REMARKS ON THE TREATMENT OF FETID EXPECTORATION BY THE VAPOUR OF COAL TAR CREASOTE.¹

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FETID expectoration, though not very common, is yet, when present, such a persistent and distressing symptom, that any method of treatment likely to be beneficial, merits earnest consideration. It had always seemed most rational to treat fetid expectoration by means of antiseptic remedies, which, in the form of inhalations acted directly on the seat of the disease. The main objection to be urged against this form of treatment is its insufficiency. The mere inhalation of some antiseptic vapour from a suitable inhaler is nearly impotent to render the expectoration free from odour, and still less likely to cause the expulsion of the long-retained, fetid contents of the bronchial tubes. When the inhalation is discontinued, the fœtor is as bad as before.

To obviate these drawbacks, the attempt was made to treat patients with fetid expectoration, by placing them for a certain time each day in an atmosphere of a highly-antiseptic, deodorant, and penetrating vapour, so that there could be no doubt that the medication employed reached the seat of the disease, and by its irritating properties caused the expulsion of the retained phlegm. After several trials, the vapour found suited best to these conditions was that of the common commercial coal tar creasote; and it is to the result of the treatment of fetid expectoration by this drug that this paper refers.

BRONCHIECTASIS THE MAIN CAUSE OF FETID EXPECTORATION.

For all practical purposes the causes of this condition are three, namely, bronchiectasis, gangrene of the lung, and putrid empyema finding exit through the bronchi. Fetid expectoration arising from gangrene of the lung and putrid empyema need not detain us, for the former is, as a rule, such a rapidly fatal complaint, and attended with such profound constitutional disturbance and depression, that patients affected with it are rarely in a position to undergo any energetic treatment for the removal of the fœtor; while the only rational treatment for putrid empyema making exit through the lung is clearly external drainage by means of an incision through the chest wall.

The cases, therefore, most suitable for treatment by means of creasote vapour are narrowed to those arising from dilatation of the bronchial tubes. Bronchiectasis may give rise to fetid expectoration in two ways: (1) by the dilated tubes becoming so large, or so numerous that sputum is retained a sufficient length of time to allow of decomposition; (2) by ulceration of the wall of the tube, and subsequent necrosis of the lung substance. When either of these conditions supervenes upon bronchiectasis, grave symptoms appear. The phlegm, which before had been simply profuse and expelled in paroxysms, now becomes horribly foul. Each fit of coughing brings with it an odour so objectionable, that it is impossible to remain near the patient. Not only during coughing, but at all times the breath has the characteristic foul-smelling scent which was likened by the late Professor Laycock to the odour of the mayflower with an *arrière-goût* of fœces. The patient on account of this distressing condition becomes unfitted for all social duties. But in the wake of the onset of fetid expectoration come symptoms of the gravest import. From a state of comparative health and strength (if we except the profuse expectoration, the cough, and the dyspnoea) the patient lapses into a condition of failing bodily power; the appetite fails, the temperature becomes hectic, and little attacks of fever make their appearance, which are only ended for the time by the expulsion of a large quantity of fetid phlegm. Sweating diarrhoea and emaciation come on. The patient wears the aspect of one suffering from septic absorption, and such really is the case. A septic form of pneumonia may develop and carry off the victim; or, what is more common, he sinks gradually and slowly under the influence of asthenia, which his condition begets. In not a few

cases the beginning of the end of bronchiectasis is marked by the advent of fetid expectoration. From what has just been stated, it will be easily conceivable that bronchiectasis with fetid expectoration is much more serious than when simple.

TREATMENT BY INTERNAL MEDICATION, INHALATION, AND INJECTION.

The catalogue of the various ways of treating this complaint is long, and of all it may safely be said that, if they do not altogether fail, they at least leave much to be desired. Innumerable drugs have been employed, either internally or as inhalation, most of which have a known power of correcting fœtor, and promoting asepsis; among them may be mentioned creasote, iodine, carbolic acid, eucalyptus, turpentine, and the balsams. The disease has also been attacked by means of inhalations of these drugs, with conflicting and varying result. Emetics to empty the bronchiectasis of their contents have too been in use. Quite recently Sir T. Grainger Stewart has recommended the plan of intralaryngeal injection, and with apparently good effect. Experience shows that internal remedies are useless, and the inhalation of the various antiseptics only of the most fleeting benefit. Indeed, the only method that has been attended with any measure of success is that of intralaryngeal injection; but from this treatment lasting good has not come, and the application of the remedy is by no means as easy as is supposed.

