation, the *ne plus ultra*, it must be a pleasure of the highest degree... Why should a more lively feeling grow up towards a fellow-being than towards a perennial fountain? [This 'should' is simply delicious from the modern evolutionary point of view.] It must be that there is a source of pleasure in the companionship of other sentient creatures, over and above the help afforded by them in obtaining the necessities of life. To account for this, I can suggest nothing but the primary and independent pleasure of the animal embrace." [Mind, this is said not of the sexual interest, but of 'Sociability at Large'] For this pleasure every creature is disposed to pay something, even when it is only fraternal. A certain
It might be that to reflection such a narrow teleology would justify itself, that pleasures and pains might seem the only comprehensible and reasonable motives for action, the only motives on which we ought to act. That is an ethical proposition, in favor of which a good deal may be said. But it is not a psychological proposition; and nothing follows from it as to the motives upon which as a matter of fact we do act. These motives are supplied by innumerable objects, which innervate our voluntary muscles by a process as automatic as that by which they light a fever in our breasts. If the thought of pleasure can impel to action, surely other thoughts may. Experience only can decide which thoughts do. The chapters on Instinct and Emotion have shown us that their name is legion; and with this verdict we ought to remain contented, and not seek an illusory simplification at the cost of half the facts.

If in these our first acts pleasures and pains bear no part, as little do they bear in our last acts, or those artificially acquired performances which have become habitual.

amount of material benefit imparted is a condition of the full heartiness of a responding embrace, the complete fruition of this primitive joy. In the absence of those conditions the pleasure of giving ... can scarcely be accounted for; we know full well that, without these helps, it would be a very meagre sentiment in beings like ourselves. ... It seems to me that there must be at the [parental instinct's] foundation that intense pleasure in the embrace of the young which we find to characterize the parental feeling throughout. Such a pleasure once created would associate itself with the prevailing features and aspects of the young, and give to all of these their very great interest. For the sake of the pleasure, the parent discovers the necessity of nourishing the subject of it, and comes to regard the ministering function as a part or condition of the delight” (Kemble and WH, pp. 126, 127, 129, 133, 140). Prof. Bain does not explain why a satin covered with a matress would not on the whole give us the pleasure in question more cheaply than our friends and babies do. It is true that the cushion might lack the ‘occult magnetic influences.’ Most of us would say that neither a baby's nor a friend's skin would possess them, were not a tenderness already there. The youth who feels ecstasy shoot through him when he rediscovers the silken palm or even the ‘vesture' s heart of his idol touches him, would hardly feel it were he not hard hit by Copid in advance. The love creates the ecstasy, not the ecstasy the love. And for the rest of us can it possibly be that all our social virtue springs from an appetite for the sensual pleasure of having our hand shaken, or being slapped on the back?

All the daily routine of life, our dressing and undressing, the coming and going from our work or carrying through of its various operations, is utterly without mental reference to pleasure and pain, except under rarely realized conditions. It is ideo-motor action. As I do not breathe for the pleasure of the breathing, but simply find that I am breathing, so I do not write for the pleasure of the writing, but simply because I have once begun, and being in a state of intellectual excitement which keeps venting itself in that way, find that I am writing still. Who will pretend that when he idly fingers his knife-handle at the table, it is for the sake of any pleasure which it gives, or pain which he thereby avoids. We do all these things because at the moment we cannot help it; our nervous systems are so shaped that they overflow in just that way; and for many of our idle or purely ‘nervous’ and fidgety performances we can assign absolutely no reason at all.

Or what shall be said of a shy and unsociable man who receives point-blank an invitation to a small party? The thing is to him an abomination; but your presence exerts a compulsion on him, he can think of no excuse, and so says yes, cursing himself the while for what he does. He is unusually su ti com pos who does not every week of his life fall into some such blundering act as this. Such instances of voluntas invita show not only that our acts cannot all be conceived as effects of represented pleasure, but that they cannot even be classed as cases of represented good... The class ‘goods’ contains many more generally influential motives to action than the class ‘pleasants.’ Pleasures often attract us only because we deem them goods. Mr. Spencer, e.g., urges us to court pleasures for their influence upon health, which comes to us as a good. But almost as little as under the form of pleasures do our acts invariably appear to us under the form of goods. All diseased impulses and pathological fixed ideas are instances to the contrary. It is the very badness of the act that gives it then its vertiginous fascination. Remove the prohibition, and the attraction stops. In my university days a student threw himself from an upper entry window of one of the college buildings and was nearly killed. Another
student, a friend of my own, had to pass the window daily in coming and going from his room, and experienced a dreadful temptation to imitate the deed. Being a Catholic, he told his director, who said, 'All right! if you must, you must,' and added, 'Go ahead and do it,' thereby instantly quenching his desire. This director knew how to minister to a mind diseased. But we need not go to minds diseased for examples of the occasional tempting-power of simple badness and unpleasantness as such. Every one who has a wound or hurt anywhere, a sore tooth, e.g., will ever and anon press it just to bring out the pain. If we are near a new sort of stink, we must sniff it again just to verify once more how bad it is. This very day I have been repeating over and over to myself a verbal jingle whose mawkish silliness was the secret of its haunting power. I loathed yet could not banish it.

Believers in the pleasure-and-pain theory must thus, if they are candid, make large exceptions in the application of their creed. Action from ['fixed ideas'] is accordingly a terrible stumbling-block to the candid Professor Bain. Ideas have in his psychology no impulsive but only a 'guiding' function, whilst

"The proper stimulus of the will, namely, some variety of pleasure and pain, is needed to give the impetus... The intellectual link is not sufficient for causing the deed to rise at the beck of the idea (except in case of an 'idée fixe');" but "should any pleasure spring up or be continued, by performing an action that we clearly conceive, the causation is then complete; both the directing and the moving powers are present." *

Pleasures and pains are for Professor Bain the 'genuine impulses of the will.' †

"Without an antecedent of pleasurable or painful feeling—actual or ideal, primary or derivative—the will cannot be stimulated. Through

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* Emotion and Will, p. 352. But even Bain's own description belies his formula, for the idea appears as the 'moving' and the pleasure as the 'directing' force.
† P. 398.

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all the disguises that wrap up what we call motives, something of one or other of these two grand conditions can be detected." *

Accordingly, where Professor Bain finds an exception to this rule, he refuses to call the phenomenon a 'genuinely voluntary impulse.' The exceptions, he admits, 'are those furnished by never-dying [spontaneity, habits] and fixed ideas.' Fixed ideas 'traverse the proper course of volition.' †

"Disinterested impulses are wholly distinct from the attainment of pleasure and the avoidance of pain... The theory of disinterested action, in the only form that I can conceive it, supposes that the action of the will and the attainment of happiness do not square throughout." §

Sympathy — has this in common with the Fixed Idea, that it clashes with the regular outgoings of the will in favor of our pleasures.|

Prof. Bain thus admits all the essential facts. Pleasure and pain are motives of only part of our activity. But he prefers to give to that part of the activity exclusively which these feelings prompt the name of 'regular outgoings' and 'genuine impulses' of the will, and to treat all the rest as mere paradoxes and anomalies, of which nothing rational can be said. This amounts to taking one species of a genus, calling it alone by the generic name, and ordering the other co-ordinate species to find what names they may. At bottom this is only verbal play. How much more conducive to clearness and insight is it to take the genus 'springs of action' and treat it as a whole; and then to distinguish within it the species 'pleasure and pain' from whatever other species may be found.

There is, it is true, a complication in the relation of pleasure to action, which partly excuses those who make it the exclusive spur. This complication deserves some notice at our hands.

An impulse which discharges itself immediately is generally quite neutral as regards pleasure or pain—the breath-
ing impulse, for example. If such an impulse is arrested, however, by an extrinsic force, a great feeling of uneasiness is produced—for instance, the dyspnea of asthma. And in proportion as the arresting force is then overcome, relief accrues—as when we draw breath again after the asthma subsides. The relief is a pleasure and the uneasiness a pain; and thus it happens that round all our impulses, merely as such, there twine, as it were, secondary possibilities of pleasant and painful feeling, involved in the manner in which the act is allowed to occur. These pleasures and pains of achievement, discharge, or fruition exist, no matter what the original spring of action be. We are glad when we have successfully got ourselves out of a danger, though the thought of the gladness was surely not what suggested to us to escape. To have compassed the steps towards a proposed sensual indulgence also makes us glad, and this gladness is a pleasure additional to the pleasure originally proposed. On the other hand, we are chagrined and displeased when any activity, however instigated, is hindered whilst in process of actual discharge. We are ‘uneasy’ till the discharge starts up again. And this is just as true when the action is neutral, or has nothing but pain in view as its result, as when it was undertaken for pleasure’s express sake. The moth is probably as annoyed if hindered from getting into the lamp-flame as the rogue is if interrupted in his debauch; and we are chagrined if prevented from doing some quite unimportant act which would have given us no noticeable pleasure if done, merely because the prevention itself is disagreeable.

