

PYGMALION  
OR  
THE DOCTOR OF THE FUTURE

*R. M. WILSON*

# PYGMALION

**TO-DAY AND TO-MORROW**

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of the Book*

**PYGMALION**  
OR  
**THE DOCTOR OF THE FUTURE**

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## PYGMALION

MOST advances in medicine have owed their beginnings to quite simple observations. At the present moment a very simple, but nevertheless new, medical idea, is slowly making its influence felt: and because it must ultimately effect great changes in thought and in action, I venture to dedicate these pages to a description of it.

I shall call the idea a "law," not because it has received universal acceptance—it has received nothing of the kind—but simply because, for some of us, it has, now, the force of law, and because—again for some of us—it seems

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to endow with a fresh meaning and significance the most trivial, as well as the most serious, symptoms of disease, and thus to open a new vista both of understanding and of achievement.

I shall not attempt any immediate statement of this law : it will be necessary, before that can be done, to examine for a moment the belief which it challenges—the belief that “a symptom is a sign of disease.” This belief is so universal, and contains, moreover, so large a measure of truth, that the bare suggestion that it may not represent the whole truth is apt to seem ridiculous on the face of it. That disease can only be apprehended, in the first instance, by a careful search for the symptoms it produces, is a truism. It does not, however, follow from this

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that symptoms (such as pain or breathlessness) are *direct* consequences of disease. They may, on the contrary, be indirect consequences, and it is further possible that this distinction, if established, may turn out to be of a fundamental kind.

An analogy will make the point clear. If a sportsman fires at a bear and hits it, the wound inflicted on the creature is the *direct* result, the effect of the shot. So also, if it occurs, is the death of the bear, or its collapse. But the same cannot be said, assuming the wound to have been a light one, about the counter-attack the animal may make against its aggressor. This is by no means a direct consequence of the shot: it is a *reaction to the shot*, an indirect consequence, which depends not



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on the sportsman and his rifle, but on the bear itself.

Thus, it would be wrong to say that the effect of a bullet-wound on a bear is a counter-charge by the animal. The effect of a bullet-wound is destructive, lethal, unless and until the bear reacts on its own account.

Further, all the activities of the bear whatsoever, its growling or whimpering if severely wounded, its efforts to escape if it does not attack, even its death throes, if it has been mortally wounded, are attempts, great or small, to mitigate in some way the effect of the shot. Only death can terminate this *struggle to live*, which is calculated at every point and in every way to *oppose* the death-influence of the bullet. To describe such opposition as a direct effect of the

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bullet is manifestly to obscure the true direct effect—namely, crippling or death. The truth of this becomes apparent when stimulation of any kind is applied to any living organism. When this is done, two definite stages are usually observed: the first, when the direct effect of the stimulus is apparent, and the second, when the reaction or response to (the “counter-attack” against) the stimulus has begun. If only the first stage is seen, the living organism has been killed by the stimulus, and so prevented from making any counter-attack. In this instance, there are no symptoms, since death is symptomless.

Every one knows that, in the human organism, a sudden shock produces an effect which is well described in the

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phrase, "My heart stood still." If death does not occur then, the body reacts and the pulses are vigorously quickened. To describe this quick pulse as a "sign of shock," is to misunderstand its true character grossly. The quickening of the pulse is, in fact, a sign of the counter-attack by the body against the shock.

Life itself, in all its manifestations, can be shown to be neither more nor less than a vast conglomeration of such counter-attacks. We live in a world which is continually smiting us—by actual contact, by light, by sound, and by the stimuli productive of taste and smell. To each of these assaults or "stimuli" we must make adequate response; the sum total of our responses is the sum total of our existence.

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A few illustrations must suffice. If light falls on the skin, the surface layer may be killed outright and peel off. If the light is less strong, the skin will not die, but will redden and become flushed with blood, i.e., more active. Later, it will become tanned and thereafter the light—except in overwhelming strength—will lose its power to inflict injury. Reaction or counter-charge will be more than equal to attack. Again, a loud sound may cause a person hearing it to die of shock there and then. But if this does not occur, the face will flush and the body become tense, and a repetition of the loud sound will fail to produce the first effect. Later on, as when a soldier has become accustomed to the noise of battle, the sound may scarcely be heard

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at all. City dwellers are easy and happy in crowded streets ; seamen go unconcerned through storms ; surgeons can maintain complete ease of mind while carrying out difficult operations. In each instance, life is expressed in reaction, in counter-attack. Nor has life any other means of expression.

It might seem to follow that a so-called "symptom of disease" is a special form of counter-attack, devised to repel a special form of assault. This view has often been put forward. But there is, to-day, the gravest reason to doubt its wisdom. Sick men live in the same world as fit men ; they share the same sights and sounds and feelings. They are called upon to make the same kind of reactions. Because, in fact, they make different reactions, we have

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no right to assume that some mysterious and special attack on them by Nature is in process. It is both simpler and more satisfying to assume that the reactions, i.e., the symptoms, of sick men are neither more nor less than the best responses to ordinary life of which they are capable.

