THE PSYCHOSOMATIC DISEASES: A HYPOTHETICAL FORMULATION.

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I. WHAT IS A PSYCHOSOMATIC DISEASE?

WE need no longer dally over theories of the mind-body relationship; we need not even speak of the integration of body and mind, for that integration is not just the combining of parts to form a whole; the unity of any organism has existed from its first beginnings, evolutionary or individual. Myers (13) and Russell (18), by introducing a concept of "the directiveness of organic activities," have defined this essential and intrinsic unity even more cogently than the many other exponents of the same theme. The unicellular amoeba, at one end of the evolutionary ladder, has all the biological capacities of man at the other end. The fertilized ovum develops from within itself all the specialized parts and functions of the higher animals. The unity, then, has been there from the beginning. The complexity of man is not an integration, but is a delegation of functions. As Russell says, the directiveness and creativeness of mind are but a specialized development of the directiveness and creativeness inherent in all living matter.

Similarly, any illness is a unitary reaction of the organism as a whole. On the other hand, the causes of any illness—even the simplest—are multiple or cumulative stresses which finally break down the organism's powers of adaptation or of compensation. Such views upon the multiplicity of the causes of disease and upon the unitary constitution and reaction of the organism are basic to any theory of knowledge in medicine and psychiatry. Such views are the essence of Adolf Meyer's general principles of psychobiology which have influenced psychiatry for many years now. What, then, is new in the term "psychosomatic"?

We may seek a definition from Weiss and English (22), who describe three groups of psychosomatic problems. Group I: Sick people who are not "out of their minds," and yet who do not have any definite bodily disease to account for their illness—the so-called purely "functional" problems of medical practice. Group II: Patients whose symptoms are in part dependent upon emotional factors even though organic disease—maybe serious organic disease—is present. Group III: A group of disorders generally considered to be wholly within the realm of "physical disease," which have to do with the vegetative nervous system, such as migraine, asthma and essential hypertension. They think there may also be a fourth group in which psychological disturbances may lead

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to structural alterations. Weiss and English clearly distinguish these three or four groups and the distinction should be maintained. Although mind and body are one we must not lose sight of the trees for the wood, and there are great differences between the groups of problems listed. If the term psychosomatic medicine is to have a new and specific meaning it should be in relation to the illnesses of the third group. These are all conditions which were formerly regarded as purely physical in origin, but in which many now think emotional and physical factors act together in a peculiarly intimate relationship. Most of them lead in time to structural alterations, and they have other features in common which I shall endeavour to analyse.

A tentative list of the psychosomatic diseases may be offered as follows: The paroxysmal rhinorrhoeas; bronchial asthma; gastric and duodenal ulcer; ulcerative colitis; essential hypertension; arterial degeneration, including coronary artery disease, if occurring before the senile age-period; hyperthyroidism; migraine; chronic arthritis; certain skin diseases, especially urticaria and pruritus; enuresis; and primary dysmenorrhoea.

The choice of conditions in the list must be justified, as the rest of the paper is an attempt at systematization based upon the features of the disorders listed—not that there are any rigid systems in Nature, but our knowledge has to be based on systems which allow us to isolate and to classify natural phenomena and thus to attempt to understand them.

More purely functional states which may apparently present largely with bodily symptoms are excluded, for example, effort syndrome, anorexia nervosa and impotence. Mucous colitis and pseudocyesis are excluded as belonging, more doubtfully, to the same category.

Enuresis is included because Stalker and Band (19) claim that it is not purely emotional in origin but has important somatic components. The symptoms are diurnal as well as nocturnal, and are reflections of an uninhibited type of neurogenic bladder, such as is found in subtotal lesions of the higher levels of the central nervous system. The disorder has its roots in the usual bladder state of infancy, and it may represent a delay in neurophysiological maturation. It is very occasionally found in persons who appear normal psychiatrically. It responds better to treatment with ephedrine than to any psychotherapy. Michaels and Secunda (12) found that enuresis with behaviour disorders was significantly associated with electroencephalographic abnormality.

Possibly more important is the exclusion of states which others might wish to include, but for which the evidence seems insufficient—for example, achalasia of the cardia, diabetes mellitus, paroxysmal tachycardia, and Ménière's disease. However, if one included such diseases, most would, on analysis, show the same features as the original list.

