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ON THE INHALATION OF MEDICATED VAPORS IN DISEASES OF THE AIR-PASSAGES.

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AMONG the palliative and curative remedies in diseases of the air-passages, there are none more highly recommended by authors, and at the same time more neglected in ordinary practice, than those which are administered in the form of vapor. It would be useless to waste time in attempting to show how powerless are the usual remedies introduced into the stomach against the various forms of local pulmonary and bronchial disease, and especially against phthisis. There seems to be a fashion in medical practice, as well as in the shape of our garments; microscopic bonnets, high-heeled shoes, hoops, and the many absurdities of male and female attire, inflict their penalties upon one generation, and then are displaced by hideous forms of the other extreme, until the next half century sees them re-appear like a returning epidemic, the 17 years locusts, or Encke's comet. There is no better proof of the invincible character of a disease, than the long and ever-increasing list of remedies employed against it. Look at phthisis from this point of view, and see how the grim tyrant scorns the feeble attempts thus far made to arrest his progress. To go back within my recollection only, and within the limits of orthodox practice, we find iodine and its compounds, cod-liver and other fish oils, phosphate of lime, fusel oil, glycerine, and (the last abomination) Bourbon whiskey. These, and others of less note, doubtless were beneficial in isolated cases, and for the relief of certain symptoms; and, recommended by high authority, in turn became the fashionable or routine practice.

This brings me to the subject of *inhalation*, which is now very popular and occasionally beneficial among irregular practitioners in all our large cities. It is my purpose to show that this method of practice affords important aid in the treatment of pulmonary

diseases, and deserves immediate and careful study by all enlightened physicians. As regards phthisis, the great destroyer of life in our neighborhood, we may admit, or not, that it is essentially a disease originating in disordered assimilation and nutrition—that tonics and alteratives, stimulants and sedatives, oils and alkalies, do, or do not, alleviate many of its symptoms. I do not speak here of its nature, constitutional symptoms, internal manifestations, nor ordinary medical treatment, which may vary in the minds of different physicians; but of its external abnormal conditions, as displayed in various lesions of the mucous membrane or of cavities communicating with the air-passages, which, as far as treatment by inhalation goes, may be considered as much external as the varieties of cutaneous ulcers originating from and kept up by constitutional vices. I have no idea that inhalation can prevent tubercular disease, or can be of any special service before the softened deposit opens into the air-passages; but after the pulmonary cavities communicate externally, I see no reason why their surfaces should not be treated on the same principles as external ulcers, or, in other words, by the application of medicated vapors in the only possible method, viz., by *inhalation*. It seems just as absurd to treat such diseased states by medicines introduced into the *stomach only*, as it would be to treat an irritable or gangrenous ulcer of the ankle without external applications. These phthisical conditions of the air-passages are not only for all practical purposes external, but they present various shades of morbid tissue, analogous to the various forms of cutaneous ulcers, and therefore require close study and a proper medication, that inhalation may not aggravate instead of relieving the disease—an additional reason why this powerful method should be in skilful hands. With the present means of diagnosis, the probable condition of the pulmonary mucous membrane may be almost as well determined as in the case of external ulceration; and as the indolent, irritable, inflamed, or sloughing external ulcer requires different remedies, so the different forms of disease in the air-passages demand corresponding medicated inhalations. It is not enough to inhale a medicated vapor, as most sick persons seem to imagine; but it must be a vapor studied to suit the morbid state of the membrane or cavity. It is quite time that the medical profession took up this subject, fraught with so much relief to their patients; it is too late to deny its importance, and useless to overlook it; it must and will be tried, and it is the duty of physicians to divert its advantages from the wastes of empiricism into the channels of science. Acting on the motto, "*fas est etiam ab hoste doceri*," let every one try this system, which, I am convinced, is founded in reason and established in experience.

