On hay asthma and the affection termed hay fever / by William Pirrie.

ON

HAY ASTHMA

Dr PIRRIE.

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AND

THE AFFECTION TERMED HAY FEVER.

BY

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ETC. ETC.

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PREFACE.

THE leading ideas in the following remarks on Hay Asthma, also called Hay Fever, or Summer Catarrh, are given in an abridged and condensed form in two papers published in recent issues of the *Medical Times and Gazette*. These papers were written by the author without any view to their ever acquiring greater permanency than that resulting from insertion in a weekly periodical; but, since their appearance in the journal already named, he has received several requests to publish them in a more convenient and enduring form. At first the author felt altogether doubtful of the propriety of complying with these requests; but he was afterwards induced to do so by the consideration that the complaints discussed in after pages have been particularly studied by comparatively few persons, and that in consequence there is hardly any unanimity of opinion on any point regarding them.

This want of more general and close investigation cannot arise from the rarity of the complaints; for they are of very frequent occurrence amongst both males and females of all ages, for nearly a quarter of the year, in this and other countries. Neither can it be excused on the ground of their being very trifling ailments; for they occasion, for the time being, an amount of inconvenience, self-denial, and suffering, which far exceeds that arising from many other complaints which enlist for the sufferer the deepest sympathies of his friends, and the most careful attention on the part of the medical attendant.

Nor again should the proper treatment of the complaints continue to be so comparatively unheeded on the too common plea that they are beyond all cure, for there does seem reasonable ground for believing that marked alleviation of suffering can be effected in all instances, and complete cure in not a few. Perhaps there is little in what follows calculated to throw much light on the many points of obscurity regarding the complaints styled Hay Asthma and Hay Fever, and much of what is written may have been more forcibly

put by others; but still the author will hope that he has not altogether in vain endeavoured to elucidate some difficult points; and he trusts that he has not in any place clothed his own ideas in words which could be considered dogmatic in style or indicative of any intention on his part to detract from the opinions of previous and better observers.

The author has the impression that much more attention should be paid, than has hitherto been the case, to the recognition of two distinct morbid influences co-existing during a certain period of the year, and both inducing complaints which have many symptoms in common, but which are nevertheless essentially different in nature—the element of the one being spasm from peripheral nervous irritation,—and the essence of the other, relaxation and febrile irritation from exhaustion or impaired activity of certain centres and nerves of both departments of the nervous system.

The recognition of these distinctions accounts in great measure, in the author's opinion, for the opposite statements of different sufferers as to the amount of benefit they have experienced from change of

locality; and also points to the necessity of adopting more or less prolonged prophylactive measures before a reasonable hope can be entertained of marked diminution of suffering during recurring attacks, or of ultimate freedom from them. Marked alleviation of distress can be effected during an attack; but immunity from seizures must be hoped for from measures carefully and systematically followed out during the intervals of health. If this work, containing the author's reasons for holding these beliefs regarding Hay Asthma, and Summer Catarrhal Fever, or simply Summer Fever, as he would term the complaint discussed in the latter part of it, will only incite some other persons to such a study of them as will eventuate in the suggestion of some more definite and generally successful mode of treatment than any which has hitherto been proposed, the author will consider that he has not unavailingly complied with the wishes of those who suggested its publication.

43, *Westbourne Park, W.*
London, September, 1867.

ON HAY ASTHMA,

AND

THE AFFECTION TERMED HAY FEVER.

The distressing complaints to which the various names of Hay Asthma, Hay Fever, and Summer Catarrh have been given by different writers, who refer them to a like source, though met with under varying circumstances, and with differences in their more prominent symptoms, are of very common occurrence in this country during the greater part of four months of the year. Almost everyone has met with a sufferer from them, and has in consequence become acquainted with many of their more striking symptoms, and has listened to tales of distress regarding the inconvenience, discomfort, and suffering which they occasion. We are therefore naturally surprised that the earlier writers on medicine, who were both careful

and acute observers of the phenomena of disease, make no unquestionable allusion to them.

Cullen makes mention of asthmatic fits caused by ipecacuanha powder; and he does remark that in some persons asthmatic "fits are more frequent in summer and particularly during the dog-days, than at other colder seasons;" but there is no indisputable reference to these morbid conditions, and the quotation just made was probably intended as nothing more than part of his experience regarding that most capricious disorder, common spasmodic asthma.

Heberden* does seem to have recognised an annually recurring attack of catarrh in certain individuals; for, while treating of catarrh, he remarks to the effect that he has seen it recur annually in four or five persons during the months of April, May, June, and July, and continue for a month.

Dr. Bostock, the celebrated chemist, whose

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* "Commentarii de Morborum Historia et Curatione." Ed. by his son, Dr. Wm. Heberden. 1802.

attention was necessarily much drawn to the complaint from having been himself a great sufferer, gave a graphic and detailed account of his own case in the fourteenth volume of the Medico-Chirurgical Transactions, having previously described the ordinary phenomena and causes of the complaint in the tenth volume of the same periodical. He made many and careful inquiries regarding the complaint, which proved that it was far from rare in this country. He chose for it the name of "Catarrhus Æstivus."

Dr. Elliotson,* who first learned of the complaint from Dr. Bostock, writes, that before that time he "had heard people talk of 'hay fever' and 'hay asthma;'" and before relating the first case that came specially under his own care, he remarks: "I could not tell what to make of it, and I disregarded it entirely, supposing it to be a sort of aguish or hypochondriacal affection, of which those who had little to do frequently became the subject."

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* Pract. of Med., 2nd Ed., p, 875.

More or less brief notice of the complaint is taken by the numerous more recent writers on systematic medicine, or on pulmonary affections; but only few persons have given special attention to the complaint, or written at any length regarding it.

In 1862, however, Dr. Phœbus, Professor of Medicine in the University of Giessen, published an interesting monograph on it, and called it by the name of "Frühsommer Catarrh," which may be rendered "Early Summer Catarrh."

The other chief authority in our own day on this common and distressing affection is Dr. William Abbotts Smith, whose treatise contains much interesting information.

We cannot suppose that "Hay Fever" (which appellation we will use at present, as it is the one most commonly known) is a disorder of recent origin, and it would be very difficult to account satisfactorily for the silence of our ancestors regarding it; but it is quite possible that though they did not describe it as a distinct complaint, they may, nevertheless, have

been familiar with its occurrence, but regarded it as a common catarrh, or ordinary asthma, as the case might be.

From the descriptions usually given of this complaint by different observers who have referred it to a like source, we would infer that from one and the same cause there may arise at one time a purely spasmodic affection, at another time a febrile disturbance, and at another time an illness in which are blended a spasmodic and a febrile element.

Some, again, consider the complaint to be a mere feverish cold, and look upon the febrile symptoms as the consequences of the local affection. Hence the terms "hay asthma," "hay fever," "summer catarrh," and "summer bronchitis," suggested by the predominance of the spasmodic, the febrile, or the catarrhal symptoms. By the great majority of persons also, professional as well as non-professional, the emanations from freshly-cut hay, or from certain grasses or plants as they come into flower, are looked upon as the grand causes of either form of illness.

Cases, however, have come under my own immediate notice, and others are on record, where the sufferers have attributed their indisposition not to these emanations, but to solar heat and intensity of light; and my own observations and inquiries lead me to conclude that sufficient importance has not been attached to their opinions on this point.

Moreover, it appears to me that there are two forms of illness which occur at the same season of the year, and which are not one and the same affection, only occurring in one individual with a more decided manifestation of one set of symptoms than in another. The opportunities I have had of watching the complaint, and the information I have received from others, have given me the impression that there are two separate forms of illness, which agree in both occurring at the same time of the year, and in having some symptoms in common, but which differ materially in their origin, in their mode of invasion, in their particular manifestations, in their duration, in their pathological relations, and in their obedience to remedial measures.

The one is a purely spasmodic affection—a genuine asthmatic seizure—which may recur at short intervals during a certain period of the year, but which does not continue for days and weeks with little variation of intensity.

This form of illness may be materially affected by remedies and change of abode in a comparatively short time, and may justly be referred to irritation consequent on inhaling certain subtile particles emanating from certain grasses or other flowering plants. Some persons are to be found who cannot pass a hayfield, or be in the neighbourhood of a rich meadow, without suffering from an asthmatic seizure, with more or less sneezing and lachrymation; just as others are similarly affected by the powder of ipecacuanha, by the odour of roses or of violets or of some other strong-smelling flowers, or by the fumes of iodine or chlorine, be they ever so much diluted. I would here cursorily remark that these cases are characterized by the comparative absence of general asthenia, by little or no premonitory indisposition, by a sudden manifestation of the permanent symptoms, by little or no appreci-

able fever, by the shorter duration of each paroxysm, and perhaps a repeated return during a certain season, but always after an interval of comparatively entire immunity. These are the cases, moreover, where we often hear of speedy amelioration of all the symptoms, or even perfect recovery after very little treatment, and after removal from the sphere of contraction. They are further characterized by the comparative absence of the impairment of mental and bodily vigour which follows, and persists for some time after the other form of illness to be presently mentioned. The following case will serve as an illustration of this form of illness which is just an ordinary asthmatic seizure, with the odour of hay as its excitant. G. F., æt. 38, of robust frame, is seized every year about the middle or end of June with "the asthma" from the "hay season." When seen by me he was sitting with his window open, and his arms resting on his knees, and felt as if he would die "from breathlessness and the closing in his chest." There was the usual whistling or wheezing sound in respiration, and

the characteristic violent action of the respiratory muscles. His skin was cool, and there was no great coryza or lachrymation. He stated, however, that his eyes were often itchy, and he would sneeze often before these asthmatic fits came; but his great suffering was in his chest. Had two or three fits during the hay season; but always got clear of them if he got to the "sea bathing," which he often managed to do by getting his holiday at that season of the year. On the occasion I saw him, the attack speedily wore off, and terminated with slight bronchial catarrh. I afterwards heard that the same immunity from illness followed a resort to the sea-side on this, as on former occasions.

