

PSYCHOLOGY OF HABIT IN SURGICAL TECHNIC.

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Medical writers agree as to the necessity for a good technic, but have been singularly silent as to how to acquire it. Too much is taken for granted. Too little study has been given to detail. No effort has been made to separate the things which are always done by habit, from those which must always be done by thought and reason. Much of this is due to a lack of understanding concerning the psychology of habit.

By far the greater part of our work is done without a thought of how it is done. Rarely can a man correctly state the moves he uses to dress himself, to cleanse his hands or to prepare a field for operation. It is much like giving a good definition for such familiar terms as "climate," "a cold," etc. Many, however, can tell exactly how to tie the latest fancy bow tie. Many can give Dr. —'s method of sterilizing his hands; Dr. Kelly's method of catheterizing the ureter; can define karyokinesis accurately or describe fully the features of bubonic plague.

The question arises: Why do we understand difficult matters and show an utter lack of understanding of the details of simpler matters?

In the first group of examples the lessons were learned before we began to apply reasoning power to an act. At this time we acted by instinct and gradually drifted into the ways of nature. As soon as we learned an act it was turned over to the custody of our master, habit, which we may say never changes and never allows an investigation.

The cases or acts of the second group are more difficult. They come to us by hearsay; necessarily require analysis, and their infrequency or our lack of familiarity with them has prevented us from turning them over to the custody of habit. It is probable that few surgeons can recall the time when they have studiously applied their minds to the performing of every detail of a surgical operation. The fact is that we can not be positive after we have done an operation whether we have observed every point in technic, but we are willing to risk our habits to carry us through safely. We unconsciously rely on the subconscious mind to tell our objective mind if our muscles do something wrong.

DEFINITION OF HABIT.

We speak of certain acts as being nothing more than habit; but do we fully understand what we mean by the word habit? James says: "The most complex habits are nothing but concatenated discharges, due to the presence there of a system of reflex paths, so organized as to wake each other up successively, the impression produced by one muscular contraction serving as a

stimulus to provoke the next, until the final impression inhibits the process and closes the chain." James further states: "In action grown habitual, which instigates each new muscular contraction to take place in its appointed order, is not a thought or a perception, but the sensation occasioned by muscular contraction just finished. A strictly voluntary action has to be guided by an idea, perception and volition through its whole course. In a habitual action mere sensation is a sufficient guide, and the upper region of the brain and mind are set comparatively free. In habitual actions the only impulse which the centers of idea or perception need send down is the initial impulse, the command to start."

He further illustrates this point by comparing the formation of habit to water, which "In flowing hollows out for itself a channel, which grows broader and deeper, and after having ceased to flow, it resumes, when it flows again, the path assumed by itself before. Just so the impressions of outer objects fashion for themselves in the nervous system more and more appropriate paths, and these vital phenomena recur, under similar excitements from without, when they have been interrupted a certain time."

The psychology of habit may be very aptly likened to a phonograph or kinoscope, which reproduces the voice in the one case or a moving image in another thousands of times exactly alike, due to a very delicate impression or path made on a plate by a sound in the one case and an image in the other. This little path or impression is very delicate, and yet so accurate that when the little machine is set to work the exact modulations of the voice are produced in the one case and the exact movements of the body reproduced in the other.

The spinal centers controlling the muscles are even more accurate than these little machines, unless their delicate structures are marred by having conflicting impressions which blur them and produce many uncertain paths, causing the muscles under control of these centers to act in uncertain ways. The muscles under control of the spinal centers can be taught to act automatically with as much accuracy as the little instruments mentioned, if they are rigidly trained to a certain act by the thinking mind for a sufficient number of times; but if a number of methods are being taught alternately the impressions made on the centers would be like a phonographic plate which carries the impression made by two different songs or speeches.

NATURE OF HABIT.

In discussing the nature of habit Dumont says: "By habit a violin used by a master for a number of years acquires beautiful tones because the fibers of the wood at last contract habits of vibration conformed to harmonic relations."

James, in another place in illustrating the power of habit, refers to the case of Rip Van Winkle in Joseph Jefferson's play, who always excuses himself for every time he is drunk by saying, "I won't count this time." James says: "Well, he may not count it, and a kind heaven may not count it, but it is being counted none the less; down among his nerve cells and fibers, the molecules are counting it, registering and storing it up to be used against him when the next temptation comes."

RESULTS OF HABIT.

The results of habit as given by James are: "First, it simplifies the movements required to achieve a given result, and makes them more accurate and diminishes fatigue. The second result of habit is that it dimin-

ishes the constant attention with which our acts are performed."

Dr. Maudsley says: "If an action became no easier after being done several times; if the careful direction of consciousness were necessary to its accomplishment on each occasion, it is evident that the whole activity of a lifetime might be confined to one or two deeds—that no progress could take place in development. A man might be occupied all day in dressing and undressing himself; the attitude of his body would absorb all his attention and energy; the washing of his hands or the fastening of a button would be as difficult on each occasion as to the child on its first trial, and he would, furthermore, be completely exhausted by his exertions. Think of the pains necessary to teach the child to stand, of the many efforts it must make, and of the ease with which it at last stands, unconscious of any effort."

