disagreeing with her, so she had stopped them. Otherwise she was quite free from all symptoms.

So this is a case of gastric ulcer occurring in a patient suffering from food allergy which was causing chronic sickness, vomiting, and epigastric pain.

The subject of food allergy, a large one with wide clinical ramifications, is very interesting and very fascinating to the physician, for it sharpens his clinical acumen. The cases often crop up when one least expects them. Bread is the "staff of life"—but it depends on the kind of bread. And the widespread drinking of milk by school children and others may yet have to be considered in the light of food allergy.

ANALYSIS OF THE ASTHMATIC PATIENT

BY

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The variety of treatments which are stated to be successful in cases of asthma, coupled with the number of asthmatic patients still to be encountered, is a sure indication that the true nature of the condition is yet very imperfectly understood. In the strict sense spasmodic asthma should not be regarded as a disease, but rather as a symptom, in much the same way as cough, headache, and abdominal pain are symptoms. There are usually many, entirely different, possible causes for any major symptom, and it is customary to seek the cause of the condition before treatment of the symptom is considered. In the case of asthma, however, the condition is commonly labelled a disease, and a standard routine of treatment is usually adopted, with the result that many series of cases are recorded to illustrate the results of certain lines of therapy, without, in the majority of cases, any clear indication as to the cause of the condition so treated.

Thus the allergist reports series of cases treated by injections of a certain composition; the rhinologist writes enthusiastically on the results of cauterization of the nasal septum; and the psychologist claims achievements from the exercise of his particular art. None of these results can be held to be particularly satisfactory, and the vast number of sufferers from chronic asthma is a clear indication of the failure of treatment in a large percentage of cases. The purpose of this paper is to try to advance a reason for this failure, and to indicate a line of approach by which, it is hoped, the results of treatment can be improved. No originality is claimed for any observations recorded here, but a method of study of the patient is presented which has been found useful in a considerable group of cases.

A Classification of Stimuli

Our conception of the essential nature of the condition is still very imperfect, but it is convenient to regard asthma as the result of an abnormality of the respiratory centre. The asthmatic attack is thought to result from a stimulus which excites a specific response in the centre, and until some means of correcting this essential abnormality is discovered it will be impossible confidently to claim a cure of asthma in any case.

The stimuli which cause the symptom, spasmodic asthma, may be divided into six main groups. This classification is probably by no means complete, yet it forms a working basis for the study of cases. It must be clearly realized that in any given case there may be more than one factor involved, so that each patient must

be overhauled completely before treatment is advised. Further, it is not always certain that the factor which is most obvious is the one primarily responsible for the initiation of the actual attacks. The principal factors concerned in the production of attacks of asthma are found to be: (1) allergic, (2) nasal, (3) broncho-pulmonary, (4) alimentary, (5) endocrine, and (6) psychological.

Allergy

The importance of the allergic factor has probably been unduly stressed. The demonstration of an allergic tendency may be very striking, and it is admittedly important in that it indicates an underlying asthmatic tendency; yet it is common knowledge that patients who are markedly sensitive to a given protein fail to develop attacks on many occasions when they are in contact with the offending substance. It is very tempting on finding that a patient is sensitive to feathers to assume that the case has been fully elucidated, but it is well known that many "feather-sensitive" subjects do not have attacks on every occasion upon which they come in contact with feathers, and that the results of removal of the offending protein are by no means always followed by a complete cessation of attacks. This point, which must be of fundamental importance in the consideration of the nature of asthma, may be illustrated by a brief reference to the following two cases.

Case 1.—The patient, a male aged 23, was seen in May, 1932, and was found to be suffering from aortic regurgitation, thought to be rheumatic in origin, and a very severe scoliosis. In September, 1933, he developed nasal catarrh, which was followed by a severe attack of spasmodic asthma, and he continued to have attacks of asthma at odd intervals. On examination in February, 1934, it was found that he was sensitive to cat hair. The patient had frequently been in contact with cats throughout his life, but had not developed any bronchial spasm until the addition of the nasal factor precipitated the attacks. Treatment with a simple nasal douche relieved him almost completely. In this case two factors were present, and treatment of the second or precipitating factor was successful.