Inhalation for pulmonary diseases is no new thing. It has been tried for centuries, and always with advantage, even in periods

when diagnosis was very imperfect; and now, with our new lights, new remedies, improved apparatus, and powerful auxiliaries, it demands another trial—let us hope it may have such. To come down to comparatively modern times. Bennet, a London physician, published a work in 1654, entitled “*Vestibulum ad Theatrum Tabidorum*,” in which he places what he calls “fumigations” among the principal remedies for phthisis, even in desperate cases. He divides them into moist and dry, calling the former “*halitus*” and the latter “*suffitus*,” applicable respectively to excessive dryness and humidity of the mucous membrane. In addition to cases of success, he gives rules for their proper administration. Rejecting all kinds of apparatus, and filling the chamber of the patient with the vapor, he remarks, that the first attempt with the dry fumigations often apparently aggravates the difficulty of breathing, and he prohibits their use within a fortnight after an attack of hæmoptysis. Several receipts are given in this work, which show that inhalation was practised then on the same principles as now, and with the same class of remedies. The three following receipts are given for moist fumigations: 1, a decoction of the roots of elecampane and sweet flag, of the leaves of hyssop, ground-ivy, rosemary and balm, with raisins and anise-seeds; 2, more emollient; composed of liquorice, leaves of colt’s-foot, sage, marsh-mallow, and lung-wort, of the flowers of the wood-betony, and of a decoction of barley, with a few seeds of anise and fennel, boiled in a sufficient quantity of water; 3, very astringent—composed of wood of the mastic tree, leaves of the oak, myrtle and tormentil, flowers of St. John’s wort, red roses and comfrey.* There are also four recipes for dry fumigations: 1, olibanum, boiled turpentine, and styrax, made into troches with mucilage of flaxseed and althæa; 2, troches made principally of gums guaiacum, myrrh, and benzoin, tormentil root, red roses and red saunders; 3, mucilage of gum tragacanth and rose-water, mixed with powdered sarcocolla, Armenian bole, ivy-gum, mastic, pomegranate flowers, with a few grains of ambergris; 4, same as the last, with the addition of the yellow sulphuret of arsenic (orpiment).

Nicolaus Piso, a French physician, whose work (published in 1580, “*De cognoscendo et curando morbos*”) was much esteemed by Boerhaave, reports the case of a woman, whose occupation was heating a furnace, and who was cured of a chronic pulmonary disease (called by him “*phthisis, seu tabes*”) by being obliged to breathe continually the dry heated air of the fire—a fact in favor of dry inhalations. On the contrary, about a century ago, the warm moist air of stables in which cows were kept was considered a sovereign remedy for phthisical complaints. These opposite hygienic conditions are no farther apart than are many of the *climates*

* For the old details of this article I am indebted principally to the “*Mémoires de l’Académie Royale de Chirurgie*,” Paris, 1774.

recommended by physicians for the residence of consumptive people, and go to show that different stages of the same disease may be benefited by exactly opposite remedies, and that the best medication, wrongly applied, may be fatally dangerous. In phthisis, more than in almost any other disease, we find the truth of the Hippocratic maxim: "*Experientia fallax, iudicium difficile.*"

Thomas Bartolinus expresses the greatest confidence in fumigations, which he considers the most natural way of treating pulmonary diseases. He orders the usual pectoral and healing plants to be boiled in water, according to the indications to be fulfilled, and the patient to inhale the vapors with the air he breathes. He says, "the very air will thus be a curative means, and there will no longer be any need of going to Egypt, as Galen advises; we may have all the advantages of this country in our own chambers."

Willis had considerable success in the treatment of phthisis by fumigations. He gives three formulæ for dry inhalation: 1, the gentlest, is composed of the usual balsamic remedies, olibanum, amber and benzoin, gum guaiacum and tolu, with red roses and red saunders reduced to powder; No. 2 is composed of ivy gum and olibanum, aa ʒij.; flowers of sulphur and mastic, aa ʒiss., made into troches with gum tragacanth; No. 3 is made with the same balsams, with the addition of about one third of orpiment. He adds, that empirics often prescribed with advantage the smoking of orpiment in a pipe, and that the common people were in the habit of cutting up pieces of the wall-paper of the wine-shops, painted with orpiment, and of smoking it instead of tobacco for pulmonary troubles, inhaling the vapors. He expresses great confidence in such inhalations in phthisis, and recommends their use, preceded by moist fumigations. Perhaps some "*Indian doctor*" may take a hint from this, and add *phthisis* to the long list of diseases curable by *un-aboriginal* poisons; he would most certainly find victims. Though the inhalation of arsenical vapors was denounced at the time as dangerous, we find this receipt in Fuller's "*Pharmacopœia extemporanea*," under the title of "*Suffitus antiphthisicus*":
R. Mastic, myrrh, and amber, aa ʒij.; crude sulphur and orpiment, aa ʒi.; to be made into a coarse powder to be thrown on burning coals, and the vapor to be inhaled. Orpiment was recommended by inhalation as long ago as the time of Galen.

