**Hay fever, its etiology and treatment : with an appendix on rose cold / by Morell Mackenzie.**

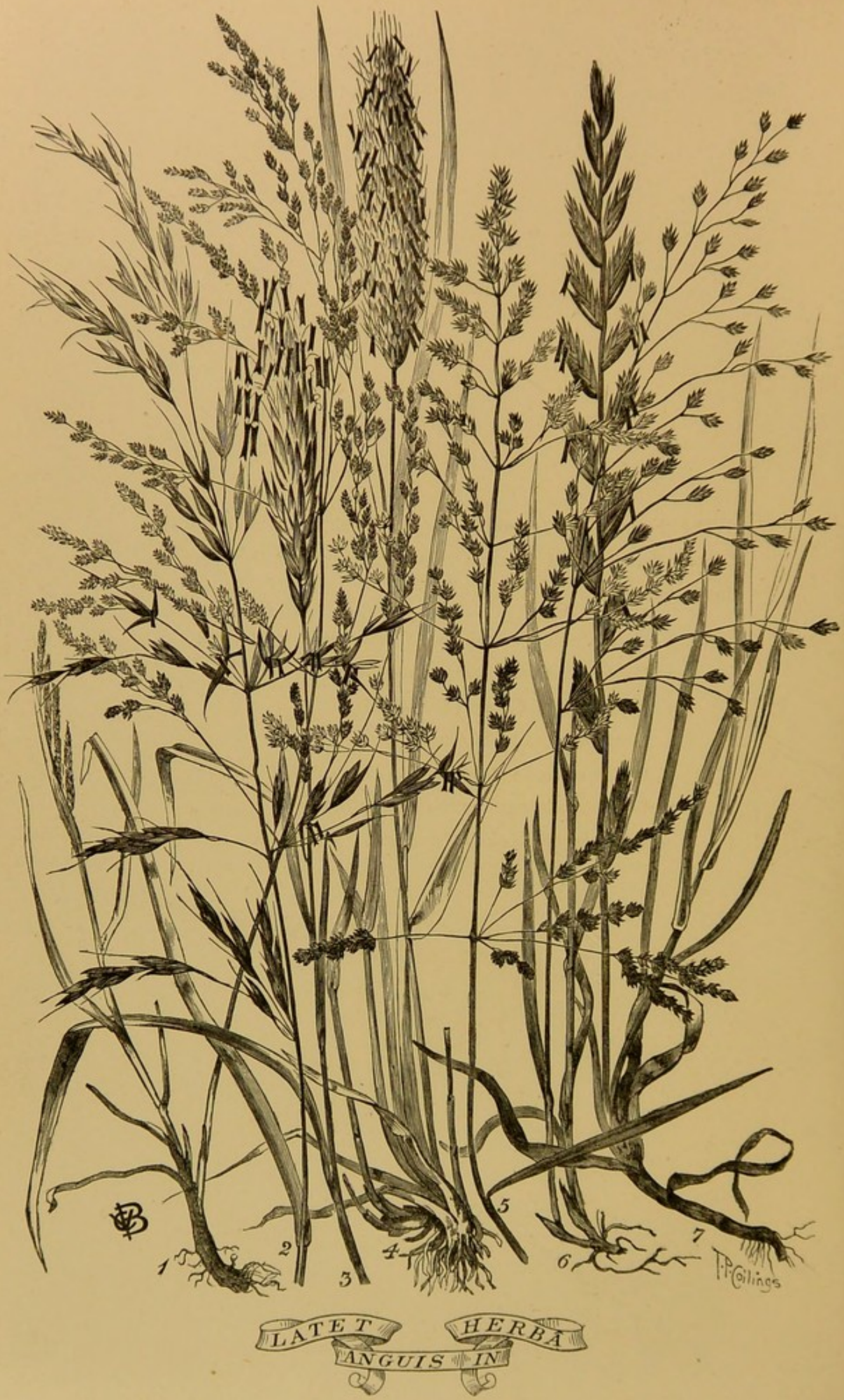
# HAY FEVER

BY

*MORELL MACKENZIE, M.D.*

"Latet anguis in herbâ."

THIRD EDITION.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F. P. Collings
LATET HERBA
ANGUIS IN

The Frontispiece (opposite) is an illustration of some of the Grasses the pollen of which is most productive of Hay Fever in this country :—

No. 1. Sweet-scented vernal grass (*Anthoxanthum odoratum*).

2. Oat-like soft grass (*Holcus avenaceus*).

3. Fertile meadow grass (*Poa fertilis*).

4. Meadow fox-tail (*Alopecurus pratensis*).

5. Rough stalked meadow grass (*Poa trivialis*).

6. Wood meadow grass (*Poa nemoralis*).

7. Perennial rye (*Lolium perenne*).

# HAY FEVER.

*Opinions of the Press on previous Editions.*

"This is a condensed, but very complete, account of a most interesting pathological condition, the subject being treated with that conscientious thoroughness which distinguishes all Dr. Mackenzie's literary work."—*Medical Times and Gazette, May* 31, 1884.

"We have here put together in a concise and most interesting form all that is known of the disease up to the present, and we strongly recommend it to those who take an interest in this affection, whether personally or professionally."—*Medical Press and Circular, July* 9, 1884.

"Those who are interested in the subject of hay fever will find in this little pamphlet a brief but comprehensive account of all that is known about it. . . . . To the general practitioner, who must often be at a loss in dealing with cases of this kind, the present communication (coming as it does from one of the highest authorities) is likely to prove highly serviceable, and we have pleasure in recommending it."—*Glasgow Medical Journal, September*, 1884.

"The learned author, moreover, gives evidence of no mean literary skill, and writes with a 'lucidity' that should delight the heart of Mr. Matthew Arnold."—*Sunday Times, July* 13, 1884.

"Nous recommandons la lecture de la brochure de M. Morell Mackenzie, qui est agréable et instructive."—*Union Médicale*, 7 *Août*, 1884.

"In dieser Broschüre giebt uns Dr. Morell Mackenzie, der ausgezeichnete englische Specialist für die Krankheiten der Athmungsorgane, einen vollständigen und klaren Bericht über Heufieber."—*Wiener Medizinische Zeitung*, 5. *August*, 1884.

# HAY FEVER

## Its Etiology and Treatment

WITH

## *AN APPENDIX ON ROSE COLD*

BY

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*THIRD* *EDITION*

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## *PREFACE TO THE THIRD EDITION.*

THE following short essay appeared last year as a reprint, from the *British Medical Journal*, of a lecture delivered at the London Hospital Medical College. A good deal of new matter has been added, more especially with regard to certain views recently propounded by American physicians, which differ fundamentally from those hitherto current as to the origin of Hay Fever. From the important bearing of those theories on the treatment of a complaint which has always proved so rebellious to therapeutic measures, they deserve attentive examination, and I have, therefore, discussed them in considerable detail. Another new feature in the present issue is an Appendix on Rose Cold—an interesting affection which bears a family likeness to Hay Fever, but is much less frequently met with.

If owing to these additions the little work has lost something of its popular character, I venture to hope that its scientific value has been materially increased.

M. M.

19, HARLEY STREET, W.,
*May*, 1885.

## *PREFACE TO THE SECOND EDITION.*

A FIRST edition (of one thousand copies) of this little essay having been rapidly exhausted, I have availed myself in this issue of the opportunity of replacing some sentences which formed part of the text of my lecture as delivered, but which were omitted in the original report owing to want of space.

19, HARLEY STREET,
*July*, 1884.

# *HAY FEVER.*

HAY FEVER, though not dangerous to life, causes at certain times such extreme discomfort to some of its victims as to make them quite unfit for their ordinary pursuits; many others, without being actually disabled, are rendered utterly miserable during the most agreeable season of the year. Under these circumstances, an attempt to elucidate the nature of so troublesome a malady would seem to be highly desirable.

The affection has received various names,[1] such as Hay Asthma, Pollen Catarrh, Summer Catarrh, Rose Cold, Peach Cold, and Idiosyncratic Catarrh, according as the most prominent symptom, or the supposed cause in a particular case, has been made the basis of nomenclature, and I have thought it convenient to make use of the one most commonly employed in this country.

The disease may be *defined* to be *a peculiar affection of the mucous membrane of the nose, eyes, and air-passages, giving rise to catarrh and asthma, almost invariably caused by the action of the pollen of grasses and flowers, and therefore prevalent only when they are in blossom.*

The *history* of the affection is interesting in many respects,

[1] Dr. Gueneau de Mussy ("Gaz. Hebdom.," January 5, 1872), proposed to call the affection *Spasmodic Rhino-bronchitis;* and it has occurred to Dr. Elias J. Marsh, of Paterson, New Jersey, that it might appropriately be described as *Catarrhus venenatus.* More recently my accomplished pupil and namesake, Dr. John Mackenzie, of Baltimore ("Maryland Med. Journ.," June 21, 1884), has suggested the magnificent title *Coryza vaso-motoria periodica.* Dr. Herzog ("Mittheil. d. Ver. d. Aerzte in Steiermark." [Reprint, Wien, 1882]), it is true, has proposed the term *Rhinitis-vaso-motoria* for nervous sneezing, but I do not think that any advantage is likely to accrue from the use of a term which involves the acceptance of an unproved theory.

and appears to show either that the complaint, like influenza and cholera, did not occur in Europe in the "good old times," or that it was entirely overlooked till a comparatively recent period.

The circumstance, already referred to, that the disease does not actually kill, and the resemblance of its different forms to some other complaints, tend to support the view that the older physicians may not have observed this transitory affection; but, on the other hand, the fact that it has certainly become more common in the last few years would seem to prove either that irritating properties have been newly acquired by certain vegetable bodies,[1] or that the wear and tear of the so-called "higher civilisation" of modern life has led to the more frequent development of the nervous temperament, resulting in a peculiar idiosyncrasy, which renders us vulnerable in a new way.

But, though the older physicians did not recognise a specific complaint affecting numbers of people during a certain season, many isolated examples are recorded of persons who suffered from catarrh or asthma in the presence of roses.[2]

As early as the year 1802, Heberden[3] had noticed that

[1] When it is remembered that new forms of *animal* life suddenly arise, become widely diffused, and then entirely disappear, it is certainly by no means improbable that vegetable matter may acquire new properties. No trace of the beetle remains which suddenly appeared in Colorado a few years since, and by its spread through America caused such wide devastation of the potato-root. Other pests, however, have not been so obliging. In the case of vegetables, new forms of blight have appeared from time to time which have caused widespread destruction among vines, hops, roses, and other plants.

[2] See Appendix on Rose Cold, p. 48.

