A PSYCHO-BIOLOGICAL APPROACH TO THE ACUTE ANXIETY ATTACK.

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(Received January 22, 1941.)

THE psychiatrist, the neurologist and the cardiologist all meet with patients who complain of their liability to a certain type of "attack" characterized by alteration of their apprehension of reality, varying degrees of subjective distress, and bodily symptoms of autonomic dysfunction, amongst which the cardiac components are given the most prominence. These attacks are often referred to as "acute anxiety attacks" by the psychiatrist and "vaso-vagal attacks" by the neurologist and the cardiologist, and vary considerably in their features and severity. The neurologist sees the most punched out clinical pattern, and in consequence it was the neurologist, Sir William Gowers, who first drew attention to them in his book, *The Borderland of Epilepsy*.

That an important part of the mechanism underlying their occurrence is a labile vaso-autonomic system is suggested by the wide distribution over the whole body of the manifestations of the attack, the fulminating character of the attack and the demonstrable involvement of the cardiovascular apparatus. The main predisposing factors for the occurrence of these attacks would appear to be a diathesis and a morbid psychological state. As the general features of the attack vary considerably according as to one or the other of these two factors is predominantly involved in the clinical setting, it follows that the patient will tend in the former instance to be studied by the neurologist or cardiologist, and in the latter instance by the psychiatrist. This multiplicity of clinical study has tended to prevent a comprehensive study of the syndrome, although recently Stanley Cobb and his colleagues in Boston have singled out for special study all these problems centring around the patient with the labile vaso-autonomic system, of which the syndrome under discussion in this paper is perhaps the most dramatic and prominent expression.

The following is a description of all the component events likely to be met with in a large series of patients. Needless to say such a total-component attack has never been known to occur, but all degrees of attenuated or partial manifestations are encountered, especially in psychiatric practice.

https://doi.org/10.1192/bjp.87.367.208 Published online by Cambridge University Press

Idealized Total Component "Vaso-vagal Attack."

Without any warning or cause that the patient himself is aware of, he suddenly experiences a sense of malaise, followed immediately by a feeling of uneasiness and insecurity, which rapidly intensifies into a state of fear and apprehension of impending catastrophe. This achieves a climax, in which the patient believes and often states that he is actually dying, and which has been called "angor animi."

Accompanying the fear there is severe palpitation, often with tachycardia of from 120 to 150 beats per minute. More rarely there is bradycardia, and Ryle records a case with a pulse rate of 19 beats a minute. The palpitation is usually accompanied by some degrees of praecordial discomfort, usually referred to the apex, but rarely described as pain, and the discomfort may radiate into the left arm.

Giddiness and nausea are experienced, and the patient may retch and vomit; or a sense of discomfort may rise up from the epigastrium to the throat and convince the patient that he is choking. In some cases abdominal discomfort, usually in the lower abdomen and unlocalized, is felt, and he may have a watery evacuation. This often has an imperative quality, and similarly there may be an imperative desire to micturate.

Meanwhile a sense of powerlessness may have spread, accompanied by immobility comparable to the immobility of a weasel-terrorized rabbit (Ryle). The patient appears pale and cold and breaks out into a cold sweat, and may exhibit a definite rigor. On the other hand these latter symptoms and signs may be preceded by or replaced by a hot flush, usually described as surging up from the neighbourhood of the diaphragm into the neck. This is associated with a corresponding appearance of flushing to the onlooker. Tingling, or feelings of stiffness in the extremities, followed in rare instances by a tetanoid spasm, have been described.

Following the intense fear and angor animi, and in many instances replacing it, and in certain cases constituting the most prominent symptom, is a sense of unreality which may show itself as depersonalization or derealization or both, and in the two latter instances is invariably characterized by if not expressed in terms of visual unreality. Things look hazy, "as in if a fog," or "as if in a picture," or "seen through a pane of glass." This haziness, either alone or together with the giddiness, often results in a feeling of floating or sinking into space. Very rarely the opposite feeling of intense awareness of existence, as if the brain were abnormally active, is experienced.

The patient may remain immobile and uncommunicative, resigned to his fate, or he may become restless and talkative and, in the more psychotic cases, interpret his experience in terms of the occult, such, for instance, as that the devil has come for his soul, or that a state of ecstatic union with the

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Deity has occurred. Many non-psychotic patients think they are becoming insane.

He appears pale and scared, with dilated pupils, but rarely, if ever, loses consciousness. In the psychotic the experience may be followed by an imperative action in an unpredictable direction; if associated with depressive ideas this may take the form of a suicidal attempt.

The whole attack may last anything from ten minutes, an average time, to as long as 20 hours. Its frequency varies within almost any limits, and its repetition is similarly unpredictable. A common frequency is two to three a week, and they are most frequently diurnal. The attacks occur characteristically in company, but not invariably so. They are best relieved by alcohol or a hot bath.

In their attenuated forms any one or any combination of the above occurrences may be noted, though in such cases it is unusual for there not to be a history of two or three major attacks. It is usual for the attenuated components to perpetuate themselves true to type, so that one patient associates his attacks with visual unreality, another with left mammary pain, another with hot flushes, another with nausea and vomiting, and so on.

Setting.

It cannot be too much emphasized how important it is to consider the setting of these attacks, once familiarity has been acquired in recognizing the patient's history of their occurrence. This importance is because of the line of treatment which has to be adopted. Otherwise treatment becomes predetermined by the general practitioner, who elects whether to send the patient on the one hand to the neurologist or cardiologist who "combines luminal with reassurance," or on the other hand to the psychiatrist, who may embark on lengthy and expensive courses of psychotherapy designed to give meaning to the occurrence of these attacks in terms of the patient's past and present emotional life. Now, although both these procedures may be justifiable in certain cases and indeed constitute proper therapy, there is much to be said for the evaluation of clinical principles from which the indications for psychological passive or psychologically active therapy may be deduced.