Now, this is just a case of ordinary asthma, and its exciting cause is not at all more curious than many which occasion similar seizures in others. Some persons, who are asthmatically inclined, have a fit induced by the smell of certain animals, and others by the smell of certain flowering plants. I have myself known of seizures being directly referrible to the pre-

sence of cats; and Dr. Hyde Salter mentions many curious cases, in some of which the paroxysm was brought on by the smell of rabbits, and in others by the effluvia from horses, dogs, hares, guinea-pigs, and many other animals.

Other people, again, are free from this singular susceptibility to the emanations from animals, but have a paroxysm of asthma if they remain in the neighbourhood of certain flowers. The only flower which I have known in my own experience to cause a fit of asthma is the rose; and I have read that in some parts of the United States, where great attention is paid to the cultivation of the rose, a disorder prevails at a certain season which is in all respects analogous to our hay asthma, and which goes by the name of rose catarrh or rose fever.

Cullen, and many more recent authorities, have cited cases in which a seizure was speedily caused by the presence of ipecacuanha powder; whilst Trousseau,* in his Clinical Medicine,

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* Lect. on Clin. Med. Translated by Victor Bazire, M.D., part iii., p. 627.

mentions the case of an unfortunate chemist, who stated that "when linseed and scammony, as well as ipecacuanha root, were being powdered in his laboratory, he had a violent fit of asthma, which invariably commenced with coryza."

The late illustrious professor had also to relate as his own experience, "I have myself had fits of asthma if I remained a few minutes in a room where there was a bouquet of violets."

Many other instances might be brought forward illustrative of the singular nature of some of the exciting causes of asthma, and of the various susceptibilities of different individuals; and it is not more singular that some individuals should suffer from the presence of hay, than that others should be made ill by the smell of roses, or of violets; or by the neighbourhood of cats, or horses, or rabbits, or some other animal, as the case might be.

Some who suffer from this form of attack may have organic disease of the heart, or of the lungs, causing a lengthening of the paroxysm and an increased difficulty of breathing and

general distress, and depriving them of that measure of good health in the intervals of the attacks, which is enjoyed by others who have no such serious complications; still, a careful study of these cases leads to the conclusion that the spasmodic element constitutes the essence of the paroxysm which is justly attributed to some irritating emanation from newly-cut hay, or flowering grass, or plant of some kind or other. The only peculiarity of these cases is the violent sneezing and coryza which need not accompany asthmatic fits arising from other external influences. But if we consider what sneezing consists of; and if we reflect on how it may be induced, we need not be surprised at its being such a troublesome attendant of hay asthma, if we at the same time remember the special character of its exciting cause.

Sneezing consists of a deep inspiration followed by a violent expiration, driving the air more or less forcibly through the nostrils; and is a reflex act caused by irritation of the nasal, as well as other filaments of the fifth nerve.

Now this peripheral irritation may arise from a primarily tumid and swollen state of the lining membrane, such as heralds in attacks of measles, or of common catarrhs; or it may immediately follow some stimulus introduced from without, as we may see illustrated daily in the case of those who take snuff, or use strong smelling-salts. There seems little doubt that it may also be occasioned by irritation of the filaments of other nerves; and, in some instances, by some influence primarily exerted on a nervous centre rather than on its peripheral extensions.

The causes of hay asthma are undoubtedly the emanations arising from certain flowering grasses, and pungent vegetable powder floating about in the air after some of them are cut down, and turned about in the process of drying or conversion into hay. Some suppose that it is the result of the benzoic acid which is liberated from some grasses by the action of the sun; but whichever theory be the correct one, the cause of illness is a pungent irritant, which, coming directly in contact with the mucous

membranes of the eyes and nose, and the lachrymal and nasal filaments of the fifth nerve supplying them, affects the mucous membrane and nerves directly, and occasions the sneezing and running at the eyes so characteristic of the complaint. Owing to the intimate connection which exists between the nasal and lachrymal branches of the ophthalmic division of the fifth nerve, it is of little consequence whether the irritant comes in contact first with the nose or with the eye; coryza and sneezing will precede lachrymation in the first instance, whilst in the second instance the running at the eyes comes first in the order of the symptoms. The offensive agent in its further passage into the system through the naso-pulmonary mucous tract affects those branches of the vagi which supply the bronchial muscles; and they, becoming spasmodically contracted, hinder the entrance of the air into the cells of the lungs.

Such, it appears to me, is the pathology of those cases which alone are properly called "Hay Asthma;" and which, beginning with sneezing and running at the eyes, are chiefly characterized by genuine asthmatic breathless-

ness, which after a time passes off, and is in some instances followed by bronchial catarrh; whilst in others it is not. Now, if we reflect on the usual course and duration of an asthmatic seizure from other causes, we need not be surprised that these persons recover quickly and also keep well at the sea-side, where they are to a great extent, if not entirely, beyond the influence of the exciting cause of illness, which is not otherwise prolonged by the co-existence of some organic affection.

Before passing on to the consideration of the other form of illness, and before considering the treatment of either form of attack, it may be interesting and instructive to note the following remarks of Professor Trousseau, as they may accurately describe some of the masked, or so to speak, imperfectly or partially-developed manifestations of hay asthma in a limited number of individuals.* That great authority states that asthma "in some cases, instead of manifesting itself at once by fits of oppression at the chest, sets in with coryza. All at once

* Clin. Med., translated by Dr. V. Bazire, part iii., pp. 619, 620.

and often without his having been exposed to any of the causes which generally bring on a cold in the head, the patient begins to sneeze with extreme violence, and in the most strangely obstinate manner. His nose runs profusely; his eyes swell and fill with tears." "In other instances," he says, the whole paroxysm (asthmatic) is exclusively constituted by this paroxysmal coryza occurring independently of all appreciable cause, or under the influence of causes which are as varied and as curious as those which induce an attack of genuine asthma. "I have often predicted," he concludes, "to individuals suffering from this curious form of coryza, who had never felt anything about the chest which could justify my assertion, that they would sooner or later become subject to asthma, and they have subsequently come back and told me that my suspicions had turned out to be true."

Perhaps some persons may be found, in whom "Hay Asthma" manifests itself by oft-repeated and prolonged fits of violent sneezing, which are neither accompanied nor followed by any symptoms which draw attention to the chest.

The other form of illness occurring at the same season of the year as that first mentioned, has some symptoms in common with it; but these are, we think, in this case, the consequence of another morbid influence operating primarily, not on mucous tissues and the nervous filaments radiating on them; but on certain centres of the cerebro-spinal and sympathetic nervous systems.

This wearing out and most tedious form of sickness may be prolonged through almost the whole summer, and accompany its victims wherever they go. Whether they take refuge at the sea-side, or resort to the highlands in quest of relief; whether they pass over to the Continent in the hope of escaping from the enemy; or whether they happen to be in foreign parts where our ordinary forms of vegetation are altogether unknown, there, they are sure, during a certain period, to catch what they consider constant feverish colds; and to endure protracted distress which incapacitates them for thorough attention to business, and for the real enjoyment of life.

It moreover selects as its victims, in many

instances at least, persons of a particular constitutional state; it is preceded by feelings of indisposition, and it leaves the sufferer weak, exhausted and irritable, and in a state of distinctly impaired mental and bodily vigour. It is, as we have said, of a very tedious nature; it is very little influenced by remedies directed against it for the first time on the appearance of a paroxysm; it is not got rid of by change of place; and it is accompanied by a distinct, though fluctuating amount of febrile disturbance.

For convenience sake, and because of the term Summer Catarrh being so familiar to all, we would suggest some such name as Summer Catarrhal Fever, reminding our readers at the same time, that we do not consider the catarrhal symptoms or the febrile disturbance to be dependent on bronchial inflammation, or to be regulated by it as to their degrees of intensity. The fluctuating degree of feverish disturbance appears to us to be the consequence of nervous exhaustion, in parts to be afterwards named, which induces vascular relaxation and varying degrees of systemic as well as local irritation. Hence

the condition, though not so conveniently, might perhaps be more correctly named Summer Febrile Irritation. If two words must be used, it appears to us, that in many instances, Summer Fever or Summer Illness, would be more applicable than Hay Fever. It is something more than a catarrh, and hence the term Summer Catarrh appears to us defective. The pectoral distress and the dyspnœa which attend the complaint are not, we think, such as characterize a fit of asthma, and arise from a different pathological cause.

Persons may and do go through a prolonged period of suffering from this kind of illness without ever presenting any symptoms which would justify our saying they are suffering from asthma.

It is of the utmost moment to bear in mind the distinction between asthma and dyspnœa. Asthma is a form of dyspnœa, but all dyspnœa is not asthma. A person suffering from a common cold, from measles, from influenza, or from ague, may have dyspnœa, and yet we would not say he has asthma.

