

THESIS ON THE SUBJECT OF

SPASMODIC ASTHMA

WITH SPECIAL REFERENCE TO THAT VARIETY INDUCED BY  
THE EMANATIONS OF ANIMALS.

by

CECIL J. R. MACFADDEN

M.B. C.M.; Edin. Univ.

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S P A S M O D I C    A S T H M A .

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In selecting this as the subject of my Thesis, I have been influenced by a variety of circumstances which appeal to me as being of sufficient interest and importance. Not only is the literature on the subject, and the number of published cases of a very limited character, but it would seem that, notwithstanding the rapid advances made in medical science in recent years, our knowledge of this condition remains very much in its primitive and unsatisfactory state. This is no doubt attributable to the rarity of the condition and also to our frequently failing to recognise it as such when it does exist.

Few cases have been described, and still fewer remarks have been made as to the nature of the condition since the publication of Hyde Salter's classic work on Asthma. His work still remains as the authority on the subject and is invariably quoted in our modern works with reference to it; but even it cannot be regarded with much satisfaction. The

information one derives from it being limited to a few remarks admitting the existence of the condition, and a brief description of a few cases. In no instance has any attempt been made, as has been done in the case of Hay Asthma, to demonstrate the source or nature of the exciting causes of those severe paroxysms of Spasmodic Asthma which are induced in some individuals by the presence of, or contact with, animals, and descriptions of cases have received a similar amount of recognition.

It has been my fortune to meet with several cases of this <sup>particular</sup> ~~peculiar~~ variety of Spasmodic Asthma in the last few years, and to be enabled to give the subject my study and investigation.

I have accordingly selected the subject and have laid before you the result of my observations, trusting that in doing so, I may merit the reward of your approval.

ETIOLOGY

In writing this Thesis I have endeavoured as far as possible to confine myself to the description of that particular variety of Spasmodic Asthma which I have chosen as my subject, but owing to the close relationship which exists between this and other forms of the disease, it has been necessary in some instances to depart from this line and to give a more general description of the disease as it appears to suit the particular instance.

In considering the etiology of Animal Asthma I have, however, found it necessary to confine my remarks to those predisposing and exciting causes which immediately affect my subject, and have not endeavoured to discuss the numerous and varied causes of Spasmodic Asthma which I do not consider are connected with it.

The causes in this form, as in other forms of Spasmodic Asthma, may for convenience sake be described under two headings - Predisposing and Exciting.

Predisposing Causes.

Age. The influence of age on the condition appears to point to the fact that as a rule, Spasmodic Asthma begins in early life - Salter's tables indicate that the origin of almost half the number of cases of

Spasmodic Asthma is traceable to the first twenty years of life. With regard to Animal Asthma, I find that in six cases out of seven the disease was known to exist in the first ten years of the patients' lives.

Sex. It is in the male sex that the majority of cases of Spasmodic Asthma are to be found, and as a reason, it has been stated that, owing to the severe nature of men's daily occupations, their liability of the condition is increased. Here again, most cases of Animal Asthma are of the male sex.

Social Position. Spasmodic Asthma in the great majority of cases is found to be a disease of the upper classes and this would appear to be contrary to what we should expect from our argument of its more frequent occurrence in males. Owing to the more exposed nature of their occupations, and to the difficulties which surround the effective treatment of such cases, Spasmodic Asthma in the lower classes is more frequently found to be complicated with bronchitis, so that we rarely see pure forms of the disease in these classes.

In the special form of Animal Asthma, few cases are to be found in the lower and working classes; they do not appear to exist to any great extent, or owing perhaps to a want of observation, the true cause

of the condition does not become manifest. I cannot help thinking that many cases must exist which are attributed to other causes than the correct one.

Heredity. Spasmodic Asthma is undoubtedly of a markedly hereditary nature, cases being described in which several members of the same family suffered from the disease. In one of my cases this is well marked. A gentleman suffered from Horse Asthma, his sister was a victim to Cat Asthma, two cousins suffered from other forms of the disease, and his father was a martyr to Hay Asthma.

Surroundings. The effects of temperature are frequently very marked in this condition. Low temperatures often act as an irritant to the terminal branches of the respiratory nerves and cause attacks of asthma. In one of my cases the patient was really never perfectly free from his complaint unless he lived in a temperature over sixty degrees Fahrenheit. Sudden changes of temperature and high winds are particularly prejudicial to the condition. The effect of locality on the production of asthma is of great importance, and we have in this an example of the capricious character of the disease. Living in a city often diminishes the severity and frequency of attacks, and these are often reproduced on returning to the country.

Smoky towns suit many Asthmatics and the foggy atmosphere of London appears to agree with many; in others these conditions would very soon give rise to attacks. Often, removal from one house to another in the same town relieves the condition, and many find that they cannot sleep in certain rooms of a house without attacks, whereas probably in the next room they would not suffer from them.

Altitude affects some Asthmatics, while this is not the case with others. A dry atmosphere suits many, and others state that this has the effect of giving rise to their complaint.

#### Influence of Morbid Naso-pharyngeal Conditions.

The mass of clinical evidence adduced by Votolini, Haenisch, Schaeffer, Frankel and many others in support of the theory of the production of Asthma by nasal disease, and the large percentage of cures reported as resulting from the nasal treatment, should leave no doubt of its reflex dependency upon the nose in many cases. With regard to those forms of Asthma induced by animal and vegetable emanations, I believe that the morbid Naso-pharyngeal conditions which are invariably present in these cases, act as the most powerful predisposing causes to these conditions.

Psychical Influences. The fear which these patients develop for the peculiar exciting cause of

their disease, often becomes a very powerful predisposing cause in giving rise to their trouble. We are well acquainted with the marked periodicity which occurs in cases of Hay Fever, some people developing their attack regularly on a certain date. This may be explained by the fact that the individual's mind is so far concentrated on the anticipation of his attack, that when the day comes, the Hay Fever Symptoms set in. This psychical influence is well illustrated by the case of Dr. John Mackenzie, in which an attack of "rose cold" was precipitated by means of an artificial rose - Mackenzie also reports a case in which an attack of Hay Fever was brought on by a patient gazing upon a picture of a field of hay.

In one of my cases this psychical influence was very well marked and the very dread which he had for horses, was on many occasions the chief factor in the production of his attacks. The elimination of this factor played, in his case, a very important part in his subsequent cure.

#### Exciting Causes.

The actual exciting causes of this particular form of Asthma are confined to certain irritating emanations of various animals which appear to be capable of producing their action only in certain individuals possessing peculiar idiosyncrasies. This extra-ordinary



extraordinary power which these causes have in producing their effects, indicates to us the remarkable nature of the neurosis from which these persons suffer.

Some appear to be affected by one particular tribe of animals, and will not <sup>only</sup> suffer in the presence of a cat, but are also affected by the larger members of the tribe, such as lions, tigers, etc. Again, others, who appear to possess more varied idiosyncrasies are affected by more than one animal, and a case is recorded in which the offending animals included horses, rabbits, sheep, oxen, and dogs. As a rule, however, most cases are affected by a single animal and this fact must cause us to believe that very slight variations in the composition of these animal emanations are capable of producing their unpleasant effects. Some patients are affected by horses and still they are perfectly comfortable in the presence of mules and donkeys. Many are affected by poultry, and a few are unable to sleep on pillows stuffed with feathers without an attack. Flint of New York experienced great inconvenience, when absent from home, from sleeping upon feather pillows. In his case the asthmatic attack was not brought on by all pillows, but why one was more active than another, he was unable to determine.

Other cases appear to be affected by lower

forms of animal life and in one case which I have mentioned Asthma was invariably caused by contact with hairy caterpillars.

Under the heading of Pathology I have discussed the nature of this animal emanation and its source, and believe it to be a volatile, organic toxin which is given off from the excretions of the skin of all animals. The power which it has of selecting certain individuals as its subjects, depends on their possession of peculiar idiosyncrasies, and I believe in nearly every case, a third factor is necessary for the establishment of the condition, namely, some morbid condition of the naso-pharyngeal mucous membrane.