Such an assumption, however, does not carry us much further, unless we perceive the fact that, in making it, we are saying, in effect, that symptoms are signs not of reaction to *disease*, but of *altered reaction to life, occasioned by the presence of disease*—a very different matter. Thus the stumbling flight of a wounded animal is not a reaction to its wound, but a reaction to the natural stimulus of fear as aroused by the sight or smell of the sportsman,

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which, by reason of the wound, has been altered in quantity, though not in quality. Breathlessness is a symptom which may owe its presence to disease. On the other hand, healthy folks are breathless if they over-exert themselves. In the same way, many trained athletes suffer after ordinary severe effort from pain over the heart, not markedly different in quality from the pain experienced in some types of heart disease. The man who has just received a shock is often giddy and exhausted ; he who has indulged his appetite too freely is frequently distressed by pain in the stomach, and so on. *These people are reacting normally to violent stimulations.* Their "symptoms" can no more be accepted as signs of disease than can be the weeping of a mother by

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the death-bed of her child. The reaction, in all such instances is proportioned to the stimulus, the physical character of the reacting organism being taken into account. Where the reaction or symptom is painful—as in the stomach pain of the glutton—all that can be said is that the man is unequal to the task he has set himself—that the stimulus is too great to be adequately responded to.

Symptoms identical with those seen in sick men, then, may indicate merely failure to make adequate counter-charges against impossibly severe "attacks." The question naturally arises whether the sick men are, by reason of their sickness, facing likewise impossibly severe "attacks"—in short, whether the ordinary stimuli



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of life are, in their cases, exaggerated at the moment when they receive them.

Recent study has shown that an affirmative answer can be given to this query. The late Sir James Mackenzie pointed out that a defect of any organ of sense exercises, in time, a general influence on the whole nervous system. Thus, a tight shoe pinches the foot; but, if its wearer goes on enduring it, this pinch soon extends its evil influence to the whole body. The man becomes "irritable," in the general sense, and the ordinary calls of life, which he is accustomed to meet without trouble, develop into intolerable burdens. He reacts to these with great difficulty, or even fails to make complete reactions, i.e., exhibits "symptoms of disease." Eye

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defects are fruitful causes of trouble of this kind. The peering victim lives "in a state of nerves," and manifests a wide variety of excessive reactions or of incomplete reactions.

We see, then, that changes or defects in the organs which receive stimuli from the world may, by exaggerating these stimuli, inflict on the body an intolerable burden. Victims of such changes are compelled to see their environment through a telescope, to hear its voice through a megaphone, and to feel its lightest touch on a raw wound. In a world which other people find normal and easy, they struggle against great odds, and so, naturally, show symptoms of over-reaction or—if the thing has gone further—of partial failure to react.

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Some time ago, a man suffered from great pain in the region of the stomach. The pain drove him to seek medical aid, and he went to a doctor. This doctor, who regarded all symptoms as being "*signs of disease,*" naturally—on his working hypothesis—declared that the stomach was out of order, and that the pain represented a "catarrh" or inflammation of its lining. So he prescribed medicines to "soothe" the inflamed organ, and put the man on a very light diet. These measures entirely failed to help him.

The man, thereafter, was subjected to a more elaborate examination. He was given a "bismuth meal"—that is a large quantity of a substance, harmless in itself, which casts a shadow when irradiated with x-rays. Photo-

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graphs of the stomach in action were taken.

Further, test meals were administered, and careful analyses made of the gastric juice. The result was that no sign of disease could be detected. The man was then told that his was a case of nervousness, and that his pain was imaginary.

Later, when an oculist examined the patient, a defect of vision was found. Spectacles were prescribed and, as it seemed, miraculously, the stomach trouble disappeared. The patient had not sought the help of the oculist for his stomach complaint; he had gone to him merely because he suffered from discomfort when reading. Nevertheless, he had, as the event proved, made a correct, though unconscious,

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diagnosis of his own ailment. The eye defect, in fact, was acting like the pinching shoe. All the nerves of the body were irritable—the stomach nerves among the number. Thus, the ordinary stimulation of food entering the organ produced an extraordinary reaction, a violent activity of the stomach and severe pain.

It is manifest that anything irritating or exciting the nerves will give rise to the same kind of results. Thus, drugs (strychnine, alcohol, and so on) and many of the poisons of disease exert, internally, influences similar to those exerted externally by defects of the eyes and ears and the skin. They render the body more sensitive to stimulation, and hence place it under the necessity of making excessive counter-

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attacks to all the small, everyday stimuli of life. Symptoms are produced ; but these—let me repeat—are not reactions to disease at all. They are reactions to life.

This holds good even when actual organic changes have taken place. The pain felt when a bone is broken expresses the inadequacy of the responses made by the injured tissues to the normal demands on them, i.e., to the stimuli of life, as is shown by the fact that it can be reduced or removed by putting the limb in a splint. This treatment represents a removal of the broken limb from conditions in which it must, in the ordinary course, receive normal stimuli. Stimuli being cut off, the pain is mitigated, though the fracture remains as before.