Case 2.—A female aged 20 had suffered from attacks of spasmodic asthma for two years. She was found to be "feather-sensitive," and the usual measures, such as the substitution of kapok pillows, were advised, but the attacks persisted. On admission to the Royal Chest Hospital the attacks ceased at once. In order to test the actual part played by "feather-sensitiveness" in the causation of the attacks her feather pillow was brought from home and she was allowed to sleep on it in hospital; during the week in which this experiment was carried out she was entirely free from bronchial spasm.

This phenomenon, which is constantly encountered by all who have to deal with asthmatic patients, appears clearly to indicate the importance of a second factor, usually psychological, as the precipitating cause. In very many cases the underlying allergic basis seems simply to mean that such patients will respond by an asthmatic attack to a stimulus which in a differently constituted individual might be entirely harmless, or would cause some entirely different symptomatic expression.

It is not always easy to determine whether there is an allergic factor in any given case, but a consideration of the following points will generally allow a definite opinion to be formed. First, the previous history of the patient may give evidence of some condition which is accepted as being allergic in nature; infantile eczema, Besnier's prurigo, hay fever, and urticaria are conditions most definitely associated with an allergic basis. The family history may be significant in that multiple cases of asthma are commonly, although not invariably, to some extent allergic, and a family history of the other allergic con-

ditions may be noteworthy. The patient's own history may be conclusive, in that it may be stated that asthmatic attacks are known to follow contact with some particular protein. The cutaneous protein-sensitivity tests, if positive, are also conclusive, but negative tests may simply indicate that an insufficient range of protein extracts has been used. In addition, a high eosinophil count in the sputum or in the blood is very suggestive of an allergic factor.

In forming an opinion due notice must be taken of the definite positive factors, but the allergic factor may be safely assumed on occasion in the absence of confirmatory skin tests. On the other hand, it is never safe to assume the absence of the allergic factor in any patient, no matter what the age of onset, until every proper investigation has been made.

The Nasal Mucosa

The nasal factor is quite properly stressed by many clinicians, and it is of the utmost importance in many cases. Routine examination may disclose the presence of an abnormal nasal mucous membrane, which may be either pale and atrophic or congested and oedematous, according to the stage at which the examination is made, or there may be demonstrable sensitive spots, usually upon the septum. These spots may be defined by exploring the septum with a probe, and upon contact a cough reflex or even a mild asthmatic attack may be induced. More gross disease, such as polyp formation or sinusitis, may be present. The state of the tonsils may be noted, although the connexion of tonsillar infection with asthma is much less definite than is the state of the remainder of the upper respiratory tract.

The Lower Respiratory Tract

This must be investigated in detail. There can be no doubt that true spasmodic asthma may result from bronchial infection; whether this be an acquired bacterial protein sensitization or simply the result of the infection is not known. A full examination of the sputum, especially from the point of view of its bacteriology, should therefore be made in every case. Asthmatic attacks are occasionally associated with cases of pulmonary tuberculosis, frequently latent in type, and sputum examinations, together with skiagrams of the chest, are necessary in all cases.

Occasionally more gross disease, such as bronchiectasis, may be detected on clinical examination, but the state of the patient, the physical signs, and the quantity and character of the sputum will probably yield evidence of the presence of something more than a simple asthma. A lipiodol examination may therefore be necessary in a certain proportion of cases, especially in those in which the symptoms have first appeared in adult life. In addition, physical examination of the chest gives information of value from the prognostic point of view, for the chest expansion, and, by inference, the degree of emphysema, indicate the presence or absence of organic change. The condition of the chest wall is also important, for a postural factor, which may be either primary or secondary, enters into the composition of many cases, and this may be of value from the point of view of treatment and prognosis.