Carpenter says: "Our nervous system grows to the modes in which it has been exercised." James thinks "The hell endured hereafter, of which theology tells us, is no worse than the hell we make for ourselves in this world by habitually fashioning our characters in the wrong way." James also states: "Already at the age of 25 you see the professional mannerism settling down on the young commercial traveler, on the young counselor-at-law, and on the young doctor. You see the little lines of cleavage running through the character, the tricks of thought, the prejudices, the ways of the shop; in a word, the way in which a man can by-and-by no more escape than his coat-sleeve can suddenly fall into a new set of folds. On the whole, it is best he should not escape. It is well for the world that in the most of us by the age of 30 the character has set like plaster and will never soften again." So we see the habit is both our master and slave. It controls our most essential acts and yet performs practically all the menial services of ordinary life.

APPLICATION TO SURGICAL TECHNIC.

In applying this matter of psychology of habit to surgical technic the chief point is that neither the surgeon, his assistants nor his nurses can devote the mind to every little detail which is performed. The mind must be applied to the points of work which require judgment and the higher sense of reason; the details must be left to what is known as muscle sense, or spinal sense, or habit. If these actions are to be performed by the muscles, these muscles or spinal centers must be educated, and as they are not possessed with the power of reason they will act like the parrot—only as they are taught. Therefore, the principal point in arriving at a good surgical technic is education of the muscle sense.

If the parrot is to be taught to say prayers only it must never be left where it can hear profanity. If the muscles are to be taught correct methods in surgical technic they must never be permitted to act in an incorrect manner.

It is a very serious matter, during the course of an operation, if a nurse or an assistant, or the surgeon himself, becomes so engrossed with some difficult problem which comes up that he entirely loses himself so that instead of doing the right thing in the way of technic his muscles perform some old method learned years before which has proven disastrous on many occasions and which he has tried in vain to forget. An important point for us to consider, therefore, is the early education of our muscles, in one good way, so that when storms arise and when troubles come the chances are many to one that they will do right.

PATHS OF HABIT.

The paths of habit in the nervous system are all so delicate and so accurate that such a small point as having had our attention called away from our work while washing our hands early in our career may be the beginning of a habit which from that time on has caused us to neglect some little point of the surface of our hands. It may be only one corner of a certain finger nail, or a very small area in the space between two fingers, but we may rest assured that under ordinary circumstances we will neglect this space with as much certainty as that a seed will reproduce its kind, and this may be the cause of the fatal cases of sepsis for which you could in no way account.

I have no patience with the old excuse that "sepsis will occur without apparent cause in the practice of the very best men." When we have sepsis in a clean wound we may know some one has infected the patient. It may be the surgeon, his assistant or his nurse, but some one is at fault, and I think the primary blame must rest on the surgeon himself, for he must be responsible for the training of his assistants and nurses. This applies, not only to the cleansing of the hands, but to every point connected with surgical cases.

HOW TO ACQUIRE GOOD HABITS.

It is a fact that it is almost impossible for one to change his technic after he has operated for a number of years; if he has not already acquired a fairly good technic his patient will suffer because of his methods.

If he has acquired a good technic it is not his own acts that he fears, but the acts of his assistants and nurses. The question then is, how can he most quickly and most effectually train his nurses or students so that they will perform their duties in a correct manner at all times and under all circumstances?

I know of no rules better than a modification of the principles laid down by James. First, take care to launch your students with as strong and decided initiative as possible by teaching them the importance and value of habit, and that they must depend largely on habit for results. Second, never allow an exception to pass with impunity until the new habit is successfully rooted. After a number of months' practice in the same groove the nervous system will act infallibly right.

Almost nothing has been written in the form of a text on this subject. Nurses and doctors have each learned their particular method, not seeing any two persons with exactly the same technic. Their teachers have not seen fit to call their attention to the small details, or have not noticed all this. The consequence is that a wrong habit has been fixed. For instance, a physician has acquired the habit of washing his hands for five minutes. If you watch him you may notice that four minutes of this has been spent in rubbing the ends of his fingers to and fro along the brush, one-half minute has been spent in scrubbing the palms of the hands, one-third has been spent in making an occasional excursion over his hands, and one-twelfth of a minute has been spent in making an occasional tour over the hands and arms, while the spaces between his fingers have received very little attention. Another operator may reverse this order and devote a great deal of time to some point which has not been mentioned, but in not a single instance has he given a thought to what he is doing or whether all the points of the surface of his hands have been cleansed.

A nurse in preparing for a gynecological operation may first scrub everything from the tip of the coccyx to the pubes into one mass, and then begin by infecting

the entire field. The brush is dipped back into the pan of water and soap, is plunged into the vagina, is again brought out and scrubbed over the external genitals, again into the vagina, and so on in rotation, infecting the entire field. In consequence the field has not received the best opportunity for being cleansed and still a much longer time is required than if the work had been done in a systematic manner.