Let us now call the pleasure for the sake of which the act may be done the pursued pleasure. It follows that, even when no pleasure is pursued by an act, the act itself may be the pleasantest line of conduct when once the impulse has begun, on account of the incidental pleasure which then attends its successful achievement and the pain which would come of interruption. A pleasant act and an act pursuing a pleasure are in themselves, however, two perfectly distinct conceptions, though they coalesce in one concrete phenomenon whenever a pleasure is deliberately pursued. I cannot help thinking that it is the confusion of pursued pleasure with mere pleasure of achievement which makes the pleasure-theory of action so plausible to the ordinary mind. We feel an impulse, no matter whence derived; we proceed to act; if hindered, we feel displeasure; and if successful, relief. Action in the line of the present impulse is always for the time being the pleasant course; and the ordinary hedonist expresses this fact by saying that we act for the sake of the pleasantness involved. But who does not see that for this sort of pleasure to be possible, the impulse must be already as an independent fact? The pleasure of successful performance is the result of the impulse, not its cause. You cannot have your pleasure of achievement unless you have managed to get your impulse under headway beforehand by some previous means.

It is true that on special occasions (so complex is the human mind) the pleasure of achievement may itself become a pursued pleasure; and these cases form another point on which the pleasure-theory is apt to rally. Take a foot-ball game or a fox-hunt. Who in cold blood wants the fox for its own sake, or cares whether the ball be at this goal or that? We know, however, by experience, that if we can once rouse a certain impulsive excitement in ourselves, whether to overtake the fox, or to get the ball to one particular goal, the successful venting of it over the counteracting checks will fill us with exceeding joy. We therefore get ourselves deliberately and artificially into the hot impulsive state. It takes the presence of various instinct-arousing conditions to excite it; but little by little, once we are in the field, it reaches its paroxysm; and we reap the reward of our exertions in that pleasure of successful achievement which, far more than the dead fox or the goal-got ball, was the object we originally pursued. So it often is with duties. Lots of actions are done with heaviness all through, and not till they are completed does pleasure emerge, in the joy of being done with them. Like Hamlet we say of each such successive task,

"O cursed spite, That ever I was born to set it right!"

and then we often add to the original impulse that set us on, this additional one, that "we shall feel so glad when
well through with it," that thought also having its impulsive spur. But because a pleasure of achievement can thus become a pursued pleasure upon occasion, it does not follow that everywhere and always that pleasure must be what is pursued. This, however, is what the pleasure-philosophers seem to suppose. As well might they suppose, because no steamer can go to sea without incidentally consuming coal, and because some steamers may occasionally go to sea to try their coal, that therefore no steamer can go to sea for any other motive than that of coal-consumption.*

As we need not act for the sake of gaining the pleasure of achievement, so neither need we act for the sake of escaping the uneasiness of arrest. This uneasiness is altogether due to the fact that the act is already tending to occur on other grounds. And these original grounds are what impel to its continuance, even though the uneasiness of the arrest may upon occasion add to their impulsive power.†

To conclude, I am far from denying the exceeding prominence and importance of the part which pleasures and pains, both felt and represented, play in the motivation of our conduct. But I must insist that it is no exclusive part, and that co-ordinately with these mental object innumerable others have an exactly similar impulsive and inhibitive power.‡

If one must have a single name for the condition upon which the impulsive and inhibitive quality of objects depends, one had better call it their interest. The interest—

* How much clearer Hume's head was than that of his disciples! "It has been proved beyond all controversy that even the passions commonly esteemed selfish carry the Mind beyond itself directly to the object; that though the satisfaction of these passions gives us enjoyment, yet the prospect of this enjoyment is not the cause of the passions but, on the contrary, the passion is antecedent to the enjoyment, and without the former the latter could never possibly exist," etc. (Essay on the Different Species of Philosophy, § 1, note near the end.)

† In favor of the view in the text, one may consult H. Sidgwick, Methods of Ethics, book i, chap. iv; T. H. Green, Prolegomena to Ethics, bk. iii, chap. i, p. 179; Carpenter, Mental Physiology, chap iv, J. Martinéau, Types of Ethical Theory, part ii, bk. ii, chap. i, and chap. ii, 1898; Against it see Leslie Stephen, Science of Ethics, chap. ii, § 11; H. Spencer, Data of Ethics, §§ 9–15; D. G. Thompson, System of Psychology, part ix, and Mind, vi, 62. Also Bain, Senses and Intellect, 338–44; Emotions and Will, 436.

ing' is a title which covers not only the pleasant and the painful, but also the morbidly fascinating, the tediously haunting, and even the simply habitual, inasmuch as the attention usually travels on habitual lines, and what we attend to and what-interests-us are synonymous terms. It seems as if we ought to look for the secret of an idea's impulsiveness, not in any peculiar relations which it may have with paths of motor discharge,—for all ideas have relations with some such paths,—but rather in a preliminary phenomenon, the urgency, namely, with which it is able to compel attention and dominate in consciousness. Let it once so dominate, let no other ideas succeed in displacing it, and whatever motor effects belong to it by nature will inevitably occur—its impulsion, in short, will be given to boot, and will manifest itself as a matter of course. This is what we have seen in instinct, in emotion, in common idea-motor action, in hypnotic suggestion, in morbid impulsion, and in voluntas invita,—the impelling idea is simply the one which possesses the attention. It is the same where pleasure and pain are the motor spurs—they drive other thoughts from consciousness at the same time that they instigate their own characteristic 'volitional' effects. And this is also what happens at the moment of the fiat, in all the five types of 'decision' which we have described. In short, one does not see any case in which the steadfast occupancy of consciousness does not appear to be the prime condition of impulsive power. It is still more obviously the prime condition of inhibitive power. What checks our impulses is the mere thinking of reasons to the contrary—it is their bare presence to the mind which gives the veto, and makes acts, otherwise seductive, impossible to perform. If we could only forget our scruples, our doubts, our fears, what exultant energy we should have for a while display!

WILL IS A RELATION BETWEEN THE MIND AND ITS IDEAS.*

In closing in, therefore, after all these preliminaries, upon the more intimate nature of the volitional process, we find ourselves driven more and more exclusively to consider the conditions which make ideas prevail in the mind.
With the prevalence, once there as a fact, of the motive idea the psychology of volition properly stops. The movements which ensue are exclusively physiological phenomena, following according to physiological laws upon the neuronic events to which the idea corresponds. The willing terminates with the prevalence of the idea; and whether the act then follows or not is a matter quite immaterial, so far as the willing itself goes. I will to write, and the act follows. I will to sneeze, and it does not. I will that the distant table slide over the floor towards me; it also does not. My willing representation can no more instigate my sneezing-centre than it can instigate the table to activity. But in both cases it is as true and good willing as it was when I willed to write.* In a word, volition is a psychic or moral fact pure and simple, and is absolutely completed when the stable state of the idea is there. The supervision of motion is a supernumerary phenomenon depending on executive ganglia whose function lies outside the mind.