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It may seem that this distinction is "much ado about nothing," and that, since symptoms arise when disease is present, - their exact relationship to disease matters little. To argue in this fashion, however, is to betray a complete misunderstanding of the problems at present facing the doctor. To treat a symptom successfully, it is absolutely necessary to know how it arises, and what it means.

For example, a man suffers from pain in the stomach. If we say that *a symptom is a sign of disease*, our attention will necessarily be directed to the organ showing the symptom, and we will administer drugs tending to reduce the activity of this organ. If, on the contrary, we say that *a symptom is a sign of reaction to, or counter-attack*

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*against disease*, we shall administer, in small doses, drugs tending to increase the pain, (as is done by the practitioners of homœopathy). But if *a symptom means for us a reaction to life*, we will at once ask ourselves why this stomach is re-acting with such abnormal vigour to stimuli which seem to be normal. Our attention will then be directed to any circumstances tending to exaggerate the force of stimuli, that is, tending to put the individual in a false position towards his environment.

All sorts of possibilities will at once present themselves—possibilities of which, acting on either of the other two ideas—we should have remained unaware.

They will group themselves naturally under four headings :—



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- I. Circumstances, other than bodily, which may render the normal calls or stimuli of life more difficult to meet.
- II. Changes in the sense organs which may have the effect of exaggerating the normal stimuli of life (as a megaphone exaggerates sound or a raw wound exaggerates touch).
- III. Alterations in the irritability of the nervous system (the brain, spinal cord and nerves) which may have the effect of amplifying the stimuli passing along this system.
- IV. Changes in the actual organs, because of which they will be unable to respond normally to normal stimuli

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Possibilities II and III assume a magnification by the body of the calls of life; possibility I assumes an addition of some kind to the calls of life, rendering these calls more emphatic; possibility IV assumes that the calls of life reach the organs unchanged and in a normal fashion. Reaction to these calls is abnormal only because the organ itself is incapable of sustaining it. A broken bone, as has been said, furnishes an illustration of this.

The vast field of the human mind contains a whole multitude of "circumstances, other than bodily, which may render the normal calls or stimuli of life more difficult to meet." A man under the influence of fear, for example, is frequently rendered breathless by the creaking of a door at night. A man

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under the influence of anxiety, un-avowed or even unconscious, may display symptoms commonly associated with heart disease, in the ordinary circumstances of his daily life. For example, a patient consulted a physician on one occasion, and was found to be breathless on slight exertion, to have pain over the heart, and to be tremulous and subject to palpitation. Nothing was discovered. The man went away, but returned two years later in a state of good health. He then confessed that, at his first visit, he had been the subject of a dreadful anxiety (the fear of criminal proceedings). When that anxiety was removed, his symptoms left him.

I remember well visiting a research laboratory with a distinguished

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physician. We were told that a series of experiments were being carried out on the responses of the heart to strong olfactory stimulation—in this case, to sudden whiffs of ammonia smelling-salts. Charts were displayed, showing that in some cases a whiff of the salts set the heart beating vigorously, while in other cases it had no effect. My companion thought a moment, and then said, "Suppose that one of the people you tested happened to be in love with a girl who used smelling-salts of that kind ; would not this fact influence his reaction ? " He added, "The sense of smell is a powerful bidder of memory."

Mental influences, memories, repressions, anxieties and so forth are stimuli, which, like the pinching shoe, act as

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irritants to the whole nervous system. They demand, being excited, reactions just as do the stimuli of the outside world, such as light and sound and touch. Thus, they exhaust the powers of reaction or counter-attack and so "render the normal calls or stimuli of life more difficult to meet." The scriptural writer who stated that "the wicked flee when no man pursueth," was well aware of this fact. Nor is flight—a comparatively active form of reaction—by any means the most severe penalty which a secret sense of guilt is capable of inflicting. The mere sound of a voice, the sight of a face, are frequently enough to induce palpitations and tremors in those who associate such stimuli with their hidden anxieties.

Those who declaim against the work

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of psycho-analysts in this field, often betray ignorance of the immense effect on the body's powers of response to stimuli which emotional stimulation, continued over long periods, is capable of exerting. On the other hand, many devotees of psycho-analysis, fail to realize that mental stimulation is not the only "circumstance other than bodily" which can augment the strength of the demands made by life on a human individual. They are apt to prove sceptical when it is pointed out, for instance, that a damp, enervating climate exaggerates all the stimuli of life by the simple process of rendering all the special senses more excitable. In such a climate, as the white inhabitants of the West Coast of Africa know, small stimuli are apt to

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be very difficult to meet, and thus produce irritability, depression, breathlessness and other symptoms. Severe cold has a like effect on the sense organs, as also has the strong light of the High Alps, and even the noise of machinery.