SURGICAL TREATMENT.

All surgeons will probably agree that the cases in which good comes of operative procedure are very few. Could the surgeon drain all the dilated bronchi, untold benefit would result, but since he can only effectually deal with some of them, permanent and lasting improvement cannot be expected. Of course where the bronchiectasis is single, much good results from operation. During the past few years, at my suggestion, surgical interference has frequently been resorted to, but so unsatisfactory, and even disastrous, have been the results, that I could wish I had never proposed such a course, and I feel very certain that I shall never do so again.

MODE OF USING COAL TAR CREASOTE VAPOUR.

Believing that the successful treatment of this complaint is to be found in some form of inhalation, a search was made for a drug, the vapour of which, while possessing strong antiseptic and deodorant properties, was yet of such a nature that it would penetrate to the bronchi, and thus attack the seat of the disease. If such a drug could be found it would be likely to have the double effect of reducing the unpleasant smell, and the undoubted danger of the complaint.

Through the courtesy of Messrs. Burt, Boulton, and Haywood, a visit was paid to their creasote and timber works at Silvertown. While looking over the factory and questioning the *employés* about their previous health, the fact became evident that those who worked in the fumes of the creasote were, notwithstanding the strong and acrid vapour, peculiarly free from any chest complaint. It was also learnt that there was a tradition among the workmen that working in the fumes of the creasote was very helpful in cleaning the chest of phlegm, and rendering those who were employed free from "asthma" and consumption.

The creasote manufactured at the works is that commercial variety known as coal tar creasote, and is used principally for seasoning railway sleepers and telegraph poles. It is obtained from the distillation of coal tar. Its chief constituents are phenates and acridin and pyridene bases, all of which are of high antiseptic value. When heated to near boiling point this creasote gives off a dense, pungent, irritating vapour, which strongly stimulates the sensory filaments of the fifth nerve, evidenced by running from the eyes and nose. At the same time a smarting sensation is felt down the trachea and bronchi. As the inhaled vapour gains access to that part of the respiratory tract, coughing comes on, and whatever there may be of phlegm in the bronchial tubes is expelled. After inhaling this vapour the breath distinctly smells of it for some hours after.

Here, then, is a substance which contains properties well suited to the treatment of fetid expectoration: (1) The vapour is penetrating and capable of reaching the dilated

¹ Read before the Hunterian Society.

bronchus; (2) it is irritating, and thereby able to cause, by inducing cough, expulsion of the retained and decomposed matter; (3) it is antiseptic, and may be expected to do something towards rendering the bronchiectasis, which it reaches, free from the putrefactive germs which cause the fœtor.

At this time there was, at the Victoria Park Chest Hospital, a case of bronchiectasis with foetid expectoration, which had hitherto resisted all treatment. The drug was accordingly tried on this patient, and the method of application was as follows:

A small chamber about 7 feet square by 8 feet high was set apart at the hospital for this purpose. It was excellently situated, being an outhouse connected by a porch with the main building of the hospital.

This chamber was made as airtight as possible, all chinks and holes in the walls being stopped up with cotton wool. It could thus be easily filled with the creasote vapour. In the centre of the room, on a pedestal, a spirit lamp was placed, and over the lamp a flat open dish, into which was poured the creasote. The lamp was lighted and the room very soon became filled with the characteristic pungent fumes. The patient sat in the chamber and inhaled the vapour, at first with only a gentle heat applied. But as time went on the patient was able to stand the inhalation with impunity, sitting with her head over the dish, with the chamber so filled with the vapour that it was difficult to distinguish objects. A few minor, but not unimportant, details should receive attention. Thus it was found that patients, until accustomed to the vapour of the creasote, complained of the irritating and smarting effect it had upon the eyes and nose. To obviate this the simple expedient was adopted of protecting the eyes by a pair of watch glasses framed in sticking plaster; thus effectually preventing the ingress of the fumes. The nostrils were also plugged with cotton wool. By attention to this small matter of detail the most unpleasant concomitant of the treatment is removed, and by this simple plan many patients were enabled to obtain the full benefit of the vapour, who, without it, would scarcely have been able to stand the treatment for any length of time. Then, again, it was found that the hair and clothing, especially if the patient were a woman, retained the scent of the creasote. To prevent this a towel pinned over the head and a loose dressing gown were used with complete success.