The conditions named in the tentative list have one essential common quality which distinguishes them from other bodily diseases, such as pneumonia or cancer. The major symptom or disturbance of function in each corresponds to some known bodily form of emotional expression, for example, the diarrhoea of ulcerative colitis; the raised blood pressure of hypertension; and the general autonomic disturbance, so like that of fear, in hyperthyroidism. This is what Weiss and English meant by saying that they all had to do with the

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vegetative nervous system. (Arterial degeneration does not have this quality, so far as is known, but its other general features make it fairly generally accepted as a psychosomatic disease, *cp.* Flanders Dunbar (5) on the anginal syndrome and on coronary occlusion.)

Yet the bodily manifestations of emotion in these diseases are very different from the bodily manifestations of emotion in the neuroses. To understand this matter we must consider the general subject of the bodily effects of emotion.

II. Can the Bodily Effects of the Emotions be Classified?

Many different emotions, such as elation, depression, fear and rage, can be recognized by subjective introspection or by observation of others. How much the emotions differ in their bodily expressions is uncertain. Many now think that the bodily expressions of emotion can be classified in a few simple groups. Thus Cannon (1) stressed the utilitarian nature of the bodily effects of emotion. He said that the cranial autonomic system is concerned with the quiet service of building up reserves against times of stress, and that these functions are accompanied by the relatively mild pleasures of the sight and taste and smell of food. The sacral autonomic is concerned with sexual functions. All these parasympathetic functions are inhibited when the sympathetic division is excited. Cannon claimed that all the "exciting" emotions, especially fear and rage, and also states of pain and asphyxia, show themselves in activity of the sympathetic—including increased output of adrenaline, increased blood sugar, increased action of the heart and lungs, decreased muscular fatigue, and transfer of blood from the abdominal viscera to the heart and the voluntary muscles. These he regarded as primitive responses occurring with the rapidity of a reflex, and designed to mobilize bodily energy to meet a situation of danger with either fight or flight. He believed that other emotions, such as joy, sorrow, grief or disgust, could have the same sympathetic effects when they were sufficiently intense. These are the physiological emotional expressions. Cannon recognized two pathological varieties of expression. Firstly, persistent derangement of bodily functions in strong emotional reactions may be due to persistence of the evoking stimuli from non-completion of the emotional reactions, due to memories or attachments which keep the reactions alive, or due to a conditioned reflex mechanism. Secondly, he could only explain the paradoxical and non-utilitarian activity of the bladder and rectum in very intense periods of emotional stress, when the sympathetic system is strongly innervated, as due to simultaneous discharge of opposed innervations, such as occurs in strychnine poisoning.

Darwin (3) recognized the visceral accompaniments of emotion, but studied principally the outward manifestations in posture and facial expression, in the superficial structures of the body and in behaviour. He was thus able to describe many different and specific manifestations of the different emotions. This has been criticized, and it has been said that the outward appearances, if separated (e.g. by photography) from the accompanying situation, are not reliable indications of the effective state. Nevertheless, Darwin's approach has the value of a study of the total living organism in its actual behaviour.

Darwin distinguished exciting emotions such as anger and joy, which

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naturally lead to energetic movements and depressing emotions, such as sorrow. In the latter " the sufferer sits motionless, or gently rocks to and fro ; the circulation becomes languid ; respiration is almost forgotten and deep sighs are drawn . . . collapsed muscles and dulled eyes." Pain and fear, too, may induce extreme depression or prostration.

Drawing upon the literature and upon clinical observations, I shall venture to make up a classification of the bodily effects of emotion, based primarily on the visceral changes, and to a lesser extent on the state of the voluntary muscles, including posture and general expression. (Emotional effects in the details of expression, in gesture and in language will not be considered. They may be partly direct and partly symbolic, but could perhaps justifiably be used for further subdivisions of the classification.)