These are really commonplaces of everyday life which, because they are familiar, are discounted in advance. Nobody is surprised at feeling irritable during the first heat-wave of the year, and even if breathlessness or faintness occurs at this time the explanation "the heat" satisfies both doctor and patient. The ordinary layman, indeed, declares with conviction that he "can't exert himself in hot weather"—meaning that exertion at such a time lies beyond his power of response or reaction. He does not suspect that, in

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saying this, he is affirming a new law of medicine and consenting to the idea that symptoms are signs of altered reactions to life, and not of disease. It can be stated as a general proposition that none of these "circumstances other than bodily," which make response to the calls of life more difficult, are diseases in any ordinary acceptation of that term. Yet their influence is precisely similar to that exerted by disease and may, very probably, lead in the end to consequences indistinguishable from those of disease itself, i.e., failure of bodily powers, declension and death. The statement that "nobody ever dies of a broken heart" is almost certainly incorrect.

There are, conversely, circumstances, other than bodily, which render the



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normal calls or stimuli of life easier to meet. It is unnecessary to dwell upon them, since everybody can furnish illustrations from his or her own experience. But these circumstances possess an evident importance as means of healing, since they oppose the action of their opposites. Thus *esprit de corps* renders the soldier more capable of making adequate responses to the severe stimuli of battle, and in that sense represents a form of "preventive" treatment of a positive kind. It is manifestly the business of the physician to apply any methods within his reach to the mitigation of the severity of stimuli to which his patient is unable to react, and, in fact, many approved methods of treatment represent such applications. Thus "rest" is merely a

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reduction in the number of stimuli received from the patient's normal circumstances. So also is "quiet," so also is "a light diet." A warm room in winter, and an electric fan in summer, are further illustrations of the same sort. When the psycho-analyst disentangles a "buried complex," and so removes an anxiety, he removes a mental stimulus of an overwhelmingly severe kind, and thus sets his patient free of an intolerable burden—an idea magnificently illustrated by Bunyan in the famous passage in his great allegory. There is almost no limit to the use which can be made by medical men of this method of therapy. Every religion "which man did ever find" has offered to its votaries such a means of escape from haunting thoughts and shameful

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memories—and so healed them—in a literal sense—of their afflictions.

“ Which has not taught weak wills how  
    much they can ?  
Which has not fallen on the dry heart  
    like rain ?  
Which has not cried to sunk, self-weary  
    man,  
Thou must be born again ? ”

Faith-healing is healing by the removal of circumstances, other than bodily, which render the normal calls or stimuli of life more difficult to meet. It often succeeds in those cases in which the inimical circumstances are mental or spiritual, and in such cases really does abolish physical ailments, i.e., symptoms which have arisen as a consequence, and which are an expression of inability on the patient's part to meet the demands of life. It fails when the inimical extra-

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corporeal circumstances are physical, e.g. climatic, or when actual bodily changes are exaggerating or distorting the stimuli of life to which the patient is compelled to make response.

Faith, in fact, can remove certain stimuli, and so produce a sense of relief or rest. The demands to be met are lightened by the exact amount or degree of this removal, and the patient, who was incapable before of making adequate responses (of meeting his liabilities), is now capable of so doing. Thus, his symptoms are either reduced in severity, or removed altogether. He reacts again in a normal fashion. Thus, a man with a broken leg, who is tortured by religious anxiety, may show symptoms indicating a failure to react adequately to the demands of life. He

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may be restless, exhausted, and the victim of various pains. If his religious troubles are removed entirely, and replaced by a strong and comforting faith, many of his symptoms will necessarily disappear, including probably pain in his fracture. Every cell of his body will be relieved of the burden of making reactions to the fear stimulus, and thus will be the more capable of reacting to the physical injury, that is to say, of restoring the broken bone.

Faith, *esprit de corps*, confidence in a doctor, and so on, all act by *removing anxiety*, though this end is achieved by each in its own way. A sense of safety (belief in God, in the regiment, in the man) is engendered, which effectively counters either an imaginary or a

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real fear, and so the burden of necessary response to life is lightened. Every activity becomes easier. Thus, a regiment will endure physical stresses above the powers of many of its individual members when acting alone. Such influences as music and art have a similar effect, and are rightly described as possessing the power to "charm away" depression and gloom, and so to release energies for useful work.

The medicine of the future will not, I think, remain blind to these vast stores of help which lie ready to hand. Once upon a time, the priest was the doctor; to-morrow the doctor may well have become the priest, in a new sense of the word. At least, he will see to it that his patient is free from gloom and anxiety, and possesses all the confidence

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and support which the world can afford him.