Many cases of this variety of Spasmodic Asthma are capable of being affected by other than their ordinary exciting causes, and in many instances, certain conditions of surroundings, which I have placed under the head of predisposing causes, become the actual exciting cause of an attack. This is especially the case in variations of weather and locality. Also the eating of any indigestible substance or even an ordinary full meal if taken late, may cause an attack.

Certain conditions in relation to the rectum, uterus and ovaries may also be regarded as exciting causes in some instances.

PATHOLOGY.

Since the earliest days of medical science, certain forms of dyspnoea have been recognised and described, but owing to the scanty means of investigation then at hand, and also to the limited ~~xxxxxxxxxxxx~~ scientific knowledge of those early times, differentiation of the causes and a satisfactory basis of classification did not exist, and their absence acted as a stumbling block to the further advancement of that particular branch of medical science.

This condition of affairs existed for many years, and a satisfactory differential diagnosis of the dyspnoea due to cardiac, renal, pulmonary and other diseases was unknown. We, in the present enlightened days, look back and picture to ourselves the effect which this imperfect knowledge must have had on the treatment of those who were afflicted with the condition. A new era, ~~was, however~~ soon to be established, and Laennec's introduction of Auscultation as a means of clinical investigation had the effect of overcoming many difficulties, and among these, that of distinguishing dyspnoea due to pulmonary causes from other forms, and thereby allotting to asthma a place of its own on the list of ~~of individual~~ diseases.

As is generally the result of all revolutions, this had the effect of giving rise to a healthy contro-

versy, and many new ideas and theories were propounded and set forth as being the correct solutions to that problem which dealt with the nature of Asthma.

Among the earliest and most generally followed theories, was that of Laennec himself, who thought that the condition was due to a reflex contraction of the bronchial muscle brought about through <sup>the</sup> agency of nerves, and Williams proved by his experiments on animals, that such a condition of affairs could take place. He also shewed, which ~~had~~ many had doubted, the existence of muscular fibres in the bronchi, a fact which was afterwards clearly demonstrated by the aid of the microscope.

Many further observations and statements were made in order to uphold this theory as being the correct one, but without success, until within the last twelve years Professor Fraser's famous experiments and observations on the action of nitrates went to show that the essential phenomena of an Asthmatic paroxysm were caused by Spasmodic Contraction of the bronchial muscles.

It was to Bree that the theory of sudden congestive swellings of the bronchial mucous membrane <sup>being</sup> as the cause of the asthmatic paroxysm, owes its origin. It has had many able supporters in the past, and not a few in the present day are inclined to adopt

it as the correct one. The late Sir Andrew Clark practically coincided with these views, and Berkart has merely modified them in stating that the congestion is one of the phenomena connected with diffuse erysipelalous inflammation of the mucous membrane, attributing as the cause, the action of a streptococcus. The idea of Wintrich that Asthma was due to a tonic spasm of the diaphragm, aided by the ordinary muscles of respiration, had its origin in the discovery of the low position which the diaphragm assumes during a paroxysm. He argued that this fact, and that of the increased capacity of the chest, favourably supported his argument, and that these conditions could not be accounted for by contraction of the bronchial muscle. Many adopted his theory, and others were satisfied that this condition, along with a certain amount of spasm of the bronchial muscle, did exist.

The theory that Asthma was produced by certain morbid conditions of the blood present in certain diseases, had considerable support from its relation to gout. It was shewn that the existence of Urticaria in patients suffering from Asthma was not an infrequent occurrence, and it was supposed that the same toxic influence was at work in each case.

Some say that the irritation of certain substances which have been demonstrated in the sputum of

Asthmatics, is to be regarded as the cause of their trouble, and have accordingly alloted to Curschmann's Spirals and the Crystals of Charcot and Layden that position.

It has been believed by many, and specially by that branch of the profession which has made as its study the special subject of the Nose and Throat, that the primary seat, through which certain stimulations, under certain conditions, are capable of giving rise to paroxysms of Asthma, is often situated in other regions of the respiratory tract than that of the bronchi, and I believe this to be specially the case in Animal Asthma.

The exciting causes of Spasmodic Asthma are such that although everyone is more or less continually exposed to their influence, yet comparatively few persons suffer; it is therefore obvious that as well as those factors of neurotic temperament and individual predisposition which are invariably present, another must exist to account for the rarity of the condition, and it has been frequently found that certain morbid conditions of the nasal passages exist in persons the subjects of Asthma. Attention to this fact was first directed by Voltolini's famous case of asthma which he cured by the removal of nasal polypi.

Little doubt exists that the presence of such conditions as Hypertrophic Rhinitis, spurs, and bony projections of the turbinated bones or of the septum, derivations of the septum, polypi, old post nasal vegetations and areas of hyperaesthesia in the nasal mucous membrane, is prone to increase the excitability of that mucous membrane, thereby increasing its susceptibility to certain stimulations and giving rise to such conditions as Asthma. Care must however be taken to avoid attributing Asthma to any slight alteration in the normal intra-nasal structures. In many cases it is difficult to determine the associations which exist between one and the other, and we are unable to definitely say which is cause and which is effect, and we must not forget the possibility of them both being effects of some common central neurosis, for sneezing, and coryza often precede, accompany or alternate with attacks of Spasmodic Asthma.

I have been anxious to arrive at some definite opinion as regards this theory of Asthma and especially as to its relative value in the particular variety of Animal Asthma. To me there appears to exist a more than ordinary connection between the two, and in all cases of animal asthma certain definite symptoms are present which point to the nose as the origin of the condition. Certainly nothing impossible

can be said to exist in the arguments which have been adopted in favour of this theory; they are simple and to a certain degree convincing, and are consistent with the clinical experiences of many eminent men. The presence of a mucous membrane at the entrance to the respiratory tract affected with some diseased condition, and whose sensibility has accordingly been greatly increased, must be regarded as of considerable importance in the causation of all forms of Asthma; but when, in addition to this, we consider the highly neurotic nature of persons suffering from Animal Asthma, and the extraordinary idiosyncrasies which they possess, it certainly appears to me to be very probable that these nasal conditions are capable of acting as powerful predisposing causes in the cases in which they are present. Peripheral irritation of various kinds are known to act as promoters of Asthmatic attacks and those originating in the naso-pharynx would appear to be amongst the most powerful.

Among other things it has been shewn that certain areas or zones exist on the mucous membrane of the nose, which, when stimulated, give rise to definite results. A sneezing zone has been mapped out, which on being touched, gives rise to paroxysms of that particular symptom. Likewise coughing and asthmatic zones are said to exist, and these conditions have been produced by stimulation of these areas in



certain individuals. It would appear that the existence of a morbid condition of the mucous membranes of these zones increases the tendency to the establishment of paroxysms of the corresponding symptoms, and that it is only in certain individuals of a neurotic nature and with special idiosyncrasies that such conditions as Paroxysmal Sneezing, Hay Fever, Cat Asthma etc. can exist. Many people possess the morbid nasal conditions, and it is to be supposed that here the absence of the neurotic element or the non-existence of the required idiosyncrasy must be regarded as the cause of their immunity.

Many cases of Asthma have been totally cured by the removal of the existing morbid condition of the nose, and in some instances the results have been striking. In every case of Animal Asthma which I have examined, I have been satisfied that some morbid condition of Nasal Mucous Membrane, varying from a degree of turgescence to one of almost complete blocking of the nasal passages by polypi, or a displaced septum, did exist. In some cases diseased conditions of the pharynx, such as enlarged tonsils and adenoid vegetations, were more marked, but appeared to me to act as equally powerful predisposing causes of the disease as those of nasal origin seemed to do. I have also observed in the course of my study of this

subject, the existence of certain clinical facts to which I think sufficient attention has not, up to the present, been directed, and the importance of which seems not to have been recognised. They are to my mind of the greatest importance in increasing the evidence in favour of this theory, for they are not only the means of differentiating asthma resulting from animal and vegetable emanations from all other types of the disease, but also seem to suggest that these forms are more powerfully influenced by morbid naso-pharyngeal conditions than is the case in other forms of Asthma; and the possibility that this close relationship with diseases of the nose exists only in animal and vegetable asthma has presented itself to me.