So in the form of sickness now under

consideration there is often dyspnœa (sometimes very trifling) which is not asthma at all in our opinion; but depends on an entirely different pathological state, and requires different treatment. We do not, indeed, doubt that many who suffer from the commonly-called hay fever may also be truly asthmatic; but our own experience leads us to say that people do have attacks of this feverish disturbance who never present, throughout the entire illness, genuine asthmatic symptoms.

The nasal flux and the pectoral symptoms are accompanied and occasioned, in our opinion, by a peculiarly relaxed, or atonic state of the naso-pulmonary vascular system, which in turn maintains a tumid and swollen or congested state of the mucous-membrane of the air passages. This vascular relaxation, and associated nervous paresis, are the results of the debilitating or paralysing effects of great solar heat or high temperature, assisted in many cases by intense light, on the cerebro-spinal and sympathetic systems of certain peculiarly constituted people.

We will now try to support these opinions, and before enumerating all the symptoms of the complaint, it may be well to quote a few cases which show that these distinctions are practical; and also that the sufferer himself, in some instances, is quite sensible of the truth of many of these observations.

The following extracts from the narrative of one who for many years was a great sufferer from the febrile form of illness occurring at the same season of the year as the spasmodic form of seizure, shows a recognition on his part of two distinct affections, of different characters, varying durations, and to be ascribed to different causes: the one to solar heat, and the other to the smell of hay. When writing of the illness which he attributed to the effects of the sun, he says, "I frequently had such a chill on me at first that I required a fire; then there was general oppression and uneasiness; and then there appeared like a feverish cold in the head, with itching in the eyes. I have frequent fits of sneezing—the disease makes and leaves me

very weak, and is very apt to be constantly relapsing during the summer season. Any day I have occasion to be out in summer under a strong sun, which causes perspiration in my head, I am sure to have an attack of this complaint. I am always best in cold, cloudy days in summer," &c. This gentleman suffered for ten or eleven years from this distressing complaint, but ultimately got quite rid of it. When describing an illness which occurred after some years of perfect health, so far as this susceptibility is concerned, he writes, "I had on one occasion to be in the country in July, and having then been in the immediate vicinity of a very rich hay and clover-field for about half an hour, I was that very day seized with a fit of asthma, and was so ill that I could not go to bed at night, but was obliged to sit in a chair all night. The complaint on that occasion, however, was confined simply to a difficulty of breathing. That was altogether different from the attacks described before, which lasted four, or six weeks or more." Here is the sufferer himself, thoroughly

competent to form a correct opinion on the matter, quite conscious of two distinct forms of sickness in his own person; the one, a genuine asthmatic fit clearly traceable to the smell of hay; the other, a more prolonged form of illness, with heats and chills, apparently regulated in severity by the degree of atmospheric heat and clearness. In another instance, a delicate lady, who for many years had suffered from what she termed "summer cold," clearly referred her illness, and the degree of its intensity, to the existing amount of heat; for she remarked to me, "I cannot go out on a very bright and hot day without being so ill; and I think it is more from the general effect of the heat on me than anything else."

Another female, who was a great sufferer, told me "she was always ill for many weeks, and was always worst when the season was a bright and sunny one."

Here again the sufferers evidently traced a connection between their indisposition and the amount of it, and the degree of heat and light.

Without detailing cases which must of

necessity much resemble one another, I would just make a few extracts from other two, which appear to me to be valuable as far as the question of causation goes, and help to elucidate the point that we previously insisted on—viz., that though there are pectoral symptoms and dyspnœa, still the spasmodic element does not constitute the essence of the complaint.

An officer, who was many years in India and in other parts of the world, stated that he always got "ill about the beginning of June in this country;" that he "had a low feverish feeling, with occasional chills, and great itching of the eyes and running at the nose, for six weeks or so; that he generally must shut himself up in a cool and dark room, and that he was sensibly worse when he faced a strong light, or was exposed to the sun." In answer to an inquiry as to the amount of chest obstruction he experienced, he replied that he "had never more chest uneasiness than a feeling of stuffiness, similar to what he often felt in a bad cold or ague fit." This sufferer was once seized when out at sea, beyond the

reach of all vegetable emanations, and also passed through a long illness every year he was in India.

It is very evident, from this case, that this form of indisposition may arise independently of all vegetable effluvia; or, if ever arising from such a source, may be caused in those with the requisite predisposition by any form of rich vegetation. The fact also that the patient himself had various forms of illness, such as bad catarrhs and agues, and states that in his hay fever illness he had the same amount and kind of feeling in his chest as during a bad cold, or during an attack of ague, are valuable and interesting points in the history of this disease, as no one considers the spasmodic element to be the essence of a paroxysm of ague or cold; although in both of them there may be chest uneasiness. But, to bring this enumeration of cases to an end, I will only further give a few extracts from a statement of his case made to me by an officer of the Indian army, who has for many years been subjected to much inconvenience and

uneasiness from this worrying and wearing-out form of recurring illness.

They are interesting as bearing on the causation and aggravation of the complaint; and as showing that it may occur with rich vegetation, but that it is nevertheless sure to appear when there is perhaps not a trace of vegetation to relieve the monotony of the parched and lifeless plain, and as evidencing its occurrence in other countries besides our own, and most especially as conveying the sufferer's own testimony to the kind and amount of chest obstruction which he usually had to endure during the periods of his illness.

In detailing his case, this gentleman says that he "recollects distinctly suffering, every summer from childhood, from hay fever, in June and July, causing sneezing and irritation of the eye and nostril glands. Was in England seven summers during his adultship, and always suffered from this cause in June and July, after which these symptoms would abate; but sneezing and asthmatic oppression

in the lungs were frequent till the end of September, when excited by exposure to the sun-heat in shooting," &c. "In the early part of summer," he adds, "I never could venture on cricket, boating, or violent exercise in the sun, and even dreaded walking in the sun, as it excited paroxysms," &c. "When in India, this constitutional disease remained unabated, and there," he adds, "attacks were more frequent during the whole course of a year than in England, and the worst time for it was from the end of July to the end of September. But during the hottest season, from March to June, in Western India, vegetation is dried up, the sneezing, &c., at this time would be constant enough if excited by the sun," &c. In further commenting on his state, he informs me he has had attacks in the season from November to March; and in answering my inquiries regarding the degree of chest obstruction or uneasiness which he usually endured, he replies, "The disease is febrile," and "the asthmatic symptoms are precisely the same as in intermittent fever or ague in India."

Now, before pursuing the argument in favour of the influence of solar heat and strong light in the causation of this complaint any further at present, it may be well to enumerate the symptoms characterizing this form of illness, so that we may hereafter more clearly see whether or not they can be referred to a primarily central and not peripheral morbid impression.

The symptoms of hay fever, for which, however, we have suggested the term Summer Fever, may be divided into the premonitory, the permanent, and the after symptoms.

The premonitory symptoms consist of a feeling of general indisposition or malaise, a sensation of languor, lassitude, increasing muscular debility and spinal weariness, restlessness, insomnia, anorexia, foul tongue, and constipation, or it may be diarrhœa. About the beginning or middle of May, or it may be a little later in other cases, the unhappy victims of this complaint begin to feel themselves unfit for so much work as before; they cannot concentrate their thoughts as they would like; they feel themselves to be losing their relish

for food; they feel disinclined for amusements which at other times they delighted in; they seem instinctively to prefer remaining as much as possible quietly indoors; they begin to feel languid and weary; their temper perhaps begins to be less sweet than before, and most commonly they begin to complain loudly of being always done up by the summer heat, which has by this time given sensible proofs of its approach.

These precursory indications of more abiding evil give place in a short time to the permanent symptoms of the disorder.

These may be divided into the local and the general.

The local symptoms have been divided into numerous groups, according as they are observable in the eyes, nose, throat, or chest; but as these three last are but component parts of the respiratory tract, we will, for the sake of brevity, divide them into the cerebro-spinal and the naso-pulmonary, introducing the latter by a description of the eye distress. The most marked symptom connected with

the cerebro-spinal system is headache, which at one time is situated in the mid-frontal region, at another time in the occiput, and in a third instance is diffused throughout the entire head. This headache is sometimes accompanied by marked heat of the scalp; and in all the instances we have observed, it has been markedly aggravated by exposure to the sun and to strong light, both of which the patient has, as it were, instinctively avoided. In almost every case this frontal, or occipital, or general headache, is much increased by the violent sneezing which so much annoys the sufferer by its constant recurrence. But sometimes there may be little positive headache, and the most distress felt in the head may arise from a feeling of more or less decided giddiness, which also is generally sensibly augmented by the mid-day sun and light. Other indications of nervous disturbance are to be found in the buzzing or ringing in the ears which molest some of the afflicted, and in the itching of the forehead, nose, or ears, which are complained of by others. Itchiness of some part or other of

the facial integument is very characteristic of the complaint. There is also more or less of a sense of weariness, or other form of uneasiness along the spine, more particularly in the cervical portion of it; and this same feeling of impaired energy becomes gradually extended to the nervous trunks supplying the general muscular system. Hence the muscular debility and disinclination as well as inaptitude for much exertion.