Most of us have known cases in which a man or woman has been told to "set his or her house in order," and prepare for death. Most of us must have observed how soon, thereafter, the condemned victim "crumples up" and reveals to all the world the symptoms of severe disease. But few, perhaps, have reflected how grotesque is the dictum, "You are the subject of severe disease, and must therefore avoid all worry and exertion." In making this statement, designed to ease the burden of his patient, the doctor, too often, adds immeasurably to that burden. As if a man, who believes that he is stricken, can "avoid all worry." The worry of his new anxiety is added to the stimuli

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of life, and, even if these have been cut down in obedience to "doctor's orders," is usually enough to turn the scales against him. He cannot meet so great a demand. If such an individual, at any future time, is persuaded that he is not doomed after all, immense improvement in his condition immediately occurs. There is the secret of the "quack" who, without hesitation, declares that a cure is possible. There lies the strength of Christian Science, and of all the mental healing systems in the world. They remove the fear which orthodox medicine, or the patient's own anxiety, implanted, and so either relieve, or actually restore, a large number of people.

Is the doctor of the future, then, to mislead deliberately the man whose



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condition seems to him to be serious? This question has actually been answered affirmatively by some distinguished practitioners. "Hope," they say, "is a medicine which must, in all cases, be administered." I am not prepared for a moment to support this view. But I am sure that, to take hope away when it exists, or to fail to support it when it can honestly be supported, is to commit a great error. A doctor has no right to take a gloomy view of his patient's future unless he is prepared, at the same time, by every honest means, to counteract the gloom and give his stricken patient such hope as may be obtained for him. The curious failure of many doctors to understand the successes achieved by "quacks" and by less scrupulous

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members of their own profession, is due, I think, to their failure to realize that mental states can act with all the force of violent physical stimuli, such as blows or shocks. In their detestation of ignorance, dishonesty or mere acquisitiveness, these good people rule out the conception of man as a reacting organism, and busy themselves exclusively with disease. They speak to patients in terms of disease, not in terms of life, and the patients, often enough, are filled with a nameless dread which exaggerates all their existing symptoms and not infrequently adds fresh symptoms to them.

The student of a symptom, however, has by no means completed his task when he has located and removed circumstances, other than bodily,

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tending to exaggerate the burden of life. Bodily circumstances still await his attention. The doctor of the future will assuredly bestow on these as great a care as he will bestow on the mental conditions accompanying them. But when he passes from environment and mental factors, to the body itself, he will recognize that he is passing from a study of stimuli to a study of the organism stimulated. Heat and cold, for example, are "whips" wielded by Nature; anxiety is a "whip" wielded by the spirit. But short-sightedness is not a whip at all. It is a physical condition of a portion of the organism on which the whips are laid. It is, moreover, a physical condition which changes the effect of the blows struck by the various whips. The simplest of

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all illustrations of this is furnished by the skin. If the cheek of a child is patted gently, the action is taken to represent kindness and affection. The child suffers nothing, and experiences joy. But, if the skin of the child's cheek happened to be raw and bleeding as a result of an injury, and if, in these circumstances, it was patted, the effect would be very different. The child would shriek with pain and rush from its aggressor. The stimulus, the "whip," is the same exactly in both cases. In both cases the child is in normal health. Yet, in the second case, a gentle patting is converted, by the raw and tender skin, into the equivalent of a severe slap.

Any of the sense organs can be changed in this fashion, tuned-up, as it

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were, to a higher key, and so rendered exquisitely sensitive. Everyone who has nursed a case of measles knows that the small patient, when the disease begins, cannot bear strong light. The sensitiveness of the eye has been greatly increased, and the normal stimulus of the daylight is no longer a normal stimulus at all. If the blind of the sick-room is not drawn, the child suffers greatly, and begins to show symptoms of failure to react. Many ocular defects and many ear defects undoubtedly serve to exaggerate the normal stimuli of life, and so to place their victims in a position in which adequate responses can no longer be made to these stimuli. Inadequate responses, i.e. symptoms, soon show themselves—for example, the dyspepsia of the man referred to earlier

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in these pages ; for it has to be remembered that every stimulus received by the body may be transmitted throughout the whole organism, to all its cells. The more severe the stimulus, the wider its dissemination, and the greater the difficulty of reacting to it. The doctor of the future will certainly devote more attention to the "organs of special sense"—the eye, the ear, the skin, the nose and the "taste buds" on the tongue—than does his present-day prototype. Especially, without doubt, will his attention be directed to the skin, about which organ we are, at present, obtaining much new information. A very large number of the stimuli of life reach us "through our skins," and it is certain that the sensitiveness of the skin varies enor-

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mously both in health and disease. Sunlight, for example, exercises a profound influence on the possessors of fair, untanned skins, stimulating them in a very drastic fashion. This influence is greatly mitigated when the skin has become tanned. That is to say, light "slaps" the untanned, but merely "pats" the tanned skin, demanding in the former case a severe reaction, in the latter little or no reaction at all. This difference is not due to the veiling or screening effect of the tan; for it has been proved that the effective rays of light do not *penetrate* the skin at all, in any circumstances. It is due, clearly, to the skin itself—to its sensitiveness, as a receiving surface, to those stimuli of life which we call "light rays." The Alpine treatment of tuberculosis is

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based on a desensitizing of the body to light, as well as on the exposure of the body to this form of stimulation. It succeeds best when the skin is well tanned. When this has taken place, insolation produces no evil symptoms, i.e., reaction to the sun's rays is complete and adequate.