In St. Vitus' dance, in locomotor ataxy, the representation of a movement and the consent to it take place normally. But the inferior executive centres are deranged, and although the ideas discharge them, they do not discharge them so as to reproduce the precise sensations anticipated. In aphasia the patient has an image of certain words which he wishes to utter, but when he opens his mouth he hears himself making quite unintended sounds. This may fill him with rage and despair—which passions only show how

* This sentence is written from the author's own consciousness. But many persons say that where they disbelieve in the effects ensuing, as in the case of the table, they cannot will it. They cannot exert a volition that a table should move." This personal difference may be partly verbal. Different people may attach different connotations to the word 'will.' But I incline to think that we differ psychologically as well. When one knows that he has no power, one's desire of a thing is called a wish and not a will. The sense of impotence inhibits the volition. Only by abstracting from the thought of the impossibility am I able energetically to imagine strongly the table sliding over the floor, make the bodily 'effort,' which I do, and to will it to come towards me. It may be that some people are unable to perform this abstraction, and that the image of the table stationary on the floor inhibits the contradictory image of its moving, which is the object to be willed.

intact his will remains. Paralysis only goes a step farther. The associated mechanism is not only deranged but altogether broken through. The volition occurs, but the hand remains as still as the table. The paralytic is made aware of this by the absence of the expected change in his afferent sensations. He tries harder, i.e., he mentally frames the sensation of muscular 'effort,' with consent that it shall occur. It does so: he frowns, he heaves his chest, he clinches his other fist, but the palsied arm lies passive as before.*

We thus find that we reach the heart of our inquiry into volition when we ask by what process it is that the thought of any given object comes to prevail stably in the mind. Where thoughts prevail without effort, we have sufficiently studied in the several chapters on sensation, association, and attention, the laws of their advent before consciousness and of their stay. We will not go over that ground again, for we know that interest and association are the words, let their worth be what it may, on which our explanations must perforce rely. Where, on the other hand, the prevalence of the thought is accompanied by the phenomenon of effort, the case is much less clear. Already in the chapter on attention we postponed the final consideration of voluntary attention with effort to a later place. We have now brought things to a point at which we see that attention with effort is all that any case of volition implies. The essential achievement of the will, in short, when it is most voluntary, is to attend to a difficult object and hold it fast before the mind. The so-doing is the fact and it is a mere physiological incident that when the object is thus attended to, immediate motor consequences should ensue. A resolve, whose contemplated motor consequences are not to ensure until some possibly far distant future condition shall have been fulfilled, involves all the psychic elements of a motor fiat except the word 'now,' and it is the same with many of

* A normal spasm occurs during sleep. We will all sorts of motions in our dreams, but seldom perform any of them. In nightmare we become conscious of the non-performance, and make a muscular 'effort.' This seems then to occur in a restricted way, limiting itself to the occlusion of the glottis and producing the respiratory anxiety which wakes us up.
our purely theoretic beliefs. We saw in effect in the appropriate chapter, how in the last resort belief means only a peculiar sort of occupancy of the mind, and relation to the self felt in the thing believed; and we know in the case of many beliefs how constant an effort of the attention is required to keep them in this situation and protect them from displacement by contradictory ideas.* (Compare above, p. 321.)

**Effort of attention is thus the essential phenomenon of will.**† Every reader must know by his own experience that this is so, for every reader must have felt some fiery passion's grasp. What constitutes the difficulty for a man laboring under an unwise passion of acting as if the passion

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* Both resolves and beliefs have of course immediate motor consequences of a quasi-emotional sort, changes of breathing, of attitude, internal speech movements, etc.; but these movements are not the objects resolved on or believed. The movements in common volition are the objects willed.

† This *volitional* effort pure and simple must be carefully distinguished from the *muscular* effort with which it is usually confounded. The latter consists of all those peripheral feelings to which a muscular 'exertion' may give rise. These feelings, whenever they are massive and the body is not 'fresh,' are rather disagreeable, especially when accompanied by stopped breath, congested head, bruised skin of fingers, toes, or shoulders, and strained joints. And it is only as *thus* disagreeable that the mind must make its *volitional* effort in stably representing their reality and consequently bringing it about that they happen to be made real by muscular activity is a purely accidental circumstance. A soldier standing still to be fired at expects disagreeable sensations from his muscular passivity. The action of his will, in sustaining the expectation, is identical with that required for a painful muscular effort. What is hard for both is facing an idea as real.

Where much muscular effort is not needed or where the 'freshness' is very great, the volitional effort is not required to sustain the idea of movement, which comes then and stays in virtue of association's simpler laws. More commonly, however, muscular effort involves volitional effort as well. Exhausted with fatigue and wet and watching, the sailor on a wreck throws himself down to rest. But hardly are his limbs fairly relaxed, when the order 'To the pumps!' again sounds in his ears. Shall he can he, obey it? Is it not better just to let his aching body lie, and let the ship go down if she will? So he lies on, till, with a desperate heave of the will, at last he staggers to his legs, and to his task again. Again, there are instances where the flat demands great volitional effort though the muscular exertion be insignificant, e.g., the getting out of bed and bathing one's self on a cold morning.

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*WILL.*

were unwise? Certainly there is no physical difficulty. It is as easy physically to avoid a fight as to begin one, to pocket one's money as to squander it on one's cupidity, to walk away from as towards a coquette's door. The difficulty is mental; it is that of getting the idea of the wise action to stay before our mind at all. When any strong emotional state whatever is upon us the tendency is for no images but such as are congruous with it to come up. If others by chance offer themselves, they are instantly smothered and crowded out. If we be joyous, we cannot keep thinking of those uncertainties and risks of failure which abound upon our path; if ungrubious, we cannot think of new triumphs, travels, loves, and joys; nor if vengeful, of our oppressor's community of nature with ourselves. The cooling advice which we get from others when the fever-fit is on us is the most jarring and exasperating thing in life. Reply we cannot, so we get angry; for by a sort of self-preserving instinct which our passion has, it feels that these chill objects, if they once but gain a lodgment, will work and work until they have frozen the very vital spark from out of all our mood and brought our airy castles in ruin to the ground.

Such is the inevitable effect of reasonable ideas over others — *if they can once get a quiet hearing*; and passion's cue accordingly is always and everywhere to prevent their still small voice from being heard at all. "Let me not think of that! Don't speak to me of that!" This is the sudden cry of all those who in a passion perceive some sobering considerations about to check them in mid-career. "Hic tibi erit jamuia letis," we feel. There is something so icy in this cold-water bath, something which seems so hostile to the movement of our life, so purely negative, in Reason, when she lays her corpse-like finger on our heart and says, "Halt! give up! leave off! go back! sit down!" that it is no wonder that to most men the steadying influence seems, for the time being, a very minister of death.

The strong-willed man, however, is the man who hears the still small voice unfainting, and who, when the death-bringing consideration comes, looks at its face, consents to its presence, clings to it, affirms it, and holds it fast, in spite of the host of exciting mental images which
rise in revolt against it and would expel it from the mind. Sustained in this way by a resolute effort of attention, the difficult object at length begins to call up its own congers and associates and ends by changing the disposition of the man's consciousness altogether. And with his consciousness, his action changes, for the new object, once stably in possession of the field of his thoughts, infallibly produces its own motor effects. The difficulty lies in the gaining possession of that field. Though the spontaneous drift of thought is all the other way, the attention must be kept strained on that one object until at last it grows, so as to maintain itself before the mind with ease. This strain of the attention is the fundamental act of will. And the will's work is in most cases practically ended when the bare presence to our thought of the naturally unwelcome object has been secured. For the mysterious tie between the thought and the motor centres next comes into play, and, in a way which we cannot even guess at, the obedience of the bodily organs follows as a matter of course.

In all this one sees how the immediate point of application of the volitional effort lies exclusively in the mental world. The whole drama is a mental drama. The whole difficulty is a mental difficulty, a difficulty with an object of our thought. If I may use the word idea without suggesting associationist or Herbartian fables, I will say that it is an idea to which our will applies itself, an idea which, if we let it go, would slip away, but which we will not let go. Consent to the idea's undivided presence, this effort's sole achievement. Its only function is to get this feeling of consent into the mind. And for this there is but one way. The idea to be consented to must be kept from flickering and going out. It must be held steadily before the mind until it fills the mind. Such filling of the mind by an idea, with its congruous associates, is consent to the idea and to the fact which the idea represents. If the idea be that, or include that, of a bodily movement of our own, then we call the consent thus laboriously gained a motor volition. For Nature here 'backs' us instantaneously and follows up our inward willingness by outward changes on her own part. She does this in no other instance. Pity she should not have been more generous, nor made a world whose other parts were as immediately subject to our will!