The two main headings for investigation are the problems concerning diathesis and psychic morbidity.

Diathesis.

Where there is a family or personal history of epilepsy, migraine, asthma or hay fever; where the attacks are occurring with a fairly regular periodicity; where the attacks are fulminating and punched-out in expression; and finally where their occurrence is more frequent than twice a week, we may assume that the patient is so diathetically predisposed to their occurrence that an

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intensive psychological approach is likely to be disappointing. This does not exclude the validity of one or two simple exploratory and explanatory interviews, but excludes any prolonged analytic or semi-analytic procedures.

Some cases occur phasically, and in one instance a phase of epileptiform seizures was followed after an interval by a phase of migraine, to be followed after an interval by a phase of liability to these attacks. Nor must one lose sight of the possibility that the attacks may be occurring as epileptic or migrainous equivalents, and close questioning will often establish unequivocally that the patient, in addition to the attacks for which he has primarily sought relief, is experiencing occasional attacks of epilepsy or migraine. With general reference to this group one finds that the angor animi is not as pronounced a feature as in the group about to be discussed.

Psychic Morbidity.

Although the majority of patients experiencing vaso-autonomic crises who come under the care of the psychiatrist are classified as anxiety states, it is important to remember that almost any other psychiatric disorder may present the same syndrome. It is especially important to evaluate the presence of hysterical mechanisms involved in the total clinical picture, together with the question of hypochondriacal features. Lastly the presence or absence of obsessional modes of thought must be carefully considered. In some instances these represent long-standing personality patterns, and in other instances they represent temporarily released features.

Regarding the actual psychological illness from which the patient is suffering, the occurrence of the vaso-autonomic syndrome can be visualized as being the central connecting phenomenon between two groups, one of which contains the predominantly diathetically determined, together with the organically determined cases, and the other the predominantly psychogenic cases.

Predominantly non-psychogenic.		Predominantly psychogenic.
Organic lesion group (Neoplasm 3rd ventricle; labyrinthine vertigo) Migraine Epilepsy Vaso-vagal attack of Gowers	Vaso-autonomic seizure	Anxiety states. Phobic-obsessional group. Hysteria. Psychotic group.

This diagram suggests the following subdivisions under which it is convenient to note the setting within which the vaso-autonomic crises may occur.

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A. *A non-psychogenic group* in which a known lesion of the C.N.S. or a pronounced diathetic disposition exists as a basis for the attacks.

B. *A psychogenic group* :

1. Anxiety states.
2. Certain amongst the phobic obsessional group of patients.
3. Certain alcoholics.
4. Hysteria.
5. Occurring as a manifestation of a general hypochondriacal syndrome.
6. Menopausal states.
7. Functional cardiac states.
8. Psychotic group.

This article in the main is not directed to the predominantly non-psychogenic group, as the problems of diagnosis, prognosis and treatment in this case are matters affecting the major illness within which the attacks are occurring. An exception to these remarks must be made in the case of the true vaso-vagal attack of Gowers. The diagnosis in this instance is arrived at by exclusion. Its treatment is confined to the exhibition of sedatives, especially luminal, and its prognosis is dependent upon its reaction to such therapy. In general, however, such attacks tend to chronicity, although their frequency may be much diminished. Their tendency to phasic appearance and disappearance has been noted already.

Psychogenic Group.

1. *Anxiety States.*

The majority of patients suffering from an anxiety state sooner or later experience an acute anxiety attack. Great variations in frequency occur from patient to patient, and the most frequent and the most punched-out vaso-vagal-like attacks tend to occur at the onset of the illness. If the attacks are not more frequent than twice a week, and assuming that in the more severe group the indications for in-patient therapy, which will in many cases include an initial routine of narcosis therapy, have been dealt with, one should interview the patient in the clinic as soon after an attack as is convenient, and by a method of free association, and utilizing Freudian conceptions, endeavour to explain why the attack occurred at the moment it did. This should on no account be repeated on more than three or four occasions, and great care should be taken to represent the attacks as harmless and relatively meaningless to the patient. Thereafter the main lines of treatment are proceeded with along Meyerian lines.

Nevertheless, in spite of one's efforts, in patients who are diathetically predisposed, without prejudice to the psychogenic aetiology, the attacks very easily become chronically installed. If in addition there exist pronounced

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hysterical elements in the personality make-up, or if the patient presents marked hypochondriacal features, then one is presented with a chronic anxiety problem such as is present in the great bulk of chronic out-patients in the psychological departments of our teaching hospitals. In many of these patients there may, in addition, exist an environment factor which cannot be remedied, and one has to make the difficult decision whether or not to give them routine sedatives. The pathetic way in which these patients come back at fortnightly intervals for year after year if they are allowed to do so is a serious problem, and there can be little doubt that their medicine, apart altogether from being a placebo, does alleviate to some extent their symptoms. In this connection reference will be made to the work of Danielopolu, which has been taken up recently in this country by Macmillan and Fischgold. It should be borne in mind that in many successfully treated cases an occasional attack will continue to occur from time to time, and the patient should be warned of this fact. The ultimate disappearance of these attacks often coincides with some major adjustment in the patients' real situation which solves their problems.

Anxiety attacks in children.—Children experience both true anxiety attacks and vaso-vagal attacks. They occur most commonly in the serious-minded pubescent girl, and may be precipitated by emotional shock. If they are reported in the adolescent, and especially if they are in addition associated with hypochondriacal features, they may present serious difficulties in establishing a differential diagnosis from an early schizophrenia.

On the whole the later the age group the more are diathetic features involved, whereas in the earlier age groups the attacks are more related to emotional factors, especially the parent or sibling relationship, and present a favourable field for therapy.