Firstly, there are the pleasurable emotions. The milder forms of these produce steady and harmonious functioning of the bodily organs (including the normal activity of the gastro-intestinal tract and the general building up of bodily reserves, as described by Cannon), shift of blood from the muscles to the viscera and skin, relaxation of the voluntary muscles and of posture, and appropriate facial expressions. The more acute forms of the pleasurable emotions produce the general picture of emotional excitement as described by Cannon—palpitation, trembling, sweating and so on (e.g. sexual excitement).

Secondly, there are the unpleasant emotions, which, I suggest, may be divided into three groups :

(A) Associated with grief or sorrow in normal persons and with most retarded-depressive and neurasthenic illnesses, there is a general diminution of activity. The voluntary muscles are relaxed, easily fatigued, and general voluntary movement is diminished. The eyes are sunken and the features relaxed. There may be low blood pressure, anorexia, sluggishness of stomach and bowel functions, amenorrhoea or impotence. There is an absence of the usual effects of " exciting " emotions, such as palpitations and tremor. (Admittedly, in acute grief and in agitated depressions there may be palpitation, tremor, etc. —but in such instances the actual affect is anxiety and not sadness.)

(B) Associated with emotions of an aggressive quality are positive effects, such as raised blood pressure, perhaps without tachycardia, increased respiration and voluntary muscle tone, tense posture and expression, gastric hypersecretion, hypermotility and turgescence and perhaps diarrhoea.

(C) It would seem that the bodily effects of such emotions as fear and anxiety and also of pain are either variable or lie between the two above groups. The voluntary musculature may be relaxed or tense, with or without tremor ; the blood pressure may rise or may fall ; it may fall so much that the subject faints ; there may be tachycardia or bradycardia ; flushing or pallor of the face ; sweating ; breathing may be shallow or deep, slow or rapid ; the mouth may or may not be dry, the stomach movements may be inhibited or reversed, the bowels may be costive or relaxed ; there may be frequency or precipitancy of micturition ; sometimes amenorrhoea, impotence or sexual excitability.

In each of the emotions, pleasant or unpleasant, there are more acute and more chronic forms ; and also, in each case, a physiological form, where the cause is immediate and the bodily effects not unduly persistent, and a patho-

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logical form where the cause is insufficient, indirect or hidden and where the bodily effects persist.

Now we may perhaps say that the bodily manifestations of the psychosomatic diseases correspond to those of group B—the aggressive emotions; that the bodily manifestations of depressive and neurasthenic states correspond to those of group A, while group C corresponds to the bodily manifestations of the anxiety neuroses in particular and of other states characterized by anxiety. (Hysteria does not come into the story, as its bodily effects are symbolic and not direct.)

We can, in fact, draw contrasts between the somatic effects of almost all the suggested psychosomatic diseases and the effects of psychiatric states corresponding to the other two groups:

Between the intense congestion and secretion of eyes and nose in the rhinorrhoeas; the lesser effects in ordinary tearfulness; and the many depressed patients who cannot cry.

Between bronchial asthma and the irregular, shallow or deep breathing of some anxiety states.

Between ulcerative colitis and the diarrhoea of some anxiety states on the one hand and the constipation of other anxiety states and of the depressions, and in fact the ordinary case of constipation which is so often neurotic in origin.

Between essential hypertension and the low blood pressure of neurasthenia, and the low or fluctuating or incompletely raised pressure of the cardiac neuroses.

Between the general somatic and visceral symptoms of hyperthyroidism, which are so intense and which persist during sleep; the similar but lesser symptoms of the anxiety states which usually disappear in sleep; and the sluggish visceral functioning in retarded depressions.

Between the specific changes in the cranial blood vessels in migraine and the absence of such changes in other headaches.

Between the muscular spasm of rheumatoid arthritis and the diminished muscle tone of neurasthenia.

Between pruritus, which is typically localized, and the vague, changeable, non-localized skin itching which is so common in the neuroses.

Between enuresis, which is both diurnal and nocturnal and which dates from infancy; the frequency and urgency of some anxiety states which disappear during sleep and which are contemporaneous with the illness only; and the urinary retention of depressive stupors.

Between dysmenorrhoea and the amenorrhoea which is so frequent in depression and in many other psychiatric states.