On page 531, in describing the 'reasonable type' of decision, it was said that it usually came when the right conception of the case was found. Where, however, the right conception is an anti-impulsive one, the whole intellectual ingenuity of the man usually goes to work to crowd it out of sight, and to find names for the emergency, by the help of which the dispositions of the moment may sound sanctified, and sloth or passion may reign unchecked. How many excuses does the drunkard find when each new temptation comes! It is a new brand of liquor which the interests of intellectual culture in such matters oblige him to test; moreover it is poured out and its sin to waste it; or others are drinking and it would be churlishness to refuse; or it is but to enable him to sleep, or just to get through this job of work; or it isn't drinking, it is because he feels so cold; or it is Christmas-day; or it is a means of stimulating him to make a more powerful resolution in favor of abstinence than any he has hitherto made; or it is just this once, and once doesn't count, etc., etc., ad libitum— it is, in fact, anything you like except being a drunkard. That is the conception that will not stay before the poor soul's attention. But if he once gets able to pick out that way of conceiving, from all the other possible ways of conceiving the various opportunities which occur, if through thick and thin he holds to it that this is being a drunkard and is nothing else, he is not likely to remain one long. The effort by which he succeeds in keeping the right name unwaveringly present to his mind proves to be his saving moral act.*

Everywhere then the function of the effort is the same: to keep affirming and adopting a thought which, if left to itself, would slip away. It may be cold and flat when the spontaneous mental drift is towards excitement, or great and arduous when the spontaneous drift is towards repose. In the one case the effort has to inhibit an explosive, in the

other to arouse an obstructed will. The exhausted sailor on a wreck has a will which is obstructed. One of his ideas is that of his sore hands, of the nameless exhaustion of his whole frame which the act of farther pumping involves, and of the deliciousness of sinking into sleep. The other is that of the hungry sea ingulging him. "Rather the aching toil!" he says; and it becomes reality then, in spite of the inhibiting influence of the relatively luxurious sensations which he gets from lying still. But exactly similar in form would be his consent to lie and sleep. Often it is the thought of sleep and what leads to it which is the hard one to keep before the mind. If a patient afflicted with insomnia can only control the whirling chase of his thoughts so far as to think of nothing at all (which can be done), or so far as to imagine one letter after another of a verse of scripture or poetry spelt slowly and monotonously out, it is almost certain that here, too, specific bodily effects will follow, and that sleep will come. The trouble is to keep the mind upon a train of objects naturally so insipid. To sustain a representation, to think, is, in short, the only moral act, for the impulsive and the obstructed, for sane and lunatics alike. Most maniacs know their thoughts to be crazy, but find them too presssing to be withstood. Compared with them the same truths are so deadly sober, so cadaverous, that the lunatic cannot bear to look them in the face and say, "Let these alone be my reality!" But with sufficient effort, as Dr. Wigan says,

"Such a man can for a time wind himself up, as it were, and determine that the notions of the disordered brain shall not be manifested. Many instances are on record similar to that told by Pintel, where an inmate of the Bicêtre, having stood a long cross-examination, and given every mark of restored reason, signed his name to the paper authorizing his discharge 'Jesus Christ,' and then went off into all the vagaries connected with that delusion. In the phraseology of the gentleman whose case is related in an early part of this [Wigan's] work he had 'held himself tight' during the examination in order to attain his object; this once accomplished he 'let himself down' again, and, if even conscious of his delusion, could not control it. I have observed with such persons that it requires a considerable time to wind themselves up to the pitch of complete self-control, that the effort is a painful tension of the mind. ... When thrown off their guard by any accidental remark or worn out by the length of the examination, they
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our Self, we say, **let it be** a reality. To the word **is** and to the words **let it be** there correspond peculiar attitudes of consciousness which it is vain to seek to explain. The indicative and the imperative moods are as much ultimate categories of thinking as they are of grammar. The 'quality of reality' which these moods attach to things is not like other qualities. **It is a relation to our life.** It means our adoption of the things, our caring for them, our standing by them. This at least is what it practically means for us; what it may mean beyond that we do not know. And the transition from merely considering an object as possible, to deciding or willing it to be real; the change from the fluctuating to the stable personal attitude concerning it; from the 'don't care' state of mind to that in which 'we mean business,' is one of the most familiar things in life. We can partly enumerate its conditions; and we can partly trace its consequences, especially the momentous one that when the mental object is a movement of our own body, it realizes itself outwardly when the mental change in question has occurred. But the change itself as a subjective phenomenon is something which we can translate into no simpler terms.

THE QUESTION OF 'FREE-WILL.'

Especially must we, when talking about it, rid our mind of the fabulous warfare of separate agents called 'ideas.' The brain-processes may be agents, and the thought as such may be an agent. But what the ordinary psychologies call 'ideas' are nothing but parts of the total object of representation. All that is before the mind at once, no matter how complex a system of things and relations it may be, is one object for the thought. Thus, 'A and B and their mutual incompatibility and the fact that one alone can be true or can become real notwithstanding the probability of desirability of both' may be such a complex object; and where the thought is deliberative its object has always some such form as this. When, now, we pass from deliberation to decision, that total object undergoes a change. We either dismiss A altogether and its relations to B, and think of B exclusively; or after thinking of both as possi-
bilities, we next think that A is impossible, and that B is 
of forthwith shall be real. In either case a new object is 
before our thought; and where effort exists, it is where 
the change from the first object to the second one is hard. 
Our thought seems to turn in this case like a heavy door 
upon its hinges; only, so far as the effort feels spontaneous, 
it turns, not as if by some one helping, but as if by an 
inner activity, born for the occasion, of its own.

The psychologists who discussed 'the muscular sense' 
at the international congress at Paris in 1889 agreed at the 
end that they needed to come to a better understanding 
the appearance of internal activity at the 
moment when a decision is made. M. Fouillée, in an article 
which I find more interesting and suggestive than coherent 
or conclusive, * seems to resolve our sense of activity into 
that of our very existence as thinking entities. At least so 
I translate his words.† But we saw in Chapter X how hard 
it is to lay a verifying finger plainly upon the thinking 
process as such, and to distinguish it from certain objects 
of the stream. M. Fouillée admits this; but I do not think 
he fully realizes how strong would be the position of a man 
who should suggest (see Vol. I. p. 301) that the feeling of 
moral activity itself which accompanies the advent of certain 
'objects' before the mind is nothing but certain other 
objects—constrictions, namely, in the brow, eyes, throat, 
and breathing apparatus, present then, but absent from 
others of subjective change. Were this the truth, 
then a part, at any rate, of the activity of which we become 
aware in effort would seem merely to be that of our body; 
and many thinkers would probably thereupon conclude 
that this 'settles the claims' of inner activity, and dismisses 
the whole notion of such a thing as a superfluity in 
psychological science.

I cannot see my way to so extreme a view; even al-
though I must repeat the confession made on pp. 296-7 of 
Vol. I, that I do not fully understand how we come to our 
unshakable belief that thinking exists as a special kind of

* 'Le Sentiment de l'Effort, et la Conscience de l'Action,' in Revue 
Philosophique, xxviii. 561.
† P. 577.

immaterial process alongside of the material processes of the 
world. It is certain, however, that only by postulating such 
thinking do we make things currently intelligible; and it is 
certain that no psychologist has as yet denied the fact of 
thinking, the utmost that has been denied being its dynamic 
power. But if we postulate the fact of the thinking at all, 
I believe that we must postulate its power as well; nor do 
I see how we can rightly equalize its power with its mere 
existence, and say (as M. Fouillée seems to say) that for the 
thought-process to go on at all is an activity, and an activity 
everywhere the same; for certain steps forward in this 
process seem *prima facie* to be passive, and other steps 
as where an object comes with effort) seem *prima facie* 
to be active in a supreme degree. If we admit, therefore, 
that our thoughts exist, we ought to admit that they exist after 
the fashion in which they appear, as things, namely, that 
are supervene upon each other, sometimes with effort and some-
times with ease; the only question being, is the effort 
where it exists a fixed function of the object, which the latter 
imposes on the thought? or is it such an independent 
'variable' that with a constant object more or less of it 
may be made?

It certainly appears to us indeterminate, and as if, even 
with an unchanging object, we might make more or less, as 
we choose. If it be really indeterminate, our future acts are 
ambiguous or unpredestiniate: in common parlance, our 
will are free. If the amount of effort be not indeterminate, 
but be related in a fixed manner to the objects themselves, 
in such wise that whatever object at any time fills our 
consciousness was from eternity bound to fill it then and 
there, and compel from us the exact effort, neither more nor 
less, which we bestow upon it,—then our wills are not free, 
and all our acts are foreordained. The question of fact in 
the free-will controversy is thus extremely simple. It relates 
solely to the amount of effort of attention or consent which 
we can at any time put forth. Are the duration and intensity 
of this effort fixed functions of the object, or are they not? 
Now, as I just said, it seems as if the effort were an inde-
pendent variable, as if we might exert more or less of it in 
any given case. When a man has let his thoughts go for

* Free will turns on whether or not effort is fixed by 
an external object or varies as we 'will' it.
and the discussion more refined. But if our speculative delight be less keen, if the love of a partis pris outweighs that of keeping questions open, or if, as a French philosopher of genius says, "l'amour de la vie qui s'indigne de tant de discours," awakens in us, craving the sense of either peace or power,—then, taking the risk of error on our head, we must project upon one of the alternative views the attribute of reality for us; we must so fill our mind with the idea of it that it becomes our settled creed. The present writer does this for the alternative of freedom, but since the grounds of his opinion are ethical rather than psychological, he prefers to exclude them from the present book.*

A few words, however, may be permitted about the logic of the question. The most that any argument can do for determinism is to make it a clear and seductive conception, which a man is foolish not to espouse, so long as he stands by the great scientific postulate that the world must be one unbroken fact, and that prediction of all things without exception must be ideally, even if not actually, possible. It is a moral postulate about the Universe, the postulate that what ought to be can be, and that bad acts cannot be fated, but that good ones must be possible in their place, which would lead one to espouse the contrary view. But when scientific and moral postulates war thus with each other and objective proof is not to be had, the only course is voluntary choice, for scepticism itself, if systematic, is also voluntary choice. If, meanwhile, the will be indetermined, it would seem only fitting that the belief in its indetermination should be voluntarily chosen from amongst other possible beliefs. Freedom's first deed should be to affirm itself. We ought never to hope for any other method of getting at the truth if indeterminism be a fact. Doubt of this particular truth will therefore probably be open to us to the end of time, and the utmost that a

*They will be found indicated, in somewhat popular form, in a lecture on The Dilemma of Determinism, published in the Unitarian Review (of Boston) for September 1884 (vol. xxii. p. 189).