Two interesting suggestions emerge from a study of these facts. The first, that the more frequently a stimulus is repeated *and reacted to*, the easier reaction becomes. This, of course, is universal human experience on which all training and discipline is founded. It is equally true, however, that the repetition of stimuli, to which complete reaction has not taken place, produces an exactly opposite effect. Every subsequent attempt at reaction becomes



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more difficult. The pinching shoe is an example. The pinch is not reacted to, because, in the given circumstances, the only adequate reaction is removal of the shoe. This is not carried out. And so, each fresh pinch becomes a more severe stimulus, until, at last, the influence extends over the whole body, and all the sense organs become more "sensitive or irritable." Removal of the shoe, by enabling reaction to be completed, at once restores the normal sensitiveness, and the symptoms of incomplete reaction disappear. Over-training, over-exposure to sunlight, too rigorous a discipline at the beginning of army life, and so on, defeat their own ends. They increase sensitiveness to stimulation, instead of facility of reaction—the object aimed at. It will

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be for the doctor of the future to realize that "desensitization" is certainly a most potent therapeutic measure in all cases in which the organs of special sense have become irritable as a consequence of oft-repeated and too severe stimulation. The doctor of the present day adopts this measure, it is true, when he protects weak eyes with smoked glasses, or applies ointment to a chafed skin. But this is merely local treatment. We are, just now, only groping forward to the idea of desensitizing the senses with a view to the removal of symptoms of a general kind.

The second suggestion afforded by the work at the sunlight clinics is that, as reaction to light becomes more perfect, the power of the body to resist disease organisms is increased—the so-

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called bactericidal power of the blood. It would seem to follow that excessive exposure to light, i.e., stimulation to which adequate reaction cannot be made, must reduce the bodily resistance. And this, in fact, occurs. Thus, the imperfectly reacting organism is a weak organism in the bacteriological sense. To suggest that the removal of an ocular defect, or the soothing of an area of sensitive skin, may contribute to the healing of an abscess or an ulcer elsewhere in the body, seems a daring enterprise. Yet this would appear to be, merely, a statement of fact. By reducing sensitiveness, the force of stimulation is reduced; the "slaps" of Nature are converted into gentle pappings, and the body resumes its full power of reaction to life—i.e., resumes its

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health. Thereafter, though very gradually, sensitiveness, or—which amounts to the same thing—stimulation may be increased, so as to evoke a higher degree of complete reaction. In other words, the patient may be “put into training.”

An illustration will make this clear: A man has a large raw area of the skin of his arm. This area is exquisitely sensitive, and, like a pinching shoe, has raised, sympathetically, the sensitiveness of his whole body. He is unable, in consequence, to react satisfactorily to the stimuli of life. Small sounds irritate him, noises make him nervous. Exertion causes him to become short of breath and suffer from pain over the heart. Strong light sets him blinking. After a time, boils perhaps break

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out on his skin, the consequence of his "reduced vitality" (i.e., his reduced capacity for reacting to bacterial stimulations or assaults). Treatment is now directed to his arm, which is protected (by dressings) from stimulation of any kind. As a result, the sensitiveness of the skin is reduced all over the body, and the stimuli of life become, at once, and in consequence, less vigorous. Reaction is re-established, and irritability, breathlessness on exertion, tremors and so forth, pass away. The physician now begins very slight stimulation on his own account by means of violet light. Very short exposures are given to some small area of the skin, exposures so insignificant that even the somewhat enfeebled patient is easily able to react to them.

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As time goes on, larger exposures follow, care being taken to see that reaction is always complete (i.e., that no unpleasant symptoms develop). The patient's reacting power is increased not only in one, but in all directions. His boils vanish. An examination of his blood reveals the fact that its germ-killing power has been materially raised.

Unfortunately, it is not only the sense organs which, being altered in sensitiveness, may exaggerate the strength of the stimuli of life. An exactly similar exaggeration occurs when the nervous system, along which these stimuli are conveyed to the various organs, is rendered hyper-excitabile. Nerves, like senses, can be converted into "telescopes and megaphones," so that gentle impulses become transformed in the

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course of their passage, into overwhelming blows. The intense sensitiveness of many patients during attacks of fever (influenza, malaria, etc.) is an example in point. A light pinch applied to the skin, at such times, may evoke quite violent manifestations. During attacks of trench fever some patients were actually unable to bear the pressure of the bedclothes on their legs. If their hyperæsthetic skins were touched, they became, in a few instances, pale and breathless. Chronic infections, especially of the "rheumatic type," appear to act as nerve sensitizers of this sort, and thus their victims are compelled to live in a world, the stimuli of which are all exaggerated, so far as they are concerned. Where a healthy man is called upon to make light reactions,

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they are called upon to exert themselves to the utmost ("paying a pound for every shilling demanded of their fit neighbours"—as the case was expressed recently). Thus, these people manifest, chronically, signs of failure to react—breathlessness, dyspepsia, pains and palpitations, etc. They are constantly exhausted, and only at rare intervals enjoy a feeling of well-being.