And as for the stomach, the findings of Wolf and Wolff (23), in their patient with a gastrostomy with herniated gastric mucosa agree with the argument. Pleasurable emotions of appetite led to some increase in secretion and vascularity of the mucosa and increased motility of the stomach wall. Sadness, discouragement and self-reproach led to prolonged pallor of the mucosa and hyposecretion. Acute alarm also caused pallor and diminished acid secretion. Anxiety produced hyperaemia, hypersecretion and hypermotility.

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Aggressive feelings including resentment and hostility led to great increase in secretion and vascularity and to some increase in motility. Emotional vascular changes in the face regularly corresponded with similar changes in the stomach. The implications of these observations in relation to peptic ulcer and functional dyspepsia are obvious.

All these contrasts perhaps help to confirm the hypothetical classification, given above, of the emotions and their bodily accompaniments.

III. What Follows from the Classification of Emotions?

What is the meaning of the different bodily changes of emotion? Like all good biological explanations, Cannon's are utilitarian. I think, however, that they are over-simplified. Simple contrasts between sympathetic and parasympathetic functions, their emotional causes and their bodily effects, cannot be made so directly as he tried to do. Immensely significant though his utilitarian explanation of the bodily effects of fear is, it does not explain fully why the effects are sometimes anything but utilitarian, nor does it take note of the fact that adequate responses may sometimes be made to danger situations without fear or its bodily effects occurring. Similarly, pain is often not felt at all in the height of a danger situation, while it is often felt—even in Nature—as a result of disease or previous injury when the bodily effects are not in the least utilitarian. He offered no special discussion of the bodily effects of the depressive emotions.

The common quality of all these states seems to be one of stimulation—stimulation by outside situations, pleasant or unpleasant; by internal instinctive drives or emotional complexes or conflicts; and stimulation of sensory nerves in pain. This stimulation is immediately transformed into a state of energization in a particular level of the nervous system—the emotional level. This is a high level, and is partly conscious and partly unconscious. By the peculiar situation of this level of stimulation, just at the conscious-unconscious border, it is able to bring both the conscious-voluntary and the unconscious-visceral responses rapidly into action together. Not only the visceral, but also the "voluntary" motor reactions, may occur before we fully appreciate the situation consciously. One might say that this level is the only one that really commands a total response of the whole nervous system. It exercises a dual control that neither the purely conscious level nor the lower autonomic levels can exert. The emotional level, being largely primitive, and yet being both conscious and unconscious, is able to produce both a voluntary and an involuntary response. The emotional responses are therefore primarily and usually most effectively utilitarian, as Cannon has so well proved. At the same time the emotional reactions, being strong, primitive and not fully controlled, have the disadvantage of not always reacting according to true need—particularly the need of civilized man. Hence come the pathological responses—the unwanted, ill-timed, excessive or even disadvantageous bodily responses.

Again, excessive stimulation (especially by pain and by internal emotions) may lead to excessive and undesirable bodily effects. The bodily effects of

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fear are also often not utilitarian, but disadvantageous. They may be due to excessive stimulation, or may be over-reactions to ordinary stimulation.

I prefer to discuss the central representation of the emotions in terms of a conscious-unconscious level as above, rather than venture into an analysis of the relative roles of the cortex, thalamus and hypothalamus. The rapidity of the responses does suggest a total unitary response rather than any division of functions.

(The " stimulation " concept applies not only to the " exciting " emotions with their positive bodily effects, but also to the depressing emotions with their apparently negative effects. This is already accepted in neurasthenia. Henderson and Gillespie (8) say that profound emotional experiences are exhausting, and that the enduring nature of neurasthenia probably depends on continuation of the emotional state. I believe that the depressive affect has its own positive quality. The idea of reciprocal innervation of antagonists in both the voluntary and the involuntary nervous system has replaced ideas of positive responses and of negative responses in the sense of no response at all; and in fact the idea of the reciprocal innervation of antagonists is undergoing modification (Langworthy (10). The apparently negative or inhibitory symptoms in depression, such as difficulty in thinking, psychomotor retardation and stupor, are probably positive effects of a positive emotional state.)

If the classification of emotions is valid, it would seem to follow: (*a*) That the central representation of stimulation by emotions and by pain at the conscious-unconscious level is necessary to provide a unitary response of the voluntary and involuntary effector organs.