The patient first subjected to this treatment began with an inhalation lasting half an hour, and after two days was able to endure it without trouble for an hour, or an hour and a-half. In this way the treatment was proceeded with every day for six weeks.

THE EFFECT OF THE INHALATION.

First, as to the cough. As is well known, bronchiectasis gives rise to periodic fits of coughing, which come on with violence, and end by the expulsion of large quantities of phlegm, then all is quiet for some time until the dilated tubes become full again. Now if, after one of these coughing fits (when it may be presumed that the tubes are empty), the patient be subjected to the inhalation, one is astonished to find that by the irritation of the fumes a large quantity of phlegm is expelled in coughing. The patients themselves have often been known to express wonderment that so much phlegm is ejected, when from experience they believed that all expectoration had been got rid of by the ordinary fit of coughing. This residual phlegm, as it may be termed, is generally horribly foul, and continues to be expelled during the sitting. The action of the inhalation in bringing about the discharge of expectoration, which under ordinary circumstances would have remained decomposing in the dilated tubes, may be regarded as one of the most important features in the treatment.

The inhalations have also a marked effect upon the character and amount of the expectoration. At the first two or three sittings the phlegm is profuse and foetid, but as the treatment proceeds it becomes smaller in amount and less foul, until after a certain time, varying from one to four weeks, the odour has much diminished, and the expectoration is only trifling in amount. Towards the end of the treatment the amount of expectoration not uncommonly sinks to almost zero, and the fœtor quite disappears.

Another effect which patients often insist on, is that, after each inhalation and the accompanying expulsion of phlegm,

the chest feels freer and less clogged. They often speak of a feeling as if more air could be drawn into the lungs. The dyspnoea is so much improved that staircases which before had been unclimbable are now mounted with ease; but next to the disappearance of the fœtor, by far the most important effect of the inhalation is the great improvement in the general condition of the patient. The appetite improves, the tongue becomes cleaner, and the strength increases. The temperature too exhibits a change; after undergoing the treatment the temperature curve ceases to be hectic. In many cases it falls to normal, and in all is much lower than before. The attacks above-mentioned are not so prolonged, and in time cease altogether. The pulse becomes less frequent, and the evidence of septic absorption taking place becomes slender or altogether wanting.

Lastly, if the chest of a patient who has undergone this treatment be examined, it will be found that where before there was only occasional evidence of a bronchiectasis, owing to the retained phlegm filling up the cavity, there is now to be heard, almost continually, hollow breath sound, with but few bubbling râles.

CASES TREATED.

During the first year in all 6 cases were treated, whilst a seventh has been under treatment only a month. In all cases the mode of application of the remedy has been such as is described above. Each patient began with an inhalation lasting half an hour, which in a day or two was increased to one hour daily. The course of treatment lasted from six to twelve weeks. All the cases had been under treatment of various kinds many times previously, but with scarcely any benefit. All of them expressed themselves as receiving more benefit from this treatment than from any other, and this was patent to those watching the cases. Of the 6 cases treated, in 2 the fœtor of the phlegm was entirely removed after the treatment, and had not returned two months after the inhalations were discontinued. In 2 other cases the fœtor returned in a very slight degree if the treatment was left off for a week or ten days; but it was entirely kept under by having recourse to one inhalation a week. In the remaining 2 cases the treatment has only just been completed, and although of these it may be said that the fœtor has disappeared, and that they are greatly improved, yet it is too early to say how long the expectoration will remain free from odour without the aid of the creasote. Of all of them it may be stated that the general condition, so far as regards cough, amount of phlegm, dyspnoea, hectic, and bodily strength, has manifestly improved. The seventh case now undergoing treatment is the worst that could be imagined, but even in this case there are decided signs of amendment, the fœtor having almost entirely disappeared, and the temperature having become normal.