I find that in Asthma due to Animal and Vegetable Emanations, a complete reversion from the ordinary form of onset of symptoms exists, and that instead of these initiatory symptoms of tightness of the chest and difficulty in expanding it, or what we might call chest symptoms, we invariably are informed of the onset of a paroxysm in these particular types, by the appearance of nasal or head symptoms, such as feelings of tightness or oppression about the head and especially of the nose, peculiar streakings of the face, itching and reddening of the eyes and nose, sneezing and lachrymation and Coryza, and that these

are in the course of time followed by what we may call Chest Symptoms, in which are seen increasing difficulty in breathing and its accompaniments.

This invariable onset of symptoms by nasal manifestations in these particular types of asthma, cannot but have the effect of causing us to believe that the almost constant morbid state of the nasal mucous membrane, which is found to be present in these cases, must play a very important part in the production of the disease.

It would be interesting to know whether a certain analogy does not exist between this class of patients and the lower forms of animals, and that this analogy is made possible, not only by the increased perceptive power or idiosyncrasy, but also by the altered condition of nasal mucous membrane in these cases, whereby they are enabled to discern certain stimulations which to an ordinary individual are not apparent. The perceptive power which animals have in recognising the proximity of others by means of their nasal organs is very familiar to us, and it appears to be impossible to believe that this power is solely due to their sense of smell. We are all aware of the existence of this power in the cases of dogs, cats, goats and other animals, and have seen instances where dogs have recognised the approach of friends or enemies solely by

the aid of their nasal organs. In the case of patients suffering from Animal Asthma, this perceptive power seems to be as greatly developed, it may be only in one particular direction. How certain people can say that a cat has been in the room although there be no apparent smell, or can distinguish a horse from a mule by the sole aid of their nasal organ, is difficult to understand; and the idea presents itself to us that in these people some change, whether of a higher developmental nature or retrograde character, must exist which causes their nasal mucous membrane to more closely approach the nature of that of the lower animals.

Returning to the consideration of the existence of morbid conditions of the nasal mucous membrane giving rise to some forms of asthma; it has also been shewn that by the application of certain stimuli to the same parts, the condition seems capable of being produced.

Mr. Blackley in his experiments in connection with Hay Asthma clearly demonstrated that such was the case, for after shewing that the inhalation of pollen produced the condition, he also went to show that the same results were obtainable by applying pollen to the mucous membrane of the lips, the nose,

the fauces, or the tongue, and even went further in shewing that Hay Fever was established by applying a solution of pollen to the conjunctivæ or by inoculating moistened pollen into the limbs. Blackley was amongst those who considered that the toxic element, whatever it might be, that caused the paroxysm of Asthma, acted on the nervous mechanism through the blood-channel as opposed to the idea of those who considered the action more in the light of a mechanical irritant.

In the same series of experiments he shewed that the granular contents discharged from the pollen, after it had been moistened, was capable of being passed through membranes thicker than those lining the air passages, and he therefore concludes that it may in some cases pass through the mucous membrane lining these passages, and entering the circulation give rise to the constitutional symptoms sometimes developed.

We therefore see that certain difficulties which existed at one time with regard to the nature of the exciting cause of Hay Asthma and its mode of action, have, to some extent, been satisfactorily explained, and at the present day few doubt that the condition is caused by the exciting influence of the pollen, which is either absorbed into the blood stream and through it gives rise to contraction of the Bronchial

Muscle, or acts in a direct manner on the nerve terminations of the respiratory mucosa. In comparing this with our knowledge on the corresponding subject, the closely allied form of Asthma due to animal emanations, we cannot but feel impressed with our comparative ignorance in the case of the latter. No explanation has been offered, or ~~no~~ theory propounded as to the nature of the exciting cause, its source or <sup>the</sup> method of action of that animal poison that produces severe paroxysms of Asthma in certain persons susceptible to its influence. We know that such a poison must exist; our acquaintance with the severe results of its action tells us so, but in what form it does exist, and by what method it produces this action, we appear to be totally ignorant.

Some regard it as an emanation capable of producing its action through the medium of the Olfactory nerve, and occasionally one reads descriptions of cases which are said to be caused by the "smells" of certain animals.

I have tried to believe that these clinical phenomena were brought about reflexly through the Olfactory nerve; but my experience of cases causes me to reject this explanation, for the stimuli are often of so mild a nature, as to be incapable of giving rise to any sensation of smell in the patient, and still

their power of producing paroxysms of asthma remains unabated.

On studying the condition I have tried to arrive at a satisfactory position as to the nature of its exciting cause, its source, and the method by which it produces its paroxysms, and accordingly performed some experiments on a friend of mine who was subject to the condition of Cat Asthma.

Having secured a young cat, I placed it in a band box, and introduced a piece of lint saturated with chloroform through the almost closed lid. At first the cat shewed signs of excitement, but in a few minutes quieted down, and on opening the lid I found that the animal was freely salivating and under the influence of the anaesthetic. I collected several drahms of the saliva for further experiment and placed it in a covered glass vessel. I next thoroughly washed the cat in hot water and soap, aided by the free use of the nail brush, and in this way removed a large quantity of loose hairs and dirt - if I am to be guided by the colour of the water. I then dried the cat with a clean towel, and having completely covered its body with lint fastened with safety pins, in order to prevent the animal from licking its fur, I placed it in a box before the fire to dry. When this had been accomplished I took the cat to my friend's house in order to ascertain whether or not I had eliminated by my pro-

cess the offending factor. The source of that factor, I presumed, must originate in one of the following (1) Expired Air. (2) Saliva. (3) Dust, particles of epithelium or hair. (4) Sweat. (5) Sebaceous Matter.

I considered that by my process I had, not absolutely, but to a very great extent, eliminated the three last factors, and that the first two remained practically unaltered.

My patient, who was unable to tolerate the presence of a cat under ordinary conditions for a moment, nursed this sterilised cat for a period of an hour and a quarter without much inconvenience. On touching her cheek with her hand with which she had previously stroked the cat, she developed slightly marked areas of erythema, but not to so great an extent as was produced by the contact with an uncleansed cat. After about twenty minutes ~~xxxxxxxxxxxxxxxx~~ nursing of the cat, my patient experienced slight palpitation, which is always one of her initiatory symptoms, and a certain amount of nasal oppression. She, however during the remaining time never developed any further symptoms, and at the end expressed the pleasure she had experienced in the novel source of entertainment. On enquiring next day, I found that further symptoms had developed during the night, but that these were at once relieved by remedies.



Three weeks after this, I brought the same cat to my patient's house to try the effects after the accumulation of this toxin. The animal had been allowed to go about in the interval since the last experiment, and nothing had been done to it in the way of cleansing. My patient took the animal in her arms and nursed it for three or four minutes, when all the symptoms of an attack of asthma developed, and the experiment had to be discontinued. My patient experienced a fairly severe attack and did not recover for two or three days after.

Here let me mention the difficulty in making experiments. The condition being so rare, and the patients being generally of the better classes of society, one has not the same opportunities of studying the disease so thoroughly as one could in hospital cases.

In reviewing the results of these experiments, it appears to me that I had to a great extent diminished the amount and consequently the potency of the virus, and induced by my process a mild form of the malady in my susceptible patient. One can understand the great difficulty that exists in absolutely cleansing the furry coat of an animal like the cat. The fur is not only the accumulator of such things as dust, loose hairs, particles of epithelium and dried

saliva, but also contains to a great extent the products of the excretions of the skin, which we know to be of an oleaginous nature and consequently difficult to remove. The source of the toxin could not have been the expired air of the animal, as this remained practically unaltered before and after my process, nor could the saliva be regarded as the offending factor, since I found that my patient was unaffected by the specimen which I had collected. I also felt satisfied that I had removed all particles of dust, dried saliva, epithelial debris and loose hairs from the animal, and was assured that these were not the cause of the condition.

Indeed, it is inconceivable, in the light of my observations, that this toxic substance is of a particulate nature, for I have repeatedly noticed, even when a patient has carefully covered his mouth and nose with a pocket handkerchief or other form of respirator, and so has avoided all chance of inhaling anything of this nature, that little good seems to be effected, and that as a rule the symptoms appear quite as rapidly, and are of as distressing a nature as if this plan had not been adopted. Therefore, I feel assured that the correct source is to be found in the excretions of the skin, and I believe that these contain some volatile organic toxin which

is capable, on absorption into the blood, of producing paroxysms of Asthma in certain individuals who possess the predisposition .