Almost simultaneously with these symptoms which we have now described, the others, which we would call the naso-pulmonary, make their appearance. Sometimes the eyes, and in other instances the nose, is the first to occasion trouble; and in this case we will, for the sake of convenience, suppose that the eye is the first to suffer. The patient then begins to complain of a sense of itching in the eyelids, more particularly at the inner angles, and this, by injudicious exposure, or by constant rubbing, to which there is a great tendency, is soon augmented to a state of the most distressing irritation, which is more benefited by a cool and darkened apartment

than by any other general precaution. This feeling of itching soon creeps over the whole eye, and is preceded or speedily attended by a sense of heat and fulness, or by a feeling as if of sand or some foreign body in the eye, and with lachrymation or shedding of tears, which varies in profuseness and constancy in different cases. The eyelids become swollen or more or less œdematous, and the conjunctiva looks red and tumid—and sometimes a thick or yellowish matter is secreted by the eyelids. The blinking and the shedding of tears, which in some cases are most excessive, and the intolerance of light evinced by them, remind one very much of the like features characterizing cases of strumous ophthalmia, where the lachrymation and photophobia are quite disproportioned to the local signs of inflammation. The suffering and distress however are not long confined to the eye, for soon the patient begins to sneeze and to have a running at his nostrils, which he generally explains as the result of a feverish cold which he has caught. In some cases the paroxysms of sneezing are not very annoy-

ing, but in other instances the unhappy victim goes on sneezing so loudly and so constantly that he becomes at once an object of sympathy and also of considerable discomfort to his friends. The violence of these sneezing fits is not only a cause of great discomfort in itself, but it further augments the patient's sufferings by aggravating the headache from which, as we have already said, he generally suffers. These fits of sneezing are generally worst in the morning and early part of the day, and gradually abate with the advance of evening; at first also they may not be accompanied by any discharge, or by anything save a feeling of constant tickling in the nose, but sooner or later the nostrils give exit to a more or less profuse muco-watery discharge, which in turn is blamed for the herpetic eruption which in some cases appears on the lips.

If now we look into the nostrils, we will in all probability find that their mucous lining is swollen, dark coloured, and congested; and it may be, as in one case we observed, there are a few irritable-looking ulcers produced by the rub-

bing and picking which the patient would not desist from. The whole organ is swollen, the integument about it is irritable or excoriated from the constant acrid discharge, and the sense of smell is more or less impaired, and in some instances, as we should naturally expect, entirely lost. We have not met with any case in which the function of this organ was more acutely exercised than in a state of health, but such cases, it would appear, have been met with.

But, to trace the local symptoms in their downward course (although we must remember that all the naso-pulmonary symptoms may be almost simultaneous in their appearance), we will now proceed to describe those seen and felt in the throat. Most of the throat symptoms are found in other forms of disorder, and are just those familiar to all as occurring in what is called a cold in the throat.

The patient has a dry, hot, and pricking sensation in the fauces, which is assuaged by frequent draughts of water. Sometimes he feels as if there was some little body sticking in his throat, and he tries to dislodge it by coughing

and working with his tongue, which unfortunately only increases his discomfort. Sometimes there is uneasiness in deglutition, but this is not often a prominent symptom of the complaint. Sometimes the throat discomfort is all referred to one part; and this is often the posterior portion of the soft palate. If we examine the pharynx, it probably looks dusky red and tumid; and the uvula and tonsils are of a deeper hue than natural, and perhaps relaxed. The condition of the throat observed on inspection in some cases has been very much like what all are more or less familiar with in what is popularly called relaxed sore throat. Some describe an eruption of numerous inflamed points in the posterior fauces, but this has not come under our observation.

In some cases again the patient complains of a sense of tickling or rawness in the larynx or trachea causing him to cough with more or less frequency and violence; but in most instances this last symptom is attributed to discomfort felt in the bronchi. There is a greater or less sense of rawness, weight, or oppression beneath the

sternum; the patient's voice is weakened or more or less hoarse; and there is a feeling of "stuffiness," with a desire for cool and fresh air. There is more or less dyspnœa, which, as we have already said, may exist throughout the entire period of the disease without ever amounting to asthma or "closure of the chest" sufficient to occasion a dread of death from suffocation. The difficulty of breathing endured by some sufferers was, as will be remembered, pronounced by them as similar to that accompanying intermittent fever or ague, which does not amount to asthma, although this may at a time doubtless accompany any pulmonary affection in those with the requisite predisposition. The dyspnœa, however, is generally more marked in the evening and at night than during the early part of the day, and without being ever necessarily remarkably severe, varies in intensity at different periods of the complaint. When the difficulty of breathing is more considerable, sonorous or sibilant râles may be discovered on a stethoscopic examination. Along with this post-sternal oppression and rawness,

or at all events soon after it, there appears a varying amount of cough, at first perhaps dry, but followed in due time by slight muco-watery expectoration.

Before proceeding to consider what the probable pathological condition of the bronchial mucous membrane is, and what its cause may be; we will bring our description of the phenomena of the complaint to a close by a brief enumeration of the more general symptoms.

General Symptoms.—If the patient be carefully interrogated, it will generally be found that he has a more or less decidedly feverish feeling over him; heats being sometimes followed by shivery feelings and coldish perspirations, particularly after more severe coughing or sneezing than usual. He is perhaps pretty free of feverish heat in the morning, and complains most of his eyes and nose, and his pulse may be little above the standard of health; but towards night he gets hot and restless, the breathing gets "stuffy," and the pulse mounts to as many perhaps as one hundred beats in the minute. He complains of weakness, spinal

weariness, muscular languor, and mental torpitude, and restlessness and irritability, with an incapacity to fix his attention for any length of time on one subject. Circumstances which previous to the attack would have occasioned no annoyance, now become irksome and troublesome. The sufferer is troubled by the least noise, and shows an unhinged and irritable nervous system by an unwonted susceptibility to a thousand outward impressions, more especially closeness of the air, and exposure to the sun or strong light, which at other times and in other persons would cause neither bodily discomfort nor mental irritation. He also, in all probability, has little or no appetite, his tongue is coated, and he suffers from constipation, or from the opposite condition of looseness. More or less hepatic fullness and biliary derangement are usually complained of; and the patient's skin, hot and dry at one time, is at another moist and clammy. The imperfect action of the digestive organs, the derangement of the liver and its function, and the imperfect depuration of the blood, is often further evi-

denced by a scanty secretion of urine, which throws down a copious deposit of lithic acid. In most cases I have seen, there has been a poor and languid circulation; and in one case, grave renal disorder. Sometimes the patient is further annoyed by the presence of a copious eruption of urticaria, which however, when at its height, has been known to be attended by a temporary abatement of the bronchial symptoms. At another time the unhappy patient is much distressed by an eruption of herpes on the lips, which if at first owing to the constant flow of an acrid discharge from the nostrils, is certainly not afterward improved by the constant rubbing and blowing from which the patient cannot abstain. Imperfect secretion by the skin has characterized the cases seen by me.

After Symptoms.—According to our experience, sufferers from this complaint do not recover so speedily, or jump so quickly from sickness to health, as those are wont to do who have been attacked by a purely spasmodic complaint. They remain for some time weak in body and without their natural vivacity and

mental energy. They very gradually shake off their languor, depression, and spinal weariness, which, as a rule, diminish with a speed proportionate to the degree of atmospheric coolness. Their nights often continue to be restless without any apparent cause; they for some time have more or less dyspeptic discomfort; and they are very apt to have headache from the least fatigue during the hours of greater heat, more especially if exposed to the sun. They are not, so far as our experience goes, at all particular sufferers from colds in winter.

Now, on a review of all these symptoms, it will abundantly appear that the sufferers are specially characterized by two features common to them all. These are, nervous exhaustion, and, as a consequence of this, undue irritation or abnormal morbid excitability. This irritation evidences itself by impaired mental energy, by a generally quickened and easily-raised pulse, by a restless and enfeebled state of the muscular system, and by an excessive sensibility of the general surface and of the sensitive nerves to heat, light, and other external influences.

Hence though the term catarrhal is, for convenience and from the prominence of its manifestation, retained in the designation of the complaint, still it is very necessary to remember how largely that condition of the general system expressed by the word irritation, stamps the complaint.

Time of Appearance.—One of the most curious and characteristic features of the complaint is the periodical return of all its symptoms which we have now described, and its tendency to seize upon its victim about the same exact time every year, provided the characters of the recurring summer months do not differ widely. The earliness of its onset seems to bear an undoubted relation to the advent of the really hot summer days; that is, if the month of May be much hotter in 1868 than in 1869, we would expect that those who are prone to the disorder would begin to suffer earlier in the month just named, in the former than in the latter year. Moreover, the period of its first appearance is undoubtedly influenced by individual temperament, and by the geo-

graphical distribution of the sufferers. Thus, the nervous and irritable constitution, with a natural aversion to close or warm weather, is likely to suffer very early in the summer, and also to have to wither through a very prolonged indisposition. But, again, a person in the south of England will be attacked in all probability sooner than one in the northern counties, whilst one in the last-named situation will get ill before another who lives in the north of Scotland. In the first situation, it begins to make its first appearance about the latter part of May, in the second quarter it may be the middle of June, and in the last-named part of the island it is usually somewhat later still. All this, we think, has a direct relation to the advent of the hot days of summer. When the disease recurs in India, it has, as we mentioned before, appeared in the hot dry weather from March to June, and also in the period intervening between the end of July and the end of September, or even later in the year. It has been said to have appeared among Europeans in India during the months of February and

March, and then it has been attributed by some to the blossom of the mango and some other trees which are then in flower.