The Alimentary Tract

It is common to be told that nocturnal asthma is aggravated by a heavy meal late at night, and there can be no doubt that dyspepsia is an important factor in some cases. Whether this is the result of mechanical pressure

upon the diaphragm or of a nervous reflex acting through the vagus it is not necessary to consider. In many of these cases the fractional test meal shows an absence of hydrochloric acid in the gastric juice, and this investigation should therefore form part of the complete examination of the patient. Constipation, possibly as the cause of a nervous reflex, or, as some think, as the cause of the absorption of intestinal toxins, is another associated finding, and its significance from the point of view of causation and treatment should be appreciated. There is no certain evidence that disturbed function of the remaining parts of the digestive apparatus, such as the liver and pancreas, is directly associated with the cause of asthma, although it may be a contributory factor, for their deficient function results in dyspepsia of the types already mentioned.

Endocrine Factors

The part played by the endocrine glands hardly needs emphasis. The effect of adrenaline upon the actual acute attack is so specific that it is clear that the suprarenals are closely associated with the condition. Bronchial spasm is also relieved in many cases by pituitrin, a fact suggestive of pituitary implication. The connexion of the thyroid gland is not so obvious, although its close relationship to the sympathetic nervous system is at least suggestive of an association. In many cases of asthma there is clinical evidence of hyperthyroidism in loss of weight, rapid pulse, and prominent eyes. In some instances the asthmatic state may alternate with a true clinical hyperthyroidism. The connexion of the gonads is definite, but the exact relationship is not clear. In women the number and severity of the attacks is frequently noted to vary with menstruation and with pregnancy; during pregnancy the asthmatic attacks often cease entirely.

Unfortunately, it is usually impossible to assess the function of the various endocrine glands, with the exception of the thyroid, by any means at the disposal of the physician, and an estimation of endocrine dysfunction must therefore be based as a rule upon a clinical impression which may not always be reliable.

The Psychological Factor

This is perhaps the most important single factor in the production of asthmatic attacks, although our understanding of the psychology of the asthmatic patient is as yet very imperfect. Nervous tension of any sort, worry at home or at work, anxieties, disappointments, and fears of any kind all play a large part in the causation of the asthmatic state, and it is impossible to initiate any course of treatment with any hope of success unless the asthmatic individual and his surroundings are fully understood.

It is also of the greatest importance to recognize the existence of the psychological factor in assessing the results of any line of treatment. The personality of the physician is frequently of much more therapeutic value than the substance he injects or the cautery he handles, and this fact may be held to account, in part, for the widely different results recorded by observers using apparently similar methods of treatment. It is impossible for anyone to assess this factor with any degree of accuracy, and for this reason the published results of the various methods of treatment are unsafe indications of the actual value of those methods. The well-known therapeutic value of injections of distilled water in cases of this type is an example of the influence of the mind, and shows how impossible it is to ensure adequate controls in any therapeutic experiment in asthma.

Present Analysis

The foregoing very brief analysis of the lines on which the asthmatic patient may be investigated is given to indicate the methods that have been employed in a series of 150 cases in the asthma clinic of the Royal Chest Hospital during the past three years. The results are given not only to show that the factors vary greatly in different cases, but also to convey some idea of the multiplicity of factors which may be involved in any given case. The age of onset of the actual asthmatic condition in the series of 150 cases, sixty-four males and eighty-six females, is shown in Table I.

TABLE I.—Age of Onset

Years	Number of Patients	Years	Number of Patients
0-6 ...	40	31-36 ...	13
7-12 ...	19	37-42 ...	10
13-18 ...	10	43-48 ...	14
19-24 ...	21	49-54 ...	9
25-30 ...	14		

The preponderance found in the earlier years of life would naturally be associated with the allergic factor as a rule, and this point will be considered subsequently.

Analysis of the complete series showed that the various factors were present as follows:

TABLE II.—Number of Factors Present

Number of Factors	Number of Cases
No factors found ...	1
1 factor found ...	28
2 factors found ...	62
3 " " ...	31
4 " " ...	23
5 " " ...	4
6 " " ...	1

From this table it is seen that a single factor was present in 18 per cent. of the cases, that two factors were present in 42 per cent. of the cases, and that three and even four factors were by no means unusual. It is noteworthy that one case, after full analysis, failed to show any positive findings at all.