Both in children and in adults the attacks may be entirely nocturnal, and if unaccompanied by overt diurnal symptoms are liable to be mis-diagnosed as asthmatic or cardiac attacks. They are frequently precipitated by flatulence, and the patient will awake suddenly "with a start" usually with the instant sense of impending death. One patient described her attack as follows: "I wake up suddenly with a start and feel I am dying; I seem paralysed; I can't move; my brain seems extremely active, and I have a dreadful desire to speak or breathe, both of which I seem unable to do. My heart bumps; I fight for my breath; suddenly I can breathe; my heart is racing away; I feel calmer; I turn over and go to sleep."

2. *Phobic-obsessional Group.*

The psychiatric internist often finds himself in difficulties when attempting to classify the heterogeneous group of patients who present obsessional features. Amongst these are the patients who have a carefully mapped out geographical ambit beyond which no amount of persuasion will scarce suffice to drag them.

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They tend to chronicity, have usually a good insight into much of their psychopathology, and in their complex clinical picture, anxiety features, obsessional modes of thought and constitutional hysterical patterns of behaviour all present themselves.

The whole group are liable to anxiety attacks, but in a general way they may be divided into a less severe group, in which the attacks are only conditioned by more or less specific circumstances, e.g. claustrophobia, and a more severe group in whom the fear is "fear of having a panic attack too far away from my base of security." In this latter group a state of mental hypochondriasis results which is involved in the problem of their chronicity. One interesting feature concerning this group is the emphasis which is laid on the psychic components, especially the unreality, of the anxiety attack.

The treatment of this group may be pursued along analytic lines, but practicable social measures combined with explanatory discussions may serve to increase their range of mobility. They are an extremely difficult and stubborn group, though often showing a spontaneous remission for no apparent reason only to have a second, third, or even fourth attack. In this manner they usually and surprisingly enough contrive to lead useful lives.

3. *Alcoholism.*

A discussion of anxiety states must include a certain sub-group of these patients who come to the physician complaining primarily of alcoholism. They are essentially patients who have developed an anxiety state and have found, unfortunately for themselves, that alcohol only too readily acts almost as a specific for the acute anxiety attacks.

Their prognosis and method of treatment will depend entirely on the degree of psychopathy involved, but taken by themselves they constitute the most favourable group of alcoholics for treatment, since they can be handled simply as anxiety states once the motive for taking the alcohol has been explained to them.

4. *Hysteria.*

The term "hysteria" is an unsatisfactory one, seeing the multiplicity of ways in which it is used. In this article it is employed to designate all patients in whom the symptoms of the illness or the whole illness itself has meaning for the patient's personality. The symptoms are, therefore, in a sense purposive, albeit subconscious.

From this definition it follows that the term "hysteric" may be employed of a certain patient because his illness fits in with the psychogenic conception enunciated above, or it may perhaps more loosely be employed with partial reference to an individual symptom or symptom-complex existing amongst a total illness pattern which is not so to be regarded. It is in this latter sense

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that the word "hysteric" has meaning when applied to the vaso-vagal syndrome, since no patient can reproduce at will, with complete fidelity, the classical vaso-vagal attack. They can, however, have a very good try, and yield extremely informative histories of the intermixture of the occurrence of the true vaso-vagal attack and the "hysterical turn." Needless to say the patients themselves understand the distinction only too well. In the treatment of this class of case it is probably wiser to refrain from any direct reference to the attacks whatsoever, and, depending on the physician's personal orientation towards the problems of hysteria, the "hysterical turn" as opposed to the true vaso-vagal attack may receive attention.

5. *Hypochondriasis.*

It has been maintained above how important it is always to evaluate carefully the existence of a hypochondriacal setting, and special mention has been made of the chronic out-patient anxiety hysteric who has secondarily developed a state of hypochondriasis in relation either to the major vaso-vagal attack or to its attenuated components. These are the all too familiar patients with "hot flushes" down the spine and elsewhere, accompanied by gastric symptoms.

Psychotherapy is fighting an uphill course in this class of patient, but there has been published recently an interesting article on the pharmacological approach to these patients. This is discussed below under the appropriate heading.

6. *Menopausal States.*

Menopausal patients frequently develop psychiatric disorders, and since a labile vasomotor system is a feature of both the menopausal state and the vaso-autonomic syndrome, it will readily be seen how easily it is occasionally to become confused in making a differential diagnosis. Fortunately the distinction has very little therapeutic implication, as in the majority of cases the patient is to be regarded from the menopausal angle. Brief mention should perhaps also be made of an older type of patient with cerebral arteriosclerosis, who experiences attacks which may give rise to the suspicion of a vaso-vagal syndrome. They are usually distinguishable by their possessing pronounced vestibular features.

"Functional Cardiac Group."

The cardiologist, especially the Army consultant, sees a large number of patients who complain of their "hearts," but in whom no disease of the myocardium, valves or blood vessels can be demonstrated. Moreover they have a blood pressure within limits normal for their age, and their renal

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functions are normal. The clinical picture of this group cannot be presented with clearness, but in general they have the following features. They complain of palpitation and dyspnoea on exertion, exhibit an anxious preoccupation concerning their "hearts" and complain of varying degrees, varyingly described, of praecordial distress. It is a remarkable fact that this group only commenced to attract any considerable attention as a result of British medical experience, especially in relation to the pension problem, during the last war, 1914–1918. A still more remarkable fact is that the psychiatrists of that period have left no clear account in their publications that they were called upon to handle these cases. Recognition of the fact that they are essentially a psychiatric entity is still tardy, and during the recent campaign in Flanders these patients were not referred to us as a rule, but were often seen solely by the cardiologist. However, it is becoming increasingly recognized that this policy is incorrect, and more and more are these cases being referred without delay to the psychiatrist. Taking the whole group they illustrate in a complete manner the variety of settings enumerated above. Their connecting feature is a labile autonomic nervous system, and in every case which I examined at Dieppe I never failed to elicit a history of at least one acute vaso-autonomic seizure.