[3] "Commentarii de Morborum Historiâ et Curatione," p. 118 *et seq.* cap. 24. Londini, 1802. It is to be noted that Heberden is speaking expressly of *chronic* catarrh, and there is nothing in his words to show that he even dimly recognised the characteristic group of phenomena to which the name "hay fever" is now generally attached. From the context it is apparent that the examples of summer cold to which he refers had no special significance for him beyond other varieties which he mentions, such as catarrh recurring every night, or at longer intervals; or catarrh continuing through every season of the year *except* the summer. The following is the whole passage in the original Latin: "Interdum tamen fit

catarrh was sometimes periodic, occurring, in certain cases, every summer for a month, and occasionally lasting throughout the whole of that season. The first detailed account of hay fever was given by Bostock,[1] who, in 1819, described a "periodical affection of the eyes and chest," from which he was himself a sufferer. In 1828,[2] this physician published some further observations of the complaint, under the name of "summer catarrh"; in the same year, MacCulloch[3] speaks of it as a "well-known disorder," and mentions that the term Hay Fever had lately become fashionable. A short paper on "Hay Asthma," by Gordon,[4] appeared in 1829, and, in 1831, Elliotson[5] gave a brief description of the complaint. A few years later, the same physician[6] discussed the subject more fully, and mentioned that a patient had suggested to him that pollen was the probable cause of the affection.

A systematic inquiry into all the circumstances of the disease was made in 1862 by Phœbus,[7] of Giessen, whose own personal observation was, however, confined to a single case. Unlike most of the other writers upon the subject, moreover, he did not himself suffer from the complaint. His method consisted in issuing circulars and advertisements, inviting medical men all over the world to send him answers to a series of questions so framed as to embrace every possible kind of information about the causes, symptoms, and

morbus [sc. catarrhus] longus et paucis intermissionibus perseverat, modo aliquot menses, modo annos quatuor; modo redit singulis noctibus per decennium, modo bis in mense per multos annos. *Quinque ægris contigit graviter laborare hoc morbo per mensem omni æstate, alium totam æstatem afflixit quotannis;* alius nunquam nisi æstate ab eo liber."

[1] "Med.-Chir. Trans.," vol. x. pt. i. p. 161 *et seq.* London, 1819.

[2] Ibid., vol. xiv. pt. ii. p. 437 *et seq.*

[3] "Remittent and Intermittent Diseases," vol. i. p. 394. London, 1828.

[4] "London Med. Gazette," vol. iv. p. 266. 1829.

[5] Ibid., vol viii. p. 411 *et seq.* 1831.

[6] "Lectures on the Theory and Practice of Medicine," pp. 516–527. London, 1839.

[7] "Der typische Frühsommer-Katarrh." Giessen, 1862.

progress of the disorder; its periods of prevalence, geographical and ethnological distribution; and its prevention and treatment. In this manner a vast quantity of facts and observations was collected, and from these Phœbus endeavoured to extract a complete theory of the disease. During the ensuing ten years pamphlets on hay fever were published by Abbott Smith,[1] Pirrie,[2] and Moore,[3] dealing with the disorder from various points of view, but all, more or less, showing a disposition to limit the cause of its development to emanations from plants.

In 1869 a theory of hay fever was propounded by Helmholtz,[4] who was himself a sufferer from the complaint. He held that the symptoms were produced by vibrios, which, although existing in the nasal fossæ and sinuses at other times, were only excited to activity by summer heat. He professed to have found a ready means of relief and even of prevention, in the injection of quinine, which Binz had shortly before shown to be poisonous to infusoria. Subsequent experience has not confirmed Helmholtz's conclusions. In the following year a short paper was written by Roberts,[5] in which he claimed to have been the first to observe that excessive coldness of the tip of the nose is "*the* pathognomonic" symptom of hay fever, and desired to have due credit awarded for this remarkable discovery! In 1872 Dr. Morrill Wyman[6] discussed the disease as it prevails in America, and tried to establish that two distinct forms of the complaint exist in that country--one occurring in May and June and corresponding to English hay fever, and a later variety peculiar to America, which he called "Autumnal Catarrh." In 1873 Dr. Blackley,[7] of Manchester, produced a

[1] "Observations on Hay Fever." London, 1865, 2nd ed.
[2] "Hay Asthma." London, 1867.
[3] "Hay Fever." London, 1869.
[4] Binz: "Virchow's Archiv." February, 1869.
[5] "New York Med. Gaz." Oct. 8, 1870.
[6] "Autumnal Catarrh." New York, 1872.
"Hay Fever." London, 1873, and 2nd ed. 1880.

work which is a model of scientific investigation. By a most ingenious and carefully-conducted series of experiments he proved that in his own person at least the pollen of grasses and flowers was the sole cause of hay fever, and that in the case of two other patients the severity of the disease bore a direct relation to the amount of pollen in the air. His subsequent observations make it extremely probable, indeed almost certain that, though transient irritation of the mucous membrane may occasionally be caused by simple dust, pollen is in fact the true *materies morbi* of summer catarrh. In 1876 a short treatise was published by the late Dr. Beard,[1] of New York, in which he dealt with the complaint as it is met with in the United States. His information was collected chiefly by circulars after the manner of Phœbus; but, more fortunate than that inquirer, Beard had himself seen and treated many cases. He received replies from over two hundred patients, and on these data he came to the conclusion that the immediate exciting causes are more than thirty in number, and that further investigations may extend the number of secondary causes to fifty or even a hundred. Beard showed clearly from his statistics that a large proportion of the sufferers are of nervous temperament, and that nerve-tonics are of considerable value in the treatment of the affection.

In 1877 an important essay appeared from the pen of Dr. Marsh,[2] in which, whilst accepting the pollen theory in general, he endeavoured to prove that in America the pollen of the Roman wormwood was the only one which excited the complaint. Marsh also made some interesting comparisons between the effects of the *Rhus toxicodendron* on the skin, and pollen on the mucous membrane.

In the year 1882 an entirely new doctrine was put forward.

[1] "Hay Fever, or Summer Catarrh." New York, 1876.

[2] "Hay Fever, or Pollen-poisoning." Read before the New Jersey Medical Society, 1877.

Ignoring external or atmospheric causes, Dr. Daly,[1] of Pittsburg, maintained the hypothesis, that the etiology of the complaint would be found in the intrinsic conditions of the nose, and he reported three cases of hay fever which had been cured by surgical treatment. He has since been followed, though with some differences of opinion, in the same line, by Dr. Roe,[2] Professor Hack,[3] Drs. Sajous,[4] John Mackenzie,[5] and Harrison Allen.[6] The views of these practitioners will be considered in detail further on; but it may be stated here, in general terms, that the doctrine that hay fever depends on chronic disease of the nose is open to the fundamental objection, that so few of the many sufferers from nasal disease are affected by the pollen of plants.

In accordance with the usual method of dealing with *etiology*, the causes of hay fever may be conveniently divided into the predisposing and the exciting.

The predisposing cause of the complaint is the possesssion of a peculiar idiosyncrasy, but on what that idiosyncrasy depends is quite unknown. Indeed, it would cease to be an idiosyncrasy if a satisfactory explanation could be arrived at. Whether it is due to some local abnormality affecting the structure of the mucous membrane, the capillaries, or the periphery of the nerves, but of too delicate a nature to admit of detection by available methods of research, cannot be determined. Of the sufferers one may here and there be found who is affected with chronic nasal disease, but most of them appear to be perfectly healthy as regards the nose, except during the short period when they are attacked by hay fever. Whilst millions of people are exposed to the

[1] "Archives of Laryngology," vol. iii. p. 157. 1882.

[2] "Pathology and Radical Cure of Hay Fever." New York, 1883, and "Second Article" reprinted from New York Medical Journal. Appleton, New York, 1884.

[3] "Wien. Med. Wochenschrift." 1882–83.

[4] "Med and Surg. Reporter." Dec. 22, 1883.

[5] "N.Y. Med. Record." July 19 and Oct. 18, 1884.

[6] "American Jour. Med. Sci." Jan. 1884.

cause of the affection, very few actually suffer from it. The idiosyncrasy is generally suddenly developed without apparent reason. Once acquired, however, it is seldom lost, the predisposition, on the contrary, seeming rather to increase with each recurring summer.

The idea that idiosyncrasy has anything to do with hay fever has been so violently assailed since this little treatise was first published, that it has become necessary to make a few remarks on this subject. The term idiosyncrasy has been described[1] as "a convenient refuge for acknowledged ignorance," but it seems to me, on the contrary, to be "a convenient word to express certain series of phenomena which have not been explained."

If pressed for a definition, I should say that idiosyncrasy may be looked upon as an exceptional state of the constitution[2] shown in a few[3] persons by a peculiar sensibility, not possessed by the bulk of mankind, to certain agents,

[1] J. Mackenzie: "A contribution to the study of Coryza Vaso-motoria Periodica, or so-called Hay Fever." (N.Y.) Medical Record, July 19, 1884. The author has taken as a motto for his article the following lines from Terence:

> "Nunquam ita quisquam bene subductâ ratione ad vitam fuit
> Quin res, ætas, usus semper aliquid apportet novi,
> Aliquid moneat, ut illa quæ te scire credas, nescias,
> Et quæ tibi putaris prima, in experiundo ut repudies."

It is not improbable that increasing "ætas" and "usus" may lead him to apply his quotation in a contrary sense to that in which he at present seems to employ it.

[2] I do not consider that the perverted taste, or the unreasonable cravings resulting from a diseased condition or a physiological process, ought to be considered as idiosyncrasies.

[3] An idiosyncrasy confined to a single individual has very little medical importance, but is, nevertheless, interesting. Examples of this kind are very numerous; but the following, the subject of which was a man of remarkable strength of mind, will be sufficient. Scaliger, the well-known scholar, who had for many years been a soldier, himself confesses that he could not look on watercress without shuddering: "I, who despised not only iron, but even thunderbolts, who in two sieges (in one of which I commanded) was the only one who did not complain of the food either as unfit to eat or as horrible, am seized with such shuddering horror at the sight of a cress that I am forced to go away" (J. C. Scaliger, "De Subtilitat. Exercit." 274, p. 789. Hanov. 1694). It is worthy of observation that one of Scaliger's children had a similar aversion to cabbage.—Ibid.

which manifests itself by certain definite phenomena. One of the most familiar forms of idiosyncrasy is that shown by people who cannot eat crab-fish without suffering from nettle-rash. In this case a few persons (that is, few in proportion to the mass of mankind) show a peculiar susceptibility to something contained within the flesh of the crab, whilst the eruption constitutes the definite phenomenon. No explanation of this train of symptoms has ever been given. Is it due to any peculiar condition of the nerves of the stomach, or to some exceptional quality of the blood in the vessels of that organ? It is impossible to answer this question. Whilst crab is the shell-fish which most frequently gives rise to urticaria, the lobster produces it in a smaller number of people, and the oyster in a lesser number still. It is very strange, too, that with some persons so different an article of diet as fruit should be capable of producing the same rash, but it is well known that strawberries have this effect. Again, in the case of certain individuals, the white of egg invariably causes sickness; and there are several idiosyncrasies equally well known.

Dr. Marsh has suggested that the *Rhus toxicodendron*, or poison-ivy,[1] affords a good example of an idiosyncrasy analogous to that which is observed in the case of pollen, and the action of the *Rhus venenata*, or poison-ash, would seem to be equally in point. These plants, during the night, or in the daytime when grown in shady places, or even in open ground, if the sun be not shining, have the power of secreting in their tissues an acrid juice, and emitting a poisonous vapour, which appears to affect some people very injuriously, whilst others apparently escape unhurt. The following[2] is a good example of the action of the *Rhus*

[1] The earliest account of this plant appears in the "Canadensium Plantarum Historia," Parisiis, 1635, p. 96 (cap. xl.) under the name of Edera Trifolia Canadensis. The work contains a drawing of the rhus, but the author says nothing as to its properties, either poisonous or therapeutic.