>Can the ethical argument be re-cast as a pragmatic kind of argument? Is it pragmaticism ever in reality to claim that the issue is decided only by feasibility on how such option plays out in life?
believer in free-will can ever do will be to show that the deterministic arguments are not coercive. That they are seductive, I am the last to deny; nor do I deny that effort may be needed to keep the faith in freedom, when they press upon it, upright in the mind.

There is a fatalistic argument for determinism, however, which is radically vicious. When a man has let himself go time after time, he easily becomes impressed with the enormously preponderating influence of circumstances, hereditary habits, and temporary bodily dispositions over what might seem spontaneity born for the occasion. "All is fate," he then says; "all is resultant of what pre-exists. Even if the moment seems original, it is but the stable molecules passively tumbling in their preappointed way. It is hopeless to resist the drift, vain to look for any new force coming in; and less, perhaps, than anywhere else under the sun there is anything really mine in the decisions which I make." This is really no argument for simple determinism. There runs throughout it the sense of a force which might make things otherwise from one moment to another, if it were only strong enough to breast the tide. A person who feels the impotence of free effort in this way has the acutest notion of what is meant by it, and of its possible independent power. How else could he be so conscious of its absence and of that of its effects? But genuine determinism occupies a totally different ground; not the impotence but the unthinkability of free-will is what it affirms. It admits something phenomenal called free effort, which seems to breast the tide, but it claims this as a portion of the tide. The variations of the effort cannot be independent, it says; they cannot originate ex nihilo, or come from a fourth dimension; they are mathematically fixed functions of the ideas themselves, which are the tide. Fatalism, which concedes of effort clearly enough as an independent variable that might come from a fourth dimension, if it would come but that does not come, is a very dubious ally for determinism. It strongly imagines that very possibility which determinism denies.

But what, quite as much as the inconceivability of absolutely independent variables, persuades modern men of science that their efforts must be predetermined, is the continuity of the latter with other phenomena whose predetermination no one doubts. Decisions with effort merge so gradually into those without it that it is not easy to say where the limit lies. Decisions without effort merge again into ideo-motor, and these into reflex acts; so that the temptation is almost irresistible to throw the formula which covers so many cases over absolutely all. Where there is effort just as where there is none, the ideas themselves which furnish the matter of deliberation are brought before the mind by the machinery of association. And this machinery is essentially a system of arcs and paths, a reflex system, whether effort be amongst its incidents or not. The reflex way is, after all, the universal way of conceiving the business. The feeling of ease is a passive result of the way in which the thoughts unwind themselves. Why is not the feeling of effort the same? Professor Lipps, in his admirably clear deterministic statement, so far from admitting that the feeling of effort testifies to an increment of force exerted, explains it as a sign that force is lost. We speak of effort, according to him, whenever a force expends itself (wholly or partly) in neutralizing another force, and so fails of its own possible outward effect. The outward effect of the antagonistic force, however, also fails in corresponding measure, "so that there is no effort without counter-effort, . . . and effort and counter-effort signify only that causes are mutually robbing each other of effectiveness." * Where the forces are ideas, both sets of them, strictly speaking, are the seat of effort—both those which tend to explode, and those which tend to check them. We, however, call the more abundant mass of ideas ourselves; and, talking of its effort as our effort, and of that of the smaller mass of ideas as the resistance, † we say that our effort sometimes overcomes the resistances offered by the inertias of an obstructed, and sometimes

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* See Grundtatsachen des Seelenlebens, pp. 584-5; and compare the conclusion of our own chapter on Attention, Vol. I. pp. 448-449.

† Thus at least I interpret Prof. Lipps's words: "Wir wissen uns natürlicherweise in jedem Streben umso mehr aktiv, je mehr unser ganzes Ich dem Streben beihilft ist," u. s. w. (p. 601).
those presented by the impulses of an explosive, will. Really both effort and resistance are ours, and the identification of our self with one of these factors is an illusion and a trick of speech. I do not see how anyone can fail (especially when the mythologic dynamism of separate "ideas," which Professor Lipps cleaves to, is translated into that of brain-processes) to recognize the fascinating simplicity of some such view as his. Nor do I see why for scientific purposes one need give it up even if indeterminate amounts of effort really do occur. Before their indeterminism, science simply stops. She can absorb from it altogether, then; for in the impulses and inhibitions with which the effort has to cope there is already a larger field of uniformity than she can ever practically cultivate. Her prevision will never foresee, even if the effort be completely predestinate, the actual way in which each individual emergency is resolved. Psychology will be Psychology,* and Science Science, as much as ever (as much and no more) in this world, whether free-will be true in it or not. Science, however, must be constantly reminded that her purposes are not the only purposes, and that the order of uniform causation which she has use for, and is therefore right in postulating, may be enveloped in a wider order, on which she has no claims at all.

We can therefore leave the free-will question altogether out of our account. As we said in Chapter VI (p. 453), the operation of free effort, if it existed, could only be to hold some one ideal object, or part of an object, a little longer or a little more intensely before the mind. Amongst the alternatives which present themselves as genuine possi-

* Such ejaculations as Mr. Spencer's: "Psychical changes either conform to law or they do not. If they do not, this work, in common with all works on the subject, is sheer nonsense: no science of Psychology is possible" (Principles of Psychology, i. 503),--are beneath criticism. Mr. Spencer's work, like all the other "works on the subject," treats of those general conditions of possible conduct within which all our real decisions must fall no matter whether their effort be small or great. However closely psychical changes may conform to law, it is safe to say that individual histories and biographies will never be written in advance no matter how "evolved" psychology may become.

bles, it would thus make one effective.* And although such quickening of one idea might be morally and historically momentous, yet, if considered dynamically, it would be an operation amongst those physiological infinitesimals which calculation must forever neglect.

But whilst eliminating the question about the amount of

* Conjectures of the kind of supposition which free will demands abound in determinist literature. The following passage from John Flax's Cosmic Philosophy (pt. ii. chap. xvii) is an example: "If volitions arise without cause, it necessarily follows that we cannot infer from them the character of the antecedent states of feeling. If, therefore, a murder has been committed, we have a priori no better reason for suspecting the worst enemy than the best friend of the murdered man. If we see a man jump from a fourth-story window, we must beware of too hastily inferring his insanity, since he may be merely exercising his free-will; the intense love of life implanted in the human breast being, as it seems, unconnected with attempts at suicide or at self-preservation. We can thus frame no theory of human actions whatever. The countless empirical maxims of every-day life, the embodiment as they are of the inherited and organized sagacity of many generations, become wholly incompetent to guide us; and nothing which any one may do ought ever to occasion surprise. The mother may strangle her first-born child, the miser give away his treasured gold into the sea, the sculptor may break in pieces his lately-finished statue, in the presence of no other feelings than those which before led them to cherish, to hear, and to create."

"To state these conclusions is to refute their premise. Probably no defender of the doctrine of free-will could be induced to accept them, even to save them with which they are inseparably wrapped up. Yet the dilemma cannot be avoided. Volitions are either caused or uncaused. If they are not caused, an inexorable logic brings us to the absurdities just mentioned. If they are caused, the free-will doctrine is annihilated. . . .