The other feature they all had in common was that the dynamic behind the patients' complaints was their unwillingness to undergo military training and undertake military duties. In this case they could all be classified as hysterias. However, further investigation shows that they are not such a homogeneous group as at first seems the case. The essentially hysteric motive exists in differing levels of consciousness, and furthermore there exists a difference in the vaso-autonomic lability as measured by exercise tolerance tests. Their final classification yields four groups:

1. Anxiety states in which the cardiac symptoms represent a superadded hysterical fixation.
2. Recent hysteria.
3. Malingerers.
4. Chronic hysteria combined in nearly every case with a very labile autonomic system.

In the first three groups the history is recent, and their exercise tolerance within normal limit, the distinction between 1 and 2 depending on the presence or absence of the other anxiety symptoms, such as feelings of tension, inability to concentrate, etc. The fourth group are patients who have characteristically been led to believe that they have "weak hearts" from early years. They usually present signs of being constitutional hysterics, and their body build is of an asthenic type with cold mulberry-coloured extremities. Moderate exercise will send their pulses racing up to as much as 160 per minute with a marked increase in blood pressure, both of which take up to five minutes to subside. It is important to distinguish a group of patients whose symptoms

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follow convalescence from a febrile illness. The treatment of the first three groups is that of their essential psychiatric condition, but the treatment in the fourth group is very unsatisfactory, and more study is required before the proper method of case handling is evaluated. It seems an open question whether indeed this fourth group are not a diathetically disposed group of individuals in whom the hysterical mechanisms are a secondary consideration. This would explain their chronicity, but renders the problems of policy in relation to Army Service an extremely difficult one to determine with justice to the individual patient and the requirement of the community at war. In this sense they are very analogous with the chronic lumbago and some of the chronic dyspeptic group. It has been suggested that the only satisfactory solution of this problem would be to create a special "gastric" or "back" or "heart" corps, within which both the interests of the soldier and the community could be safeguarded.

In civilian practice these functional cardiac patients have this feature in common with their army correlates, viz. that their illness has reference as a rule to some unitary factor in their real situation, the removal or modification of which will often result in a considerable amelioration if not subsidence of their complaint. Their case handling exemplifies all the considerations enumerated above.

Thyrotoxic Group.

Reference to the functional cardiac group has been brief on purpose, as it is not the scope of this article to enter into a consideration *per se* of functional cardiac conditions, but only to draw attention to the occurrence of the syndrome under discussion in this setting.

Similarly brief mention must be made of the third member of the triad, which together with the anxiety state and the cardiac lesion frequently constitutes a difficult diagnostic problem, namely the thyrotoxic patient. The difficulties in differential diagnosis encountered here have been dealt with by Trevor Owen, and the occurrence of true fear reactions and an established history of the occurrence of the vaso-vagal attack will tend to place the patient in the anxiety group.

In an out-patient department one occasionally sees a patient who has been admitted for investigation as a case of thyrotoxicosis, the commonest symptom being a tachycardia of anything up to 130. They usually present general nervous symtopms, complain of fatigue, and exhibit a tremor of the hands and slight fullness of the thyroid glands. Their B.M.R. is found to be within normal limits. Their case history yields ample psychiatric material. These cases do not respond well to psychotherapy, and tend to run a chronic course. Their inclusion entirely within the anxiety state seems unsatisfactory, and their normal B.M.R. separates them from the cases of true

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hyperthyroidism. They are an interesting group, and one cannot help forming the opinion that they constitute a true clinical entity in themselves.

Psychotic Group.

To make the references to the various settings complete it is necessary to point out that the syndrome may occur in association with any form of psychiatric illness whatsoever. It is not common, however, outside the settings described above, and if it does occur is seen usually at the very beginning of the illness. The true nature of the attack is sometimes missed in psychotic patients owing to their tendency to elaborate by attaching delusional meaning to the psychic component of the attack. Perhaps the most usual material brought forward is the idea that God or the Devil visited them at the moment of the vaso-vagal attack. A very special case is the ecstasy attacks. They are not common and I have only seen one case myself. As, however, the patient clearly described vaso-vagal phenomena I kept my notes. Anderson in this country has collected the best description of the occurrence, but makes no reference to the vaso-motor phenomena. This, however, need not, and probably should not, be taken as implying that they were absent in his series.

Malingering.

The series is completed by a passing reference to the malingerer, who can undoubtedly reproduce some of the symptoms and signs of a panic attack.

PHARMACOLOGY.

In practice the drug which is most capable of modifying an acute anxiety attack or a vaso-vagal attack is alcohol. This it does efficiently, and references have been made above to the dangers inherent in this fact. If the alcohol is carefully covered up, however, much of this danger can be avoided. Paraldehyde is just as effective and has less objections attaching to its usage.

Because of the known involvement of the autonomic nervous system attempts have been made to modify the occurrence of these attacks by the use of acetylcholine and belladonna. Misch claimed results from the former drug, but his findings were not substantiated by subsequent investigators. I have tried the drug in numerous cases and found it ineffective. A very interesting piece of research by Finesinger and his colleagues in Boston into the effects of adrenaline and acetylcholine injections given to patients liable to vaso-autonomic attacks yielded the following results: Four groups emerged, two who reacted specifically to one drug and not the other, and two who reacted to both or failed to react to either respectively. The authors thought that of the first two groups the adrenaline-sensitive group produced a vaso-vagal-

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like attack with passivity and intense angor animi on the part of the patient, whereas the acetylcholine-sensitive group produced an attack which was purposive and constructive on the part of the patient, and from their description was very similar to the panic attacks observed by me in the phobic-obsessional type of patient.