The mucous membrane of the nose being situated as it were at the gateway to the respiratory tract, receives the full effect of any exciting element which may be inspired, and the action of this exciting element is greatly increased by the presence of morbid conditions of the mucous membrane, Idiosyncrasy, or a susceptibility to certain influences, appears to be all that remains necessary for the establishment of an attack.

The fur appears to act as an accumulator of this toxin, and my idea is to a great extent supported by the fact that the long haired animals have, in nearly every case, been found to possess more potency than their shorter haired brethren.

I have also shewn that when this accumulator has been practically discharged, it has no longer the power of producing the symptoms in the same degree, but that on becoming recharged, it is capable of producing its severe results as it was previously.

It would appear that this volatile organic toxin is only produced by living animals, or, in other

words, when excretion is taking place. It is a peculiar fact that animals which have been dead for some hours are generally incapable of giving rise to those symptoms which they were able to produce when alive. This is generally stated and has also been my experience. The prepared skins of these animals are also harmless in their effects, although they may give rise to paroxysms of asthma in individuals who would be totally unaffected by a living animal of the same kind. Such facts appear to throw some light on the nature of the condition, and may account for its presence in those rare cases which come under our notice.

MORBID ANATOMY.

I have already alluded to the Pathological History of Spasmodic Asthma from our Clinical observations of the condition. Our knowledge does not appear to be much increased by the study of its morbid anatomy

No post-mortem lesions have yet been discovered, solely characteristic of the condition. The pathological effects of the disease are manifested in emphysematous and collapsed conditions of the lungs. Enlargement of the bronchial glands is also frequently described, and enlargement of the right side of the heart is generally found.

The mucous membrane of the bronchi is also frequently found to have undergone changes of a chronic nature, especially in cases which have become complicated with Bronchitis, but these we must regard as being the effects and not the causes of the disease.

Various morbid changes are also to be found in the Naso-pharynx and must be considered of importance in the study of the morbid anatomy of the condition.

CLINICAL HISTORY.

I have already briefly alluded to certain facts with regard to the clinical history of Animal Asthma and have pointed out the resemblance between this form of the disease and Hay Asthma. I have also mentioned the similarity which exists in the onset of symptoms in these two forms and the marked way in which they appear to differ from other forms of Asthma. In both the onset of an attack is heralded by nasal symptoms, as opposed to the onset by chest symptoms in the ordinary forms of Asthma, and it would appear that in these two forms the mucous membrane of the nose is the primary seat of the poisoning, all the symptoms pointing to such as being the case. Additional doses of the poison appear to be absorbed into the blood as long as the exciting cause is capable of exerting its toxic influence on the patient; and the symptoms which were at first confined to the nose, spread to other parts of the body until a fully developed asthmatic attack is established.

Most sufferers from Animal Asthma are warned of the approach of an attack by some prodromal symptoms which appear to vary very much in character in different individuals. Dr. Woakes, appears to consider that the prodromata of nasal asthmas are frequently manifested to us in the form of some cardiac

irregularity and palpitation, and I have found this to be so in one case, but patients as a rule state that their trouble appears to commence with unpleasant feelings in the nose and head, headaches, irritability of temper, and in many cases, severe sneezing. The face becomes altered and frequently streakings appear at the sides of the nose. Itching of eyes and chin and reddening of the skin round the eyes and nostrils are present. The patient soon suffers from violent sneezing; lachrymation and coryza are established, and a profuse watery secretion runs from the nostrils and causes much distress to the patient. The face soon becomes swollen, and the mucous membrane of the nose assumes a very congested character. The patient may frequently give short coughs at this time and complains of tightness of the chest; this marks the onset of his chest symptoms, and gradually his sense of suffocation and want of breath increases. He cannot bear the weight of clothing and loosens every article which might impede his breathing, and seizes on every means of obtaining fresh air. He generally assumes some position which experience has taught him is the most comfortable, and fixes the hands or elbows on some support. The respiratory efforts are violent, and every muscle seems to be called into action to assist in the struggle for breath. In

consequence of these exertions, the sweat often pours off the upper part of the body. The breathing is not as a rule increased in rate, but will be noticed to have undergone marked changes in character. The inspiratory act becomes very short and jerky, while expiration is greatly prolonged, and the relative character of these two acts is inversed, expiration frequently lasting two or three times longer than inspiration. Respiration is very noisy and wheezing. Soon symptoms of venous congestion and deficient aeration of the blood appear; the face is often blue and livid, and the hands and feet become cold and congested. The pulse is small and quick, and is frequently irregular in character.

The duration of the attack varies in different cases and at different times in each case. Sometimes nasal symptoms are alone developed, and at other times only a mild degree of chest symptoms are superadded; but frequently the severe attack which I have described is to be observed.

The termination of an attack is frequently ushered in by the establishment of expectoration and in many cases this is very small in quantity. It is remarkable how much a patient appears to be relieved by bringing up often only a small quantity of expectoration.



Physical Signs.

Inspection. The chest is observed to be enlarged, owing to the condition of inflation which exists, and its expansive movements are very small in amount. The intercostal spaces sink in during inspiration, as is also observed in the supra clavicular fossae. The expiratory rhythm is altered, and as a rule the patient has most difficulty during the expiratory act.

Percussion. The note obtained is markedly resonant all over the chest; the position of the diaphragm is found to have altered with the increased capacity of the chest; and the heart's dullness is diminished.

Auscultation. The heart sounds are feeble or absent and are frequently completely masked by the loud chorus of rhonchi which are of every pitch and which seem to be constantly changing their position. Towards the end of an attack a few crepitations may be heard. The vocal resonance is diminished.

Sputum. Mucoid in character, containing little pellets of mucous which resemble tapioca. It varies in quantity, sometimes being very scanty, and contains bodies known as Curschmann's Spirals.

At other times the sputum is frothy and more abundant in amount.

These attacks of animal asthma are developed as a rule during the day time when the patient is going about and is consequently exposed to the effect of some particular toxin. A definite periodicity does not appear to exist as is the case in other forms of Asthma, the patient developing his attacks on exposure to his exciting cause.

In all cases marked idiosyncrasies are present, the explanations of which are beyond our comprehension. They, however, appear to be one of the factors necessary. The constant development of the condition by nasal symptoms would appear to suggest that the nose in these cases plays a prominent part, and the almost constant morbid state which is present in its mucous membrane would almost affirm that in it we have the second factor necessary for the establishment of the disease. Our third factor is undoubtedly an animal toxin which appears to vary in its potency in different cases.

I believe that these three factors are necessary for the establishment of the disease, and this may to some extent account for its rarity.

In my cases I have noticed that the after effects of an attack of Animal Asthma are always of

a more severe and lasting nature than those produced by an attack of other causation, such as dust, indiscretion of diet or fatigue. In the former case, the patients usually suffer from headaches and unpleasant feelings in the nose and chest for a much longer period than they do in the latter, and there is no doubt that this can be accounted for by the fact that large quantities of this animal toxin, which is so particularly irritating in these cases, are absorbed, and a general poisoning of the system takes place. The attacks which are induced by indiscretions in diet, etc., are altogether of a milder nature and these exciting causes do not appear to possess so toxic an effect on their individuals as those which I have mentioned.

Case of Horse Asthma.

This case of a boy aged sixteen suffering from Horse Asthma was first brought under my notice in 1894.

Family History. Mother healthy, but extremely nervous woman. Sister died, aged four months of "heart disease". Brother died, aged thirteen months of "Heart disease". Brother died, aged nineteen years, of "Angina and Inflammation of the Lungs.". The patient has one brother alive who is healthy. There is no history of asthma in any relation.

Previous History. The patient at birth weighed  $9\frac{1}{2}$  lbs, and nearly died at this time. At age of seven months was very ill with whooping cough, and his parents thought he would have died. When one year old, he wheezed when he went to the Highlands. His mother thought it was a cold, but afterwards found that he always wheezed on going there. Patient had to drive considerable distances on these occasions. Always was ill when he drove and the "smell of hay" brought it on. Was also affected by cold and altitude. His symptoms always commenced with watering of the eyes and nose and redness of these parts. Mother thought "his mucous membrane was too fine". He only obtained temporary relief by smoking cigarettes and

burning powders. Was most affected by change of climate, a warm one always suiting him. When very young he often had a sharp pain over the ribs when laughing.