In truth, the immediate correlatives of the free-will doctrine are so shocking, not only to philosophy but to common-sense, that were not accurate thinking a somewhat rare phenomenon, it would be inexplicable how any credit should ever have been given to such a dogma. This is but one of the many instances in which the force of words alone men have been held subject to chronic delusion. . . . Attempting, as the free-will philosophers do, to destroy the science of history, they are compelled by an inexorable logic to pull down with it the cardinal principles of ethics, politics, and jurisprudence. Political economy, if rigidly dealt with on their theory, would fare little better; and psychology would become chaotic jargon. . . . The denial of causation is the affirmation of chance, and 'between the theory of Chance and the theory of Law there can be no compromise, no reciprocity, no borrowing and lending.' To write history on any method furnished by the free-will doctrine would be utterly impossible."—All this comes from Mr. Flax's not distinguishing between the possibilities which really tempt a man and those which tempt him not at all. Free-will, like psychology, deals with the former possibilities exclusively.
our effort as one which psychology will never have a practical call to decide, I must say one word about the extraordinary intimate and important character which the phenomenon of effort assumes in our own eyes as individual men. Of course we measure ourselves by many standards. Our strength and our intelligence, our wealth and even our good fortune are things which warm our heart and make us feel ourselves a match for life. But deeper than all such things, and able to suffice unto itself without them, is the sense of the amount of effort which we can put forth. Those are, after all, but effects, products, and reflections of the outer world within. But the effort seems to belong to an altogether different realm, as if it were the substantive thing which we are, and those were but externals which we carry. If the ‘searching of our heart and reins’ be the purpose of this human drama, then what is sought seems to be what effort we can make. He who can make none is but a shadow; he who can make much is a hero. The huge world that girdles us about puts all sorts of questions to us, and tests us in all sorts of ways. Some of the tests we meet by actions that are easy, and some of the questions we answer in artificiously formulated words. But the deepest question that is ever asked admits of no reply but the dumb turning of the will and tightening of our heart-strings as we say, “Yes, I will even have it so!” When a dreadful object is presented, or when life as a whole turns up its dark abysses to our view, then the worthless ones among us lose their hold on the situation altogether, and either escape from its difficulties by averting their attention, or if they cannot do that, collapse into yielding masses of plaintiveness and fear. The effort required for facing and consenting to such objects is beyond their power to make. But the heroic mind does differently. To it, too, the objects are sinister and dreadful, unwelcome, incompatible with wished-for things. But it can face them if necessary, without for that losing its hold upon the rest of life. The world thus finds in the heroic man its worthy match and mate; and the effort which he is able to put forth to hold himself erect and keep his heart unshaken is the direct measure of his worth and function in the game of human life. He can stand this Universe. He can meet it and keep up his faith in it in presence of those same features which lay his weaker brethren low. He can still find a zest in it, not by ‘ostrich-like forgetfulness,’ but by pure inward willingness to face the world with those deterrent objects there. And hereby he becomes one of the masters and the lords of life. He must be counted with henceforth; he forms a part of human destiny. Neither in the theoretic nor in the practical sphere do we care for, or go for help to, those who have no head for risks, or sense for living on the perilous edge. Our religious life lies more, our practical life lies less, than it used to, on the perilous edge. But just as our courage is so often a reflex of another’s courage, so our faith is apt to be, as Max Müller somewhere says, a faith in some one else’s faith. We draw new life from the heroic example. The prophet has drunk more deeply than anyone of the cup of bitterness, but his countenance is so unshaken and he speaks such mighty words of cheer that his will becomes our will, and our life is kindled at his own.

Thus not only our morality but our religion, so far as the latter is deliberate, depend on the effort which we can make. “Will you or won’t you have it so?” is the most probing question we are ever asked; we are asked it every hour of the day, and about the largest as well as the smallest, the most theoretical as well as the most practical, things. We answer by consents or non-consents and not by words. What wonder that these dumb responses should seem our deepest organs of communication with the nature of things! What wonder if the effort demanded by them be the measure of our worth as men! What wonder if the amount which we accord of it be the one strictly underived and original contribution which we make to the world!

THE EDUCATION OF THE WILL.

The education of the will may be taken in a broader or a narrower sense. In the broader sense it means the whole of one’s training to moral and prudential conduct, and of one’s learning to adapt means to ends, involving the “association of ideas,” in all its varieties and complications, to
gether with the power of inhibiting impulses irrelevant to the ends desired, and of initiating movements contributory thereto. It is the acquisition of these latter powers which I mean by the education of the will in the narrower sense. And it is in this sense alone that it is worth while to treat the matter here.*

Since a willed movement is a movement preceded by an idea of itself, the problem of the will’s education is the problem of how the idea of a movement can arouse the movement itself. This, as we have seen, is a secondary kind of process; for framed as we are, we can have no a priori idea of a movement, no idea of a movement which we have not already performed. Before the idea can be generated, the movement must have occurred in a blind, unexpected way, and left its idea behind. Reflex, instinctive, or random execution of a movement must, in other words, precede its voluntary execution. Reflex and instinctive movements have already been considered sufficiently for the purposes of this book. ‘Random’ movements are mentioned so as to include quasi-accidental reflexes from inner causes, or movements possibly arising from such overflow of nutrition in special centres as Prof. Bain postulates in his explanation of those ‘spontaneous discharges’ by which he sets such great store in his derivation of the voluntary life.†

Now how can the sensory process which a movement has previously produced, discharge, when excited again, into the centre for the movement itself? On the movement’s original occurrence the motor discharge came first and the sensory process second; now in the voluntary repetition the sensory process (excited in weak or ‘ideational’ form) comes first, and the motor discharge comes second. To tell how this comes to pass would be to answer the problem of education of the will in physiological terms. Evidently the problem is that of the formation of new paths; and the only thing to do is to make hypotheses, till we find some which seem to cover all the facts.

How is a fresh path ever formed? All paths are paths of discharge, and the discharge always takes place in the direction of least resistance, whether the cell which discharges be ‘motor’ or ‘sensory.’ The connate paths of least resistance are the paths of instinctive reaction; and I submit as my first hypothesis that these paths all run one way, that is from ‘sensory’ cells into ‘motor’ cells, and from motor cells into muscles, without ever taking the reverse direction. A motor cell, for example, never awakens a sensory cell directly, but only through the incoming current caused by the bodily movements to which its discharge gives rise. And a sensory cell always discharges or normally tends to discharge towards the motor region. Let this direction be called the ‘forward’ direction. I call the law an hypothesis, but really it is an indubitable truth. No impression or idea of eye, ear, or skin comes to us without occasioning a movement, even though the movement be no more than the accommodation of the sense-organ; and all our trains of sensation and sensational imagery have their terms alternated and interpenetrated with motor processes, of most of which we practically are unconscious. Another way of stating the rule is to say that, primarily or connately, all currents through the brain run towards the Rolando region, and that there they run out, and never return upon themselves. From this point of view the distinction of sensory and motor cells has no fundamental significance. All cells are motor; we simply call those of the Rolando region, those nearest the mouth of the funnel, the motor cells par excellence.

A corollary of this law is that ‘sensory’ cells do not awaken each other connately; that is, that no one sensible property of things has any tendency, in advance of experience, to awaken in us the idea of any other sensible properties which in the nature of things may go with it. There is no a priori calling up of one ‘idea’ by another; the only a priori couplings are of ideas with movements. All suggestions of one sensible fact by another
take place by secondary paths which experience has formed.

The diagram (Fig. 87) shows what happens in a nervous system ideally reduced to the fewest possible terms. A stimulus reaching the sense-organ awakens the sensory cell, S; this by the connate or instinctive path discharges the motor cell, M, which makes the muscle contract; and the contraction arouses the second sensory cell, K, which may be the organ either of a 'resident' or 'kinesthetic,' or of a 'remote,' sensation. (See above, p. 488.) This cell K again discharges into M. If this were the entire nervous mechanism, the movement, once begun, would be self-maintaining, and would stop only when the parts were exhausted. And this, according to M. Pierre Janet, is what actually happens in catalepsy. A cataleptic patient is anesthetic, speechless, motionless. Consciousness, so far as we can judge, is abolished. Nevertheless the limbs will retain whatever position is impressed upon them from without, and retain it so long that if it be a strained and unnatural position, the phenomenon is regarded by Charcot as one of the few conclusive tests against hypnotic subjects shamming, since hypnotics can be made cataleptic, and then keep their limbs outstretched for a length of time quite unattainable by the waking will. M. Janet thinks that in all these cases the outlying ideational processes in the brain are temporarily thrown out of gear. The kinesthetic sensation of the raised arm, for example, is produced in the patient when the operator raises the arm, this sensation discharges into the motor cell, which through the muscle reproduces the sensation, etc., the currents running in this closed circle until they grow so weak, by exhaustion of the parts, that the member slowly drops. We may call this circle from the muscle to K, from K to M, and from M to the muscle again, the 'motor circle.' We should all be cataleptics and never stop a muscular contraction once begun, were it not that other processes simultaneously going on inhibit the contraction. Inhibition is therefore not an occasional accident; it is an essential and unremitting element of our cerebral life. It is interesting to note that Dr. Mercier, by a different path of reasoning, is also led to conclude that we owe to outside inhibitions exclusively our power to arrest a movement once begun.*