[2] "Lond. Jour. Bot.," vii. 159, art. by Dr. Bromfield.

*venenata.* The Rev. Dr. Buchanan, of Charlestown, when on a botanical expedition near that place, found a specimen of the poisonous ash, and, knowing its effects upon himself, advised his friends not to pluck it. In spite of this, however, several of the party picked the leaves. One of these suffered from an inflamed arm, two from inflammation and ulceration of the hand with erysipelatous rash on the arms, whilst the rest of the party escaped without any injury. On getting home, the Doctor found a branch hidden among other specimens by a practical joker who was sceptical as to the effects of the plant. Next day symptoms of poisoning, viz., swelling of the whole body and lower extremities, attended with intolerable pain and irritation, confined him to bed, where he was obliged to remain for several days; indeed, he was unable to resume his duties for some weeks.

Fontana,[1] whose observations are especially interesting because he had made very careful studies in connexion with the venom of snakes (his book having been the principal authority on that subject until the appearance of Dr. Weir Mitchell's valuable researches[2]), says that he would have liked to have made a regular series of experiments on the *Rhus toxicodendron*, but had to give it up, as he poisoned himself on three consecutive occasions with its leaves. From his experiments with the poison of serpents, he was strongly impressed with the idea that no injury could be done unless the skin was broken, but this did not prove to be the case with the *Rhus*, for he was once attacked by a severe disease resembling erysipelas,[3] after

[1] "Traité sur le Venin de la Vipère," etc., t. ii. p. 158. Florence, 1781.

[2] "Med. Times and Gazette." Feb. 6, 1869.

[3] Three days after touching the back of his hand dark spots appeared, and afterwards swelling of the face, especially about the eyelids, and the lobes of the ears. There was terrible heat of the skin for a fortnight, and unbearable itching for another fortnight, especially between the fingers, which were red and covered here and there with vesicles full of transparent fluid. There was no fever, but the pulse was very disturbed. There was œdema of the face, and the attack ended with desquamation of the cuticle.

merely touching the back of his hand with a leaf so lightly that he hardly perceived any sensation; and on two other occasions, somewhat similar symptoms were produced on merely touching the leaves. The juice of the plant, however, when directly applied to the hands of two gardeners, did not cause any effect at all![1]

Where a true idiosyncrasy exists, it produces its effects independently of the consciousness of the person concerned; for it has been proved repeatedly that, when articles of diet have been surreptitiously introduced into the food of those who are susceptible, the characteristic train of phenomena has been invariably manifested.

The circumstances which seem to influence this idiosyncrasy are *race*, *temperament*, *occupation*, *education*, *mode of life*, *sex*, *heredity*, and *age*. These various points may, with advantage, be considered in detail.

The influence of *race* is seen in the fact that it is the English and Americans who are almost the only sufferers from the complaint. In the north of Europe—that is, in Norway, Sweden, and Denmark—it is scarcely ever seen,[2] and it rarely affects the natives of France, Germany, Russia, Italy, or Spain. In Asia and Africa, also, it is only the English who suffer. As far as I have been able to ascertain,

[1] I am not quite sure whether the effect *Rhus toxicodendron* has on certain individuals is so good an example of idiosyncrasy as Dr. Marsh imagines. Orfila, however, reports a case which supports Dr. Marsh's view; for he relates that a gardener suffered from a severe attack of poisoning after merely cutting some twigs of the *Rhus*, whilst Dr. Boullou actually inoculated himself with the juice, without being at all affected. As the conditions under which the plant secretes the acrid juice are well known, it does not appear probable that any fallacy in this experiment could have arisen as regards the circumstances under which the juice was extracted (Orfila, "Traité de Toxicologie," 5th ed. t. ii. p. 133. Paris, 1852). Fontana suggests that the invulnerability of some persons may be due to a thick epidermis. As the plant is common in certain parts of the United States and Canada, I would suggest to some of my co-workers in America that they should make a series of investigations with it.

[2] Since writing the above I have made a tour (in August, 1884) through the Scandinavian kingdoms, and, as the result of many inquiries, I find the statement in the text fully confirmed by leading physicians.

the complaint is more common in the south of England than in the north; whilst in the north of Scotland it is very rare. In America it occurs in nearly every State, though diminishing in frequency towards the South. I think it extremely likely that the disorder will be found in Australia and New Zealand, but I am not aware that any cases have yet been reported from those countries.[1] In support of the view that race has an important influence, it may be mentioned that in New York, where hay fever is comparatively common at certain seasons, Dr. Jacobi, whose practice lies largely among Germans, has never met with a case of the disease in a person of that nationality, and that Dr. Chaveau, of the same city, has never observed the complaint among his French compatriots residing there.[2] Beard never heard of a case amongst Indians or negroes, except the one related by Wyman, in which an Indian child was the subject of the disease. Dr. John Mackenzie[3] has recently reported a case of hay fever in an adult negro; but, as the symptoms were produced not only by the emanations of hay, but also by sudden atmospheric changes, the dust of coal, and that resulting from the shaking of carpets, door-mats, &c., as well as from tobacco smoke, and the greasy smell of the kitchen, the case does not come within the category of hay fever according to my definition.

*The nervous temperament* has, undoubtedly, a certain influence in predisposing to hay fever. This, of course, does

[1] Since the publication of the first edition of my Lecture on this subject I have been furnished with a very interesting case by Dr. W. R. Parker, which is here given in his own words:—"Mrs. C——, wife of Dr. C——, of New Zealand, has been subject to attacks of hay fever for many years past, while residing in various parts of that country. In November, 1883, she was suffering from a severe attack while residing at Ross, a small gold-mining seaport town on the west coast of the South Island; and previously at Reefton, further inland. Both these towns lie in a densely bushy and extremely moist district. She had previously suffered in Nelson, a warmer and drier seaport town in the 'Garden' or 'Kent' of New Zealand."

[2] Beard, op. cit., pp. 90, 91.

[3] "N.Y. Med. Record," p. 427 *et seq.* Oct. 18, 1884.

not mean that all the patients are highly nervous people; some are of nervo-bilious, others of nervo-sanguineous temperament; but nearly all belong to the active, energetic class of so-called nervous organisation.

One of the most singular features of this complaint is that it is almost exclusively confined to persons of some *education*, and generally to those of fair social position. In 1879 I had notes of sixty-one cases of hay fever from my private practice, and had seen many others of which I kept no record, whilst amongst my hospital patients I have not met with a single instance of the disease. Of forty-eight cases which came more or less directly under the notice of Blackley, every one belonged to the educated classes; whilst, out of fifty-five cases reported by Dr. Wyman, in forty-nine the patients were educated people. Dr. Merriman[1] also says that the affection belongs "principally to the upper and middle classes." This view, however, has been opposed by Dr. Marsh,[2] who thinks that the statistics which have been collected on this point are quite untrustworthy. His own, however, are so meagre (only fourteen cases), that on this point they cannot be said to have much significance. The influence of the *mode of life* is shown in the fact that the rustic is much less subject to the affection than the citizen. Thus farmers and agricultural labourers, who of all people are most exposed to the disease, very rarely suffer from it, there having been only seven cases among the two hundred reports collected by Beard. It is not possible to say whether the villager owes his exemption to the vigorous health maintained by an out-door life, or whether habitual exposure to the cause of the complaint begets tolerance; but the fact remains, that dwellers in towns are much more prone to the affection than those who live in the country.

*Sex* has a distinct influence, many more men than women

[1] "Brit. Med. Journ.," vol. i. p. 1315. 1883.
[2] Loc. cit., p. 6.

suffering from the disease. Out of a grand total of 433 cases cited by Phœbus, Wyman, and Beard, only 142, or about a third, were females. Against these statistics it may be urged that the information on which they are based was collected by circulars, to which, perhaps, women would be less likely to reply than men. This objection, however, does not apply to my own cases, amongst which I met with thirty-eight belonging to the male and only twenty-three to the female sex.

*Heredity* has likewise a powerful influence. This has been abundantly proved by Wyman and Beard, and it is supported by my own observations. In Wyman's experience there was heredity in 20 per cent., and in Beard's in 33 per cent. Out of my sixty-one cases, in twenty-seven one or more near relatives had suffered in the previous generation. I have also several times treated a father and his children at the same time.

*Age* to some extent governs the disorder, which in the great majority of cases appears before forty; but several instances have been reported of the first occurrence of the malady in patients as old as sixty. It is somewhat rare for the affection to show itself in very young children, but I have seen it in one patient at two years of age, and in another at three. In these cases, as in all those of very young patients that have come under my notice, the little sufferers were the children of parents who had themselves been victims to the complaint. Had not the parents been subject to the affection, it is most likely that the true import of the symptoms would not have been recognised in the children, but would have been attributed to a common cold; and from this it may be inferred that when the complaint attacks the young it is often overlooked.

Many agencies of various kinds have been looked upon as the *exciting causes* of this disease, but there can now be little doubt that *pollen is the essential factor in the case of those*

*who possess the peculiar predisposition.* Before, however, proceeding to show that pollen is the real cause of the affection, it may be well to pass in review some of the other sources to which its origin has been attributed. The most important of these are heat, light, dust, benzoic acid, coumarin, excess of ozone, and over-exertion, or several of these influences in combination. The theory that there is a *peculiar predisposition* has also been recently opposed, and an attempt has been made, unsuccessfully, it appears to me, to show that the vulnerability depends on gross structural changes within the nose. This view, which may be called the pathological theory, will also meet with due consideration.

*Heat.*—Popular observation had already associated hay fever with effluvia from grass or hay, at the time when Bostock, from his own personal experience, put forth the view that the affection is due to the influence of solar heat. The obvious difficulties in the way of this theory led Phœbus to attribute the affection to "*the first heat of summer*," which, he observed, "is a stronger cause than all the grass emanations put together." Later on, however, Phœbus remarked thal the "first heat of summer only acts in an indirect manner as an exciting cause"; and he admitted that hay and the blossom of rye cause exacerbations. Heat alone will not, however, produce the disease. It is not met with in the plains of India when the heat is greatest, though occasionally it is seen in the cooler months, before the vegetation is burnt up. Hay fever is also found in the milder climate of the Indian hills, when the grasses and cereals are in blossom. The intense heat of the desert does not produce the disease, nor does it occur at sea in the sultry equatorial regions, though the heat, when vessels are becalmed, is sometimes almost beyond endurance. In America, hay fever is much more common in autumn than in the tropical summer of that country.

*Light.*—The observations as regards heat apply equally

to light. Phœbus thought that the *longer days*, which produce a more continuous action of light, are perhaps to blame; but where the light is strongest and lasts longest, in the land of the "midnight sun" itself, hay fever is almost unknown. At sea, when the sun is bright, it is well known that nothing can exceed the glare; yet a sea-voyage is the best safeguard for the sufferer from hay fever. Persons with a sensitive mucous membrane, especially those subject to hay fever, are no doubt sometimes liable to attacks of sneezing from sunlight, and incautious observers might mistake these symptoms for true hay fever. Some of Beard's patients even attributed the affection to gas-light, but gas-light is used much more in winter, when hay fever is absent, than in the English summer and American autumn, when the affection prevails.

