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SOME CLINICAL FEATURES REGARDING HAY-FEVER AND ITS RATIONAL TREATMENT.*

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The employment of the term "hay-fever" is in the generic sense, and has reference to the recognized symptoms commonly attributed to pollen.

Taught by the immature expressions of so many who have approached this subject from the physiological and clinical standpoints, it is the desire of the writer that his experience and conclusion should not be accepted at once in the light of an altogether new discovery, nor does it boldly promise in every instance a radical result.

During the past season of the hay-fever period a certain number of new cases have afforded a fresh opportunity to compare notes as to the various methods of treatment and their effects. Certainly, so far, no clear explanation as to the intrinsic condition upon which this disease depends has appeared, and perhaps it may be wise to add, such a didactic statement should not be too confidently received, owing to the various and indefinite elements that in exceptional examples serve to obscure an affection possessing so great a variety of subjective details. It is equally safe to premise that no morbid condition, medical or surgical, can assume to be positive in its descriptive details in every instance; nor is this thought to be necessary in order to establish a fundamental rule for action. "In scientific investigations," says Darwin, "it is permitted to invent any hypothesis, and if it explains various large and

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independent classes of facts it rises to the rank of well grounded theory."

In the main, excluding a very minor number of cases in which a purely neurotic condition is at fault, that is connected with other reflex disorders and independent of any structural alteration that can be appreciated, it is the intention of this paper to call particular attention to an abnormality of the middle turbinated bone and its covering tissues.

It is ever stated with an emphasis born of long habit, that in the chain of hay-fever are the three imperative connecting links, viz.: the predisposing constitutional or neurotic state, the exciting irritant cause of whatever nature—whether pollen, dust, or atmospheric, prevalent at a certain season, and thirdly some physical alteration of the intra-nasal structure. These three increments constitute the tripod upon which rests whatsoever is claimed to be the association between cause and effect so far as a physical appreciation of hay-fever is concerned. Otherwise it is asked how comes it that a removal from the field of its invariable influence is accompanied by an immunity, or possessed of the identical surrounding a more vigorous physical habitude, will serve to cut short a disposition of long standing? These questions however answered would appear at first sight to lead to an inevitable conclusion as to the mere accompanying value of a local intra-nasal abnormality, unless one is careful to give to each matter its proper place in the scheme of a purely predisposing element such as is familiar in a greater or lesser degree to all diseases.

The turbinated bodies normally sensitive to vaso-motor excitement, are in some individuals curiously responsive to mental states, as is illustrated by two examples cited by the later Sir Morrel Mackenzie and Dr. John Mackenzie, of Baltimore. In the first a patient was seized by an attack of hay-fever after witnessing a highly realistic painting representing a hay gathering, and in the second where the exposure to a collection of artificial roses to a woman subject to rose cold was sufficient to establish an immediate intra-nasal congestion. Other approximate instances are sufficiently commonplace in the histories of hay-fever that relate to exact time periods of attack to cause many patients to distrust propositions to anything that may have the sound of a minor surgical operation, and leads them to seek their salvation in a climate free from the germ they have learned to be the ingredient of their distress.

The proposition that appeals to the physician is to outline a curative treatment that will allow a normal state of health to prevail notwithstanding the exposure to whatever form of pollen or irritant may commonly induce the attack. Certainly no healthy nostril should afford a resting place for the development of infection, or readily respond to extremes of vaso-motor disturbance.

The inferior turbinated appears to have received the major share of attention in the past as the offending body, and unquestionably often has been sufficient to influence indirectly the necessary irritation underlying this affection. Following the removal of its fullness by means of the cautery or snare, or the riddance of projecting spurs of the septum, irritating contact has given place to temporary and frequently to complete immunity from the periodic hay-fever attacks. In the majority of instances unfortunately the relief has not been so satisfactory, showing that in addition there have been irritable areas unnoticed and untouched. Occasionally local spots on the septum have been suspected to be the starting points in the formative career of the disease. These have received a like cautery application but without producing a result sufficiently encouraging to give much hope for anything tangible in this direction. All these surfaces are undoubtedly important as approximating a normal and unembarrassed nostril, without which the best conditions for an absolute relief could hardly be expected. Infinite antiseptic, astringent, alterative, washes and pigments have been employed with indifferent success. Such, then have been in the hands of the majority the selective treatment. So far as the theory and as far as the practice has gone, ground has been gained; many sufferers have been radically cured, more have experienced a partial but substantial relief.