When I first became acquainted with the case, my patient was a delicate-looking boy, of a shy and nervous disposition. Face pale, but liable to flushes and markings under the eyes on slight provocation; general muscularity fair.

On examination of the chest I found it to be decidedly barrel shaped, the shoulders were elevated, and at the level of the mid-dorsal region there was a distinct antero-posterior curvature of the spine which I was informed had been attributed by some doctors to spinal disease and by others to weakness of the muscles of the back. He had worn a poroplastic jacket for some considerable period, but at my advice discontinued doing so. The patient walked with a distinct and well-marked Asthmatic stoop.

On physical examination of the chest I found that a considerable amount of emphysema existed, and that the right side of the heart was slightly dilated.

On examination of the nose a considerable amount of thickening and turgescence of the mucous

membrane was found to exist; the tonsils were greatly enlarged and almost met in the middle line, and some chronic inflammation of the pharynx was present.

Nothing further of importance was noted. My patient was very susceptible to Horse Asthma, and had been so all his life. When free from an attack he ate heartily, indeed much more so than an average boy of the same age, but he felt sure that this had no effect on his complaint. He was unable to go near a horse, and if by chance close proximity to one was extended over a period of a few minutes, an attack of asthma was the result. He was quite unable to drive in a closed or open carriage behind a horse, and was consequently always compelled to walk. But even this did not relieve him from his trouble, for if he passed through any place that was frequented by horses, the effect was always the same. He was quite unaffected by the donkey, mule, or any other animal, and during the winter of 94-95, which we spent in Egypt, my patient daily rode many miles on donkeys, without being affected by them, but on approaching a horse he almost immediately developed symptoms.

During that winter he had frequent attacks of Spasmodic Asthma which varied somewhat in their severity. The attacks were quite irregular in occur-

rence, each one lasting for several hours; as a rule he was confined to bed for two or three days after each severe attack.

I might here describe the symptoms of his paroxysms, which were of two degrees, severe and mild.

Symptoms of a Severe Attack.

Prodromata invariably displayed themselves in the form of headaches and irritability of temper. The appearance of the face altered markedly, white streaks appearing at the sides of the nose, with reddening round the eyes and nostrils, and the patient would commence to sneeze and at the same time clear his throat frequently. Snuffling of the nose, with watery discharge, followed by lachrymation, soon appeared, and the patient would often at this time give short coughs which heralded his difficulty in breathing. This latter gradually increased, the short inspiratory and prolonged laboured expiratory efforts being very manifest. This was accompanied by loud wheezings. Gradually the difficulty of breathing increased and the patient was compelled to sit up in his bed and hold on to some object for support. The impediment of clothes near him became intolerable to him and he would remove them. His violent respiratory efforts called all his muscles into action, and with his head

thrown back and mouth open, he would hold on to some object trying to breathe.

Profuse sweating was present in such attacks, as was also venous congestion. The face became quite livid and the extremities were cold and blue. The pulse was weak and rapid. Expectoration which was very typical in character, became most marked towards the end of his attack and with its establishment brought much relief.

On auscultation, the breath sounds were marked by the loud chorus of rhonchi which one heard everywhere and which varied in pitch, and towards the close of the attack a few crepitations could be distinguished. On the relief of his breathing, the patient usually fell asleep for some hours, and one was able to observe the gradual improvement in his condition.

In the Milder forms of his attacks, he displayed the same peculiar streaked appearance at the side of the nose, and invariably suffered from headache and restlessness, with reddening of the eyes and nose and a flow of nasal mucous and lachrymation. Some slight difficulty of breathing always occurred, but varied in the severity of its nature, and the patient would gradually improve and the symptoms disappear.



On one occasion we had been to some place of interest, and our train did not return to Cairo till the evening. Wishing to be in time for dinner, we got into a closed carriage to drive to our hotel which was situated about a mile from the station. I instructed my patient to cover his nose and mouth with his pocket handkerchief, which he did during the few minutes we were in the carriage; but before we had driven half the distance, symptoms of asthma appeared, and on our arrival at the hotel, he was compelled to go to bed and endure one of his severe attacks. He was perfectly well on his arrival at the station, and previous to his getting into the carriage; indeed, he had been gaily talking of our day's outing and how much he had enjoyed it.

Thinking that his liability to attacks might be prevented or even reduced by a thorough grooming and washing of the horse and carriage, I had a horse thoroughly washed all over, and after drying with clean straw, I had him thoroughly brushed. I also had the harness equally cleaned, and the brougham, which had leather cushions, was thoroughly cleaned, and fumigated with Hinksman's Powder. I may mention that this remedy was the one which appeared to relieve his symptoms most markedly. Indeed on getting into the carriage he was in an atmosphere of Hinksman, and

I had good hopes that my experiment would prove successful, as all these preparations had been carefully performed under my own supervision, and I was satisfied with their efficiency. I instructed the Coachman to go to a place where we were not likely to meet any horses, and I saw that the windows were closed, and that everything was in the most satisfactory condition for my patient. However, all my careful precautions had not been perfect, for my patient, after having driven a distance of about two miles, developed the familiar symptoms, and we were compelled to beat a speedy retreat to our hotel, where he suffered from a mild attack of Asthma.

I therefore felt satisfied that I had here, as in the case of my friend who suffered from Cat Asthma, eliminated to a certain extent the offending factor, for the nature of the attack was so very much milder than that of the former ones, which resulted from much shorter exposures to the influence of horses that had not been treated as this one had.

At this time we found it was quite impossible for him to drive without experiencing an attack, and we therefore made all our journeys on donkeys. These never affected him in the slightest, although some of them were very imperfectly groomed, and, to

all intents and purposes, had the same smell as that of a horse. I found it quite impossible to distinguish between a horse and a donkey by smell alone, unaided by any of the other senses, a fact in which my patient also agreed with me; he said that it was only by the after effects that he was enabled to distinguish. This, I also think, would go to show that the condition cannot be regarded as one in which the afferent nervous impulse is directed through the Olfactory Nerve.

Although donkeys never gave rise to his symptoms, he found, in riding through Cairo, where one naturally meets with many horses, that the tendency to an attack was always present. Later in the season, when we travelled up the Nile and visited many towns like Girgha, Assuit and Kennagh this tendency to Asthma was never present, and I attributed it to the fact that, although the streets were very much narrower and more imperfectly cleaned and ventilated than those of Cairo, the number of horses in these places was very limited, their place being taken by the donkey and mule. Mules, although so closely allied to horses, never provoked his paroxysms, and he was also able to ride on Camels without experiencing any evil result.

During our two months visit to the Nile,

he was quite free from attacks, with one exception, when we were present at a review of Egyptian troops at Assouan. Unfortunately our point of observation was beside a body of Egyptian Cavalry, and the consequence was that he developed a severe attack of his complaint.

On our return to Cairo, he developed his attacks as frequently as he had done when there before. I, at this time, conceived the idea that the very dread which my patient had for horses in itself increased his susceptibility to their influence, and I determined to try and eliminate this element in his case.

After leaving Egypt we went to Naples.

I may say that he was always perfectly free from attacks at sea, and was really then in the best of health. In Naples I induced him to take short drives in the tram cars, which are open ones, drawn by horses. We always sat at the back of the car and our drives were at first only limited to a few minutes duration. He at first suffered from one or two attacks, but their severity began to distinctly diminish, and after much perseverance he was able to accomplish a drive in a tram car of fully half an hour's duration without the development of the symptoms. He was also able to drive in a carriage with greater comfort, but never beyond a period of ten minutes.

This, however, was a great improvement, and I was much satisfied with the result. While travelling in Italy, I endeavoured to continue this line of treatment, always, however, keeping well on the safe side. We went by slow stages to Paris and arrived there on a certain afternoon. He was perfectly well on his arrival and during that evening, but when in bed that night, he developed one of his severe attacks of Asthma, and I was much at a loss to discover the cause. In the morning, however, I found that the windows of his bedroom overlooked the hotel stables, and I at once recognised the source. Neither he nor I experienced any smell of horses in his room, nor did we know of the proximity of the stables, and his window had been closed early in the afternoon. On changing to another room he was quite well.