*Dust.*—This is a more difficult subject to dispose of. Most writers who accept dust as a cause of summer catarrh speak of "common dust"; but, as Blackley remarks, there is no such thing as *common* dust. The constitution of dust depends upon the geological character of the soil, upon the vegetation which it supports, and upon the season of the year, as well as on "the number and kind of germs and other organic bodies" present in the atmosphere. Beard's statistics, if accepted without consideration, strongly point to dust as the most common cause of hay fever, for out of 198 patients no less than 104 attributed the affection to dust. Of these 198 cases, however, 142 occurred between May and September; and it may well be asked, How was it that dust did not affect these patients in the winter months? Does this not clearly point to the presence in the dust of some special irritant, during the summer and autumn months, which does not exist at other times? In England, in the months of February, March, and April, when strong east winds often blow clouds of dust against the face, symptoms of hay fever do not appear, whilst in June and July, when there is

comparatively little dust, the complaint is rife. It is true that in many of Beard's cases, collected by circulars, the patients attributed the affection to "indoor dust," and some even to "cinders." But as people stay in the house more in winter than in the autumn and summer, and use fires at that time, these agencies, if of any real power, would produce their greatest effect in winter. Directly the opposite, however, occurs. Is it not highly probable, therefore, that these patients were misled as to the real cause of their malady? We all know how easy it is for the trained physician to make erroneous observations and to overlook important physical signs, and how much more likely is the untutored patient to make a mistake in the obscure and highly complicated problems of etiology!

*Ozone, Benzoic Acid, &c.*—An excess of ozone in the atmosphere was suggested by Phœbus as a possible cause of hay fever, but Blackley purposely breathed air highly charged with this substance for five or six hours without effect. He, moreover, inhaled artificially-prepared ozone, in quantities far exceeding what is ever found in the same volume of atmospheric air, without feeling any inconvenience. The same physician also studied the effects on his own person of benzoic acid,[1] coumarin (the odorous principle of many flowering grasses), and of the volatile oils which impart to many plants, such as peppermint, juniper, rosemary, and lavender, their characteristic perfume. The results were in all these cases entirely negative.

*Over-exertion, or prolonged exercise, in the open air*, never has any effect in cold weather, or indeed at any other time except when grass is in flower. Its influence, however, in *aggravating* hay fever, in its proper season, is very great, and will presently be considered.

[1] This substance has been shown by Vogel to be contained in *Anthoxanthum odoratum* and *Holcus odoratus*, the two species of flowering grasses to which the causation of hay fever has been in a special manner attributed.

*Combined Causes of Hay Fever.*—Several writers have contended that, although no one of the above causes may alone be sufficient to produce hay fever, several of them acting together may be able to do so. Such theories are the last resource of those who are unable to discover the true etiology, and there is not a tittle of evidence in their support.

*The Pathological and Vasor-motor Theories.*—The view that hay fever depends on gross structural changes within the nose deserves serious consideration, on account of the brilliant practical results which are claimed for modes of treatment based upon it, and also because it is advocated by several American physicians of well-known ability. As already remarked (page 12), the pathological theory does not at all account for the fact that only a very small proportion of those people who have chronic disease of the nose actually suffer from hay fever. I must also premise that the theory is not at all in accordance with my own experience; for, in the great majority of cases of this disease which have come under my notice, there has been no visible structural change in the nasal passages, except a congested condition during the period that the patient was actually suffering from hay fever. For reasons above stated, however, it is necessary to discuss fully the latest views on the etiology of the complaint now under consideration. Those of my readers whose connexion with the dissecting-room is of a somewhat remote date will, perhaps, pardon me for reminding them that the veins over the turbinated bones between the periosteum and the mucous membrane have been shown by Kohlrausch to form a "cavernous network," and that this structure was subsequently proved by Bigelow to be of a truly erectile character. Voltolini[1] pointed out that each turbinated bone, in spite of

[1] "Diseases of the Throat and Nose," by Morell Mackenzie, M.D., vol. ii. p. 236. London, 1884.

its extremely delicate structure, can, after maceration, be seen to be perforated by countless minute holes. Through these apertures small vessels pass, and they pierce the bone in such abundance that in a space of three square millimètres as many as ten open vessels have been counted. The soft parts are closely adherent to the elevations and depressions of the periosteum, covering the bone, as Voltolini says, "just as a sponge does the hard coral beneath it." Dr. Daly,[1] who was the first to enunciate the theory that, in cases of hay fever, structural changes would generally be found within the nose, reported a case in which the destruction of the hypertrophied tissue of the turbinated bodies by electric cautery had effected a cure of hay fever that had lasted for twenty-one years. In a second case, in which there was a polypus in the nose, with a generally thickened condition of the mucous membrane of the naso-pharynx, the removal of the polypus and treatment of the pharyngeal membrane entirely relieved a patient who had suffered from hay asthma for six years. In a third case, treatment of the turbinated bodies also brought about a complete cure in a patient who had been a victim to the disease for six years. These cases are certainly remarkable, and they reflect great credit on the operator.

In 1883, Dr. Roe,[2] whilst admitting "the dependence[3] of hay fever upon the presence of pollen and other irritating substances floating in the atmosphere," maintains "that it has been observed that, in every instance in those who were subject to hay fever, more or less disease or hypertrophy of this erectile tissue existed."[4] He considers that the hyperæsthesia is associated with, or occasioned by, a diseased condition, either *latent*[5] or active, of the naso-pharyngeal

[1] Loc. cit.
[2] "Pathology and Radical Cure of Hay Fever." Appleton & Co., New York.
[3] Ibid., p. 6.
[4] Ibid., p. 13.
[5] The italics are not in the original.

mucous membrane, and with an hypertrophied condition of the vascular tissue covering the turbinated bones and the lower portion of the septum; and, taking into account the cavernous tissue of the turbinated bodies, he thinks that the vasor-motor theory fully explains the phenomena of the disease. In his more recent publication,[1] Dr. Roe has somewhat elaborated his views. He calls attention to the spicula of bone, which, he observes, are often found projecting across like spurs, exciting irritation and producing thickening of the opposite surface. Dr. Roe is of opinion that every person who suffers from hay fever has, at some other period of the year, "when entirely free from the attack of hay fever, more or less chronic rhinitis or nasal catarrh, although often not sufficiently severe[2] to give rise to much annoyance." In other words, Dr. Roe thinks that everybody who is subject to hay fever has a "cold in the head" some time during the year. Although I have not gone into this question, I do not feel inclined to dispute the position which my friend has taken up, for I believe there are very few people who do not suffer from coryza at some period during the entire twelve months. He admits, however, that "in some cases there must be a special proclivity for these terminal nerve-fibres to become diseased, when so small an amount of disease of the surrounding tissues so readily affects them, and when in other cases we find no indication of these nerves being involved, however badly the surrounding tissues may be diseased." This statement appears to me to concede the whole question at issue. Special proclivity and idiosyncrasy are so nearly allied as to make it unnecessary to attempt any differentiation.

In the interval between the first and second articles of Dr. Roe, Dr. John Mackenzie published his views. In addition to his remarks on idiosyncrasy already referred to, he endeavoured to show that there are certain sensitive spots

[1] "Hay Fever." Appleton & Co., 1884.
[2] Second article, p. 7.

in the nose corresponding in all probability to the cavernous structure already described ; that all parts of this area are not equally sensitive, the most sensitive spots being probably represented by that portion of the membrane covering the *posterior end* of the inferior turbinated body and the septum immediately opposite ; that the tendency to the exhibition of reflex phenomena varies in different individuals, and is probably dependent on the varying degree of excitability of the erectile tissue. "In some," says Dr. John Mackenzie, "the slightest touch is sufficient to excite the reflex act, while, in others, chronic hyperæmia or hypertrophy of the cavernous bodies seems to evoke it by constant irritation of the reflex centres."

In accordance with this theory, he recommends that the reflex excitability of the turbinated tissue should be diminished, or, if that cannot be done, that the tissue should be altogether destroyed. The most serious objection to the views of this author consists in the fact that he does not seem to realise the true nature of hay fever as a periodical disease occurring *only* during the season when hay or certain flowers are in blossom, for, in one of his two illustrative cases, he remarks, "the attacks come on at all seasons of the year." Again, his views of the sensitive area are directly opposed by Professor Hack,[1] who, though an advocate of the vasor-motor theory in connexion with hay fever, has found that reflex manifestations do not occur until the *anterior part of the lower turbinated body has first become turgid.* Dr. John Mackenzie, on the other hand, maintains that the posterior end is the part to be incriminated.[2]

[1] "Wien. Med. Wochenschrift." 1882—Nos. 49, 50, 51, and 1883—No. 4, *et seq.*

[2] Already the importance of the "cavernous structure," as a cause of reflex phenomena, is on the wane. At the recent International Medical Congress held at Copenhagen, Dr. Bernard Fränkel, who regards the nose as an important seat of reflex phenomena, maintained that the sensory twigs of the trigeminal nerves were the starting-points of the remarkable train of symptoms which have been observed in some cases in connexion with nasal disease.

As the result of a great number of experiments, I should say that the most sensitive spot varies in different individuals, and also in the same individual at different times. I have treated a lady who frequently suffers from violent sneezing, whose nose is so sensitive that even a slight touch externally will produce the most severe attacks, lasting often for half an hour or an hour, whilst if an instrument is introduced even within the vestibule of the nose, sneezing of the most intense character at once takes place. I could never discover in this case that any one spot in the interior of the nose was more sensitive than another, whilst, beyond general congestion, there is no appreciable local disease; there is no enlargement of the turbinated bodies, no projecting bony point, nor any kind of obstruction.

Dr. Harrison Allen[1] has put forward the view that hay fever depends solely on obstruction of the nasal passages, and that the cure consists simply in the removal of that obstruction; but, as Dr. Roe[2] has himself disposed of this view in calling attention to the fact that very few of those who suffer from obstruction of the nares are subject to hay fever, it need not further detain us. Before dismissing this point I may remark that, since my attention has been specially directed to the pathological theory, I have made very careful rhinoscopic investigations on twelve patients who had suffered from hay fever every summer for many years. The oldest case was of seventeen years' duration, the most recent dated three years back. These cases were all repeatedly examined, both when hay fever was present, and later on, when that complaint had passed off. Under the latter circumstances, in only one instance was there any evidence of disease within the nose, and here there was merely swelling of the anterior extremities of the inferior turbinated bodies, such as is often seen in persons who suffer no inconvenience, and consider

[1] Loc. cit.
[2] Loc. cit. (second article), p. 8.

themselves perfectly healthy. Though in some of the American cases morbid conditions, such as hypertrophy of portions of the turbinated bodies, projecting bony spicula or exostoses,[1] and chronic rhinitis have been found, such cases will prove in the end, I believe, to be the exception rather than the rule. I myself have treated hundreds of patients who have suffered from chronic disease of the nose (such as polypus and enlargement of the turbinated bodies) who have never been affected with hay fever; and, in the worst case of nasal irritability I have ever seen, in which there was intense hyperæsthesia of the Schneiderian membrane, with constant sneezing on the mildest provocation, the patient was entirely free from the complaint now under consideration.