Some of the six cases that have been treated may be conveniently epitomised:

CASE I.—A girl, aged 16, had been bringing up foetid expectoration for three years, from a bronchiectasis at the base of the right lung. On two previous occasions she had been in the Victoria Park Chest Hospital, but with no appreciable improvement. She underwent the treatment, receiving in all fifty-six inhalations. At the end of that time all the fœtor had disappeared, the expectoration was insignificant in amount, the temperature normal, and the patient was generally improved. Two months afterwards she was in the same excellent condition.

CASE II.—A young woman, aged 24, who had been ill with foetid expectoration for a year, was admitted to the hospital, and after being treated for some time with but little benefit, consented to make trial of the treatment. After undergoing thirty-six inhalations the fœtor had diminished until it was only trifling, and since then, by means of two inhalations a week, she has been quite able to prevent it from becoming worse. In fact, when she came to the hospital she had been discharged from her occupation on account of the unpleasantness of her complaint, but since then she has been able to resume it.

CASE III was also that of a woman who had been operated upon for bronchiectasis on two occasions, but without benefit. After forty inhalations the fœtor disappeared, only being noticeable when violent cough came on.

Another of the cases was a young butcher, who until he took a course of the treatment was unable to follow his occupation, on account of the danger of driving away customers.

The practical bearings of this paper may be thus summed up:

1. The usual treatment of foetid expectoration is unsatisfactory, and as a rule leads to but little permanent benefit.
2. The onset of fœtor of the phlegm is sufficiently grave to demand a trial of any new method of treatment.
3. The form of treatment upon which this paper is based

offers a prospect of amelioration, or even cure, to the victim of this complaint, such as will favourably compare with other ways of dealing with it.

Lastly, the application of the method is easy, attended with no danger, and cheap, half a gallon of creasote costing only 4d.

THE ETHICAL ASPECTS OF THE PHARMACY OF TO-DAY.¹

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UNDER the prospect of a new edition of the *British Pharmacopœia*, the professional mind is at present being directed to pharmacy. There are some aspects of the subject which, although connected only indirectly with the *Pharmacopœia*, are yet well worthy of consideration. Recent developments are tending not only to modify the methods of prescribing, but also to affect the ethical relations of medical men to the pharmaceutical world.

Pharmacy, though now regulated by a distinct Corporation, with its own organisation, protected by Acts of Parliament, is still a branch of the healing art. Home Rule has been granted, but not independence. Between prescriber and dispenser there is a mutual dependence and mutual obligations over which an ethical, if not legislative, power should preside.

Though now distinct from medicine as a profession, pharmacy has developed a professional status for itself, safeguarded by examinations that demand considerable scientific education and practical training. This position, however, requires strengthening and purification. As a profession pharmacy has, in its business relations, to contend with gross influences, which, for the sake of gain, are engendering practices inconsistent with all professional character. A keen commercial and speculative spirit is becoming rampant; it threatens to degrade pharmacy, and is affecting seriously the interests of those who are devoting themselves to the work in a proper professional spirit.

The enterprise shown of late by pharmaceutical chemists is to be commended so long as its aim is the improvement of pharmacy by scientific and professional means. When, however, it becomes associated with the craving for gain, and endeavours to satisfy it by the introduction of novelties that are turned into proprietary interests, when it is promoted by self-laudation and misleading statements in persistent and obtrusive advertisements, then the professional spirit is crushed. Under such circumstances it behoves medical men to be on guard, lest they are enticed into abetting actions that are opposed to the treasured principles and traditions of their profession.