Duration.—It is next to impossible to say what is the average duration of this complaint, as season, temperament, age, locality, treatment, and other circumstances all tend to cause variations in different years and in different individuals. Treatment will do much to curtail the duration of the more prominent and distressing symptoms; but it is seldom that they depart under three or four weeks if left to themselves. Even this is very rare, for, as we have already shown, most cases suffer from the end of May to the latter part of July, whilst many, as in one of the cases quoted, do not get rid of their trouble till the end of September. Some suffer most severely till some time in July, then perhaps they get a little better, and then relapse again during August and September, having, as is generally said, a second attack at this period. The warmer the season the longer the duration of the complaint, according to our observations. According to

Dr. Bostock, the complaint has a tendency to increase rather than to decrease with advancing years, whilst according to others, the length of the illness increases with each year up to a certain age, after which it begins to be of shorter duration.

Period of Life.—We have mentioned one case in which the disorder appeared in childhood, and many others are on record where it appeared in the very early years of life. Thus, Dr. Bostock, who has left much interesting matter regarding this form of illness, suffered from his boyhood. Perhaps it generally always first appears before the period of adult life is attained to. I have seen it once or twice stated that no one suffers for the first time after the middle period of life, but I am unable either to corroborate or to contradict the assertion. In the instances which we have seen the tendency first appeared early in life.

Causes.—Before proceeding to the diagnosis of this complaint, it may be well to give some further reasons for believing that the prolonged feverish indisposition is in all probability often caused by solar heat or high temperature and

strong light, and not by vegetable emanations at all; and for proposing the names by which we have designated the complaint.

First, then, the complaint is restricted to a certain period, extending from the end of May to the end of September, varying in its time of onset and in its duration according to individual and local peculiarities. This corresponds to the period of great solar heat in this country. But it may be said that is just the time when pungent powders and other vegetable emanations can only be met with; and the warmer the weather the greater the smell, the more perfect the winnowing of the grass, and the greater the amount of pollen in the air; or, if we refer the complaint to benzoic acid, the more perfect the sublimation of that acid. It has also been found in the experience of some that the complaint occurs much more frequently among the inhabitants of rural districts than amongst the residents in towns; and that it is oftener to be met with amongst those living in the outskirts of towns than amongst those in more central parts.

My own experience agrees with that of those who consider the upper classes more prone to suffer than the lower. Whether this be owing to the latter not knowing the character of their illness, or to their considering it a common cold, which they seldom think worthy of much regard, or whether it be owing to the tendency so often found in this class to neglect seeking relief until actually laid low and unfitted for work I cannot say; but the cases I have seen have certainly been amongst people, if not in affluent, at least in easy circumstances. Dr. Bostock regarded hay fever as a complaint of the upper and middle classes, and not of the poor and lower orders. Dr. Elliotson writes that "he was told that certain distinguished personages had hay fever. It appears to be quite an aristocratical affection, not at all visiting haymakers, or those who have to do with hay and straw." This clearly indicates what were the opinions generally promulgated then regarding the favourite victims of the complaint, and Dr. Phœbus seems rather inclined to a similar view. But, as is so often the case,

one man's experience is the opposite of another's. Thus, Dr. King, in the *London Medical Gazette* for 1843, writes, "I have known of its occurrence in masked and aggravated forms, which I attribute to difficulties and exposures of a severer kind to which the poor are subject. I make very little doubt also, that these same catarrhal disturbances in summer are of a more frequent occurrence under a less distinct form; namely, that of aggravation of affections which in some degree the sufferer considers as habitual and almost natural to him."

Dr. Smith also, if I mistake not, mentions having met undoubted instances of hay fever amongst the poorer classes.

The cases which have come under our notice have been from amongst persons living in towns and not in rural parts. During the last two summers I frequently asked persons engaged in haymaking if they often suffered from hay fever or hay asthma, but I never gained any information indicative of any familiarity with the complaint. Here we may just suggest that perhaps the robust labourer, enjoying a

well-toned nervous system and a freely acting skin, would be little subject to an attack of this summer feverish irritation if heat be its cause; but he ought to be if the mere inhalation of pungent particles or odours were the exciting cause of illness.

Again, I made inquiries of some hay-salesmen, and at others largely engaged in horse hiring, whether or not they knew of frequent distress of any kind referrible to the presence of new hay or other grass, but I could not hear of anything lending countenance to the idea of hay fever being a noticeable complaint amongst these classes, which we might reasonably expect it to be, if the morbific influence had its origin in hay. But others have met with occasional cases from amongst these persons, and my investigations may not have been sufficiently extended to establish the point, and therefore I simply submit them for consideration. I never met with any one either who had an attack from going about hay-stacks at other periods of the year, even though the hay, from being massed, had a strong enough smell.

But to proceed a step further.

If vegetable emanations are the cause of what we have called summer catarrhal fever, effluvia of any kind from hay or sweet-scented spring grass are not its only causes. Thus we have stated that an analogous disorder prevails in some parts of the United States where the rose is largely cultivated, and that there it goes by the name of "rose fever" or "rose catarrh."

We have also given an instance where it occurred in India during the months of August and September, when vegetation, though becoming rich and mature, was altogether different from the forms met with in England; and we have seen it attributed in the first-named country to the blossom of the mango and other trees during February and March.

But, again, the complaint has made its appearance when all vegetation was dried up; and it has appeared in one instance in my experience when the victim of it was beyond the reach of all vegetable effluvia, as at sea; and similar cases have been recorded by others.

But, again, others have had their first seizure while at the sea-side, and had their distress increased when the wind blew from off the sea and not from the land. Here, if we must have a vegetable origin for the effective agent of dishealth, we must look for it in sea-weed or some form of marine vegetation. Still further, the effects of entire removal from all vegetable emanations have not been such as to favour the idea of their being the sole cause of disease. Persons are often met with who, though perhaps to some extent relieved, are not the least cured by going to the sea-side. Moreover, many sufferers have of themselves referred their illness to great heat of the weather, and they, when once attacked, instinctively avoid the sun and mid-day light as much as possible. Now, the patient's own ideas on this point I consider very valuable, more especially if they are those of an educated and intelligent person, and therefore, in addition to the opinions I have already given from sufferers known to myself, I may just state that Dr. Bostock attributed his own prolonged suffering every year not to emana-

tions from hay, but to fatigue and exposure to the sun's rays. He resorted for a considerable part of each summer to Ramsgate, living in a house on the cliff, with little or no grass near it; he observed that on many of the hottest days, the nearest land to the windward of his house being the opposite French coast, and the wind blowing from the south-east, if he exerted himself in any way, or exposed himself to the sun, his distress and suffering were augmented and perpetuated. Other similar cases might be adduced. Some who look to the vegetable world for the cause of illness, attribute the complaint to the presence of hay; others, to sweet-scented spring grass, or to rye-grass, beans, nettles, violets, roses, or some other plants in flower: but if we carefully review all these cases, we will find that one factor alone is common to them all, and that is great heat of the atmosphere. May not, therefore, the first appearance of illness, after being in the neighbourhood of any of these plants, be attributable to that having been the first occasion of more or less direct exposure to the sun?

The premonitory feelings of languor, lassitude, oppression, anorexia, and insomnia experienced by some are well-known effects of high temperature ; and the dyspnœa may never amount to a degree entitling it to the appellation asthmatic, as has been evidenced by the statements of patients themselves.

It is well worthy of notice that a feeling of tightness or constriction in the chest forms a very prominent symptom of other forms of illness which are by general consent attributed to direct solar influence or high atmospheric temperature. This I had ample opportunities of verifying from personal observation, and though different in degree, they may be similar in kind in both instances. Spasm is not regarded the essence of the paroxysm in these graver forms of sun affection, and we are inclined to believe it is not in the case now under consideration.

We have in some cases observed that the sufferer cannot face a strong light, or expose himself to the sun without an immediate aggravation of the general distress, independently of the local

discomfort; and that these persons are uncomfortably affected by these same agencies at all seasons of the year. It is further remarkable that some of the symptoms of this complaint make up the after effects of ardent continued fever and *coup-de-soleil*, which unquestionably arise from undue solar heat.

More or less mental depression, languor, sense of weariness along the spine, disturbed breathing and pectoral distress, dislike to strong light and inability to undergo exposure to the sun with impunity, distressing formication and ophthalmic irritation with lachrymation on exposure to bright light or to the sun, and frequent febrile heats with sleeplessness, have all come under my observation as consequences of these grave disorders. Lastly, I would just add that a train of symptoms in every respect similar to those characterizing the commonly called hay fever, occur in some persons under circumstances which indisputably point to high temperature as the cause of discomfort. These cases must have come under the notice of many, and are to be met with in this country at a

season of the year when there is no vegetation to blame for the distress.

A delicate nervous person, with perhaps a very weak circulation and subject to febrile flushes alternating with chills, has occasion to remain in a room the temperature of which has been made high by a large fire, and is perhaps rendered still more so by the presence of a good many people in it. In a little time his face begins to flush, his skin to feel hot, and his eyes to water, and immediately, or very soon after, he begins to sneeze and his nostrils to run. He will also complain of oppression at his chest. Some persons are thus affected in heated churches, and at large public meetings. This subsides as soon as he retires and enters a cool apartment, but if we could imagine his distress perpetuated, we would have a wonderfully good representation of the chief phenomena of hay fever. This distress is often experienced by delicate females, and the phenomena, so long as they last, precisely agree with those of hay fever. Now in this last instance, the morbid phenomena must surely be the effect of the high temperature of

the room relaxing the general tone of the nervous system, and not the mere result of peripheral irritation.