(*b*) That the bodily effects of the aggressive emotions (group B) represent, both in their normal manifestations and in the psychosomatic diseases, a preparation for active, aggressive responses, even if such responses are suppressed in the latter.

(*c*) That the bodily effects of the emotions of group A, both in their normal manifestations and in the retarded-depressive and neurasthenic illnesses, represent a withdrawal from activity and from any attempt to influence the environment.

(*d*) That the bodily effects of anxiety, fear, and pain, in health and in disease, may partake of either of the first two groups, or may represent a type of response intermediate between them, or may be a mixture of aggression and withdrawal reflecting a similar conflict in the mind.*

IV. Are Aggressive Emotions Dominant in the Psychosomatic Diseases?

As one reads studies of the personality in any and in all of the psychosomatic diseases, one finds that anxiety, obsessionalism and more or less latent aggression are almost constant findings. The following are selected, but not necessarily unrepresentative, quotations from the literature.

Rogerson (17) described the personality in children suffering from asthma,

* As one specific instance of this, Engel and Romano (7) thought that vasodepressor syncope resulted when the primitive reflex preparation for flight or struggle was initiated, but then for some reason appropriate action became impossible or had to be inhibited.

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and most of them also from eczema-prurigo, as irritable and aggressive, over-anxious and insecure, with intelligence much above the average.

Draper, Dupertuis and Caughey (6) found, in 80 cases of peptic ulcer, an inner sense of insecurity in 84 per cent., Oedipus problems in 97·4 per cent., jealousy and aggression in 64·9 per cent., guilt and fear related to sex problems in 49·2 per cent. and compensatory striving in 56·2 per cent.

Wittkower (20) studied 40 patients with ulcerative colitis. The personalities fell into several groups, but anxiety, obsessionalism and overt or latent aggression were present in the majority.

Dunbar (5) found in a large series of patients with hypertensive cardiovascular disease that they were in a chronic state of obsessive doubt . . . that their life histories revealed indications of compulsive character, but of relatively few outspoken neurotic symptoms . . . and that they showed general tension cloaking aggression and resentment. A characteristic statement was, " I always say ' Yes ' ; I don't know why. Afterwards I'm furious." She found that the characteristic behaviour pattern in coronary occlusion was compulsive striving—an urge to get to the top through hard work, self-discipline and mastery of others. The pattern was similar in cases of angina pectoris.

Although Wolff (24) did not wish to over-simplify or to claim that he had described a typical migrainous personality, he found in 46 migrainous subjects certain common personality features which he tentatively compared with the obsessive character. In his long paper he described many groupings and instances of unusual ambitiousness, perfectionism, and efficiency, orderliness, doubts and repetitions, inflexibility, caution and economy, tension, dissatisfaction and resentment.

Johnson, Shapiro and Alexander (9), drawing their conclusions principally from 29 women suffering from rheumatoid arthritis, found that the general psychodynamic background was a chronic inhibited hostile aggressive state as a reaction to the earliest masochistic dependence on the mother that is carried over to the father and all human relationships, including the sexual. The majority of these personalities learned to discharge hostility through masculine competition, physical activity and serving, and also through domination of the family. When these methods of discharge were interrupted in specific ways, the persistent increased muscle tonus resulting from the inhibited aggression and the defence against it in some way precipitates the arthritis. But these factors are found so commonly in patients without arthritis that they postulated that there must also be somatic factors.

Robertson (16) followed the observations of J. L. Halliday that in a series of middle-aged men a widespread dermatitis had followed some disaster which they felt was undeserved and which caused them to labour under an acute sense of injustice. Robertson reported some similar cases, emphasizing the patients' sense of injustice, resentment and self-pity, and noting that too rapid inquiry into the emotional difficulties might cause an acute exacerbation of the dermatitis.

Stalker and Band found that, of 67 patients with enuresis persisting after the age of puberty, 40 showed anxiety trends varying from an anxious type of

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personality within normal limits to anxiety neuroses, and 17 suffered from psychopathic states, of which 6 were of aggressive types.