One great inhibitor of the discharge of K into M seems to be the painful or otherwise displeasing quality of the sensation itself of K; and conversely, when this sensation is distinctly pleasant, that fact tends to further K's discharge into M, and to keep the primordial motor circle going. Tremendous as the part is which pleasure and pain play in our psychic life, we must confess that absolutely nothing is known of their cerebral conditions. It is hard to imagine them as having special centres; it is harder still to invent peculiar forms of process in each and every centre, to which these feelings may be due. And let one try as one will to represent the cerebral activity in exclusively mechanical terms, I, for one, find quite impossible to enumerate what seem to be the facts and yet to make no mention of the psychic side which they possess. However it be with other drainage currents and discharges, the drainage currents and discharges of the brain are not purely physical facts. They are psycho-physical facts, and the

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*This figure and the following ones are purely schematic, and must not be supposed to involve any theory about protoplasmatic and axis-cylinder processes. The latter, according to Golgi and others, emerge from the base of the cell, and each cell has but one. They alone form a nervous network. The reader will, of course, also understand that none of the hypothetical constructions which I make from now to the end of the chapter are proposed as definite accounts of what happens. All I aim at is to make it clear in some more or less symbolic fashion that the formation of new paths, the learning of habits, etc., is in some mechanical way conceivable. Compare what was said in Vol. I. p. 81, note.

spiritual quality of them seems a codeterminant of their mechanical effectiveness. If the mechanical activities in a cell, as they increase, give pleasure, they seem to increase all the more rapidly for that fact; if they give displeasure, the displeasure seems to dampen the activities. The psychic side of the phenomenon thus seems, somewhat like the applause or hissing at a spectacle, to be an encouraging or adverse comment on what the machinery brings forth. The soul presents nothing herself; creates nothing; is at the mercy of the material forces for all possibilities; but amongst these possibilities she selects; and by reinforcing one and checking others, she figures not as an ‘epiphenomenon,’ but as something from which the play gets moral support. I shall therefore never hesitate to invoke the efficacy of the conscious comment, where no strictly mechanical reason appears why a current escaping from a cell should take one path rather than another. But the existence of the current, and its tendency towards either path, I feel bound to account for by mechanical laws.

Having now considered a nervous system reduced to its lowest possible terms, in which all the paths are conative, and the possibilities of inhibition not extrinsic, but due solely to the agreeableness or disagreeableness of the feeling aroused, let us turn to the conditions under which new paths may be formed. Potentialities of new paths are furnished by the fibres which connect the sensory cells amongst themselves; but these fibres are not originally pervious, and have to be made so by a process which I proceed hypothetically to state as follows: Each discharge from a sensory cell in the forward direction tends to drain the cells lying behind the discharging one of whatever tension they may possess. The drainage from the rearward cells is what for the first time makes the fibres pervious. The result is a new-formed ‘path,’ running from the cells which were ‘rearward’ to the cell which was ‘forward’ on that occasion; which path, if on future occasions the rearward cells are independently excited, will tend to carry off their activity in the same direction as to excite the forward cell, and will deepen itself more and more every time it is used.

Now the ‘rearward cells,’ so far, stand for all the sensory cells of the brain other than the one which is discharging; but such an indefinitely broad path would practically be no better than no path, so here I make a third hypothesis, which, taken together with the others, seems to me to cover all the facts. It is that the deepest paths are formed from the most drainable to the most draining cells; that the most drainable cells are those which have just been discharging; and that the most draining cells are those which are now discharging or in which the tension is rising towards the point of discharge.* Another diagram, Fig. 88, will make the matter clear. Take the operation represented by the previous diagram at the moment when, the muscular contraction having occurred, the cell K is discharging forward into M. Through the dotted line p it will, according to our third hypothesis, drain S (which, in the supposed case, has just discharged into M by the conate path P, and caused the muscular contraction), and the result is that p will now remain as a new path open from S to K. When next S is excited from without it will tend not only to discharge into M, but into K as well. K thus gets excited directly by S before it gets excited by the incoming current from the muscle; or, translated into psychic terms: when a sensation has once produced a movement in us, the next time we have the sensation, it tends to suggest the idea of the movement, even before the movement occurs.†

* This brain-scheme seems oddly enough to give a certain basis of reality to those hideously fabulous performances of the Herbartian Vorlesungen. Herbart says that when one idea is inhibited by another it fuses with that other and thereafter helps it to ascend into consciousness. Inhibition is thus the basis of association in both schemes, for the ‘draining’ of which the text speaks is tantamount to an inhibition of the activity of the cells which are drained, which inhibition makes the inhibited revive the inhibitor on later occasions.

† See the luminous passage in Münsterberg: Die Willenshandlung, pp. 144-5.
The same principles also apply to the relations of K and M. M, lying in the forward direction, drains K, and the path KM, even though it be no primary or a connate path, becomes a secondary or habitual one. Hereafter K may be aroused in any way whatsoever (not as before from S or from without) and still it will tend to discharge into M; or, to express it again in psychic terms, the idea of the movement M's sensory effects will have become an immediately antecedent condition to the production of the movement itself.

Here, then, we have the answer to our original question of how a sensory process which, the first time it occurred, was the effect of a movement, can later figure as the movement's cause.

It is obvious on this scheme that the cell which we have marked K may stand for the seat of either a resident or a remote sensation, occasioned by the motor discharge. It may indifferently be a tactile, a visual, or an auditory cell. The idea of how the arm feels when raised may cause it to rise; but no less may the idea of some sound which it makes in rising, or of some optical impression which it produces. Thus we see that the 'mental cue' may belong to either of various senses; and that what our diagrams lead us to infer is what really happens; namely, that in our movements, such as that of speech, for example, in some of us it is the tactile, in others the acoustic, Effectbild, or memory-image, which seems most concerned in starting the articulation (Vol. I. pp. 54–5). The primitive 'starters,' however, of all our movements are not Effectbilder at all, but sensations and objects, and subsequently ideas derived therefrom.

Let us now turn to the more complex and serially concatenated movements which oftenest meet us in real life. The object of our will is seldom a single muscular contraction; it is almost always an orderly sequence of contractions, ending with a sensation which tells us that the goal is reached. But the several contractions of the sequence are not each distinctly willed; each earlier one seems rather, by the sensation it produces, to call its follower up, after the fashion described in Chapter VI, where we spoke of habitual concatenated movements being due to a series of secondarily organized reflex arcs (Vol. I. p. 116). The first contraction is the one distinctly willed, and after willing it we let the rest of the chain rattle off of its own accord. How now is such an orderly concatenation of movements originally learned? or in other words, how are paths formed for the first time between one motor centre and another, so that the discharge of the first centre makes the others discharge in due order all along the line?

The phenomenon involves a rapid alternation of motor discharges and resultant afferent impressions, for as long a time as it lasts. They must be associated in one definite order; and the order must once have been learned, i.e., it must have been picked out and held to more and more exclusively out of the many other random orders which first presented themselves. The random afferent impressions fell out, those that felt right were selected and grew together in the chain. A chain which we actively teach ourselves by stringing a lot of right-feeling impressions together differs in no essential respect from a chain which we passively learn from someone else who gives us impressions in a certain order. So to make our ideas more precise, let us take a particular concatenated movement for an example, and let it be the recitation of the alphabet, which someone in our childhood taught us to say by heart.

What we have seen so far is how the idea of the sound or articulatory feeling of A may make us say 'A,' that of B, 'B,' and so on. But what we now want to see is why the sensation that A is uttered should make us say 'B,' why the sensation that B is uttered should make us say 'C,' and so on.