Reference must be made to work conducted along the lines of Danielopolu, who attempted to classify the vaso-autonomic diathesis into a parasympatheticotonic and a sympatheticotonic group. Therapy then consists of a skilled and judicious administration of ergotamine or belladonna according to the division of the autonomic system affected.

Work along these lines has been published by Macmillan and Fischgold. They mention, however, that in addition "luminal was widely given," which raises some doubt as to whether the beneficial effects described could be ascribed entirely to the "autonomic therapy" employed.

This work obviously deserves widespread and careful testing out, as if it is confirmed it will be a valuable addition to our methods of treating the anxiety states. There are, however, many statistical difficulties involved, and the importance of having adequate controls has to be borne in mind. This work also raises very pertinently the whole question as to whether or not the autonomic nervous system can, functionally speaking, be thought of in two halves, and some authorities deny the validity of this conception.

Psychotherapy.

The main principles controlling active psychotherapy have been discussed under the heading of anxiety states, since it is within this group of disorders that the vaso-autonomic syndrome is most amenable to psychological methods of attack. It only remains to re-emphasize the necessity of a careful evaluation of the diathetic factor, the degree of hypochondriacal or obsessional factors involved and the possibilities of manipulating a difficult real situation if such exist.

In general a psychobiological as opposed to a psycho-analytical approach is likely to produce the best results, although an eclectic use of Freudian principles may justifiably be made with reference to two or three of the individual attacks.

Differential Diagnosis.

The differential diagnosis of the syndrome under discussion involves a consideration of two main groups of conditions:

1. Conditions associated with paroxysmal attacks of fear.
2. Conditions associated with paroxysmal alterations of consciousness.

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The student will expect to find, and the investigator is tempted to make, a list of criteria whereby any patient presenting himself for an opinion can be immediately classified. This, however, is not possible, and moreover any attempt to do this will inevitably result in mistakes being made. This fact probably explains the paucity of formal attention which is paid to the syndrome in many text-books. The principle one would like to lay down is that it is only by a careful consideration of the setting in which the attacks are occurring, combined with an accurate description of the features of the attack, that a correct diagnosis can be made. A special danger to be avoided is to label the patient who is experiencing an acute anxiety attack as suffering from an anxiety state before sufficient observation has been possible, in order to exclude a more frankly depressive illness or an underlying schizophrenia. By such care many clinical disasters can be avoided and needless expense on the part of the patient obviated. The psychiatric internist is frequently called upon to deal with such cases who have been so handled, and the inevitable harm and waste of time incurred.

Fear Paroxysms.

1. The vaso-autonomic syndrome under discussion:
   - *a*. Vaso-vagal attack.
   - *b*. Acute anxiety attack.
2. Climacteric attacks.
3. Angina pectoris.
4. Raynaud's disease.
5. Labyrinthine vertigo.
6. Local disease of the central nervous system.
7. Anaphylactic shock.
8. Hypoglycaemic attacks.
9. Certain states of furor in psychopathic personalities.
10. Following the administration of certain drugs:
    - *a*. Adrenaline and acetylcholine.
    - *b*. Amyl nitrite.
    - *c*. Mescal.
11. Pre-cardiazol emotional paroxysm.
12. Physiological fear in the presence of real danger, e.g. shell shock. Mention should also be made here of the patient suffering from heat cramp and the crises of Addison's disease.

The setting in which the members of the above series occur will in the majority of instances not present much difficulty for the diagnostician, but a word is necessary in some instances.

Climacteric.—This has already been dealt with, and the emphasis here will almost invariably be on the fact of the climacteric. A severe anxiety state or

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an incipient depressive or paraphrenic illness may be superadded and carefully investigated.

Angina.—True angina is characterized by its tendency to occur in late middle-aged men who give a hereditary history and who themselves are subject to excessive mental wear and tear. Arterial disease is usually present and there may be a positive Wassermann. The attack does not characteristically "come out of the blue," but follows a definite precipitating cause, especially physical strain and exertion. The emphasis is always on the pain, whereas in pseudo-angina (the name given by the cardiologist in this connection to the vaso-vagal syndrome) true pain is not experienced, and the emphasis is more likely to be on the angor animi and the palpitation. Finally the presence of emotional factors in the patient's history and a study of the psychological setting will usually serve to establish the correct diagnosis.

Labyrinthine vertigo.—The extent to which this group will cause difficulty in diagnosis will depend entirely on the extent to which the patient has come to fear his attacks, and there is a group in which such a distinction becomes impossible, inasmuch as a vicious circle becomes established by the sequence: attacks of vertigo—anxiety—anxiety precipitating vertigo.

In these cases it will be helpful to consider the causes of vertigo as a neurological entity. They include:

a. Intracranial disease.
b. Chronic otitis media.
c. Acute labyrinthitis.
d. Haemorrhage into the labyrinth.
e. Tobacco excess.
f. Prolonged insomnia.
g. Migraine.
h. Vasomotor disturbances, including the emotional group, and therefore coming within the vaso-autonomic syndrome.
i. Otosclerosis of late middle life.

This last group constitutes the majority of cases, and is characterized by a slow progressive deafness accompanied by tinnitus in one ear and attacks of sudden giddiness, in which objects either revolve round or the ground appears to rise up. The patient may vomit or have diarrhoea. There is a variable degree of prostration accompanied in proportion by pallor and coldness, and there may be a feeling of impending dissolution. The presence of this last symptom will determine whether or not the case will simulate the vaso-autonomic group and give rise to difficulties over diagnosis.

These patients are liable to a persistent feeling of unsteadiness, especially on sudden movement of their eyes or sudden change in their general posture. Such an occurrence may serve to precipitate an attack, which is further liable to be brought about by fatigue, sudden loss or gain in weight, an empty stomach, sudden emotion, and in general is complicated by the menopause.