Wittkower and Wilson (21) thought that almost all of 57 women with primary dysmenorrhoea belonged to one of two main personality groups—first, those with deep resentment of the feminine role with masculine and aggressive traits, and secondly, those with both physical and emotional immaturity, with either shut-in or anxious traits.

From these descriptions one may see that on the whole the personality structures in the different psychosomatic diseases are compounded of elements of anxiety, obsessionalism, aggression, and the group of aggressive emotions which are given such descriptions as rage, hostility and resentment. It is generally agreed in psychopathology that obsessive trends are specifically related to underlying aggressive urges, and some at least of the anxious trends must have the same source.

It is a fallacy to look for any one mental trend in a group of patients and accept it as equivalent, whether it occurs at a superficial or at a deeper level. I believe, however, that that fallacy does not arise in the present discussion, where we are looking for the dominant emotional trends which are determining the bodily responses. It does not matter here whether the person is basically passive and superficially aggressive, or basically aggressive and superficially passive, if the aggressive trends are sufficiently dominant in the whole picture to be the causes of the bodily responses.

Are we then entitled to say that aggressive trends and their bodily effects are more dominant and more frequent in the psychosomatic diseases than in other psychiatric states? This can only at present be a matter of opinion and of impressionism, but I suggest that it is so.

Freud's theory of the life instincts and the death instincts is difficult and tenebrous, but its application in general terms has brought light rather than obscurity to psychopathology. It is well described by Karl Menninger (11), who speaks of the death instinct as consisting of primary impulses of destructiveness, as opposed to the life instinct representing primary impulses of creativeness and constructiveness. The two normally become extraverted and combined in the psychological and biological phenomena of life. Their defusion and/or introjection is associated with much of the individual and social psychopathology of humanity, and Menninger describes all this vividly in relation to suicide, martyrdom, alcoholism, self-mutilation, accidents and the rest—including the psychosomatic diseases. He believes that some forms of organic disease represent structuralization of perverted functions forced upon these organs to solve unconscious conflicts, the nature of these conflicts being related to the opposition and interaction of aggressive, self-punitive and erotic components of the self-destructive tendency.

We may now relate the aggressive trends in the previous personality to the diseases developed as the bodily effects of the aggressive emotions—the process being in the interaction of the personality and its environment. Here is the important practical field of clinical study; here the causes, in an external and practical sense, may be found; and here lie the opportunities for individual and social prophylaxis and therapy; but in this theoretical paper I shall

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content myself with emphasizing that now, and proceed with the theoretical discussion.

Neurotic reactions to life's difficulties are more or less inadequate reactions, according to the extent of the difficulties. The psychosomatic reactions are less inadequate; there are greater striving and drive and more overcoming of difficulties, and often considerable success. There is more aggressiveness, which shows itself both in greater achievement and in the bodily reactions. But the psychosomatic patient's adaptation is less adequate, or more stressful, than that of the normal person who can cope without excessive or ill-balanced aggression, without somatic disturbances, and without part of the aggression being repressed or turned against the self. Can it also be said that in the psychosomatic disorders the aggressive component—which derives from the instinctual level—is actually quantitatively different, is stronger or more intense, than in the neurotic or in the normal? I believe that it can. There are the analogies firstly, that overt aggression appears more strongly in the aggressive psychopathic reactions, including murder and suicide, than in other psychiatric states, and that covert aggression exists more strongly in the obsessive neuroses than in other states; and secondly, an instinctual defect has been postulated by Myerson (14) in his term "constitutional anhedonia," by which he designates individuals who, from the earliest period of their lives, have shown impairment amounting to serious deficit in the important drives or desires of life—appetite, general activity and sex.

V. The Sex Incidence.

The fact that most psychosomatic diseases are more frequent in the male sex invites further speculation. According to the writers in Price's Textbook (15) paroxysmal rhinorrhoea, chronic gastric ulcer, ulcerative colitis (in the previous edition) and migraine affect the sexes equally, while exophthalmic goitre affects females six times and rheumatoid arthritis five times more often than males. Asthma is twice as frequent in males, chronic duodenal ulcer four times, atheroma and coronary occlusion are much more common, and diffuse hyperplastic sclerosis of the arteries (usually associated with essential hypertension) and angioneurotic oedema are more common in males. Stalker and Band reported that the incidence of enuresis in children was 3 boys to 2 girls, and in older persons 3 males to 1 female.