In Paris I again pursued the course which I had adopted in Naples, and my patient was able to drive on the top of the busses with considerable comfort. In London I found that he could do the same, and that he was able to do so for even longer distances without developing symptoms. He, however, was quite unable to drive in a hansom for any period of time.

In the winter of 95-96 I was unable to accompany him on a tour which he made round the world. During this winter he states that he had many attacks of Asthma, all caused by his old enemy, but that he was certainly freer from his complaint, and dreaded the sight of a horse to a less extent than during the previous winter.

In the beginning of November 1896, we started for South Africa, and all during the sea voyage he was perfectly well and free from his trouble, as was also the case during our two months stay in Cape Town. Here I tried the experiment of driving him in a landau with his back to the horses and was to a certain extent successful in my results, for although he was at first threatened, and would have developed attacks had he not left the carriage, he gradually became more accustomed to the ordeal and in the course of time could cover a distance of several miles without any evil effects resulting. During our stay out there we decided to make a tour through Zululand, as I understood it to be a climate very suitable for Asthmatics. The usual method of travelling was by horses, but I feared that such an undertaking would prove too much for my still horse-sensitive patient. We accordingly secured a team of fourteen oxen and an ox-wagon, and accomplished our tour with perfect success (he never showed any sensitiveness to oxen.)

Here let me express the excellent opinion I formed of the climate of Zululand for Asthmatics. The air is warm and dry, and there is an absence of those sudden changes of temperature at sundown, which are so common in warm countries. Unfortunately hotel accomodation and travelling arrangements are in a very unsatisfactory state, and until these improve the country is unsuitable for those who cannot endure a little roughing.

On returning to Cape Town, I decided to try the effect of a long drive with horses, and we accordingly drove to Hout Bay, by the Victoria Drive, a distance of about thirty-four miles. This proved too much for him, and resulted in a severe attack of asthma. I concluded that this could not have been due to the effect of fatigue, as we had accomplished many more severe days work, under less luxurious conditions, during our tour through Zululand, without any inconvenience; and the fact that he was still liable to Horse Asthma was apparent to me. It was clear that I had in this instance exceeded the limits of his indurance, and I accordingly confined him to shorter drives, gradually increasing the distance.

On returning to London I found that he was able to accomplish a feat which he had hitherto failed to do. I refer to his driving in hansoms; this I

discovered he was able to do without any inconvenience.

During the summer of '97, he was free from attacks with the exception of one slight one which he acquired after visiting his mother's stables.

In November 97 we went to Cannes and when there he was able to accomplish a drive of 40 miles without an attack. Up till the beginning of February 98, he has not had a single attack of Asthma, and he had been constantly driving and in close proximity to horses.

In reviewing the history of this case, certain points have appealed to me as being of interest from their similarity to other cases of the same nature.

The markedly neurotic history of the patient's family on both sides, together with his own inheritance of the element, point of the disease as being chiefly nervous in its character. But the history of his case gives one the impression that his neurotic peculiarity is entirely limited to one definite cause, which alone is the source of all his trouble, and that his case is a pure example of Horse Asthma. The nature of his symptoms have also struck me as being peculiar, and in every way coincide with the description of other cases of Animal Asthma. I



invariably notice that in these cases the onset of the paroxysms of Asthma is first made apparent in the establishment of what I might call head or nose symptoms, such as headache, altered appearance of face, lachrymation, coryza, evidently pointing to the fact that the nasal mucous membrane is the primary seat of infection, and that the symptoms which are manifested in constriction of the chest, palpitation, and increasing difficulty of breathing, and which I might call Chest Symptoms, occur subsequently to those I have mentioned.

I think this is worthy of note, as in most cases of Spasmodic Asthma due to other causes than those of animal and vegetable emanations, the symptoms generally developed at first are referable to the chest. In this respect this form of asthma closely resembles Hay Asthma, and I cannot help thinking that in every respect the two forms are extremely similar. The one form, so to speak, being produced by an animal and the other by a vegetable emanation.

The theory of smell does not appeal to me and is indeed irreconcilable with my own observations, and why an attack of Asthma should be produced by the emanations of a horse, and not by those of mules and donkeys, is a question which is difficult to answer. Some chemical difference must exist in the composition of the organic toxins of different animals, which is

capable of establishing stimulative effects in certain persons of peculiar idiosyncrasies, and we know that such people are extremely sensitive to the slightest differences.

Case of Cat Asthma.Mrs. H.

Family History. Nothing special known. Gouty.  
Neurotic.

Previous History. Had a delicate chest from infancy.

Aet 4. Varicella and Mumps.

Aet 5. Pertussis - severe attack.

Aet 6. Scarlet Fever - Very severe attack.

Aet 7. Was thrown into river owing to boat sinking and nearly drowned. Immediately after this used to have violent attacks of sneezing every morning about 6 a.m., followed often by epistaxis. In the winters had "bronchitis and Asthma" (Cardiff).

Aet 9. Bronchitis and Morbilli - very severe. Asthmatic attacks became steadily worse.

Aet 11. Went to Cape (King William's Town). On voyage out had acute tonsillitis (abscesses incised) Bronchitis was much less in South Africa, but Asthmatic attacks preceded by coryza were very frequent.

Aet 11-16. Had several pet cats which were not thought of as possible exciting cause till end of this time. The asthmatic attacks did not occur when down at sea coast nor when up country, i.e. in absence of cats. After this the cats were kept outside the house and the attacks became much less frequent.

Aet 16 $\frac{1}{2}$ . Was in a railway accident - after which suffered from giddiness - inability to read, etc.

Aet 17. Returned to England (Worcester) although not keeping a cat did not avoid them - used to have asthma but did not attribute it to cats.

Aet 22. Went to Cape Town - was free from Asthma for one year but had occasional attacks of coryza and sneezing.

Aet 23. When going round coast from Port Elizabeth caught severe cold and had bronchitis and asthma.

In September 92 returned to England, went to High Garret, Essex, was constantly suffering from Asthma. There was a cat kept in the kitchen. On going to Beeches, Suffolk and to Surbeton got rid of Asthma, which, however, returned when patient went back to High Garret.

November 1892. Married.

May 1893. Was having tea one afternoon in a garden at Hampstead where there were two Persian cats. After stroking one of them, touched cheek with same hand, within 10 minutes and erythema appeared which caused intense irritation and was accompanied by coryza of an aggravated type. This was followed by Asthma which did not finally disappear till the following morning.



From 1893 till present time patient has been living at Paddington. Her attacks of Asthma have continued, and do not appear to have changed much in character. She avoids cats as much as possible, but on several occasions when calling at friends houses who keep cats, she has developed attacks. She is now afraid to visit any house where there is any chance of meeting with her enemy.

Her symptoms are in every way similar to the case of Horse Asthma I have described at length, except that in this case palpitation appears before nasal symptoms. On examination of the nose, the mucous membrane is found to be markedly swollen and vascular. At one time she had this cauterised, and her condition improved for some time after, but gradually assumed its old character. I may state that only a very small area of mucous membrane was cauterised at this time and she is now about to have the operation repeated.

Case of Cat Asthma.

The patient is managed between 30 and 40, there is no history of a family tendency to this or allied diseases. He believes that he first suffered from Spasmodic Asthma at the age of fourteen, and remembers being confined to his bed in his boyhood for several weeks with almost constant dyspnoea and wheezing, attended by a doctor who gave him plenty of Antimony and with a favourite cat sleeping at the foot of the bed. Later on he is said to have been subject to Hay Fever; at all events he had violent attacks resembling that affection when he went to stay with relations in the country during the hay season; but it is a curious fact that his distinct recollection is that he never suffered when out of doors, but always in the house, and also that the people of that house were extremely fond of cats. Neither he nor his friends had at that time the least suspicion of the exciting cause of his malady which has only been traced within the last few years.

The onset of an attack is usually heralded by violent sneezing, followed by excessive secretion from the nose, lacrymation and itching of the conjunctivae in the neighbourhood of the caruncles.