One marked feature of the present day is the invasion by wholesale houses of the province of the dispensing chemists. Machinery is displacing hand labour, wholesale manufacture the home-made article. From the wholesale manufacturer the druggist must obtain much of his stock materials, and on his knowledge, experience, and character we must rely for the selection as to quality; but in dispensing, the preference should always be given to the freshly home-made article over the factory compounds turned out in hundreds of gross, and that may be months and years old before they are used. In the movement the spirit of personal aggrandisement can be readily detected. By a mere coating of varnish, or the use of a registered name, it is turning even the formulæ of the *Pharmacopœia* into proprietary preparations. If we prescribe for a patient any of the pills of the *British Pharmacopœia*, or of a well-known formula, have we any right, is it becoming, that we should require that they be those of one particular maker? Yet this is what the wholesale houses ask us to do, and is done by many practitioners. Would it not be more reasonable to require that the ingredients be those of certain makers than that the desired peculiarity should consist solely in the excipient or the coating of the pill? Chemists are now often compelled to keep in stock some half-dozen makes of an article which they themselves could freshly and as skilfully compound—all to suit varying

whims and bring grist to particular mills. There are many remedies where it may be desirable to name the maker preferred, but then only as a recommendation. These are the proper factory or laboratory preparations demanding special skill and facilities; but when the prescription is of the nature of a pill, a syrup, or a mixture that, the formula being known, can be compounded by any qualified druggist, it is unbecoming to restrict the dispensing in any way.

In the present day the art of combining remedies and of prescription writing is imperfectly acquired and little studied. Ignorance is the fruitful soil of gullibility; hence the large crop of non-official compounds of remedies, combined in unrevealed proportions and by secret processes.

The objectionable character of proprietary articles is not removed by a professed publication of the formula. Any value they possess must either be a secret, or if the claim be skill and facilities in compounding, in most cases it is unsupported by such intrinsic value as to merit "exclusive dealing."

The *Pharmacopœia* Committee will have some difficulty in preparing the new edition. Can it be expected to keep pace with the "new pharmacy" with its tablets, tabloids, tabellæ, cachets, capsules, jelloids, hypoderms, perles, parvules, palatinoids, bipalatinoids, and soloids? There is good in the "new pharmacy," but this fresh development is showing a redundancy of action, and is invaded by and proving to be a favourable medium for the cultivation of the germs of pure personal aggrandisement. There are many instances where the capsule or the tabloid is a well adapted form for the administration of a remedy, but there is a danger, under the continuous pressure of puff and samples, of the system being carried too far. The disciples of the "new pharmacy are shouting "Eureka!" and are discarding draught and mixture.

An important question, however, has been raised, whether many drugs will act as efficiently when given in the dry and concentrated as in the fluid form, especially when freshly prepared. It may be difficult to prove the point as regards many medicines, but the special form in which a remedy is administered is not unimportant. It is known that the infusion of digitalis is at times more serviceable than the tincture; caffeine does not give the same results as freshly prepared coffee; and no one surely would prefer a tea tabloid to a cup of that beverage. For convenience sake, or to make the dose more palatable, we are to discard as of no importance the corrective and the adjuvant in our prescriptions.

Another marked feature of the pharmaceutical world of to-day is the extensive use of advertisements. In business this custom is legitimate and beneficial to the public, so long as it is conducted in a fair, truthful, and businesslike manner. But it is reprehensible and unbecoming when it assumes the aggressive form against rivals, and makes use of unwarranted statements dressed up in quasi-scientific garb, the truth that is half untruth—all calculated, if not intended, to deceive the public. It is to be regretted that pharmaceutical chemists are degenerating in the style of their advertisements.

The evil effect of the keen commercial speculation can be readily traced in the changes which the advertising mania is producing in infant and invalid feeding. Articles such as condensed milk, infants' food, essences and extracts of meat, all useful in their proper place, have been seized upon and made to serve the purposes of the insatiable greed of gain. Their proper use does not create sufficient demand to meet the excessive production arising out of the large sums invested in their manufacture. Hence that demand must be artificially increased. The speculative spirit conjures with the latest scientific terms and ideas, it seeks favour by fallacious quotations of chemical analysis and physiological experiment, and makes unwarranted assertions as to medical experience and opinions. Malt has "come as a boon and a blessing," not to babes alone, but to speculators too. Of the making of meat extracts there is no end. The fresh milk of the cow is discredited in every way. It must be sterilised, peptonised, "humanised," before it is fit for use. Freshly-prepared home-made articles are useless; invalids should be fed on factory-prepared meats and peptones, months and years old; and are not medical men all the country over aiding in the production of the artificial demand necessary to earn dividends to the joint stock companies limited, ac-

¹ Abstract of a paper read before the Aberdeen, Banff and Kincardine Branch of the British Medical Association.