Possible explanations are:

(1) That the incidence of dysmenorrhoea, chronic arthritis and exophthalmic goitre redresses the balance.

(2) That the "functional" psychiatric states are more frequent in women, and that redresses the balance. (Incidentally, it is thought that the anxiety neuroses—the most frequent of all the neuroses—present more frequently as effort syndrome, dyspepsia and other somatic syndromes in men, and more frequently with purely emotional symptoms in women.)

(3) Again, that stronger aggressive trends in men are associated with more psychosomatic disorder.

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VI. The Choice of Symptom.

Possible causes of the psychosomatic diseases have been described in general terms applicable to them all. But why does one person develop asthma, another hypertension and so on? In fact, the first question here is, Can the bodily effects of emotion be localized in one organ or in one function? Cannon (2) stated as an aphorism that the sympatho-adrenal system, though organized for diffuse and widespread action, might influence excessively separate organs or functions. He said that the evidence for this statement was derived, not from experimental data, but from clinical testimony, and he gave as examples both neuroses, such as soldier's heart, and psychosomatic diseases, such as exophthalmic goitre.

Many specific explanations have been offered for the different varieties of psychosomatic disorder—such as some degree of variation in the personality types; identification with a relative or friend suffering from the same disorder; a superimposition upon an already existing organic defect, e.g. asthma following bronchitis; a specific symbolic meaning in the symptom developed; or a complicated psychopathological mechanism leading to the symptom. Such explanations have their validity, but at this point I would stress the constitutional aspect or hereditary predisposition to react to stress in a specific way. The writers in Price's Textbook recognize definite hereditary predisposition or familial incidence in paroxysmal rhinorrhoea, asthma, gastric and duodenal ulcer, hypertension, arteriosclerotic conditions, exophthalmic goitre, migraine and eczema. Stalker and Band found 112 enuretic relatives in the families of 60 cases of persistent enuresis.

VII. A Classification of the Psychosomatic Diseases.

At one end of the scale are the conditions which exist from an early age; whose symptoms come in brief attacks, often from the slightest cause, and pass away again for the time being; these are mostly the "allergic" diseases which may be associated with abnormal release of histamine-like substances—the paroxysmal rhinorrhoeas, migraine and urticaria. At the other end of the scale are the conditions which appear to be the result of prolonged stress; which come on in relatively later life; which are usually continuous or progressive; and which are mostly associated with dysfunction of the autonomic nervous system—essential hypertension, arterial degeneration, hyperthyroidism, peptic ulcer, ulcerative colitis, chronic arthritis and pruritus. Intermediate between these two groups in their features are asthma, enuresis and dysmenorrhoea.

VIII. Immediate Causes.

Although the literature contains many reports of psychosomatic diseases beginning for the first time acutely after one major emotional disturbance, I doubt if that is the rule, and prefer, as indicated above, to think of constitutional predisposition, of continued environmental stresses, of migraine, etc., as

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repeated trigger-like responses, and of hypertension, etc., as the end-results of lengthy processes.

On the other hand, relapses and exaggerations of the psychosomatic diseases are often caused by acute and immediate emotional disturbances. Thus Davies and Wilson (4) found that of 52 relapses of peptic ulcer, proved by radiography, 42 dated from some event causing anxiety to the patient.

IX. Mixtures.

Simple, clear-cut schemes and classifications do not describe all the complexities of Nature, and although one can contrast the psychosomatic diseases with the " functional " states, one may also inquire if they often co-exist. If they do, that may strengthen the view of the emotional origin of both rather than weaken it. There is a strong clinical impression that the two groups are often associated. Among psychiatric patients a history of dysmenorrhoea, enuresis, migraine, peptic ulcer, hay fever or asthma is extremely common. Relative to their frequency in the community, hyperthyroid patients are quite often seen—especially after operation. Hypertensive and arteriosclerotic patients, of course, form a large part of psychiatric practice—but one often feels that the psychiatric symptoms, especially of anxious depression, are greater than may be explained by the circulatory disorder. On the other hand, the observation is often made that, when a major psychiatric illness such as depression supervenes, such a condition as asthma may cease.