Until the year 1880 it had not been my custom to examine the interior of the nose except in the case of patients who complained of nasal disease; but some five years ago, with the view of making measurements and drawings of the interior of the nose, and comparing the relative advantages of different speculums, I examined the nose of nearly every patient who consulted me. My investigations caused me some surprise, for the appearance of the interior of the nose was very seldom up to the standard of the descriptions and illustrations of the best anatomical works. In some, one or other of the turbinated bodies was swollen; in a large number there were slight bony or cartilaginous outgrowths. In very few cases were the two nasal passages precisely of the same colour or form, whilst a rectilinear septum was extremely rare. Indeed, by an enthusiastic rhinoscopist every one of these cases could have been looked upon as examples of disease, though not one of the patients ever complained of any inconvenience connected with the nose. But, after all, does not the use of

[1] Exostoses and bony ridges are, however, much more common in the nose than is hay fever. In 2,152 skulls, examined under my direction in the Museum of the College of Surgeons, exostoses were found in 170 specimens, and bony ridges in 673. ("Diseases of the Throat and Nose," vol. ii. p. 390.)

the handkerchief in itself imply a condition of the nasal mucous membrane other than that of health? Is it natural that secretions should form, and have to be constantly cleared away by an artificial process? And yet it seems hard that nearly every person who occasionally uses the pocket-handkerchief should be considered as a fit subject for operative treatment.

With regard to the *vasor-motor theory*, I have little to say. It, no doubt, affords an admirable explanation of the reflex phenomena of hay fever, but it does not enlighten us as to why pollen should be so irritating to some people and not to others. The scale on which the *vasor-motor theory* is applied appears, however, to be somewhat too extensive. The asthmatic symptoms of hay fever seem to be regarded by Hack and others as a reflex neurosis, resulting from irritation of the nose.[1] Though this may occur in rare and exceptional cases, the theory altogether ignores the *direct* passage of pollen into the bronchial tubes and air-cells. Again, although it is a familiar fact that irritation of the lining membrane of the nose causes lachrymation, it appears to be forgotten that *direct* irritation of the conjunctiva will produce the same effect in a much more severe degree. In a bad case of hay fever which I saw two years ago, the patient, by means of an oro-nasal respirator, succeeded in freeing himself from sneezing and asthma, but he could never get spectacles which completely excluded the pollen from the eye, and he consequently suffered much from *conjunctivitis*.

[1] The nose, which from a medical point of view was formerly looked upon as an organ of quite secondary importance, has lately received a degree of attention which more than compensates for past neglect. Professor Hack, of Freiberg, maintains that nightmare, cough, hemicrania, brow ague, certain vasor-motor disturbances accompanied by quasi-erysipelatous symptoms (in which there is temporary redness of the nose and cheeks), attacks of giddiness, epilepsy, rhinorrhœa, and hay fever, often owe their origin to polypus or tumefaction of the nasal mucous membrane. Although these views have received the support of a number of well-known practitioners, there has, perhaps, been a trace of exaggeration in connexion with this new discovery, and, in some cases, it is possible that the wish has been parent to the thought.

Having shown what does *not* generate hay fever, its real mode of origin must now be demonstrated.

Blackley's observations leave no doubt that the cause of hay fever is *the action of pollen on the mucous membrane.* His experiments were framed on a most comprehensive plan, and carried out in a rigorously scientific spirit. By well-devised tests he succeeded in proving—1st, that in his own person the inhalation of pollen always produced the characteristic symptoms of hay fever; 2ndly, that in his own case, and in that of two other persons, there was a direct relation between the intensity of the symptoms and the amount of pollen floating in the air; and 3rdly, as already shown, that none of the other agents referred to, such as heat, light, dust, odours, or ozone, can of themselves cause the complaint.

The question naturally arises, Is there anything in the nature or structure of pollen which is calculated to set up irritation? Everybody knows that the yellow dust seen on the surface of many flowers is pollen; but, for the convenience of those who have not studied the science of botany minutely, it may be desirable to enter into further detail. Pollen is contained in the anthers of the stamens which usually surround the pistil of a flower. When examined with the microscope, pollen is found to consist of minute cells usually either spherical or oval in form, and varying in size from $\frac{1}{300}$ to $\frac{1}{700}$ of an inch in diameter. These cells have an outer coat called the *extine*, and an inner one to which the name of *intine* has been given. The extine is covered externally by an oleo-resin, varying in quantity and colour from rich amber to pale straw, and the intine contains a minute granular matter called *fovilla*, consisting of granules varying in diameter from $\frac{1}{4000}$ to $\frac{1}{30000}$ of an inch, and, in addition, some starch and oily matter. According to Herapath, in addition to sugar, gum, albumen, cerin, and resin, there is in the granular matter of several orders of plants[1] as much as

[1] "Manual of Botany," by Robert Brown, M.A. Blackwood, London, 1874.

46 per cent. of a peculiar inflammable, azotised principle, insoluble in nearly every liquid. The extine is seen to be absent at certain spots, leaving grooves or pores, and under the influence of moisture the intine is observed to project through these openings, and thus to form the "pollen tubes," which, in some of the lily tribe, attain the extraordinary length of two or three inches.[1] The fovilla moves through these glove-like protrusions, which, bursting at their distal ends, allow the granular matter to be expelled with some force. As the pollen granules are only $\frac{1}{10}$ the size of the blood corpuscles, it is highly probable, as Mr. Wright Wilson has suggested, that they enter the blood-vessels by actual penetration of the walls, and it is not improbable that the *malaise* which is experienced in hay fever may be due to the presence of this granular matter in the general circulation. It appears probable that the action of pollen is dependent more on its vital than on its chemical properties or physical characteristics. The pollen which has the longest "pollen tubes" (as in the case of *Liliaceæ*) is far less irritating than that of the *Graminaceæ*, in which the pollen tubes are quite rudimentary, and the amount of the oleo-resin seems to have little effect in so far as the excitant properties of the pollen are concerned. On the other hand, as a living organism capable of undergoing some degree of development when deposited on mucous membranes more or less exposed to the air, pollen appears to possess exceptional properties.

Nevertheless, it must be freely admitted that no theory explains why pollen should prove a highly exciting substance to the mucous membrane of some persons, and not others.

Blackley's experiments were made with pollen of various grasses and cereals, and with that of plants belonging to thirty-five other natural orders.

The grasses which, as already stated, were at one time considered to be especially active are the sweet-scented

[1] "Lancet," Oct. 6, 1873. Art. by Mr. Wright Wilson.

vernal and oat-like soft grasses; but this idea, no doubt, originated in the extremely fragrant odour of these plants, and there is no reason to suppose that their pollen is more active than that of the meadow foxtail, and the various *Poæ* and *Loliæ*. The pollen of rye is, however, more potent than some of these, and that of wheat, oats, and barley is also very active. The careful observations of Blackley show that in England, during the season of hay fever, 95 per cent. of the pollen contained in the atmosphere belongs to the *Graminaceæ*. This order generally comes into full blossom between *the end of May and the latter part of July*, and that is precisely the period of the year when hay fever prevails. If the season be wet and cold, the disease usually sets in rather later, and is milder in character than when the weather is fine and the vegetation luxuriant.

There are persons who can resist the pollen of grasses, but are affected by that of the rose; and this idiosyncrasy has been long recognised in America, where the complaint is called "rose cold." This interesting affection is so closely allied to hay fever, that I have thought it worth while to give a short account of it in an appendix (p. 48 *et seq.*).

In America, as already remarked, the pollen of the Roman wormwood (*Ambrosia artemisiæfolia*) appears to be the most common cause of hay fever, and Dr. Marsh goes so far as to maintain that it is the sole source of the complaint; but in this respect he has undoubtedly gone too far. His observations, however, are so interesting, that I think they deserve to be quoted in detail.

"I have noticed," says Dr. Marsh, "the extreme abundance and wide diffusion of the ambrosia during my travels to escape it. In this section of the country it may be said to grow everywhere. Roadsides, stubble-fields, waste places everywhere abound with it, and few of the most highly cultivated gardens are free from it. It is only after the attention has been directed to the plant that its universal presence is

observed. It seems to spring up by magic everywhere. I have counted hundreds of plants within a few blocks in New York city, in the neglected courtyards and spaces about houses and churches. I have found that it extends up to the limits of the catarrhal regions, and not at all, or in extreme rarity, in the exempt regions. . . . . I have observed that the course of the disease has been directly affected by the character of the season and the amount of ambrosia springing up. For instance, in 1875, the ambrosia was very forward in season and abundant in quantity. Severe symptoms came on early, and those who remained at home suffered more than usual. In 1876, owing perhaps to the extreme heat and drought, there was not one quarter the amount of ambrosia as in the previous year, so that I myself was able to remain at home a week later than my usual time, and the season was generally found a mild one for hay fever subjects."

Dr. Wyman[1] found that, when a parcel containing this plant was opened at White Mountain Glen, where he had retired in order to avoid hay fever, he and his son were immediately attacked with all the symptoms of the malady. *The plant blossoms in August and September, and it is then that hay fever most prevails in America.* The *ambrosia* (which belongs to the genus *Ambrosiaceæ*, order *Compositæ*) fortunately does not grow in Europe. Several varieties of the *artemisiæ*, a closely-allied genus, are met with in England, and I think it not improbable that some cases of hay fever which have occurred at the seaside in this country may have been due to the pollen of the *Artemisia maritima*, or its variety, *Artemisia gallica*. It is curious that, except in the case of Indian corn, the pollen of *grasses* appears to have but slight effect in America, though a mild form of hay fever is met with in that country from May to August.

There are certain supposed fallacies in the pollen theory

[1] Op. cit. p. 101.

which must be referred to. Thus, a case is mentioned by Dr. Walshe,[1] in which the patient retained the symptoms of hay fever during a passage across the Atlantic, and another has been reported by Dr. Abbott Smith,[2] in which the disease came on at a distance ot nine miles from land. These are, I believe, the only authentic instances in which hay fever has continued to exist or has originated at sea, and they are open to various explanations. It has been distinctly shown by Blackley that pollen may be retained in an article of dress for many weeks, and in Smith's case the patient, who was yachting, experienced the symptoms after assisting "to hoist the sails." The attack came on the 13th of June, and it is not unlikely that when the sails were unfurled a large quantity of pollen collected in their folds was set free. In Walshe's case, the symptoms may have been kept up by some other irritant to which the patient may have had a peculiar susceptibility, or the case may not have been a true example of hay fever, but of ordinary asthma, complicated with catarrh. It is not altogether impossible, however, that pollen may be deposited on a ship miles away from land. Darwin[3] has shown that dust is sometimes carried by the wind far out over the Atlantic. "The dust," he observes, "falls in such quantity as to dirty everything on board, and to hurt people's eyes; vessels have even run on shore owing to the obscurity of the atmosphere." Again, in speaking of the distribution of pollen, Darwin reminds us that the ground near St. Louis, in Missouri, has been seen covered with pollen as if it had been sprinkled with sulphur, and there is good reason to believe that this had been transported from the pine-forests at least 400 miles to the south.[4] A shower

[1] "A Practical Treatise on Diseases of the Lungs." London, 1871, 4th ed. p. 228.

[2] "On Hay Fever." London, 1866, 4th ed.