To understand this we must recall what happened when we first learned the letters in their order. Someone repeated A, B, C, D to us over and over again, and we imitated the sounds. Sensory cells corresponding to each letter were awakened in succession in such wise that each one of them (by virtue of our second law) must have 'drained' the cell just previously excited and left a path by which that cell tended ever afterwards to discharge into the cell that drained it. Let S¹, S², S³ in figure 89 stand for three of these cells. Each later one of them, as it discharges
motorwards, draws a current from the previous one, $S^a$ from $S^b$, and $S^c$ from $S^d$. Cell $S^a$ having thus drained $S^a$, if $S^a$ ever gets excited again, it tends to discharge into $S^b$; whilst

![Diagram 1](image)

$S^a$ having drained $S^b$, $S^b$ later discharges into $S^c$, etc., etc. — all through the dotted lines. Let now the idea of the letter $A$ arise in the mind, or, in other words, let $S^a$ be aroused: what happens? A current runs from $S^a$ not only into the motor cell $M^a$ for pronouncing that letter, but also into the cell $S^b$. When, a moment later, the effect of $M^a$'s discharge comes back by the afferent nerve and re-excites $S^a$, this latter cell is inhibited from discharging again into $M^a$ and reproducing the 'primordial motor circle' (which

![Diagram 2](image)

in this case would be the continued utterance of the letter $A$), by the fact that the process in $S^b$ already under headway and tending to discharge into its own motor associate $M^b$, is, under the existing conditions, the stronger drainage-channel for $S^a$'s excitement. The result is that $M^b$ discharges and the letter $B$ is pronounced; whilst at the same time $S^c$ receives some of $S^b$'s overflow; and, a moment later

when the sound of $B$ enters the ear, discharges into the motor cell for pronouncing $C$, by a repetition of the same mechanism as before; and so on ad libitum. Figure 90 represents the entire set of processes involved.

The only thing that one does not immediately see is the reason why 'under the existing conditions' the path from $S^a$ to $S^b$ should be the stronger drainage-channel for $S^a$'s excitement. If the cells and fibres in the figure constituted the entire brain we might suppose either a mechanical or a psychical reason. The mechanical reason might lie in a general law that cells like $S^b$ and $M^b$, whose excitement is in a rising phase, are stronger drainers than cells like $M^a$, which have just discharged; or it might lie in the fact that an irradiation of the current beyond $S^b$ into $S^c$ and $M^c$ has already begun also; and in a still further law that drainage tends in the direction of the widest irradiations. Either of these suppositions would be a sufficient mechanical reason why, having once said $A$, we should not say it again. But we must not forget that the process has a psychical side, nor close our eyes to the possibility that the sort of feeling aroused by incipient currents may be the reason why certain of them are instantly inhibited and others helped to flow. There is no doubt that before we have uttered a single letter, the general intention to recite the alphabet is already there; nor is there any doubt that to that intention corresponds a widespread premonitory rising of tensions along the entire system of cells and fibres which are later to be aroused. So long as this rise of tensions feels good, so long every current which increases it is furthered, and every current which diminishes it is checked; and this may be the chief one of the 'existing conditions' which make the drainage-channel from $S^a$ to $S^b$ temporarily so strong.*

The new paths between the sensory cells of which we have studied the formation are paths of 'association,' and we now see why associations run always in the forward

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* L. Lange's and Münsterberg's experiments with 'shortened' or 'muscular' reaction-time (see Vol. I. p. 439) show how potent a fact dynamically this anticipatory preparation of a whole set of possible drainage-channels is.
direction; why, for example, we cannot say the alphabet backward, and why, although S* discharges into S', there is no tendency for S* to discharge into S', or at least no more than for it to discharge into S*. The first-formed paths had, according to the principles which we invoked, to run from cells that had just discharged to those that were discharging; and now, to get currents to run the other way, we must go through a new learning of our letters with their order reversed. There will then be two sets of association-pathways, either of them possible, between the sensible cells. I represent them in Fig. 91, leaving out the motor features for simplicity's sake. The dotted lines are the paths in the backward direction, newly organized from the reception by the ear of the letters in the order C B A.

The same principles will explain the formation of new paths successively concatenated to no matter how great an extent, but it would obviously be folly to pretend to illustrate by more intricate examples. I will therefore only bring back the case of the child and flame (Vol. I. p. 25), to show how easily it admits of explanation as a 'purely cortical transaction' (ibid. p. 80). The sight of the flame stimulates the cortical centre S' which discharges by an instinctive reflex path into the centre M' for the grasping-move-

* Even as the proofs of these pages are passing through my hands, I receive Heft 2 of the Zeitschrift für Psychologie u. Physiologie der Sinnesorgane, in which the irrepressible young Münsterberg publishes experiments to show that there is no association between successive ideas, apart from Intervening movements. As my explanations have assumed that an earlier excited sensory cell drains a later one, his experiments and inferences would, if sound, upset all my hypotheses. I therefore can (at this late moment) only refer the reader to Herr M.'s article, hoping to review the subject again myself in another place.

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second commate path discharges into M', the centre for withdrawing the hand. The movement of withdrawal stimulates the centre S', and this, as far as we are concerned, is the last thing that happens. Now the next time the child sees the candle, the cortex is in possession of the secondary paths which the first experience left behind. S', having been stimulated immediately after S', drained the latter, and now S' discharges into S' before the discharge of M' has had time to occur; in other words, the sight of the flame suggests the idea of the burn before it produces its own natural reflex effects. The result is an inhibition of M', or an over-taking of it before it is completed, by M'.—The characteristic physiological feature in all these acquired systems of paths lies in the fact that the new-formed sensory irradiations keep draining things forward, and so breaking up the 'motor circles' which would otherwise accrue. But, even apart from catalepsy, we see the 'motor circle' every now and then come back. An infant learning to execute a simple movement at will, without regard to other movements beyond it, keeps repeating it till tired. How reiteratively they babble each new-learned word! And we adults often catch ourselves reiterating some meaningless word over and over again, if by chance we once begin to utter it 'absent-mindedly,' that is, without thinking of any ulterior train of words to which it may belong.

One more observation before closing these already too protracted physiological speculations. Already (Vol. I. p. 71) I have tried to shadow forth a reason why collateral inner-
vation should establish itself after loss of brain-tissue, and why incoming stimuli should find their way out again, after an interval, by their former paths. I can now explain this a little better. Let \( S' \) be the dog’s hearing-centre when he receives the command ‘Give your paw.’ This used to discharge into the motor centre \( M' \), of whose discharge \( S' \) represents the kinesthetic effect; but now \( M' \) has been destroyed by an operation, so that \( S' \) discharges as it can, into other movements of the body, whimpering, raising the wrong paw, etc. The kinesthetic centre \( S' \) meanwhile has been awakened by the order \( S' \), and the poor animal’s mind tingles with expectation and desire of certain incoming sensations which are entirely at variance with those which the really executed movements give. None of the latter sensations arouse a ‘motor circle,’ for they are displeasing and inhibitory. But when, by random accident, \( S' \) and \( S' \) do discharge into a path leading through \( M' \), by which the paw is again given, and \( S' \) is excited at last from without as well as from within, there are no inhibitions and the ‘motor circle’ is formed: \( S' \) discharges into \( M' \) over and over again, and the path from the one spot to the other is so much deepened that at last it becomes organized as the regular channel of efflux when \( S' \) is aroused. No other path has a chance of being organized in like degree.

\[\text{Fig. 3a.}\]

CHAPTER XXVII.

HYPNOTISM.

MODES OF OPERATING, AND SUSCEPTIBILITY.

The ‘hypnotic,’ ‘mesmeric,’ or ‘magnetic’ trance can be induced in various ways, each operator having his pet method. The simplest one is to leave the subject seated by himself, telling him that if he close his eyes and relax his muscles and, as far as possible, think of vacancy, in a few minutes he will ‘go off.’ On returning in ten minutes you may find him effectually hypnotized. Braid used to make his subjects look at a bright button held near their forehead until their eyes spontaneously closed. The older mesmerists made ‘passes’ in a downward direction over the face and body, but without contact. Stroking the skin of the head, face, arms and hands, especially that of the region round the brows and eyes, will have the same effect. Staring into the eyes of the subject until the latter droop; making him listen to a watch’s ticking; or simply making him close his eyes for a minute whilst you describe to him the feeling of falling into sleep, ‘talk sleep’ to him, are equally efficacious methods in the hands of some operators; whilst with trained subjects any method whatever from which they have been led by previous suggestion to expect results will be successful.* The touching of an object

\[* It should be said that the methods of leaving the patient to himself, and that of the simple verbal suggestion of sleep (the so-called Nancy method introduced by Dr. Lévénez of that place), seem, wherever applicable, to be the best, as they entail none of the after-inconveniences which occasionally follow upon straining his eyes. A new patient should not be put through a great variety of different suggestions in immediate succession. He should be waked up from time to time, and then rehypnotized to avoid mental confusion and excitement. Before finally waking a subject you should undo whatever delusive suggestions you may have implanted in him, by telling him that they are all gone, etc., and that you are now going to restore him to his natural state. Headache, languor, etc., which sometimes fol-\]
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