TABLE III.—Distribution of Factors

Factor	Number of Cases
Allergic ...	73
Nasal ...	90
Broncho-pulmonary ...	75
Alimentary ...	21
Endocrine ...	31
Psychological ...	74

It is curious to note the rather even distribution of the main factors which are known to be concerned in the production of the attacks, and this table illustrates the necessity of applying the tests with regard to *all* the known factors in every case. A further aetiological factor may be noted at this point. Tuberculosis was present in eleven of the patients showing a broncho-pulmonary factor, and in four of these tubercle bacilli were demonstrated in the sputum. In four cases asthmatic attacks began very shortly after the inhalation of chlorine gas, and in three of these this inhalation was accidental and not connected with the war.

It is of interest to consider the group of twenty-eight cases in which a single factor only could be found. Of these, six were allergic, eight were nasal, ten were associated with broncho-pulmonary disease, one was alimentary, and three were psychological. In two of the psychological group attacks appeared to be entirely imitative in nature as the result of prolonged contact with an asthmatic subject.

It is impossible to attempt any further analysis of the cases in which more than one factor was present, nor is any such analysis really necessary. A few points should

be considered concerning the individual factors. The allergic factor was present in approximately half the cases, and the skin tests were positive in sixty-five out of the total number of seventy-three. The tests were performed by the scratch method, using the Parke Davis protein extracts, which were found to be quite satisfactory. In all cases the common foodstuffs, epidermal extracts, and pollens were employed. It is possible, of course, that if a larger number of proteins had been tested a greater number of positive results would have been obtained, so that this figure must be regarded as a minimum. The age of onset for the cases in which the allergic factor was present is shown in Table IV.

TABLE IV.—Age of Onset in Cases in which Allergic Factor was Present

Age	Cases	Age	Cases
0-6 ...	29	19-24 ...	9
7-12 ...	16	25-30 ...	8
13-18 ...	5	Over 30 ...	11

From this table two points can be deduced. It is clear that the cases in which the allergic factor is important commonly manifest asthmatic symptoms at an early period of life; it is also clear, however, that there is an allergic basis in a certain number of cases in which the asthma begins in adult life. There is no reason to suppose that the hypersensitiveness is acquired in the majority of these, and they illustrate well the importance of the precipitating factor in a predisposed subject.

This series demonstrates the number and extent of the factors that may be expected to be present in patients complaining of asthma, and it illustrates the possibility of obtaining a complete visualization of the cause of the symptom and the type of patient as the result of a not very complicated routine overhaul. It is also possible by this method to obtain some idea as to the relative importance of the factors in any given case, this being obtained from a study of the history of the patient and of his reactions to his environment. It is very convenient to be able to summarize the case in terms of simple figures. Thus, "Male, aged 30, 1, 2, 6," would indicate a male patient in whom there was an allergic basis and a nasal factor, and in whom also there was some psychological element. If cases can be visualized in this way a scheme of treatment designed to attack the precipitating factors stands a much better chance of success than an attempt to combat an underlying and possibly ineradicable factor by stereotyped methods.

The Minister of Health has issued circulars (Circulars 1536 and 1536A) to the responsible port and local authorities in England and Wales enclosing a revised list of treatment centres in the chief sea and river ports throughout the world at which seamen can obtain gratuitous treatment for venereal diseases in accordance with the arrangements contemplated by the International Agreement relating to this matter which was signed at Brussels in December, 1924. The list is based in the main on the particulars contained in a corresponding list published by the Office International d'Hygiène Publique in 1935, and arrangements have been made with the Board of Trade for a copy of the list to be supplied to every ship of the Mercantile Marine. The opportunity has also been taken to issue with this list a number of recommendations which have been formulated by the Office International as the result of its continued investigations into the operation of the agreement in different countries. These findings should facilitate the administration generally of the provisions of the agreement by the contracting parties.