[3] Journal of Researches," &c. London, 1845, 2nd ed. p. 5.

[4] "The Effects of Cross and Self-Fertilisation in the Vegetable Kingdom," London, 1876, p. 405.

of yellow pollen was wafted to Philadelphia[1] from some distant pine-forest so recently as the 16th of March (1883). It caused such a thick deposit as to lead ignorant people to take it for brimstone. These facts are sufficient to show that the influence of pollen may be experienced under circumstances where it would not generally be looked for.

The phenomena of hay asthma, though their origin may be different, are, like those of asthma in general, of a neurotic type, and it would appear that in some cases hay fever has been of what Dr. Carpenter calls an "ideo-motor" character. One possible example of this kind has come under my notice. Some years ago I saw a young lady, who informed me that she was so subject to hay fever that she invariably remained in London till after the hay was got in. On one occasion, however, after a visit to the Royal Academy, where she had been much struck by a highly-realistic hayfield of Mr. Vicat Cole, she had a severe attack of her familiar complaint. Whether this proves that Mr. Vicat Cole can rival Zeuxis[2] in the absolute *truth* of his art, or whether the case is to be explained by the young lady having passed a hay-cart on her way home, I do not pretend to decide; but the latter solution, if more prosaic, is also, it must be confessed, more probable.

The *symptoms* of the disease are seen under two well-marked types, the catarrhal and the asthmatic. In the former the onset is very sudden, the patient becoming conscious of an itching, smarting sensation in the nose and eyes, and sometimes in the fauces and roof of the mouth. Not unfrequently the attack commences with a feeling of extreme irritation at the inner canthi. Paroxysms of sneezing, often of extreme violence, quickly ensue, followed by an abundant thin discharge from the nose. The mucous

[1] "Philadelphia Med. News," April 7, 1883.

[2] As is well known, this artist painted a bunch of grapes, and when the picture was exposed, birds came and pecked at the counterfeit presentment of the fruit.

membrane of the nasal fossæ swells so as to block up the passages and make respiration through them impossible. At the same time, there is profuse lachrymation with much pricking and stinging of the conjunctival surfaces, and sometimes photophobia. There is often a certain amount of chemosis, and occasionally the eyelids become puffed so as almost to close the eyes. The discharge from both nose and eyes gradually grows thicker, sometimes even becoming semi-purulent in character. There may be severe neuralgic pain in the eyeballs and over the back of the head. Now and then there is some degree of pyrexia, but this is by no means the rule. The disorder often varies considerably in intensity, even in the same person, within short intervals of time, so as almost to give an intermittent character to the complaint. This is probably due to the varying quantity of pollen present in the atmosphere, the severity of the disease being, as a rule, in direct proportion to the abundance of the *materies morbi*. An attack lasts from a few hours to several days, or even longer, finally ceasing almost as suddenly as it set in, and leaving little or no trace of its presence either in local lesion or systemic disturbance. In some patients hay fever is accompanied by nettle-rash.

The asthmatic form of the complaint may be superadded to the disorder just described, or it may constitute the entire affection. It generally comes on in the daytime, and the paroxysm may pass off in a few hours, the patient first expectorating a little ropy mucus, and later an abundant frothy secretion, or the dyspnœa may continue, with only slight remissions, as long as the sufferer is exposed to the influence of pollen. The attacks seldom produce any emphysema, and the patient sooner or later entirely recovers.

The *diagnosis* of hay fever, from common catarrh on the one hand and spasmodic asthma on the other, is not always easy, and mistakes in diagnosis were formerly very common; but the disease is now so much better known that errors are

less likely to occur. The first attack might perhaps be confounded with ordinary coryza; but the suddenness of the onset, the characteristic œdematous puffiness of the eyelids, together with the absence of constitutional symptoms, will speedily lead to a truer diagnosis. People who are prone to catarrh are very apt to catch cold in the changeable weather of the spring and early summer of this country, and these cases are sometimes mistaken for hay fever; but the readiness with which they yield to anti-catarrhal treatment at once shows their real nature.

Hay fever may attack those who suffer from chronic rhinitis, hypertrophy of the turbinated bodies, or other slight structural disease of the nasal passages; but in the typical examples of true hay fever the interior of the nose is, as already stated, according to my experience, quite healthy.

Persons with slight chronic disease of the nose are, however, apt to suffer from exacerbations in the spring and summer, owing to exposure to dust, strong sunlight, or other irritants. Of course, such individuals may be affected by pollen; but such cases are not examples of true hay fever, though they are sometimes erroneously included in that category. There are also many people who readily take a slight cold in summer, and who, after sneezing a few times, fancy they have the "seasonable complaint";[1] but such cases are, of course, excluded. Another set of cases to be eliminated are those in which catarrhal symptoms are developed as the result of an idiosyncrasy other than that of hay fever.

Thus, it is well known that powdered ipecacuanha will in some persons cause a peculiar form of asthma closely resembling hay asthma, and with many people the fumes of burning sulphur have the same effect. I have frequently observed

[1] A lady once seriously complained to me that "the few who really have hay fever suffer from want of sympathy through the many professing to have it, whose ailment is very trifling by comparison."

slight attacks resembling hay fever produced by the insufflation into the larynx of powdered lycopodium, and, indeed, I have for this reason been compelled to give up the use of this drug as a diluent for medicinal powders. Some people experience symptoms somewhat analogous to those of hay fever in eating peaches,[1] whilst others are troubled in the same way by the presence of cats, rabbits, and guinea-pigs; and Dr. Bastian[2] suffered from an affection closely resembling hay fever whilst he was dissecting the *Ascaris megalocephala*, a parasite which infests the horse. If the specific exciting influence is in operation on a person subject to an idiosyncrasy of this kind, a complaint almost precisely similar to hay fever is produced; but, as a rule, the conditions leading to its manifestation are exactly known by the patient, and can, therefore, be avoided.

The asthmatic form of hay fever may, in some instances, be less easy to recognise than the catarrhal; but the history of the case will generally guide the practitioner to a correct opinion. The fact that hay fever comes on, as a rule, in the daytime, out of doors, and in the summer, whilst, on the other hand, paroxysms of true asthma most frequently occur in the evening or night, indoors, and in one of the other seasons of the year, may help to differentiate the two complaints.

The *prognosis* is in all cases favourable as regards the termination of each attack; *semotâ causâ, cessat effectus.* When the season of flowering grass is passed, the complaint will certainly depart; but it will almost as surely reappear whenever the patient is again exposed to the action of pollen.

Hay fever leaves no permanent structural lesion behind

[1] In connexion with this observation it may be mentioned that Dr. Marsh (loc. cit. p. 16) has found pollen accidentally lodged in the velvety skin of the peach, a circumstance which may explain the "peach cold" occasionally noticed in America.

[2] "Philosophical Transactions," vol. cvi. 1866.

it, and cannot, therefore, be said to have any *pathology*. Blackley thinks that pollen has a peculiar and specific effect in causing dilatation of the capillaries and exudation of serum from them; but it appears to me highly doubtful whether this is anything more than the reaction which ordinarily follows the application of an irritant.

It need scarcely be said that zealous *bacteriomaniacs* have, of course, sought for parasitic germs in the nasal secretions of those subject to hay fever; but, although bodies resembling pollen corpuscles have been found,[1] no specific organisms have, so far as I am aware, been detected. It is almost a comfort in these days to find one disease for which the ubiquitous bacillus does not appear to be responsible.

The *treatment* of hay fever is by no means satisfactory, and in no disease is the old adage, that "prevention is better than cure," more truly applicable than in the case of this complaint. If the poison be continually introduced into the system, the antidote, if one exists, can have but little chance of effecting a cure. The first measure, therefore, must be to remove the patient from a district in which there is much flowering grass. A sea-voyage is probably the most perfectly satisfactory step that can be taken. Patients who are unable to go to sea should endeavour to reside on the coast, where they will generally be free from their troublesome complaint, except when land-breezes blow. Dwellers in towns should avoid the country, and those who reside in the country should make a temporary stay in the centre of a large town. It often happens, however, that such a change of abode is not practicable, and under such circumstances, if the complaint is very severe, the patient should, if possible, remain indoors during the whole of the hay season. Many persons, of course, cannot stay in the house during the month or six

[1] "Brit. Med. Journ.," vol. ii. p. 18. 1881.

weeks of the hay fever period; and those who can are apt to find such detention not only exceedingly irksome but very injurious to the general health. Active exercise in the country should, however, be carefully avoided, for it must be borne in mind that the energy of the respiratory function bears a direct relation to the activity of the body, and, that when the breathing is frequent and deep, a far larger quantity of pollen will be inspired than when respiration is more passively performed.[1] If a patient is obliged to go out of doors, he should, if possible, avoid the middle of the day, when the glare of the sun greatly aggravates the sufferings of those whose eyes have been inflamed by the pollen dust. If obliged to go out at such times, the patient should protect his eyes by wearing spectacles with large frames, accurately adapted to the circumference of the orbits; or he may find some advantage in wearing a hat with a very broad brim. Plugging the lachrymal ducts with small glass rods has also been recommended,[2] and Dr. Thorowgood speaks[3] favourably of a little apparatus containing a few drops of a camphorated or carbolized solution, which can be comfortably (?) worn in the nostrils. I cannot recommend either of these procedures, but the nostrils may be *plugged* with cotton-wool or wadding by means of one of Gottstein's screws.[4] Many people find no inconvenience from the cotton-wool, which seems infinitely

[1] The popular games of cricket and lawn-tennis offer conditions very favourable to the development of the complaint in those who possess the idiosyncrasy, owing to their being played out of doors, and requiring a good deal of running about. Napoleon is said to have attributed his defeat at Leipzig to his having eaten, not wisely, but too well, of his favourite dish, shoulder of mutton and onions; in like manner (*si parva licet componere magnis*) the victory has sometimes been decided in the cricket-field, in a contest between the rival "blues," by the inopportune sternutation of some doughty champion, whose nerves are as adamant against everything but pollen.

[2] Hannay, "Brit. Med. Journ.," vol. ii. p. 872. 1881.

[3] "Lancet," vol. ii. p. 82. 1881.

[4] Both the screw and the spectacles are sold by Messrs. Mayer and Meltzer, Great Portland Street.

preferable to *closing* the nose with a little metal clip, as has been advised by Hannay.[1] As rapid motion in the open air almost always aggravates the complaint, it may be advantageous to wear a veil over the face whilst driving or riding. One made of "three ply" of fine silk gauze has been recommended,[2] but I have found a "double gossamer" veil, which can be had in several colours, answer the purpose in some cases. Protected in this way, many people predisposed to hay fever escape altogether, whilst others only contract the disease in a very mild form.

As the affection most commonly occurs in persons of nervous temperament, nerve-tonics and other constitutional remedies have been used for the purpose of warding off hay fever, or controlling the violence of its attacks. Among these, quinine, arsenic, opium, and belladonna have been employed, but I have found valerianate of zinc, in combination with assafœtida, more valuable than any other drug. I usually give the remedy in the form of pills containing one grain of valerianate of zinc, and two grains of the compound assafœtida pill, doubling the dose at the end of ten days or a fortnight. I direct my patients to begin taking these pills as the hay season approaches, and, under the use of this remedy, many persons who formerly suffered most severely from hay fever have ceased to be troubled with it.