The doctor of the future will no doubt deal with these people as the doctor of the present day deals with irritable skin. He will possess, in all human probability, the secret of the desensitization of nerves, of which we are, unhappily, ignorant. Or, conversely, he will discover some drug capable of destroying the hypothetical organism



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of rheumatism in the body, and so of putting an end to its baleful poisoning of the nervous system. When he can do this, a vast host of men and women who belong at present to the ranks of the partially fit will be restored to health—men and women labelled at present as sufferers from “heart disease,” “nervous disease,” “neurasthenia,” “hysteria” and so forth—the population of sufferers which throngs the spas and the health resorts, which passes, flitting, from one specialist to another, and from one “quack” to another, which turns in its misery to any cure or any treatment which seems to offer release.

These people show a special liability to inflammations of all kinds, in which the so-called septic organisms are involved—tonsillitis, appendicitis,

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mastoid disease, pyorrhœa and so forth. Nor is this a matter of any wonder, when we reflect that their powers of reaction are constantly inadequate to their needs. An immense amount of study is being devoted at present to these cases, and a certain amount of light has been forthcoming. But it will scarcely be contended by anyone aware of the difficulties, that real progress of a solid kind has been achieved. The fact remains that, at present, few of the victims of chronic nerve sensitization (chronic toxæmia, chronic infection—call it what you will) are permanently freed from their afflictions. Happily, however, this rule is not absolute. The victim of a chronic amœbic dysentery—who often shows all the signs of failure to react—

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can be greatly relieved by specific drug treatment. So can the victim of chronic syphilis, in many instances. So also can the victim of poisoning arising within the alimentary canal. In these cases, removal of the source of poison results in a desensitization of the nervous system, and hence in a reduction in the force of stimulation, as applied by life. The patient regains his power of easy response to his environment, and so recovers his health and fitness.

It may not be a great thing to be able to tell the victim of a palpitating heart that his trouble lies in poisoned nerves and not in his heart; yet it is something, even if the confession must be added that the chances of getting rid of the poison are small. At least, we

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have run our own ignorance to earth and presented ourselves with a clear problem awaiting solution. At least, we have rid our minds of the idea that disorders referred by their victims to certain organs, are necessarily disorders of these organs. We have pointed the way to the doctor who will come after us.

This, however, does not mean that organic disease lacks reality. Failure to respond to the calls of life may, indeed, be due to actual breakdown of the responding structure—a bone, a muscle, a lung, the heart itself. In such a case, a normal stimulation, normally conveyed and transmitted, will yet impose an impossible burden, and, unless the broken-down structure can be healed, a “quieter life,” i.e., a life

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presenting fewer demands, will be necessary. The question naturally arises whether, in some instances, actual breakdown may not follow excessive efforts to react to impossible stimulations continued over a long period. It cannot be answered, at present, with any degree of certainty.

This brief survey of the origins of symptoms makes it clear that they are expressions of *inadequate* reaction to life, and that each of them may depend for its inception on one of a large number of factors, or even on several factors in combination. It emphasises the vast importance for the physician of a general outlook, as opposed to a narrow specialism. Specialists are, of course, necessary; but their work is, properly, to amplify in given directions

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the observations of the physician, and not to attempt to take control of operations on their own behalf. The days when the treatment of disease can safely be entrusted exclusively to bacteriologists, radiologists, psychologists, pharmacologists, or even to surgeons, is rapidly passing away.

Thus, I venture to foresee a great reaction in favour of the doctor, in the older sense of that much abused term. And I venture to foresee an evolution in the personality of the doctor himself. The physician of the future will not, as is now usually assumed, be a "scientist" of the orthodox type, a man with the technique of laboratories at his finger ends, and with the aim in his mind of elucidating the phenomena of life in terms of chemistry or physics.

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Rather, he will be a humanist, a man with the widest possible knowledge of human nature, and the deepest possible understanding of human motives. He will be a cultured man, ripe in intellectual attainments, but not lacking in emotional sympathy, a lover of the arts as well as a student of the sciences. This is, indeed, no more than a projection into the future of a gracious figure of the past—for the great physicians of other days were all, likewise, great citizens of humanity. Yet the projection is, I think, justified by reason of the very scepticism it is sure to arouse. I look forward to the time when the practice of medicine will include, within its scope, every influence of known potency over the human spirit, and when the practitioner, like

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Pygmalion, will look on his work and see, not disease and death, but the glowing lineaments of life.

Medicine, in these latter days, has neglected life too much. It has sought the living among the dead, or contented itself with the mere forms of things. The demand that human beings should be seen as something different from the animals, has often fallen on deaf ears. The doctor, in consequence, has become frequently something rather less than a man of culture. That tendency, perhaps, was inevitable. But the age of materialism is past, with its dull and deadening influence.