The patient describes a curious symptom which has been noticed in other similar cases, a

peculiar sensation of itching under the chin and also great coldness of the hands and feet. The rapidity of invasion of these symptoms is very remarkable. The onset is almost as sudden and violent as it would be if he were exposed to an atmosphere laden with snuff; and he declares that very soon, with saturated pocket-handkerchief, irritated swollen eyelids, and cold damp extremities, he is reduced to a state of abject misery, physical and mental.

A few minutes later, if he continues to be exposed to the influence, and sometimes even if he escapes from it, he experiences the familiar oppression of the chest, respiration becomes laboured and accompanied by sibilant sounds in the bronchial tube, and unless relief is afforded, all the symptoms of severe asthma supervene.

Profound diuresis is usual at this stage. As a general rule, the respiratory troubles disappear entirely after a sleep, always supposing the patient to be far removed from cats; but sometimes after long exposure to their influence, he may suffer even for several days from slight oppression, with unusual secretion of bronchial mucus.

There are several varieties in the attacks, sometimes he only suffers from coryza, without asthma,

and sometimes the presence of the enemy induces Asthma without Coryza. There are marked differences, too, in the intensity of the paroxysm in different attacks, but the above may be taken as a true and faithful account of the normal type.

The patient finds that to touch his eyelids with a hand that has just stroked a cat, sets up violent irritation. The actual presence of the foe is not however necessary; he suffers, though not severely, when he is in a room commonly frequented by cats, though they may be absent at the time. The nearer he is to the animals, and the more numerous they are, the more severe are the symptoms.

The larger members of the tribe excite his symptoms; he was lately driven from the lion-house at the Zoological Gardens by violent sneezing.



Case of Horse Asthma.

The following case was described in the British Medical Journal of January 1888.

A gentleman, aged twenty-four, had two cousins who suffered from Asthma and a sister who was a Cat Asthmatic. His father's cousin suffered from Hay Fever. He himself, when  $2\frac{1}{2}$  years old had bronchitis and from that time until the age of nine had attacks of sneezing and asthma. He then went to live at the seaside and for four years was perfectly well. Little by little, however, after leaving the seaside, both forms of attack recurred, sneezing first then asthma. For the last two years his sneezing had been growing better and his asthma worse, but he suffers more or less all the year round. He finds that either or both forms of attack may be brought on by coming near a horse, and this is the only exciting cause he can discover. One night, at the theatre, he felt oppressed and commenced sneezing without being able to account for it. In a few minutes, in the course of the performance, a horse galloped on the stage and his attack then became so bad that he had to get up and leave. He found that going into the stable would at any time immediately excite a paroxysm and that the clothes of people who had been racing had a similar effect.

One day at Malton some betting men got into the same carriage with him, and an attack was at once induced. The emanations from horses would sometimes bring on asthma and sometimes an attack of sneezing and not infrequently both. The asthma was more likely to come on in a carriage or closed space, the sneezing in the open air, the attacks always lasting as long as he was exposed to the exciting cause. Flowers and grasses did not affect him in the slightest degree, but he occasionally had peptic asthma as the result of an indigestible meal.

During the sneezing attacks the conjunctivae and the eyeballs itched, the conjunctivae becoming red and congested. The itching was also felt over the whole of the inside of the nose and was frequently accompanied by irritation of the throat. The sister's attacks, which sometimes assumed the form of sneezing and sometimes of asthma, were never excited by horses, but only by cats.

The following case is described by Dr. John Throwgood.

A gentleman who from his boyhood had been liable to attacks of Spasmodic Asthma, and who is now about 40 years old, enumerates among various exciters of his complaint, the presence in his room of a hare or its skin. Many persons are affected with asthma

in the presence of a hare or a cat, as is pretty well known; but in my friend's case, a roasted hare is even a more speedy cause of an Asthmatic Seizure than in the furry coat of the creature; and he has related to me the very severe attack which he once had on meeting a roast hare in a hall, under a cover, on its way to the dinner table.

Hyde Salter, in his interesting work on Asthma, gives detailed notes of several cases in which the asthmatic attacks were induced by exposure to the effluvium of various animals, his list including not only cats, dogs and horses, but wild beasts, cattle, guinea pigs, rabbits and hares.

Salter tells the story of a country clergyman who was always rendered asthmatic by the neighbourhood of a hare or a hare skin. If by chance he met a man who had been poaching, he at once detected him. When the gentleman was a boy studying with a private tutor, a fellow student, as a practical joke, put a dead hare under a sofa on which he was sitting and he immediately had a severe attack of his complaint.

The following case of asthma and sneezing produced by contact with a caterpillar was published in the medical papers about ten years ago and is, we believe, unique.

Some years ago we had under our care a gentleman of neurotic temperament, who, about the age of 50 suffered severely from acute pleurisy, the result of exposure to cold and wet whilst out shooting. He recovered, but from that time was subject to what he called "hairy caterpillary asthma."

If by any chance he touched a caterpillar, especially a very hairy one, he was immediately seized with an attack of shortness of breath, often lasting an hour or more. Sometimes the paroxysm commenced with an attack of sneezing, accompanied by itching and irritation of the eyes and nose, with profuse watery discharge from both. He was not in the slightest degree affected by pollen and he could pass hours in and about stables without experiencing the slightest inconvenience.

One of his daughters, who shared his temperament, was a cat asthmatic, her attacks of sneezing and coryza being always induced by contact with cats or even by the presence of one in the room. She is not subject to Hay Asthma, and ridicules her Father's objection to caterpillars.

PROGNOSIS.

The immediate prognosis in cases of Asthma may be regarded as favourable, as no case is recorded in which death during a paroxysm occurred.

The prognosis as to recovery will depend on many conditions in each case. In young persons this may be said to be favourable, especially if the disease be uncomplicated with other diseases. Much will also depend on the extent of alterations which have taken place in the lungs due to the asthmatical paroxysm. Many young people may be said to possess very old lungs, which have become altered by emphysematous and other changes, and in these cases we cannot hold out so favourable a prognosis. In people who are more advanced in life Asthma frequently becomes complicated with Bronchitis and under the circumstances the prognosis of recovery is unfavourable.

We shall also be influenced in our prognosis by the cause of the attacks, the nature and frequency of their occurrence, and the condition of health which the patient enjoys during the intervals of his paroxysms. In cases where the cause, such as that of proximity to certain animals, can be avoided, our prognosis becomes more favourable, and indeed we may say that in almost<sup>all</sup> cases of animal Asthma we can hold

out good hopes of a cure, provided we can deal with the disease before gross organic changes in the lungs have taken place.

In those cases in which morbid conditions of the naso-pharynx are found to be the most important predisposing cause, we are also enabled to give a very satisfactory prognosis, and hope, by resorting to appropriate surgical treatment, to establish a perfect cure in many cases.

Much will depend on the social position of the patient, as in cases where the disease exists in the lower and poorer classes our treatment cannot be carried out in the same satisfactory manner.

Good surroundings in a warm dry climate and with every means at our disposal for our treatment, will enable us to give a very satisfactory prognosis.

DIAGNOSIS.

In another place I have mentioned the difficulties which existed at one time with regard to the differential diagnosis of the various forms of dyspnoea. Nowadays, owing to the more perfect methods of investigation which are at our disposal, these difficulties cannot be said to exist, and in most cases we have little difficulty in asserting that one case displays all the symptoms of dyspnoea due to Cardiac disease, and that in another these point to the existence of pulmonary or renal mischief.

The differential diagnosis of the various forms of Asthma, and the demonstration of their causes are, however, sometimes attended with considerable difficulty, and especially is this the case in that variety induced by the emanations of animals. The condition is of so comparatively rare a nature and the data on which we have to form an opinion are frequently so unsatisfactory, that in many cases the cause of this disease is not manifested to us for many years. In one case quoted by Hyde Salter, a patient, the proprietor of a well known equestrian establishment, always had his Asthma brought on by the presence of horses, so that he was continually asthmatic. He had no suspicion of the real cause of his suffering

till he made his fortune and retired from business, when his symptoms departed only to return if by chance he visited his old haunts. In one of my own cases the patient was continually troubled with her complaint for many years and it was not until cats were discovered to be the cause and her favourite pets were banished from the house that she obtained relief.