When the disease is established, tincture of opium is of great benefit in controlling hay asthma, reducing the secretion, diminishing the sneezing, and at the same time bracing up the nervous system. It should be given in small doses of five or seven drops twice daily, and a saline purgative should be taken on alternate mornings. Belladonna has

[1] One of my American lay critics remarks: "It is a question whether a man would think himself perfectly happy with a clothes-pin on his nose, large spectacles on his eyeballs, glass-rods in his lachrymal ducts, and a plentiful supply of assafœtida pills at his command for six weeks. Three or four such patients, for example, in a church Sunday morning would keep awake the sleepiest congregation."

[2] "Brit. Med. Journ.," June 30, 1883.

been recommended, but I have had no experience of its use in this complaint.

I trust very little to local measures in the treatment of hay fever; but, when there is profuse secretion with an excessive tendency to sneeze, the inhalation of strong ammonia salts often gives great relief. I have not found injections of quinine, as recommended by Helmholtz, at all useful. Though in a few cases benefit was derived, in most instances no effect was produced, whilst some patients were actually made worse. The good effect is probably to be explained by the injection washing away the *corpus delicti* mechanically rather than by any parasiticide action. The same remark may apply to the case in which Binz[1] states that a solution of one part of salicylic acid to one thousand of water, thrown into the nares, cut short the disease. The Vapor Benzoini of the Throat Hospital Pharmacopœia has occasionally produced a soothing effect, and I have also seen good results from insufflations into the nose of a powder consisting of one-sixteenth of a grain of morphia and one grain of bismuth. This should be applied several times a day. Ferrier's snuff may be substituted for the above formula, but it should be applied by insufflation. Habitual snuff-taking, by deadening the sensibility of the nasal mucous membrane, renders people less liable to common catarrh, and I have heard that this habit affords some protection against hay fever. Tobacco-smoke, also, sometimes affords relief, and I know of one case in which a patient, who was advised to smoke on account of another complaint, was entirely cured of his hay fever by means of this pleasant remedy. I believe, however, that this is a somewhat exceptional case, and I have known several instances in which the affection was much aggravated by tobacco-smoke. It is also said[2] that great advantage has been derived from the snuffing of pure salicylic

[1] "Deutsche Med. Wochenschr.," Sept. 22, 1877.
[2] "Brit. Med. Journ.," vol. ii. p. 101. 1878.

acid, ten or fifteen grains being used in this manner in the course of the day. As, however, this powder is highly irritating to the mucous membrane, I am inclined to believe that most persons would consider the remedy worse than the disease. Since this essay was first published the valuable properties of hydrochlorate of cocaine as an anæsthetic to the mucous membrane have been discovered. Used as a spray (4 per cent. solution), its influence will probably be found to be to some extent protective in cases of hay fever; but, should this not prove to be the case, a stronger solution (20 per cent.), applied with a brush, will no doubt at once remove the distressing symptoms which affect the nose and eyes.

The theory which has been put forward in America, that hay fever attacks none but those who suffer from some chronic disease of the nose, has naturally led to a vigorous treatment of that organ, and a number of cases have been reported, in which freedom from hay fever has resulted from active surgical measures. Those reported by Dr. Daly have already been given (page 24), but Dr. Roe seems to have been equally successful, and has published a greater number of cases. The plan which he recommends for the removal of "redundant and hypertrophied tissue" is Jarvis's snare-operation, "although caustics, such as acetic, chromic, or nitric acid may be employed. For the destruction of the deeper plexuses of vessels the galvanic cautery is by far the most efficient. It is also the most efficient means of removing the sensitive regions on the septum and other portions of the nasal chambers. For the latter purpose a very small point should be used, so as to enable the operator to limit the cauterisation entirely to the diseased tissue, and by using a very small point but little pain is occasioned. All obstructions to the nostrils other than hypertrophic tissue should be removed, and also all abnormal conditions of the passages, whether they be sufficient to cause obstruction in the chambers or not, should be corrected." Dr. Roe

recommends that the radically curative measures should be instituted when the patient is free from the affection, though, if necessary, the treatment may be begun during the attack. I have never myself tried the effect of electric cautery as a remedy for hay fever, but I have recently been consulted by two patients on whom it had been unsuccessfully employed.

Mr. H. B. S., æt. twenty-five, of Boston, Massachusetts, consulted me on January 27 on account of enlarged tonsils, which have troubled him ever since he had an attack of scarlet fever when he was a boy at school. He stated that he had suffered from hay fever during each of the last seven years, except during two seasons which he had spent in Switzerland. In 1883 he was told by a physician in New York that his complaint could probably be cured by the removal of some swollen tissue within the nose. He consented to be operated upon, and on three occasions pieces were removed from the inside of the nose by means of a snare. The process, he said, was exceedingly painful, but he should not have minded this if he had been cured. On one occasion the operation lasted an hour and a half, and on another three hours. During last autumn, however, while staying in the neighbourhood of Boston, he had one of the worst attacks of hay fever that he ever experienced. He said that nothing would ever induce him to undergo any further treatment at all resembling that to which he had already been subjected. I carefully examined this patient's nose, and could find nothing wrong in it.

The second case was that of a gentleman who consulted me on February 12 of the present year, with the view of obtaining some means of protection against future attacks of hay fever to which he was subject. The patient was an Englishman, but he had been living for the last four years in New Jersey. Having suffered for several years from hay fever, in June 1884 he went to New York, and consulted

an eminent specialist, who found that he had considerable obstruction of both nasal passages, and recommended that treatment should be carried out by means of electro-cautery. The red-hot wire was applied to the inside of his nose eleven times. The patient did not find it so painful as he expected, but he said that he would not care to have it done again. In the autumn of the same year he had a very severe attack of hay fever; he thinks, however, that the nose was not quite so bad as it had been on previous occasions, and there was not so much sneezing, but he suffered very badly with his eyes, and had such severe asthma that for more than a fortnight he was not able to lie down at all at night. The asthma also was so bad during the day that he had to transact business as best he could at home instead of going to New York, as was his daily custom. I was unable to detect any disease in this gentleman's nose or throat, beyond atrophy of the turbinated bodies, resulting, no doubt, from the operations which he had undergone.

Though these cases do not appear favourable to the surgical treatment of hay fever, of course they do not prove anything absolutely against it, for it is quite possible that it may not have been carried out with sufficient thoroughness. Again, although such measures may not cure all cases, it is quite conceivable that some may be relieved by them. As the anæsthetic effects of cocaine now enable operations to be done with little or no pain, there is no doubt that the somewhat heroic treatment with electric cautery or wire loop will be more or less widely practised in the future, but I do not think that it offers a sufficiently favourable prospect to justify me in employing it myself. I may add, moreover, that so much may be done in the way of reducing the over-sensibility of the nose and the hypertrophy of the turbinated bodies by the use of bougies, that destructive treatment is, in my opinion, rarely called for.

In a few cases I have known some benefit result from the

use of medicated bougies, such as the bismuth, and acetate of lead Buginaria of the Throat Hospital Pharmacopœia; but, like quinine spray, they occasionally aggravate the mischief they are meant to cure.

The upper lip and the margins of the nostrils should be smeared over with benzoated zinc ointment two or three times a day, when those parts are inflamed, or aconite liniment[1] may be used in the same way.

For the relief of the irritation of the eyes, frequent bathing with very cold water is sometimes useful, though Roberts[2] appears to have found more benefit from warm and slightly salt water. Sulphate of copper (gr. ij. ad ℥j.) or sulphate of zinc (gr. ij. ad ℥j.) may sometimes do good, but I have found a lotion containing two grains of acetate of lead with two drops of dilute acetic acid in an ounce of water, the most soothing application. Sedative collyria occasionally allay the irritation; for this purpose a small quantity of a solution of acetate of morphia (gr. i. to iij. ad ℥j.) may be dropped into the eyes when they begin to itch.

Asthmatic patients are often relieved by inhaling the fumes of nitrated blotting paper, the good effect of which is further increased by steeping the paper in a solution of stramonium, datura tatula, belladonna, or lobelia. A patent American remedy, consisting of nitrate of potash and powdered herbs, of which stramonium or datura tatula is probably the most important, is sold under the name of "Himrod's Cure,"[3] and

[1] Ringer: "Handbook of Therapeutics," p. 288. London, 1880, 8th ed.

[2] "New York Med. Gaz." Oct. 8, 1870.

[3] The original formula of this remedy has recently been published in the "Chemist and Druggist" (December, 1883). It is said to consist of stramonium, lobelia inflata, black tea, and nitre in equal parts. If a little powdered aniseed or fennel be added to this preparation, it certainly produces a compound which in appearance and effect is very similar to that of Himrod's remedy. Careful microscopical examination made at my request by those familiar with vegetable structures has, however, failed to detect any tea-leaf in Himrod's preparation, though, of course, it is readily seen in specimens of powder prepared according to the formula just given. On the other hand, bearing in mind the fact mentioned in the text, that tea when drunk often gives great relief to asthmatics, it is not at all improbable that the herb may have some effect, if burned and inhaled,

when this powder is lighted and the fumes inhaled, they sometimes quickly relieve the spasm.

In hay fever the food should be nutritious and easily digestible. Owing to the depression which the complaint causes, stimulants are sometimes necessary; but they should, if possible, be avoided, or only taken in small quantities. Light claret or hock, or whisky diluted with water are the least injurious. Tea and coffee are extremely useful in the asthmatic form of the disease, both in relieving the spasm and counteracting the exhaustion which follows it. Dr. Thorowgood[1] strongly recommends citrate of caffeine for the same purpose, especially in cases where the heart is weak; he gives it in doses of two or three grains dissolved in water or warm coffee.

In conclusion, it may be stated that, though the symptoms of hay fever can seldom be mitigated whilst pollen is allowed uninterrupted access to the system, yet, if the directions which have been given in this little treatise are carefully followed, the troubles of the affection will be found to be so minimised that the quondam sufferers will have comparatively little to complain of, and certainly will no longer dread the "gracious odours" conveyed

'Upon the gentle wing of some calm-breathing wind."

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[1] "Lancet," vol. ii. p. 83. 1881.

# *APPENDIX.*

## ROSE COLD.

THE existence of a peculiar idiosyncrasy which makes certain individuals liable to catarrh and asthma from the presence of roses appears to have been known from the middle of the sixteenth century. In the year 1565, Botallus[1] (known to fame as the discoverer of the *foramen ovale* in the heart) affirmed that he knew persons who held the smell of roses in deadly hatred, because it gave rise to headache, sneezing, and troublesome itching of the nose. Somewhat later, Van Helmont[2] (1577–1644) mentions the odour of sweet-smelling substances as causing headache, and, in some cases, difficulty of breathing; he also gives[3] the case of a canon who was *totâ æstate propemodum asthmaticus, totâque hyeme liber.* It must be allowed, however, that this passage, though suggestive, is not quite conclusive as to the nature of the malady. In 1673 I. N. Binningerus[4] says that he had often heard from James à Brun, a professor of the medical faculty in the University of Basle, that his wife, Ursula Falcisin (a lady, as he is careful to inform us, whose charms were of the "too, too solid" kind, *ampli corporis et carnosi*), suffered from coryza for several weeks every year during the rose season.