In expressing my ideas and the method of instilling habits into the nervous system of pupils I can probably do no better than to state the method I have adopted in teaching surgical technic to the nurses of the North Pacific Sanatorium.

OUR METHOD.

We have our work printed in a little pamphlet entitled "Methodical Technic," which we use as a text, in which is described every detail. Every move in performing each act has been thoroughly studied before it has been adopted. Having been adopted it is followed to the letter, and we admit no other way than "Our way" for cleansing the hands; there is no other way than "Our way" for cleansing a field for operation; there is no other way than "Our way" for performing any of the details pertaining to surgical technic, unless it be by a special order of a physician in attendance. Every act must be first learned by a direct concentration of the mind on the details under supervision of the head nurses.

As an illustration of what I mean by detail, I will give a method of cleansing the hands.

METHODICAL CLEANSING OF THE HANDS.

1. With sterilized liquid green soap and sterile brush scrub the hands from the wrists down in the following order: Begin with the thumb on the left hand and scrub the thumb thoroughly in the following order: Radial side, dorsal surface, palmar surface, radial side again, end of finger and nail, root of nail, ulnar surface of thumb, interdigital space, radial side of index finger, dorsal surface, palmar surface, radial side, end of finger and nail, root of nail, ulnar surface interdigital space, radial side of middle finger, etc. Studiously scrub under and around every portion of the nail and surface and the space between the thumb and the index finger. Scrub the index finger likewise, carefully concentrating the mind on every move of the brush and paying special attention to the interdigital space. Continue across the hand, taking in all the fingers in a similar manner. Then take the thumb on the right hand and proceed across the right hand in like manner. Now begin again and scrub the left hand as a whole, beginning on the thumb side, passing over the back around the little finger across the palm and back to the thumb. Include the wrist in this scrubbing. Then a general repetition over the entire hand in the same manner, including the nails. Then the right hand in a similar manner.

2. Put down the brush and with a sterile nail file carefully clean under and around each nail, beginning with the left thumb, and take every nail in the order given for the scrubbing.

3. Soap the arms and hands from the elbow down with sterile green soap. Take a fresh sterile brush and begin with the left arm and scrub down to the wrist. Scrub the right arm in like manner. Then begin with the thumb and scrub the hands in the manner described in the first step.

In the formation of these habits the nurses must not be allowed to begin at any other point or to proceed in any other order than in the one laid down. There is no especial virtue in beginning at this particular point, but every time the hands are scrubbed in this manner

the groove is deepened and the habit thus fixed which is to become indelible.

This process of washing the hands must be done at least once a day when the nurse is off duty, in order that she may devote her mind exclusively to directing the excursion of the brush over her hands. This is much more difficult for the graduated nurses or the operator than for the pupil nurse or student.

GENERAL RULES.

The following general rules are given:

1. Avoid contact with septic material the same as if you had no water, no chemical antiseptics and no artificial protection for the hands.

2. In preparing the hands or a field for operation do your work as thoroughly as if you had handled the most virulent septic material and had no antiseptic solution or artificial protection for the hands.

3. Use chemical germicides as faithfully as if you had handled septic matter, had not had the opportunity of using soap or water and had no rubber gloves.

4. When rubber gloves are used no less precaution should be exercised than if they were not to be used.

5. After these steps have been followed out avoid contact of the supposedly sterilized articles the same as if no cleansing had been done by either of the preceding methods.

These rules are given with the understanding that there are conditions under which they can not be carried out. These exceptions are given in a general way. If these rules are constantly borne in mind you will instinctively refrain from unnecessary handling of septic material.

Having come in contact with septic material you will instinctively refrain from touching anything with your hands until you have given them a thorough cleansing. Having mechanically cleansed your hands you will instinctively feel that they are still septic until you have used an antiseptic agent. Having cleansed everything as thoroughly as possible, you will still instinctively avoid unnecessary contact.

SUMMARY.

In summing up, we may, for all practical purposes, state that habit is a channel in the nervous system formed by the performance of a voluntary act, which channel becomes deeper each time it is used, but the wall of which is weakened when a varying or conflicting method is substituted. This difference may be likened to the difference between the channel of a river which has run for thousands of years in the same channel forming a deep canyon, and a river which runs through a sandy valley and which changes its bed to suit the various circumstances and climatic changes. We may say that habit is a moss-back; is self-satisfied and never changes. Habit is a part of nature herself; is always true, therefore nothing can be safely delegated to habit which is subject to change. A surgical operation can not be delegated to habit, because we rarely find two conditions exactly alike. It always requires reason. In short, everything which can be made perfect should be delegated to habit. Nothing should be delegated to habit which is untrue or varying.

In instilling a habit first decide definitely what you want to teach. Second, do not overlook or neglect a single point or take anything for granted. Third, see that every point is carried out to the letter under the direction of a close observer. Fourth, accept no other way or excuse until the habit you wish to form is a part of the nature.