From these histories then, and from the circumstances in which some attacks first supervene, as well as from their persistence after removal from the sphere of their supposed contraction; their evident increase and decrease with a rise and fall of temperature; the manifest and oft-expressed aggravation of general as well as local suffering after exposure to strong light, or a burning sun; the similarity of many of the features of the popularly termed hay fever to those constituting some of the after effects of grave disorders ascribed to solar heat or high temperature; and the induction of a like train of phenomena in some persons by heated air when no vegetation exists, lead me to conclude that much more importance should be attached to great heat of the air, aided in many instances by intensity of light, as a cause of this form of illness, than has hitherto been accorded to it. Whether these agents are favoured by any concurring and unusual telluric or atmospheric

conditions—as, for instance, the presence of an unusual amount of ozone, as suggested by Dr. Phœbus,—we cannot say with any confidence. Perhaps the electricity of the atmosphere and of the sun's rays may have some influence in the induction and maintenance of the disorder, for I remember one gentleman who used to complain of being sensibly worse in dry weather, and immediately before a thunderstorm; whereas he was markedly better after such a storm accompanied by a heavy fall of rain. But whether an increase of ozone, or a plus or minus amount of electricity in the air or on the earth's surface, some way modified by the state of vegetation, is ever a concurring cause or not; the recognition of solar heat, more or less directly as the cause of this form of illness apparently has a most important bearing on rational treatment.

Predisposing Causes.—If the complaint which has been under consideration, really arises from causes so general in their operation as solar heat and great light; and if but a very limited proportion of the population suffer from it, and

if the complaint when once generated, is both severe and difficult to check; we are forced to conclude that some special predisposition, and some idiosyncrasy or peculiarity of constitution are necessary on the part of those who suffer.

Hereditary predisposition is by some considered as a cause of the disorder, and cases are published in which the children of parents who suffered, became similarly affected when they grew up. One case is known to me in which a brother and a sister both suffer annually; whilst in another instance the father of a large family suffers, but none of the children; and in another large family of grown-up children, the mother is the only sufferer. But if, as some say, it is a hereditary complaint, there appears also some good ground for considering it to be of constitutional or idiopathic origin. What the inherent proclivity to the disorder consists in, it would be difficult to say with any confidence; but I have certainly noticed some peculiarities of the nervous, and vascular, and secreting systems of those who have come under my observation with the complaint. The

nervous and bilious temperaments appear to be those most liable to it. We have observed the sufferers to be of a weak and nervous habit; and to have an enfeebled, and consequently an unnaturally excitable and mobile condition of the whole nervous system both at its centres and its peripheral extensions. They have moreover presented an enfeebled condition of cardiac action, and a consequent languor of the circulation, and tendency to internal congestions, together with a relaxed tone of the general system, a cold and generally unperspiring skin, a proneness to biliary congestion, and a natural preference for cold to warm weather. But though we believe that a certain constitutional peculiarity is requisite for catching the complaint, still it is extremely probable that an attack is hurried on, or perhaps contracted for the first time, under circumstances but for which complete immunity might have been enjoyed.

Thus, anything which weakens the nervous system of those prone to attacks, whether it be over-fatigue of body, or undue mental exertion, is sure to hurry on a seizure, and as certain to aggravate existing symptoms if the patient

has already begun to suffer. In like manner an unusually high temperature for the season of the year, is by general consent allowed to hasten the advent of the complaint.

Diagnosis.—The disorders with which this summer catarrhal form of feverishness is most likely to be confounded, are asthma, common catarrh, bronchitis, remittent fever, and catarrhal ophthalmia.

The diagnosis between the complaint and spasmodic asthma, which, as we have said may and does arise from emanations from hay amongst other causes, we have already attempted to establish.

But it may be said that the disorder is nothing more nor less than mere catarrh, occurring during the summer months.

Now catarrhal symptoms may constitute a special complaint commonly called a cold, or they may be prominent features of other disorders, as influenza, or epidemic catarrhal fever; or they may constitute a part of some of the exanthemata, as for instance measles; but in the present instance, the complaint differs from

common catarrh, with which it is most likely to be confounded, in the following important respects.

It occurs at a season, and under circumstances unfavourable to the generation of ordinary catarrh. Thus it may first appear during a period not characterized by frequent vicissitudes of temperature, but by steadily continued and equable high temperature; and it may be contracted by persons who keep much indoors, and avoid exposure to sudden changes in the weather. It is much less common than ordinary catarrh; and does not prevail epidemically like influenza. Many persons moreover who are not prone to colds at other seasons, have these catarrhal symptoms in summer; and *vice versa*, those who are prone to colds during winter and spring, are free of all such symptoms during the summer season.

It is not so frequent apparently amongst the aged as amongst adults and young persons. It has no tendency to appear or recur but at one season of the year, the prevailing feature of which is high atmospheric temperature.

It is wholly disobedient to the usual remedies for common catarrh, and amelioration of existing distress is usually coincident with a fall in temperature.

The affection may also be confounded, as we have just said, with bronchitis, but in many respects it widely differs from that complaint.

By bronchitis, as we understand it, is expressed inflammation of the mucous membrane of the bronchial tubes, which is generally the direct result of cold, or of heat rapidly followed by cold. This inflammation is either acute, when it is accompanied by distinct fever of a kind steadily increasing till the period of crisis, and then progressively declining; or it is chronic, when it occasions anatomical lesions in the lining membrane of the air tubes of a most serious nature, usually most difficult to remove, and certainly not in general cured by the advent of cold weather. Now bronchitis of two and three months' duration is fairly entitled to be called chronic, and would reasonably be expected to be attended by local and general changes occasioning the greatest care and

anxiety on the part of the patient during the colder months of the year. Again, acute bronchitis is never treated by tonics and stimulants from the first, which however sufferers from summer fever or hay fever, as we will for convenience call it, often are with benefit. Hay fever occurs at a season of the year when bronchial attacks are not wont to appear. It occurs only at this period moreover. The coryza and ophthalmic distress are more severe and of much longer duration in hay fever than in bronchitis. In the former complaint they are never absent; whereas in the latter they only usher in the pulmonary affection and general illness. The dyspnœa, which need not at any period be very great, is characterized also by the absence of that progressive increase and subsequent decrease which are observed during the advance and decline of an attack of bronchitis. The pulse also does not resemble that of bronchitis in its frequency or in its steadiness. It fluctuates, as well as the other morbid phenomena, much more within a given period of time than he would expect in any inflamma-

tory affection. Intolerance of light and heat especially, form no features of bronchitis. The stethoscopic signs and the expectoration changes are not so diffused, and do not undergo the alterations which usually attend the rise and fall of inflammation of the bronchial mucous membrane. The juvantia and lædentia of the two complaints are different, and the treatment beneficial in the one case, is utterly useless in the other.

The peculiarity of the general symptoms of the commonly called hay fever, then, their fluctuating nature, and the absence of the special signs of other chest affections, will serve to distinguish it from the others just contrasted with it; but the periodicity of this singular complaint which revisits its favourites with the most undeviating regularity at a like period year after year, might lead to its being regarded as a form of remittent fever.

Moreover, if a case of hay fever (to use the name for convenience here) be closely watched, it may often be remarked that there are, as we have already said, more or less well-marked

remissions and exacerbations; the pulse, which at night was frequent, falls in the morning very decidedly, but only to rise in the evening again to the morbid rate of the previous night. Now these remissions and exacerbations, together with the periodical return of the complaint and the co-existence of certain vegetable emanations, might favour the conclusion that this summer catarrhal fever is of the nature of chronic remittent fever; and that if not truly such, it is at least closely allied to the malarial group. On the other hand the idea of a malarious impression is negatived by the comparatively small number of sufferers; by the prevalence of the complaint in very dry though warm summers, as well as in moist and sultry ones; by its disappearance as autumn advances, and with it an increase of decomposing vegetable matter; by its persistence after change of locality; and by its total disobedience in most instances, to quinine and other antiperiodic remedies. I know one gentleman who suffered frequently from ague, and also every year, from hay fever, in India.

The former yielded to quinine; the latter pursued its vexing course uninfluenced by the remedy.

The points of distinction between hay fever and catarrhal ophthalmia are so many and so marked that we may pass on without any further allusion to them.

Pathology.—Heat and light are healthy stimuli, that is, they are influences essential for a proper discharge of the functions both of plants and animals. Without them, the plant bears neither flower nor fruit to perfection; and the animal also, if excluded from their genial influence, suffers in its nutrition, becomes arrested in its development, and sooner or later succumbs to pining sickness. But heat and light, like many other vivifying influences, instead of tending to maintain the standard of health, become causes of sickness if they pass a certain grade of intensity, or are uninterrupted in their operation. Hence the all-wise provision of succession of the seasons, and alternation of day and night. Heat (with which we are at present most concerned), from a salutary

influence exercised by it on the cerebro-spinal and sympathetic systems of nerves, is a quickener of the various functions up to a certain point, beyond which it perverts or disturbs those functions by exerting a depressing or partially paralysing influence on the same sets of nerves. Now one person can remain uninjured by a degree of heat which would occasion grave discomfort or positive sickness to another. The point of turning, if we may so say, from ministering to health, to tending to sickness, is determined very much in each instance by individual temperament, by the degree of animal heat generated, by the amount of evaporation from the surface, and by the tone of the nervous system. Men blessed with a freely acting skin and with great nervous power, can endure a degree of heat which would paralyse the energies of others.