The middle turbinated differs essentially in structure and function from the inferior. Constituting a considerable share of the ethmoid, these bodies stand in immediate relation to the floor of the brain; its mucous membrane is vastly more delicate and sensitive, its prescribed space is narrowly restricted and any increase in size or deviation from the normal lines brings it in contact with unyielding boundaries with accompanying pressure and obstruction to ventilation and secretion. Its thin walls easily give way to processes of inflammation with surface hyperplastic development that must react on the deeper structures composing the ramification of cell cavities. The frontal, ethmoidal, sphenoidal cells are closely influenced by any abnormal activity. Its nerve supply is

largely independent to itself and includes sympathetic branches derived through the carotid plexus. With the distribution of the olfactory, each filament is surrounded by prolongations from the dura and pia mater extending to the periosteum. It is consequently not difficult to attribute through these various anatomical conditions a wide range of symptoms such as are conspicuous in the histories of the disease in question.

As a dominant function the upper nares preside over the olfactory sense. All sapids, excepting the bitters, sweets and acids, are appreciated through this area. Aside from prolonged exposures to irritant solids or gaseous emanations, mental emotions, sexual excitements, eye reflexes, heat, light, play no small part in disturbing a vascular equilibrium. The increased inspiratory effort when the normal canal is contracted, as in the instances of hypertrophy of the inferior turbinated, or from septal deviations or exostoses, must convert this auxiliary meatus into a new and improvident functional career. Hence one explanation for the results attending the removal of these obstacles is that a proper respiration is re-established, and at once a predisposition to hay-fever is proportionately eliminated, notwithstanding the middle turbinated remains unchanged. The prevailing irritants are no longer carried through the same channel to remain impacted against this sensitive surface. It may be suggested in passing that the middle turbinated is placed nearly two inches distant from the external meatus and somewhat over an inch beyond the anterior tip of the inferior, as though apparently protected against inordinate exposures. Again, a nostril that is permanently and effectually plugged, as by large polypi, is rarely effected with the full symptoms of hay-fever—inasmuch as no air passes within, no external irritant can be drawn with it to excite acute inflammation of these structures. Other symptoms, however, are likely to prevail which are more or less germane to the subject, and concerning which much has been written suggestive of a phase of vaso-motor derangements. I refer to the relation of asthma to nasal polypi and also hay-fever. Here, too, opinions are somewhat at variance and perhaps somewhat vague, I cite from H. L. Swain: "Shall we consider that the nasal condition produces the asthma—cause and effect—or are both the outcome the result of some depraved condition of the general system which has outward expression of these two diseased conditions?" It is not proposed to take up this issue in the present discussion beyond declaring

the belief that, as an accompanying feature of hay-fever, its determination is as clear as that of the underlying intra-nasal affection itself.

Since 1819, when the first descriptive account of hay-fever was published, by Bostock, up to the time of Blackley, '73, and Beard, '76, the pollen theory appears to have been that most generally accepted. With Pierrie, '67, and Beard came the additional emphasis relating to the subjective state of the patient as impelled by a neurotic disposition. Daly, Hack, and Roe about the same period, '82-'83, began to point to an intra-nasal abnormality as a necessary complement. In '84 Morrel Mackenzie, after carefully summing up the various theories and fortified by his personal experiences, declared unhesitatingly that "pollen is the essential factor in the case of those who possess the peculiar predisposition." Concerning the combined causes, viz., heat, light, dust, ozone, benzoin, over-exertion, he proceeds to add: "Several writers have contended that although any one of the above causes may not alone be sufficient to produce hay-fever, several of them acting together may be able to do so. Such theories are the last resources of those who are unable to discover the true etiology, and there is not a little of evidence in their support."

If it is remembered that, practically, it has been hardly twenty-five years since pathological states of the nasal organs have assumed a wider significance, it is realized how impossible it has been to the earlier students of this affection to reason as to cause and effect principles in a manner that should be convincing. So it is that with the three assumed cardinal necessities—that of external surrounding, the central nervous system, and some indefinite local state, the attention has been so greatly distracted as to open the way to discussions that are endless in their variety and to a conclusion as yet unformed. Beard in his day was ready to acknowledge that there was no individual pollen that would arouse this disease into activity; consequently there were idiosyncrasies so multiple as to include dusts of many descriptions combined with weather conditions to make them potent. At the present this is not contradicted, but as if to render the field still more subtle, with an unclassified neurotic state is now frequently combined a gouty or rheumatic disposition. In other words it seems necessary to spell out a causation that will meet the requirement of each class of cases, but lacking in any general rule under which a specific action could be taken.