The "science of medicine," as Sir James Mackenzie called it, to distinguish it from other sciences, such as chemistry and physics, is the science of



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life, of humanity. The whole universe of knowledge, of emotion and of reaction is included in this tremendous ambit. There is nothing which man has ever thought or felt which cannot be used for his preservation or his healing—and which, therefore, does not concern his physician. By the term “reaction” is indicated the whole procession of life.

In the preceding pages, only the physical side of “reaction” has been discussed; nor has any attempt been made to give an account of the bodily mechanisms which act to “meet” the stimuli of life. That is a task demanding a volume to itself. Yet, even so, the necessity of continuous physical reaction, which has been placed on every living thing, is plain. Not to

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react at all, is to taste death. Thus, it may be suggested that every stimulus is lethal, a potential death-blow. We rise, in literal truth, on our dead selves. Every failure to react completely is a failure to recover completely from the blows by which Nature chastises us for our good.

*On the other hand, without stimulation there can be no reaction.*

Here is a paradox and a great mystery—that man must struggle all his life to overcome circumstance and condition, yet could not live at all if these adversaries were to cease to trouble him. Even in the dark, human beings are apt to languish and die. Removal from sensory stimulation is but another name for death.

The mind of man, with its powerful

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memory, is a storehouse of things felt and experienced and of things imagined. From this point of view, it is a sixth sense, a means of evoking reaction spontaneously, and without immediate reference to the material universe. Thus the patriot fortifies himself to face danger and death by stimulating his bodily powers with the thought of his country and his home. With thoughts and feelings we lash ourselves to heroic or bestial energy, thus opposing to Nature a subtle and amazing weapon, of which she has no cognizance, but which is an imitation, a phantom, of her own weapons. His mind is Nature's whip in a man's own hands, by means of which he is able to stimulate himself to overcome Nature. Thus, fear of past catastrophe impels us

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—without the intervention of any external circumstance—to take measures against its repetition (i.e., to react).

Here, surely, in this astounding “auto-vaccination” practised by the human brain, is the doctor’s most splendid field of effort and enterprise. The doctor of to-morrow will certainly till it. Realizing that man owes all that he is to his power of self-stimulation by thought, he will perceive that no limit can be set to the extension of this process, and that, under guidance, men and women may, indeed, be evolved mentally and spiritually in a manner not yet generally dreamed of. For myself, I believe that the centuries ahead of us will be wonderful, not so much on account of progress in applied science, as on account of progress in the

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science of thinking—that is, of self-stimulation. This feeble structure, the body, is yet an instrument capable of celestial music when played upon by the rich stimuli of the mind, stimuli derived all of them from Nature, as the pigments of the artists are derived from common stuff, or the notes of the musician from the voices of wind and tide ; but stimuli evolved and perfected and, by most cunning and secret process of the spirit, endowed with the qualities of life itself. “ What a piece of work is a man ! How noble in reason, how infinite in faculty ! ” What a piece of work may not a man become when his physicians have learned that his mind is indeed the key, not only to his dominance of Nature, but also to his dominance of his own flesh. “ Whom the

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Lord loveth, He chasteneth." And so, the god-like mind, whipping flesh and blood with its infinity of stimuli, develops powers of reaction in this dross which compass the heavens and the earth. The weary anxiety of the guilt-haunted sinner, which, with its merciless scourge, exhausts his energy and power of reaction, stands at the opposite pole from this stimulation. Anxiety crushes, like over-stimulation, like too stern a discipline, too fierce a strain, too violent a call for effort; the stimulation of the healthy mind is gentle and gradual, an education, as opposed to a punishment, an exercise, as opposed to a life-and-death encounter.

Shall the doctor content himself with watching this progress as a mere spectator? Shall he continue to speak

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of the body as though it may be spoken of apart from the mind? Shall Pygmalion continue to wield his hammer and chisel when the flesh of Galatea glows, living, before his eyes?

It was necessary that the statue should be fashioned; that, in laborious days and nights, our structure of knowledge of the human organism should be built up. It is necessary to-day that we should address ourselves to the vast labour which lies ahead, in completing and perfecting that structure. But woe to us if we believe that the future of medicine is bounded by the horizons of disease, or even of physical evolution! Woe to us, if we fail to see in every bodily reaction completely achieved the material of a mental and spiritual stimulus to yet a nobler

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response! Of the grosser material of the love of man and woman has come such a stimulus already, whereby man and woman are compelled to self-sacrifice and devotion.

“Learn by a mortal longing to ascend  
Towards a higher object,”

wrote Wordsworth, expressing a profound truth of the new science of medicine, as well as of the human heart. Those men who essay the task of caring for the minds and bodies of humanity in days to come will assuredly be seized of this truth as completely as have been the artists and poets of the days which are already passed away.



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