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Local Disease of Central Nervous System.

Penfield has described four patients with tumours involving the diencephalon. In each case the patient experienced an attack which he described as "autonomic epilepsy," whose habitual features he labelled as follows:

1. Prodromal restlessness with sometimes a desire to void.
2. Sudden intense vaso-dilatation of the skin of face, arms and breasts. Sudden rise in blood pressure from 110 to 200.
3. Lachrymation; diaphoresis; salivation; dilation or contraction of pupils; protrusion of eyes; increased rate of pressure of pulse; retardation of respiratory rate; elicitability of pilo-motor reflex.
4. Disappearance of superficial blush and fall of blood pressure; slowing and weakening of pulse.
5. Hiccup.
6. Transient shivering.

Penfield does not mention the patient's subjective attitude towards the attack, but apart from the question of angor animi these attacks are clearly indistinguishable from the attacks under discussion. Their interest lies in their establishing beyond all doubt that the syndrome under discussion occurs in an unbroken series from a purely organically determined to a purely emotionally-determined group. It would appear to establish the region of the thalami and floor of the third ventricle as the part of the brain concerned with the discharge.

Psychopathic Furor.

Amongst the miscellaneous patients who constitute the psychopaths, attacks are sometimes seen characterized by intense fear and excitement, and accompanied by tachycardia and increased respiration. The patient is very restless, and if restrained will fight and struggle violently. In some cases the patient runs away and may run amok. They resemble in this feature the attacks of "hysteria" seen in dogs. They are not likely to cause confusion in diagnosis.

Drugs.

The injection of adrenaline and acetylcholine will in certain individuals induce a response indistinguishable from an acute anxiety state. Reference has already been made to the work of Lindfield and Finesinger in this connection.

Pre-cardiazol Emotional Paroxysm.

Patients receiving cardiazol therapy who fail to produce a true fit after the injection of the drug usually experience an attack very similar to the attacks

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described by Penfield. It is tempting to classify these attacks as attacks of autonomic epilepsy, and to assume that their explanation lies in the lower threshold of the diencephalon in relation to cardiazol as compared with the cortex.

Paroxysmal Alterations of Consciousness.

Having considered the differential diagnosis from the subjective emotional standpoint, fear being the most prominent symptom, it is now important to consider the diagnosis from the standpoint of the faint, which is the most outstanding objective sign. Paradoxically enough, although the vaso-autonomic crises are rarely associated with loss of consciousness, it is from these conditions which are usually associated with loss of consciousness that they have to be diagnosed.

Gilchrist has usefully tabulated "Faints and Fits" in the following manner:

1. Seizures due to disturbance of the autonomic nervous system.
2. Syncope due to an intrinsic disturbance of the heart.
3. Seizures due to direct cerebral activity, the result of local structural or metabolic defect.

1. *Autonomic.*

Under this heading are included:

a. *The common syncopal attack or faint.*—This is ushered in by feelings of uneasiness, weakness and restlessness. There is some abdominal discomfort and nausea. The patient feels light-headed, and his vision becomes blurred. He feels cold, breaks out into a sweat and then collapses. Unconsciousness lasts a few minutes at most and recovery is gradual, leaving the patient listless. The attack is accompanied by bradycardia and a progressive fall in blood pressure. The classical precipitating factors are the erect posture, long hours without food, convalescence, hot stuffy rooms, and an unpleasant or severe emotional tone.

b. *Carotid sinus syncope.*—In certain individuals pressure over the carotid artery induces an entirely analogous picture. Adrenaline given previously inhibits the production of an attack, whereas atropine, though abolishing the cardiac effect, has no effect on the peripheral vascular changes.

c. *Postural hypotension* is a very rare condition in which the patient faints on assuming the erect posture. Minor degrees of the condition are of course more frequent, and if occurring in an hysteric may be a source of difficulty in diagnosis.

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2. *Cardiac.*

a. Stokes-Adams syndrome.
b. Ventricular arrest with intermittent complete block produces attacks in which the patient feels giddy and then falls.
c. Paroxysmal tachycardia.
d. Coronary thrombosis.
e. Angina of effort.
f. Aortic stenosis.

In all the above conditions except "*b*" the physician's attention will almost certainly be immediately drawn to the heart, and the existence of the cardiac condition diagnosed.

3. *Cerebral.*

a. *Epilepsy.*

Idiopathic . . .	*Grand mal.*
	Petit mal.
Toxic . . .	Eclampsia.
	Glomerular nephritis.
	Head conditions.
Symptomatic . .	Neoplasm.
	Syphilis.
	Hypertension.
	Traumatic.
	Cysticercosis.
Narcolepsy.	
Pyknolepsy.	

Of the above conditions *petit mal* is the only one likely to cause difficulties in diagnosis, and in so doing may produce attacks almost indistinguishable from the vaso-autonomic syndrome. The presence of an aura, the absence of a setting of psychic morbidity ; its association with periods of altered emotional tone for which the attack has often a cathartic value ; the evidence of observers as to the brief loss of consciousness and any diagnostic criteria, such as eye-rolling and the like, are the points to be borne in mind. There is very rarely any angor animi, so that characteristically the patient's manner in recounting his illness is much more laconic than in the case of the vaso-autonomic crisis.

There are, however, well authenticated cases in which a patient has given an unequivocal account of attacks of both kinds, and in these and in certain cases of nevertheless genuine vaso-vagal attacks there would appear to be little practical value in making the distinction, since they are both examples

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of periodic discharges of the central nervous system. They represent approximately equal degrees of incapacity. The treatment for both is the same, and consists in giving luminal. They are both unresponsive to psychotherapy. The vaso-vagal attack, however, is much more likely to prove phasic in occurrence.

b. *Vaso-vagal attack.*

Summary.