If it is true that the entire principle of hay-fever resides in an acute inflammatory process of the middle turbinated structure, and if this susceptibility to the influence of external irritants may be removed, the scrupulous avoidance of pollen and the constitutional remedies addressed to the nervous diasthesis will easily have passed into a category of things of an altogether secondary value.

When so important an issue is at stake and where substantial proofs may be most difficult to furnish at the outset, it is clearly the part of prudence that one should be sufficiently confident of one's ground before venturing to pronounce decidedly in a matter that has vexed for so long many and the most careful observers. It is possible that others have trodden the same path before, but judging from the discussions that followed a paper on this subject at the last annual meeting of the society, I make bold to appropriate the definite views as expressed in this communication.

Originally rather accidentally, but within the last three years more systematically, the writer was led to devote particular attention to symptoms believed to originate in hypertrophic conditions of the middle turbinated. As is well known hypertrophy here is common to patients who bring their ailments to the clinics of a special hospital. When this state is sufficiently advanced and not greatly complicated by other obstructive lesions, without too pointedly questioning, it is found that there is generally a feeling of stuffiness often amounting to a sense of pressure, a frequency to head colds with frontal pains, the voice lacks a true resonance and there is unmistakable evidence of impeded functional activity. In the development of a somewhat acute stage the symptoms become marked; the irritation is out of proportion to the ordinary so-called cold, the hydroporrhea is more extreme and viscid and bathes the upper nasal region; a dry cough frequently eventuates—in fact the local signs begin to approach more closely to those of genuine hay-fever. Stimulating applications are said to burn like fire and do not produce the speedy reduction of the swollen erectile tissues, but if anything appear to aggravate the discomfort. In addition the tracheal wall will often exhibit a redness easily appreciated. In short this picture might stand sufficiently well for hay-fever of a minor degree were it not that the attacks are not periodic nor occurring at a suitable season, nor running an equal time limit. For all that I take it that the process is identical and only modified by subjective variations that tend to intensify and prolong the term of acute inflammation. In another instance a con-

dition of perennial congestive activity, simulating in almost every detail the periodic type, is occasionally witnessed. Surely here no pollen theory, nor properly speaking, a neurosis can be introduced to satisfy the time-honored theory of causation. As an illustration the following history is introduced: Three years since a patient, a woman about 40, living in the country, was referred to the Metropolitan Throat Hospital by Dr. Fayette Smith, of Newark, with the statement that in his attendance upon her he had included of pretty nearly every method recognized in the vocabulary of treatment, and at the end of his resources he had delivered her into our hands. In the patient's language her state was beyond compare. During the preceding two years her condition at the best was wretched enough, but with the exacerbations almost unsupportable. Occluded nostrils, throbbing frontal pains, lachrymation, hydrorrhea, violent sneezing, with asthma superadded were all in active evidence at her visit. It was with the greatest difficulty that a satisfactory examination could be made, owing to the rhinal congestion. A sufficient but not great hypertrophy of the middle turbinated was brought into view developing in each nostril. In every direction this case appeared to answer to the periodic hay-fever history, excepting in the continuousness of the suffering and of course lacking in the usual exciting causations. The anterior portion of the middle turbinated was removed from the side most occluded, and on a return visit a few days later the patient expressed herself as having received a relief almost magical; her asthma having largely disappeared and the nasal trouble vastly relieved. Some six months later on a moderate recurrence of the symptoms, the opposite nostril was subjected to the same operative treatment. In a recent interview the writer was assured that her former disabilities had radically disappeared and further advice was considered unnecessary. As an incident it should be added that the greatest suffering was experienced during the period recognized as the usual hay-fever term.