It appears to us that all the train of morbid phenomena constituting the febrile form of disturbance now under consideration, is indicative of nervous exhaustion and consequent irritation, and that this results from a partially paralysed

or weakened condition of the functional activity of certain nervous centres and nerves both of the cerebro-spinal and the sympathetic systems. The febrile accessions may also at times be partially owing to increase of the animal heat which is not tempered by the cooling effects of evaporation from the surface. The paralysing or depressing effects of the high temperature, aided in some respects by the intensity of light, on the cerebro-spinal system, are evidenced by the impaired mental energy, by the ascendancy of the emotions, by the irritable condition of the general system, by the diminution of voluntary power, by the ophthalmic and cutaneous hyperæsthesia which are so constant characteristics of the complaint, by the undue excitability, and by the unnatural sensitiveness of the patient to outward impressions. The afferent or sensitive nerves are morbidly alive to impressions; the power of muscular motion is diminished; and there is loss of tone and a general relaxation of system with increased excitability. Hence the ophthalmic branches of the fifth nerve are morbidly sensitive to light

and heat according to the well-known law that wherever there is a loss of power there is a proportionate increase of mobility and sensitiveness. This is daily seen in the case of those with strumous ophthalmia consequent on lowered vitality. The dyspnœa may result from the vagi participating to a certain degree in the general innervation; but though it may in part arise also from a venalized condition of the blood consequent on a diminished frequency of respiration, still, both the varying degrees of bronchitic and pulmonary congestion from which it arises, and also the febrile symptoms with nasal flux and muco-watery expectoration, indicate a paretic condition of the vaso-motor nerves. These fluxes clearly express vascular relaxation consequent on vaso-motor nerve paresis.

Now if we consider the ophthalmic distress and the sneezing as the results of pungent powders floating in the air, we can easily explain the occurence of the fluxes, if we remember the connections existing between the various branches of the ophthalmic division

of the fifth nerve, and between the cerebro-spinal and sympathetic systems. But sometimes we seem unable to account for these phenomena on the principle of peripheral irritation. A person suffering from hay fever is in a shaded room, where he has perhaps been for a time pretty free of ophthalmic uneasiness; but all at once he begins to sneeze and his nostrils to discharge; and he complains of an increased stuffiness in the chest, with a feeling of languor. The windows have not been open, but the day is advancing, the sun outside is waxing hotter each hour, and the temperature inside rises also. Now in this case, as also in that of those who suffer, as we hinted at before, from over-heated rooms, we cannot refer the sneezing and the fluxes to peripheral irritation from pungent powders, odours, or even violent puffs of air; but they must be the result of some morbid impression which is central and not terminal in its seat. We seem shut up to the conclusion that a stimulus, morbid in degree, so influences certain nervous centres that, in place

of exalting, it depresses the functions of those parts or organs to which their offsets are distributed. This we can see often verified in the case of electricity, which will exalt function when used of a certain intensity, but depress it when used of greater strength. The congested condition of the mucous membrane when once established tends to maintain the tendency to winking, sneezing, and coughing, on the ordinary principles of direct and reflex irritation.

We doubt not that all the phenomena of this disorder are referrible, not to any organic alteration, but to functional depression of nervous centres and nerves, and that many of them are readily explicable by the laws of reflex inhibitory influence as explained by Pflüger, Lister, C. H. Jones, and others. There are, however, in our opinion, two other circumstances which tend to increase the bronchitic and pulmonary congestion, and the general discomfort experienced by some sufferers from this complaint.

From the investigations of Vierordt and others it would appear that as the temperature

rises, the oxygen in a given bulk of air is diminished, and therefore the respiration is less perfectly performed; and it would also seem that under these conditions of high temperature not only is less oxygen inhaled but less carbonic acid is exhaled, so that the blood becomes venalized. This venalized condition increases with the increase of temperature; and is expressed in the drowsiness, inertness, lassitude, muscular weakness, and diminished excretion observable in the subjects of it. To counteract in some measure the injuriousness of this state of the blood, a vicarious depuration is established by an increase of the cutaneous exhalation, which serves at once to remove effete matters accumulating in the system, and also to keep down the animal heat by evaporation.

Now we have observed that in those whom we have seen suffering from this complaint, there have been a naturally sluggish circulation, a tendency to disorder of the biliary and renal secretions, and an absence of natural, healthy, and free perspiration. An

originally greater degree of nervous power, a freedom from many of the exhausting cares of more refined life, and the benefits accruing from a freely and healthily acting skin, may partly account for the greater freedom of those in rural districts from this complaint, than of those who, living in large towns, are subjected to many unavoidable causes of depression, or voluntarily expose themselves to avoidable sources of exhaustion.

Prognosis.— We have already stated that the duration of either form of illness is very variable in different instances; but, in all uncomplicated cases, the sufferer in process of time usually in great part regains his former measure of health. The hopes of recovery from the first or purely spasmodic complaint, if not associated with bronchitis or other form of organic disease, is always good as far as an attack goes; and the same may be said of the second or febrile form of illness when unaccompanied by structural lesions in any important organ; for, though most wearing out, and for the time paralysing both of bodily and

mental energy, it is always, so far as we know, recovered from. The prognosis then, as far as danger to life from an attack goes, is good; but it is very much less favourable so far as immunity from such seizures is concerned. But still, the opinions entertained by some that one attack entails a repetition of it every subsequent year, and that the proclivity to the complaint constitutes an unalterable idiosyncrasy, are contradicted by cases recorded by others, and are at variance with some of the results of our observation and experience.

Moreover, if we consider the nature of either kind of disorder, and the modus operandi of its exciting causes, there can apparently be no reason why treatment should not be successful in reducing an existing attack to a comparatively trifling discomfort; and if systematically pursued, of completely preventing its recurrence in many instances.

Treatment.—It is difficult to see why hay asthma and hay fever as it is popularly called, should not be alleviated, and in many instances prevented, as well as the suffering from, and

tendency to neuralgic affections or bronchial attacks, from reduction of temperature.

No one attempts to cure, and no one expects to throw off the neuralgic diathesis, if we may so name it, or to get rid of a proneness to catch bronchial colds, by merely battling with an existing seizure; but hopes of ultimate freedom from either kind of suffering are based upon efforts directed against that tendency during the intervals of health. People know that there is something constitutionally faulty about them, and that their painful illnesses may recur at any time, and therefore they do not flag in their endeavours after relief; but in the case of hay asthma or hay fever, matters are different. The complaints coming round but once a year, are sorely grumbled at for the time being, but are not combated against during the rest of the year. The tendency to them is in great part a constitutional vice; and this must be altered by long sustained and systematically instituted efforts before we can reasonably expect to give the sufferer either increasing amelioration of after attacks or ultimate immunity from them.

The treatment of both complaints then resolves itself into the palliative, or that to be instituted during a seizure; and the prophylactic, or that to be pursued after the term of illness is past, in the hope of preventing its recurrence. The palliative or curative treatment of the spasmodic form, rightly termed hay asthma, is just that of ordinary asthma, and of the conjunctival and nasal irritation which accompanies it. There is no specific for an attack of hay asthma any more than for any other form of asthma; and one remedy will afford relief at one time and fail at another. They consist of various combinations of sedatives and antispasmodics. I have found a combination of belladonna, cannabis indica and camphor, in proportions varying according to circumstances, of great service in this, as in other forms of asthma. Chloric ether with the tinctura camphoræ composita, or ether and ammonia, are also good combinations, as are also stramonium, and opium or its active principles. When the gouty or rheumatic element is present, as is so often the case,

colchicum must be judiciously added to those other remedies. Many other drugs might be mentioned, all of good service; but when all others fail, sometimes relief is obtained from a combination of ammoniacum, lobelia inflata, and ipecacuanha, which unfortunately has the drawback of being most unpalatable.

In addition to these internal remedies, and in cases where the stomach cannot take medicines, great relief will sometimes follow the inhalation of chloroform judiciously administered, and of the steam of hot water medicated with any sedative. Dr. Elliotson found signal benefit to accrue from the inhalation of chlorine well diluted; and I have seen great relief from breathing the steam of boiling water to which some of the liquor carbonis detergens was added. I would here suggest the use of the last-named preparation, or of carbolic acid, or permanganate of potash in the form of medicated steam, in the hope of their deodorising and disinfecting properties being found useful in destroying the potency of the vegetable odours and powders to which the complaint is referred. It should also

be remembered that every soluble medicinal agent can now be inhaled in the form of spray, by some of the instruments devised for that purpose.

These sedative inhalations (to use the abbreviation) often give great relief to the nasal and ophthalmic irritation, which last is often much benefited by weak zinc or lead and poppy lotions. A weak nitrate of silver lotion was very useful in my hands in one instance. Smearing the inside of the eyelids at bed-time with the old citrine ointment has also been recommended, but of all measures for this end, none equal keeping in a cool and shaded room or locality. Perhaps smearing the inside of the nostrils with some unctuous substance might be useful in averting both sneezing and bronchial spasm, by protecting the mucous surface and its nervous filaments from immediate contact with any pungent powders floating in the air.

We must not omit that benefit often results from smoking tobacco or using stramonium cigarettes on the first warnings of an attack. A cup of hot coffee, without grounds, taken on

an empty stomach, has also served for the time to ward off an attack of this as of other forms of asthma.