1. The vaso-vagal attack of Gowers has been studied in as many settings as it has been found in the author's experience.

2. The term "vaso-autonomic crisis" is suggested as a more comprehensive name, and one which recognizes the homology of the series described.

3. The importance of estimating the relative degree of diathesis and psychogenesis in the aetiology as a criterion of the validity of employing a psychotherapeutic method of approach is discussed.

4. The various settings within which the psychogenic group fall are discussed, with special reference to the problems of chronicity and response to psychotherapy.

5. The pharmacological approach to the problems is discussed.

Case Histories.

Case 1.—*Vaso-vagal attacks running a chronic course.*

K. L—, aged 20. Gives a 4-year history of liability to attacks which occur two or three times a week. The attacks come on without warning, and are characterized by hot suffocating feelings rising up from the region of the diaphragm to her neck. All the use goes out of her and she experiences faint derealization with mild apprehension. She experiences palpitation and her face flushes. The attacks usually last about half an hour and leave her slightly altered for the rest of the day. No precipitating or ameliorative factors known. One brother suffers from asthma.

This patient resisted prolonged treatment under out-patient conditions.

Case 2.—*Vaso-vagal attacks running a benign course.*

C. D—, aged 35. A medical man was in severe financial difficulties. Sitting in a cinema he was suddenly seized with intense nausea and giddiness. There was palpitation and a sense of cardiac distress and dyspnoea. He looked ashen pale and thought death was imminent, and vomited. Altogether he experienced about a dozen of these attacks. He failed to respond to intensive in-patient psychotherapy, and was in general a difficult paranoid individual. Finally he insisted on transfer to a teaching hospital under a cardiologist. As his real affairs improved his attacks ceased.

Case 3.—*Vaso-vagal attacks associated with migraine and epilepsy.*

J. J—, aged 35. Was knocked unconscious at 16 years of age. For the following five years she was liable to epileptiform seizures, during which she would fall to the ground unconscious and remain confused afterwards. A year after these attacks ceased (22 years) she commenced to suffer from sick headaches and a liability to "breathless attacks." These would come on suddenly with a suffocating feeling in the throat and a fear of impending death. She felt unable to speak or

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move her legs. Vision became misty and there was palpitation and nausea. Her neck and face became flushed. The attacks lasted three-quarters of an hour and occurred about once a fortnight.

CASE 4.—*Petit mal with vaso-vagal components.*

R. W—, aged 33. Attacks commence with vague pains down the left side of her body, spreading up into the head. She feels faint and giddy, and experiences palpitation. She becomes anxious, feels cold and " loses herself " for five minutes. No absolute loss of consciousness. Wants to sleep afterwards. The attacks occur about once a fortnight and cease with the administration of luminal.

CASE 5.—*Acute anxiety attacks in uncomplicated case of anxiety state.*

J. G—, aged 20. A Cambridge undergraduate, aged 20, came into Woodside Hospital complaining of general anxiety features with somatic preoccupation, especially in relation to his heart. In particular he was liable to typical acute attacks of vaso-vagal pattern associated with angor animi and urgent defaecation.

He had been a successful schoolboy but had no real desire to go up to college ; he found his work uncongenial, and commenced to worry about his future. He was treated by an initial course of narcosis therapy and thereafter along Meyerian lines, combined with persuasion and reassurance. On two or three occasions he was interviewed immediately after an attack, and the antecedents of the attack carefully interpreted to him, utilizing Freudian concepts, e.g. one such attack had occurred in the lavatory at a time when he had just arranged for a clandestine visit to a " banned " film with a member of the nursing staff. His attacks gradually became less frequent. He was advised to leave Cambridge and take up agriculture. Three months later he was quite free from symptoms and has remained well.

CASE 6.—*Acute anxiety attacks associated with an anxiety state occurring in an hysteric.*

F. G—, aged 36. Divorced her husband on account of alcoholism. She has remained very fond of him however. During the divorce proceedings she had her first acute anxiety attack. Her family all disapproved of her divorce, particularly her mother. Six months later she married a much older man who failed to give her the companionship she wanted, and proved much less indulgent towards her than had been her first husband. She commenced to suffer from general anxiety features associated especially with gastric symptoms, and acute anxiety attacks about once a week. She was given a course of narcosis therapy and a series of explanatory talks, in which she was encouraged to face up to the hostility underlying her symptoms. This was discussed in relation to her husband and to her mother. She was discharged after four months' treatment, but continued to experience an occasional anxiety attack for the subsequent nine months. During this period she gradually acquired a new adaptation towards her mother and husband.

CASE 7.—*Acute anxiety attacks in a severe anxiety state which in its acute stage exhibited psychotic features.*

A. B—, aged 33, inherited, along with his brother, a large business from a very capable father, who had died suddenly, leaving the two brothers and his erstwhile lady secretary equal shares. The patient was married to a feckless hysteric, who for years had refused him access and was still frigid. The lady secretary, now his partner, was an extremely capable woman, with regard to whom the patient was very jealous and behaved childishly. Both brothers relied in a great measure on her business ability to keep the firm going. Within a year of the father's death the business began to get into difficulties and the patient, as the outdoor representative, felt the first brunt of diminishing returns. Suddenly one day he experienced

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a panic attack, and thereafter commenced to develop general anxiety features. He was treated along analytical lines by a non-Freudian analyst, but deteriorated and became very depressed, and developed mild ideas of reference. He was admitted to Woodside and was given a course of narcosis therapy followed by cardiazol and improved considerably. He still, however, remained liable to panic attacks about twice a week, and was unable to face his responsibilities. He was sent on to a farm for three months, during which time the business was sold. He then commenced to improve and obtained employment as a carpenter to the R.A.F. His wife has joined him and he is now free from the majority of his symptoms and earning his living.