An additional case, contrasting somewhat with the above, but equally striking in its intensity and apparent relief, is cited: Mrs. S., referred by Dr. R. O. Born, of this city, a lady of highly nervous temperament, called at a late hour of the evening, impelled by suffering that had passed beyond endurance. The distress from the pain, eternal sneezing and hydrorrhea was such that she had no rest by day, and at night sleep was rendered impossible. These symptoms had progressed increasingly during several days. A

small, fleshy, intensely red tongue of hyperplastic tissue, movable by a protected probe was visible projecting from the middle turbinated of one side, the other being pretty nearly of a normal. As she expressed a decided dread of operative interference, a small pledget of cotton moistened with a cocaine solution was placed lightly against this turbinated in the hope of gaining some temporary benefit. Two days later, having failed to acquire much relief from continued treatment of this character, the patient permitted the use of the snare with which the anterior face of the middle turbinated was removed. Within twelve hours the intensity of the attack had begun to subside and in the sequence a rapid and entire disappearance of all disturbing symptoms. It is seen that between the chronic perennial and the acute paroxysmal there are but few marks of history variation, unless, perhaps, the additional liability to asthmatic complication is considered an accompaniment not unusual with the former.

In addition to a considerable number of cases somewhat loosely classed as chronic vaso-motor, in all more than twelve cases of typical paroxysmal hay-fever of every grade of severity have been subjected to the test of this operation. With some few it must be confessed that the results have not been attended by absolutely brilliant success, but in every instance a most positive benefit has followed, and in the larger proportion a practical immunity has been secured. If some disappointments may have been felt in a failure to obtain ideal effects in each case, it is most firmly believed that the fault has arisen through the inability to complete the full intention of the operation, owing to a difficulty in gaining a visual field in nostrils greatly contracted. It has happened in several instances that at the time of operating no view whatsoever of the turbinated could be secured, although the surmise of hypertrophy was amply demonstrated by the result. As an emphasis, the treatment has not been in any way confused by the administration of other local or constitutional remedies.

So far, then, within this experience, there has been no exception where the presence of hay-fever has not been associated with middle turbinated hypertrophy, and the removal of which has seemed to demonstrate clinically a most decided arrest in the chain of vaso-motor excitement. It is unnecessary to speculate concerning the rôle played by the pollen theory, if by ablating the morbid structure to which it is responsive, no unusual liability to inflammatory action will ensue. I find, moreover, in some quarters, a

disposition to inquire more determinately into the traditional causation so open to laboratory investigation. Without comment I quote from the following extract: "During the past few years the pollen theory of hay-fever has attracted considerable attention and many adherents have been added thereto. In this connection the recent work of B. Heyman and T. Matzschata (*Zeitschrift für Hygiene u. Inf.*, Nov. 22, 1901), is of interest. They first inquire into the quantity of pollen particles in the air during the season of the year when hay-fever is prevalent. They found only a very small number of such particles are present in the air; in the average of 25 to each cubic meter. The bacteriological examination of these particles shows that they contain only a very small number of micro-organisms. Only from one to five organisms are present in the pollen from one blossom. They next examined the nasal and throat secretions of healthy persons, hay-fever patients, and individuals suffering from various other affections. The hay-fever patients showed less pollen in such secretions than any other persons examined. With respect to the micro-organisms present, they found that staphylococci predominated in the nares of persons suffering from other nasal affections, while in hay-fever patients streptococci were most abundant. They conclude that the pollen theory of hay-fever is untenable. They are undecided as to the bacterial excitement and mode of transmission."

While progressing in the lines of the operative indications the snare alone was depended upon to secure the ablation of the hypertrophied tissue. If a portion of the bony structure of the turbinated was included it was thought not to be a disadvantage. Owing to difficulties of conformation or lack of skill, the results were occasionally clearly insufficient, and although yet the wire loop is invariably employed as a preliminary, seizure forceps are considered indispensable to complete the radical removal of all hypertrophy. The bone is denuded throughout its presenting surface quite to the angle formed by the cribriform plate. Unless carried beyond this point the matter is essentially simple, requiring a few moments only, and under cocaine and adrenalin practically painless and bloodless. The exceptional instances where the turbinated itself is strongly deflected, laminated, or cystic, must be dealt with after the manner that would appear advisable under the circumstances to insure a freedom from contact. In a like sense the thickened tissue along the sides of the turbinated, if necessary, to the same purpose should be removed. These additional steps, however, would seem rarely to demand attention. It is a cautionary suggestion that the operator may have himself to blame for a failure where the error will easily lie in an absence of thoroughness in securing the purpose for which the operation is effected. In the place of the hypersensitive and erectile, a cicatricial and firm tissue furnishes a protective covering that should remain immune to ordinary causes of irritation.