But during the period when this kind of asthma prevails, the two most useful precautions (which form also part of the prophylactic treatment) are, to avoid the presence of hay, and to pay particular attention to diet, and to the state of the functions generally. There can be no reason why a spasmodic complaint, due to an external influence not found in every place, should not be averted or shortened by a change of locality, and good may justly be expected from a resort to the sea-side. But an attack of asthma of any form is prone to cause derangements of the digestive and secreting organs, which in turn are apt to induce a recurrence of the bronchial spasm until the nervous tissue regains its stability and quiescence. Hence a resort to the sea-side must go hand in hand with careful attention to all the functions, with a due regulation of the bowels, and with a scrupulous attention to the use of a light and easily-digestible diet. The

prophylactic treament may be said to consist briefly of care in diet; keeping away for the time from hay, flowering plants, and rich vegetation of all kinds, avoiding all sources of exhaustion, using nervine tonics, and also many of the measures to be enumerated for the more febrile kind of affection.

If we are correct in our supposition as to the agent or agents which induce the second form of illness, characterized by fluctuating febrile disturbance, irritability, and general nervous and vascular relaxation, with extreme sensibility, we need not look for any specific remedy, nor hope for a speedy disappearance of the symptoms from a mere change of place. But though it will not effect a cure, resort to the sea-side should, as it generally does, afford some amelioration to distress, in consequence of the cooling and bracing effects of the sea breezes But, as Dr. Bostock has left on record, even this will afford little or no relief unless all bodily and mental fatigue be completely abandoned, and the patient keep himself quietly indoor during the heat of the day. The

treatment of a febrile attack consists very much of that suitable for any other febrile seizure, and the alleviation of the ophthalmic and nasal distress is by the measures already mentioned. One patient writes, "The sneezing fits and eye trouble in the earlier season are mitigated by quinine and iron tonics," which clearly shows the connection these symptoms have with enfeebled nervous energy rather than with the inflammatory process. Still local remedies do good by allaying to some extent the morbid sensibility of the nervous filaments, and otherwise altering their tendency to morbid activity. But from all I have observed and learned from others, the greatest amelioration of the general distress, and also of the various local discomforts, arises from confinement in a cool and shaded room during the heat of the day and till the sun is pretty well down. Gentle exercise, when able to be taken, should be tried in the early morning, or better, in the cool of the evening; and the daytime should be spent in the house quietly. This may be irksome to most persons, and impossible for some to comply

with; but it is wonderful how comparatively comfortably the period of suffering can be tided over by this precaution, and how certainly an infringement of it entails additional distress. In consequence of the unavoidably lessened muscular action, less of the albuminous constituents of food should be taken than during periods of activity, and considering the lessened activity of the pulmonic circulation from diminished frequency of respiration and consequent lessened inhalation of oxygen, care should be taken to avoid all excess in the way of saccharine, spirituous, or other substances which go to form the elements of respiration. Attention to these rules of dietary materially adds to the patient's comfort. Rigid attention to these rules is essential during an accession of much febrile discomfort, but throughout the general period of illness the starving process forms no part of proper treatment, for the patient is weak, and feels and knows himself that he needs judicious support. Febrile discomfort may be lessened by general attention to the various functions, and by the occasional

use of saline laxatives with a small addition of quinine, or by the same medicine combined with dilute nitro-muriatic acid and taraxacum, to which a little of the Sp. æther nitrici may be added if the renal as well as the biliary secretion is disordered. Great irritation may for the time be diminished by the occasional exhibition of suitable proportions of belladonna, conium, hyoscyamus, or some other soothing remedy which will not interfere with a free discharge of the functions of the various secreting organs. Great relief also follows free action of the skin, which must be encouraged by means which will vary with the circumstances of each particular case, but generally all relaxing measures must be left alone. Both quinine and arsenic often give relief, according to the testimony of some patients, alike to local distress and also to general discomfort, but they do not cut short the attack ; and in those cases where they are stated to have effected a speedy cure there has probably been some lurking aguish taint. This the patient himself may perhaps not be aware of,

but it is more than probable; for both arsenic and quinine have been tried by many, and have been found to fail egregiously.

The comparative want of ultimate success in the treatment of this complaint may be owing in great part to remedial measures being instituted only at the appearance of an attack, and by their being abandoned as soon as it has begun to decline. If we grant an unaltered predisposition, we are prepared to expect a recurring illness with a periodically returning and intensified exciting cause. Hence the grand secret of success, according to some cases which have come under my own notice, and others I have heard and read of, consists in preventive or prophylactic measures carried out into a regular habit of life during the interval of health. The great indications of treatment appear to me to be to raise the tone of the entire nervous system, and so to remove or lessen the unnatural susceptibility of the lachrymal and nasal twigs of the ophthalmic nerve to outward impressions; to brace up the respiratory mucous tract, and to invigorate a naturally

sluggish circulation, and so diminish the tendency to internal congestions. If now it is possible to remove the unnatural susceptibility in some to suffer from falls of temperature, may it not be equally possible to overcome the extreme tendency in others to suffer from corresponding rises of temperature? It appears but reasonable to think so; and a sufficient number of cases are recorded to show that by patient perseverance in the use of certain means, it can be done.

Tone must be given to the entire nervous system, both in its various centres, and also in its peripheral extensions. The skin must be invigorated, and a free circulation maintained in it. The mucous membranes must be braced up so as to diminish their unnatural susceptibility to atmospheric changes, and the vigour of the cardiac contractions must be increased. The measures to be adopted for these ends are simple and easy of enumeration, and potent for good, we believe, if systematically carried out and made a regular habit of life.

The sympathy between the skin and mucous

membranes, and the central organ of the circulation, the liver, and the various chylopoietic viscera, must be carefully remembered, and due attention be paid to a healthy performance of their functions. For invigorating the skin, and also for assisting the various functions, regularly timed and properly graduated foot exercise, especially in the early morning, is a most important item of treatment. A thorough distribution of blood to the extremities, and to the general surface of the body, should be secured without inducing fatigue.

Another important mean for fulfilling all the indications, but especially for toning the nervous system and mucous membranes, is the graduated application of cold to the surface of the body, followed by judicious friction. Tepid sponging, cold sponging, the tepid general bath, and the tepid shower-bath, may be successively employed till the system can benefit from the shock of the cold shower-bath, which must be regulated according to the effect it produces. Benefit will also result from sea-bathing at the proper season, provided it does not occasion

numbness or chilliness, and in every instance the use of any kind of bath should be followed by brisk friction along the spine and over the surface of the body generally.

The force of the cardiac contractions may be upheld and strengthened, and the tone of the nervous system improved, by the avoidance of all depressing influences, specially over-anxiety of mind about business or other matters, by a nourishing animal diet proportioned to the waste of the system, by a judicious use of some stimulant, specially dry sherry and claret, in the proper season, and by the prolonged exhibition from time to time of nervine tonics, more especially iron, or iron and quinine combined with strychnine. This latter drug is, in our opinion, of very great value, from the decided effects it produces on the nervous system, and may be usefully combined at other times with diluted phosphoric acid. Great good will often result from the exhibition of arsenic, and by continuing it with some little tonic until it produces its physiological effects. Most marked relief has been obtained in one case

this season by a steady continuance of its use with iron with occasional necessary omissions since last year.

Arsenic, when given in poisonous doses, or during many states of inflammation or violent irritation, manifests its toxic influence by inducing or increasing that inflammatory or irritable condition; but it is equally certain that, if given at the proper time, and in proper proportions, and with suitable omissions during a lengthened period, it undoubtedly relieves irritation, removes hyperæsthesia, diminishes or dries up serous and other discharges, and overcomes uncontrolled and imperfectly regulated muscular movements. These effects clearly depend upon its vitalising or toning influence over nervous centres and nerves of both systems; and the singular increase of breathing capabilities ascribed to its use by the arsenic eaters amongst the peasantry of Styria and Lower Austria would seem to prove that it exercises some special influence over the medulla oblongata and the vagi and other nerves presiding over the function of respir-

ation. Hence the good we often find to result from its use in cases of strumous ophthalmia, in some instances of rheumatism, and in the great majority of cases of chorea; and hence also the good ascribed to it by some in cases of asthma. Now the good effects in these cases, and the benefit ascribed to it by some sufferers from hay fever, we believe to arise, not in virtue of its being a specific for these complaints, but by reason of its wonderfully alterative and toning influence over both divisions of the nervous system. These remedies must for a time be abandoned after manifesting their physiological effects; but they should speedily be resumed again and continued with suitable changes from time to time for a lengthened period. They ought to be taken for some considerable time prior to the wonted period of suffering; and the extreme sensitiveness of the terminal nervous filaments of the eye and nose be counteracted by using frequently, and more especially before the time of attacks, zinc or lead and poppy lotions: or by using, in the case of the eye, night and

morning, a drop of the vinum opii, or of nitrate of silver of the strength of a grain to the ounce.

Such are the measures by a prolonged and systematic adoption of which we have seen and known of permanent relief in some instances of this distressing complaint; and we are inclined to think that many more might be freed from this annually recurring inconvenience and suffering, were they more alive to the necessity of doing all they can to prevent its becoming, as we might say, a constitutional habit with them, and were they more impressed with the share that elevated temperature, assisted in many instances by intensity of light, has in the causation of their complaint, and therefore more impressed with the necessity of altering a constitutional weakness, not by merely instituting treatment at the commencement of an attack and abandoning it on its decline, but by systematically pursuing it during the interval of health.

THE END.