CASE 8.—*Acute anxiety attacks in severe obsessional with phobic symptoms.*

T. R—, aged 26, had a father, grandfather and paternal uncle all known to have exhibited severe obsessional personality disorders. Prior to his illness the patient has suffered from phobias, such as a fear of travelling on the Underground. Four years prior to his admission he had commenced to restrict his range of activities progressively until finally he kept entirely to his house and "seemed perpetually preoccupied with the problems of going out and 'Here I am'." In addition there was a history of severe panic reactions characterized especially by intense unreality. If forced to go beyond his prescribed limits he would feel his heart racing away, became anxious and terrified and break out into a cold sweat, and run home if possible or seek shelter somewhere. He improved gradually, but this did not appear to be the result of active therapy, but merely by process of nature. He was an intelligent sociable youth as he improved, and betrayed no hysterical features in his personality make-up.

CASE 9.—*Vaso-vagal attack in a schizophrenic illness.*

H. G—, aged 33, came into the hospital complaining of a severe hallucinosis which invaded a great part of his waking life. In addition to this he was deluded, believing that his brain had been altered in the manner following: He admitted to having noticed that towards the end of his career at Oxford there was a general all-round falling away in interest, and his subsequent taking up of law was pursued in a desultory fashion. He then commenced to study music, and about six years ago fell in love with a girl. Four years ago he suddenly experienced a "warm glow surging all over me but especially in my head and neck. My heart commenced to bump violently. It seemed pleasant and healing and I knew (it was an influence spreading from the vagina of his girl friend)." Subsequently he had two further attacks, and on these two occasions he interpreted the experience as malignant and baneful, and as emanating from the girl's father. The benign influence had attracted the malign influence with the result that his brain felt altered and had rotated. This patient improved under cardiazol.

CASE 10.—*Type of alcoholic liable to frequent panic attacks.*

B. S—, aged 24, came into hospital complaining of alcoholism. His history had been average apart from his having a very domineering and capable father. During his college career he got himself into mischief and was sent for by his Dean. On the way up to see the Dean he experienced a sense of panic reaction. A friend prescribed whiskey with excellent results, and he carried out his interview successfully. Subsequently he found himself more and more liable to panic reactions and more or less continually referring to his hip flask for Dutch courage. He was treated along analytical lines and appeared to do very well, and in hospital did not appear to experience his anxiety attacks. Subsequently he relapsed and has not done at all well.

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CASE 11.—*Chronic anxiety state in a patient with a good personality which made no response to prolonged treatment by analysis. Subsequent careful inquiry yielded a history of epileptiform attacks, suggesting the predominantly diathetic basis for the anxiety attacks.*

The following case is chosen, as it exemplifies the main points put forward in the article, viz. the importance of careful clinical assessment of the dual possibilities underlying any patient exhibiting the vaso-autonomic syndrome. In this patient the diathetic and psychogenic background both existed, but the patient failed to respond to psychotherapy.

W. D—, aged 42, came into the hospital with a five years' history of lassitude, feelings of tension and a variety of aches and pains, chiefly referred to his head and abdomen, with which he was preoccupied in the manner of a hypochondriac. In addition he was liable to vaso-vagal attacks and what he called his "collapses." The latter he felt were cardiac in origin, and although he had been frequently examined and reassured he felt convinced that he had some form of heart disease. His father suffered from alcoholism, and a sister of the patient was known to have had a nervous breakdown characterized by hysterical features and had been cured by an old-fashioned doctor who had bullied her.

As a child he had been brought up by a very stern uncle, owing to his father having been an alcoholic. His school record was good and he passed into the service of an insurance company, where he had been working latterly under a chief with whom he did not get on very well. He had numerous well-developed hobbies, and had married a woman whom he accused of being frigid and to whom he ascribed much of his illness. He suffered from ejaculatio praecox.

This patient had had three years' analytic treatment and was not improved. On going carefully into his history this man distinguished clearly three forms of "attack." The first were classical vaso-vagal attacks, the second were presumably hysterical turns; the third would appear to be genuine epilepsy.

The first group had come on with his illness and were associated with his feelings of tension. They frequently occurred after coitus and were characterized by palpitation, extreme fear and a cold sweat. Usually he would experience nausea and would vomit. His analyst had paid particular attention to these attacks. The second type of attack had likewise come on with his illness and occurred less frequently and at various times. In these he complained of feeling faint, appeared pale and "seemed to lose myself." For reasons which were not apparent he connected these attacks with his heart, and was convinced that he had some form of heart disease. The possibility of these attacks being *petit mal* cannot, of course, be excluded.

Finally, on about four occasions, and antedating the onset of his illness by many years, he gave an account of attacks which came on without warning, though usually in circumstances of emotional strain in which he had fallen unconscious and injured himself. He had been observed to go "stiff" in these attacks.

Here, then, is an extremely interesting case which presents essentially a constitution predisposed to vaso-autonomic discharges, and on a few occasions has had apparently real epilepsy. Of the psychogenic nature of the superstructure of his illness there was little doubt. He remained chronic, however, and failed to yield to therapy. In this connection it is surprising how frequently a minute inquiry into the past history of one's hysterical patients, and many of the psychopathic group, will yield a history of an isolated attack of what seems to have been genuine epilepsy.

The converse pattern, namely, the evidence of hysterical features in known epileptics, is too familiar and well recognized to require mention. The conception of hysterical illness and anxiety states as being psychogenic is only partially true. Underlying these conditions is a nervous system having a constitutional tendency towards the production of disease patterns, and the vaso-autonomic syndrome is an example of this.

Therapy based on either ignorance or a refusal to recognize this truth is bound

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in a large proportion of cases to prove disappointing and fruitless, and a careful evaluation of the setting of the syndrome is necessary before the scope of psychotherapy can properly be determined.

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