In the diagnosis of this form of Asthma I lay considerable stress on the symptoms which differ in many respects from most forms of Asthma. The irregularity of onset is very marked in these cases, and they do not appear to possess that periodicity which so characterises other forms of the disease. In Animal Asthma the attacks more usually occur in the day time as contrasted with their customary development at night in other forms, the reason for this being very obvious. The development of symptoms by nasal manifestations also appears to me to be of great importance, this appearing to be a constant factor in all the cases I have been able to study. In this respect this condition bears resemblance to the closely allied form of Hay Asthma, and this peculiarity of symptom would appear to be limited solely to these two forms of the disease. In all cases our diagnosis will have to be formed after a careful study of the history of each case. The presence of



a special idiosyncrasy, together with some existing morbid naso-pharyngeal condition, and the elimination of such exciting causes as those induced by gastrointestinal disturbances together with irritations from the various other systems will enable us to form an opinion.

Whether an attack of Asthma is of nasal origin can be determined in some cases by the Cocaine test, namely the arrest or the amelioration of the paroxysm by anaesthetising the mucous membrane of the nasal spaces with cocaine.

TREATMENT.

In considering this part of the subject I have classified my treatment under three headings.

1. Prevention of an impending attack.
2. Treatment during a paroxysm.
3. Treatment during the intervals.

Prevention of an impending attack.

In most cases of Asthma caused by animal emanations, the approach of a paroxysm is recognised by some prodromal symptom which experience has taught the patient to regard as a certain sign of the onset of this trouble, and very frequently attacks at this time can be warded off by appropriate treatment. As a rule our attention should be directed towards the immediate removal of the cause which can often be satisfactorily accomplished in these cases. In the case of horse Asthma which I have fully described, I was frequently enabled to avoid an attack by removing my patient from the carriage in which we were driving, and similarly in other cases the removal of the cause has been followed by relief.

A hot drink of strong coffee is at this time

beneficial, and many cases are relieved by stimulants of some kind. Various preventative medicines in the form of cigarettes and powders appear to relieve the symptoms by the action of the nitrites which are given off on being burnt. These remedies differ very much in their potency in different individuals, and a remedy which very often gives relief in one case is found to be useless in another. Hinksman's powder appears to be about the best of these, and I have found it of great use in some cases, rapid relief of the symptoms being frequently obtained by the inhalation of the burning powder. Nitre puper has also acted in a satisfactory manner.

The after effects of many of these remedies are often of a very unpleasant nature, many patients preferring to endure their Asthma rather than those headaches and other symptoms which result on seeking relief from these remedies. I have found Kutnow valuable in this respect; it appears to be beneficial in most cases and does not produce unpleasant results. I have also found Squills in the form of the compound pill to act in an extraordinary manner in some of these cases, producing its good results within half an hour after being taken.

Treatment during a paroxysm.

Having removed any obvious exciting cause our next duty is to place our patient under the most favourable circumstances which his symptoms may suggest to us, and as far as possible eliminate every factor which may be prejudicial to his condition. The addition of any extraneous element, to his already distressing condition, greatly increases his difficulty in breathing, and such things must be at once removed. As a rule patients find that the sitting or kneeling posture is usually the best, with the elbows supported so as to raise the shoulders; but not uncommonly patients must be allowed to choose the posture which they find most comfortable. In every case we must contrive to have as much fresh air as possible for our patients.

The hands and feet should be kept warm by hot bottles, or can be bathed in mustard and water. The encumbrance of clothes should, as far as possible, be removed, and everything that can obstruct the breathing should be loosened. Care must however be taken to prevent the patient from being too much exposed to the cold. The remedies recommended for Asthma are very numerous and their efficiency varies greatly in each case. As a rule we shall have to be guided by the patient's own experience. He soon

learns which remedy relieves him most effectually.

In very severe attacks, opium of all drugs appears to be the most effective, and when given in the form of a hypodermic injection of Morphia and Atropine, seems to afford great relief. There are however the usual objection to its use in Asthma as in all other cases, and great care must be taken in avoiding the establishment of the opium habit. The drug has also a disadvantage in that its administration must never be left to the patient himself. Hyde Salter, who himself was a martyr to Asthma, was not at all favourable to its administration in these cases, and regarded opium as being not only worthless, but often injurious in Asthma. He says "Sleep tends to promote the paroxysm, reflex action being much more active then than during the waking hours. In addition to exalting reflex action, it acts prejudicially, as by lowering sensibility it prevents that acute and prompt perception of respiratory arrears which is the normal stimulus to those extraordinary breathing efforts which are necessary to restore balance".

Although so high an authority as Salter was so opposed to its use, the majority of the profession

regard opium as the most valuable drug which we possess, and there is no doubt that with its careful use in suitable cases we obtain very satisfactory results.

Owing to the fact that some patients are unable, from some cause, to take opium, Chloral has been found to be of very great benefit, and, given in thirty grain doses of the hydrate, it often appears to answer the purpose as satisfactorily as opium.

That series of drugs included under the Nitrites appears to be of great use in many cases, and I myself have repeatedly confirmed Professor Fraser's statement as to their action in cases of Spasmodic Asthma, and have observed the disappearance of almost all the physical signs within two minutes of the administration of the drug. Iodide of Potassium is without doubt a very valuable drug in almost every case, and I have had very satisfactory results from its use in many cases. Dr. Theodore Williams states that when given in ten grain doses three times a day, beneficial results may be obtained in almost all cases. The use of Tobacco is often attended with good results, especially in the cases of those who are unaccustomed to its effects, and it has been combined with Stramonium and Belladonna in the form of cigarettes which are sometimes useful when smoked.

Belladonna in full doses is useful in not a few cases. The local application of menthol. guaiacol solution to the nostrils is recommended by Sir Grainger Stuart, but I have not had an opportunity of trying it in these cases.

Treatment during the Intervals.

Of predisposing causes. Physical conditions undoubtedly act in some cases as strong inducers of Asthmatic paroxysms, and this would appear to be especially the case in those forms resulting from the inhalation of animal and vegetable emanations, owing to the exceptionally strong neurotic element which exists in these cases. We must endeavour to eliminate as far as possible, this factor from our cases, but shall find that in doing so much time and perseverance will be required and that often our efforts, so well directed, will be found to be apparently useless. I have described in one of my cases how the very fear which my patient had for horses frequently assisted in the production of an attack of Asthma, and have described the tedious course of treatment which I had to adopt in eliminating this factor. It was extremely satisfactory however to know that my efforts were not in vain, and that from the commencement of this mode

of treatment my patient gradually improved until at the present day he appears to be quite free from his old malady. Morbid nasal conditions are undoubtedly almost constant predisposing causes in this form of the disease, and their treatment should be one of our first considerations.

This is best accomplished during the intervals of attacks, when our patients appear to be in a satisfactory state of health. Varying forms of Nasopharyngeal disease will be found to exist, in some cases it may be that a thickening and turgescence of the mucous membrane over the turbinated bones is the cause, and this may be treated, by the application of the Galvano Cautery to the effected parts, with much success. In other cases the presence of a displaced septum, polypi, or post nasal vegetations, and frequently enlarged conditions of the tonsils and other pharyngeal diseases, must be regarded as being of the utmost importance in the causation of this disorder, and the appropriate treatment of these several conditions will often result in a complete absence of the Asthmatic parozysms.

Treatment of General Health. In all cases strict attention must be paid to the state of the alimentary canal,



and to the diet, as well as to the functions of the organs generally; and all those things which are known to act as predisposing causes must be carefully avoided. A course of Strychnine, Quinine, or some other tonic is very serviceable in many cases.

We shall have to try to obtain a locality which suits each patient best, as regards the qualities of the air and other conditions. As regards climate, I have found that of the Nile to be very suitable in cases of Asthma, and have seen several cases derive much benefit from their sojourn there; its air is warm and dry and appears to be very bracing in character, and the countless sources of interest which are constantly to be met with, tend to have a good effect on the patient's character. The climate of parts of South Africa is also very beneficial in many cases of Asthma, but the disadvantage of bad hotel accommodation and difficulties in travelling, must be regarded as a great bar to our advising it in our more serious cases. Among the places nearer home, the climate of the Riviera is certainly the best and in cases of Asthma, I should recommend Cannes and Grasse as being the most suitable.

The climate of Madeira is also said to be of use, but I consider it rather too damp for the majority of our cases.