A few years later we find Ledelius[5] recounting the case of a merchant of Grünberg who could not smell a rose without immediately suffering from itching, followed by inflammation of the eyes, with profuse lachrymation and headache lasting some days. We come next to a case of especial interest, which was published in 1691 by

[1] "Commentarioli duo, alter de Medici, alter de Ægroti Munere," p. 23. Lugduni, 1565.

[2] "Asthma et Tussis," cap. x. (Opera Omnia, p. 344. Hafnæ, 1707).

[3] Ibid., cap. xxiv. (Opera Omnia, p. 346).

[4] "Obs. et Curat. Medicinal. Centuriæ quinque," Cent. Secunda, obs. lxxxvi. p. 227. Montbelgardi, 1673.

[5] "Miscell. Nat. Curios.," dec. ii. ann. 2, obs. 140, p. 309 (probably 1682). Lipsiæ.

J. Constant de Rebecque.[1] This passage is important as conveying the result of an experienced physician's observation of his own symptoms. He tells us that for thirteen years he had been afflicted with coryza lasting throughout the rose season, and ceasing of itself when that time had passed (*per totum tempus quo rosæ se mihi olfaciendas præbent durat, eoque elapso sponte desinit*). At first he attributed his sufferings to heat, but in the year 1685, when the summer was exceptionally hot and there were hardly any roses on account of caterpillars, he was struck by the fact that his annual disorder did not trouble him. The symptoms came on at once, however, on his inadvertently plucking a rose towards the end of the season. He concludes that something flows from roses (*e rosis aliquid effluere*) which stings the nose (in his case exceptionally sensitive) and by means of tiny prickles produces a solution of continuity imperceptible to the sight (*aculeis quibusdam solutionem continui etsi non sensibus obviam excitat*). This observer, therefore, came very near the mark as to the real cause of the disease, to which he applied the term *coryza a rosarum odore.*

An extraordinary case is related by Herlinus[2] (on the authority of Adrian Spigelius, whose name still survives in one of the lobes of the liver) of a Roman cardinal, Oliver Caraffa, who could not bear the smell of roses. This is confirmed from personal knowledge by another writer, who[3] adds that Caraffa was obliged every year to shut himself up during the rose season, guards being stationed at all the gates of the palace to stop any visitor who might be wearing or carrying the dreaded flower. It is, of course, possible that in this case the roses may have produced some other affection than rose fever; but, as it is distinctly stated that it was the *smell* to which the cardinal objected, we may, I think, fairly conclude that the "sting of the flesh" which tormented him was, in fact, rose-pollen.

About the end of the seventeenth century, Riedlin[4] relates the case of a merchant of his acquaintance who was afflicted with sneezing and catarrh every year when the roses were in bloom. Riedlin advised him to avoid the *cause* of his complaint, and modern science can suggest nothing better.

The case related by Hünerswolff[5] of a man in whom the perfume

[1] "Atrium Medicinæ Helvetiorum," obs. 92, p. 15 *et seq.* Geneva, 1691.
[2] "De Remediis sudoriferis et analepticis," p. 32. Lipsiæ, 1693.
[3] Joh. Pierius "Hieroglyphica," lib. viii. cap. 25, p. 96. Francofurti, 1678.
[4] "Lineæ Medicæ," p. 177. Augustæ Vindelicorum, 1695.
[5] "Ephem. Nat. Curios.," dec. ii. ann. v. obs. xxii.

of roses invariably produced an attack of coryza, has been often cited by modern writers. The celebrated Broussais[1] appears to have been impeded in his botanical studies by a similar idiosyncrasy.

I have myself met with only one example of rose cold. The case was that of Mrs. N——, a lady, aged forty-two, living in Devonshire, who consulted me in 1864. She was very fond of roses, and had a large quantity in her garden. She had never found any inconvenience until three years previously, when she noticed that whenever she smelt a rose she was attacked with severe sneezing, suffusion of the eyes, and headache, which lasted for some hours. After that, as far as possible, she kept roses at a distance, never had any cut or put into her rooms, and, as she said, "was able to walk about the garden without being affected by the odour." The following year, however, she found that even in her garden, when the roses were in blossom, she was attacked by sneezing and running at the nose and eyes. She tried various remedies, but nothing gave her any relief. In 1864, after having suffered from the complaint for several weeks, she came up to town and consulted me. She was still suffering from nasal catarrh, but there seemed to be nothing the matter with her nose beyond severe congestion of the lining membrane, and a slight swelling of the turbinated bodies. I found Mrs. N—— of a decidedly nervous temperament, and, though well nourished, rather weak. Her general health, however, was good, and she was not at all subject to colds in the winter. She had not suffered from any illness since childhood, when she had the usual infantile complaints.

I recommended a nasal wash containing a little alum, and the patient rapidly got better; but I believe she would have done equally well without any treatment, as she always improved when she escaped from her roses. Mrs. N—— returned home, had a bad attack, and then came back to London. After this I tried several remedies, both mechanical and medicinal, but they were only very partially successful, and this lady was obliged to banish roses altogether from her garden.

As the term rose cold still survives in America, though it is quite unknown in England, I published last year some of the historical examples which have been related in this article,[2] and invited American physicians to send me any cases which had come under their own notice. The following typical instances have been

[1] Anglada: "Du Coryza simple," p. 14. Thèse de Paris, 1837.
[2] "New York Medical Record." Aug. 30, 1884.

selected out of a considerable number sent to me for publication :—

## AMERICAN CASES.

No. 1.—*Report by the Rev.* Andrew Preston Peabody, D.D., LL.D., *kindly forwarded by Dr.* Farnham, *Cambridge, Mass., October* 2, 1884.

"In my childhood and youth I was subject to what are called bad colds in the summer; but I had never heard of the rose cold, and cannot therefore identify those colds with the rose season. It may have been in 1833, perhaps as late as—no later than—1836, that I learned that there was such a disease as the rose cold. At that time there was very little culture of roses out of season. With me the cold commenced with the earliest blossoming of the small red rose, which was the first to make its appearance, and lasted through the rose season, leaving me in my usual health about the time that many of my friends began to suffer from what they called the hay cold (which, however, did not begin till the hay harvest was almost over). During this season (the rose season) there was great swelling of the nostrils and face, an oppressive sense of fulness in the head, an inflamed condition of the eyes, with frequent paroxysms of sneezing, and a discharge from the nose which made half a dozen pocket-handkerchiefs a day no more than a normal supply. I found a relief in travelling in roseless regions, and remember once having enjoyed a day or two of entire relief on Cape Cod, to suffer with renewed severity on my landing at Boston. I was affected temporarily by roses out of season. I remember once in mid-winter, in calling on a sick parishioner, being seized with a violent paroxysm on the entrance into the room of the *fiancé* of the patient. My condition was such as to lead to the inquiry how long I had had so severe a cold. My reply was: 'Not five minutes; but I should think, did I not see to the contrary, that I was in a room full of roses.' The young gentleman disappeared, and returned instantly with a huge bouquet of roses which, he said, finding that there was some one not of the family in the chamber, he had left in the adjoining room. Both in and out of the rose season, I repeatedly had roses removed from churches where I preached, and I always detected their presence before I saw them.

"The decline, and almost disappearance, of the disease in my

case seem to me as remarkable as its existence. Since I came to Cambridge, in 1860, I have not suffered severely from it, though up to that time it had relaxed nothing of its severity. For the first few years of my residence here, roses were slightly annoying, and during the rose season proper I suffered more than at other times from dust and cinders in the railway-cars, and from the light through slatted blinds; but I now know no difference of seasons as to general health and comfort. A slight titillation of the nostrils certifies me of the beginning of the rose season; but, though habit makes me shy of handling roses, I do not suffer from having them about me whether within doors or out of doors. It seems to me that a change in my constitution can hardly have taken place so suddenly; but there was a great change in my habits of life. While I was a parish minister I had no vacations, and the commencement of summer found me wearied with my year's work and incapable of opposing the *vis medicatrix* of nature to any morbid influence. Here in Cambridge, before the written examination system was fully organised, there was a slackening of work towards the close of the term, and the near prospect of vacation made what work remained seem light. My theory is, that successive summers finding me in a better condition to encounter what had been my bane, there has been a gradual improvement of my constitution, and probably an alterative process to such a degree that precisely the same causes would not now produce the same effect.

"If this statement can be of service to you, I am most happy to place it at your command."

No. 2.—*Extract from a Letter from* Dr. Andrews, *of Detroit, U.S.A., November* 10, 1884.

"Mrs. A——, *æt.* 45, blonde, height 5 feet 5 inches, weight 130 lb., of nervous temperament, a delicate but healthy person in every way, very rarely takes cold or has any bronchial affection, only has nasal catarrh in connection with the rose cold.

"First noticed the peculiar susceptibility about fifteen years since, and then by accident. Undoubtedly she had been affected before, but had not connected the cause and effect. When once attention was called to the subject, found that the slightest exposure to rose perfume would bring on the symptoms; a single rose in a large room being sufficient to produce slight disturbance, which would

soon pass off upon removal of the cause of irritation. Not only the fresh flowers, but the dried petals and also the attar, are obnoxious, thus proving that in this case, at least, pollen is not the exciting agent. The season of the year has no apparent influence; the presence of rose perfume at any time, and anywhere, are as sure to excite the catarrh as a spark is to explode gunpowder.

"The perfume of violets, pansies, heliotrope, and tube rose have in a less degree the same effect, and very possibly other flowers. She is not at all subject to hay fever.

"Two brothers have hay fever slightly, but not rose cold; one sister and the mother feel the effect of perfumes somewhat; three other sisters are exempt."

No. 3.—*Extract from a letter from* Dr. E. Sealy, *Newark, N.J., August* 30, 1884.

"On the evening of June 2 of this year, I sat in my office reading, when a friend entered with a bouquet of beautiful roses which he had gathered from his garden, to present to me. The roses were freshly gathered and exquisitely fragrant. I held them in my hands for about half an hour, and at intervals of a few minutes buried my nose among them and fairly revelled in their perfume, and then laid them aside. About three quarters of an hour afterwards I experienced a sudden rise of fever, with a sense of great heat in the head, and soon after noticed a feeling of dryness in the nostrils. Next morning I had a well-developed coryza, which continued several days.

"I had never been a believer in rose cold, and had never thought the subject worthy of study; but the onset of this attack was so abruptly marked, and so closely related to the supposed cause, that my attention was very forcibly attracted. Even now I do not accept this as demonstrative evidence, but my former prejudices are shaken up, and I am on the alert for further facts."

No. 4.—*Extract from a letter from* Dr. Bowie, *San Francisco, September* 19, 1884.

"Miss R——, a young lady of nineteen years, is in the habit of visiting our country seat, where thousands upon thousands of roses grow. If she approaches the beds, an irresistible desire to sneeze

comes over her. Should she pin a bunch of buds upon her breast, she not only sneezes, but has all the symptoms of a cold in the head—snuffling headache, a feeling as though her nose was stopped up, and a slight watery discharge.

"As an illustration of the truth of these things, I have examined her beforehand, and found everything perfect; and, upon allowing her to smell roses, have noticed all the conditions above, the mucous membrane becoming redder and appearing as though slightly swelled."

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