Combinations of two or more psychosomatic diseases occur not uncommonly —both possibly associated conditions as asthma and hay fever or asthma and eczema, and others, e.g. 66 cases of persistent enuresis included 13 with a history of other psychosomatic diseases.

X. The Future.

Medicine and psychiatry have, as it were, discovered the uncharted land of the psychosomatic diseases, but nearly all the laborious, careful and detailed work of exploration has still to be done. Research to be comprehensive should, I believe, be based upon the system adopted by Stalker and Band—analysis and interpretation of data derived from (1) accurate description and enumeration of the somatic dysfunctions, (2) investigation of these dysfunctions by special physiological methods, (3) enumeration of associated autonomic or psychosomatic disorders, (4) description of the associated psychiatric states or personality types, (5) the sex incidence, (6) the family history of psychiatric and psychosomatic disorders, (7) the environmental conditions, (8) the psychopathology, and (9) the effects of both somatic and psychiatric treatment.

Treatment largely awaits the results of research. It is possible, even now, to alleviate patients' disorders by psychiatric understanding. Much has still to be learned about specific treatment. Indeed, it should never be claimed that any of the psychosomatic diseases are problems proper to psychiatry alone. Scientific advance and benefit to patients will only come if psychiatrists and physicians study and treat the patients together, at the same time, and in the same wards.

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XI. Envoi.

This paper is what my dictionary says a hypothesis is: "a supposition; an admittedly unproved assumption adopted as basis of inference, or for the sake of argument." It is intended only as a basis for further argument, or as a stimulus to further thought on the subject. It is sufficiently clear-cut and systematized to offer a general interpretation of the known facts, but it is much too systematized to be true to Nature.

A few criticisms, however, will be answered in advance:

(1) That the bodily effects of emotion are much more pervasive than described here. This may be so, but I have described the immediate and major effects, which are recognizable and which can be pathogenic.

(2) That all the psychoneuroses and so-called functional psychiatric states are associated with bodily dysfunctions. This may also be so, but they are different in quality, degree and curability from the bodily dysfunctions of the psychosomatic diseases.

(3) That the physiological, endocrine and autonomic manifestations have not been analysed in terms of anatomy and physiology. This is so, but for the description and understanding of the whole it is not always necessary to analyse the parts; the phenomena of the whole occur on a different plane and may represent a new emergence, and analysis of the parts alone may not give the complete answer to the functioning of the whole.

(4) That the contributions of internal medicine to the psychosomatic diseases have not been discussed. This is so, but they are not meant to be ignored. They are to be integrated in the future in the psychiatric study.

Summary.

Although there are no rigid systems in Nature, our knowledge has to be based on systems which allow us to isolate and to classify natural phenomena and thus to attempt to understand them. Therefore, although a psychosomatic point of view should be pervasive in all medicine, it may be proper to reserve the name psychosomatic disease for the paroxysmal rhinorrhoeas, bronchial asthma, gastric and duodenal ulcer, ulcerative colitis, essential hypertension, arterial degeneration (including coronary artery disease) if occurring before the senile age period, hyperthyroidism, migraine, chronic arthritis, certain skin diseases such as urticaria and pruritus, enuresis, primary dysmenorrhoea, and possibly a few other similar diseases. Almost all these diseases have the essential common quality that the major disturbances of function correspond to known bodily manifestations of emotion.

It is argued that the bodily expressions of emotion in health and in disease can be divided into those of the pleasant and those of the unpleasant emotions. The latter can be subdivided into three groups: (A) Diminished visceral and voluntary muscle function in sadness, neurasthenia and depression, representing a withdrawal from activity and from any attempt to influence the environment; (B) increased visceral and voluntary motor function in aggressive emotions and in the psychosomatic diseases, representing a preparation for

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active aggressive responses; and (c) a greater or lesser degree of mixture of the first two in normal and in pathological states of anxiety.

It is suggested that aggressive emotions have generally been dominant in the personalities of persons with psychosomatic diseases.

If the same basic mechanisms of aggression occur in all the psychosomatic diseases, hereditary influences may be one of the factors determining the choice of symptom.

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