Dr. Mead, in his "*Monita et præcepta medica*," speaking of hectic fever and phthisis, praises very highly the use of balsamic inhalations, and complains that they are too much neglected.

M. Buchoz, in 1769, published a "*Treatise on Pulmonary Consumption*," in which he advises a humid vegetable fumigation, to be inhaled by means of a tin cone with a suitable mouth-piece, the nostrils being closed during the operation; in this way he recommends the inhalation of the vapors of a decoction of balsamic and emollient plants. Besides those already mentioned, he uses the

leaves of veronica and agrimony, the flowers of primula, feverfew, life-everlasting, horehound, and chamomile.

About the middle of the last century, M. Billard published a memoir on the use of fumigations in phthisis, in which he prefers the dry inhalation, on the ground that this disease is most common in damp climates, like those of Great Britain, Holland, the Netherlands, and the maritime provinces of France, and the least common in drier and interior countries. He in this way explains the advantages of a residence in temperate dry climates; and he thinks that the inhalation of hot moist medicated vapors must be as relaxing and prejudicial as are damp tropical climates. Still, in asthma and in many cases of dry convulsive cough, he confesses that the moist inhalations are of great value. He gives cases of phthisis cured by inhaling an air charged with various aromatic, balsamic, and antiseptic vapors, of moderate warmth, free from acridity and moisture—a very simple, natural and cheap method of imitating the best anti-phthysical climates. His favorite vapor was obtained by melting together, in a metallic vessel, equal parts of yellow wax, fresh from the comb, and common resin, the patient breathing the pleasant aromatic air, resting quietly in bed. For the resin, he sometimes substituted turpentine, adding also Canada, tolu, and Peru balsams. He thinks the wax the most important ingredient, for its emollient and anodyne qualities, and often prescribes it alone; he advises that the apartments of consumptives be lighted at night by candles made of yellow wax, whose balsamic vapor is very soothing to the lungs. It might be worth trying, in this connection, the candles now made from *paraffine*, one of the products of the distillation of the Kentucky bituminous coal, which have an agreeable pyroligneous odor. This author recommends balsamic inhalations in diseases of the throat accompanied by hoarseness and cough, in obstinate catarrhs, in asthma, in hæmoptysis, and in all the symptoms by which phthisis ordinarily manifests itself; he anticipates the most modern treatment in this respect, and observes that, by means of proper apparatus, the vapors of wax, balsams, and resins, might be conducted to the genital mucous membranes, to the great relief of congestions, irritations, ulcers, leucorrhœa, gonorrhœa, &c.

Dr. Beddoes, in 1793, speaks of injury from the inhalation of oxygen, aggravating the cough and hectic fever, and advises atmospheric air mixed with hydrogen or nitrogen, and carbonic acid.

Sir Alex. Crichton, in 1823, met with remarkable success in the treatment of pulmonary diseases by the inhalation of the vapor of boiling tar; and many nostrums since his time have been originated on this principle.

These observations show that the old authors understood quite as well, if not better than the moderns, the advantages to be de-

rived from inhalation in pulmonary diseases. But to come down to more recent times.

Sendamore* gives the following formula for an iodine inhalation: **R.** Iodine, gr. v.; iodide of potash, gr. iij.; alcohol, 3 ij.; distilled water, 3 v.; and saturated tincture of conium, 3 vi. **M.** Of this he directs usually two drachms as the total quantity for each inhalation; two thirds for the first half of the time, and the other third for the remainder; the period being fifteen or twenty minutes three times a day, and the vehicle, water of about 120° Fahr. If expectoration be very difficult, from fifteen to twenty minims of a saturated tincture of ipecac should be occasionally added. The best times for inhalation, he thinks, are before breakfast, before dinner, and before going to bed. The smallest dose of iodine for each inhalation is one tenth of a grain, the largest five eighths of a grain, the medium about one fourth of a grain. The inhalation at first increases the cough a little, but it soon gives relief by facilitating expectoration. It sometimes causes a thickening and irritation in the posterior fauces, which assume a dark-colored inflamed appearance, but with hardly any soreness; it commonly passes away even during the continuance of the treatment, but always if the iodine be suspended for a few days. A spongy state of the gums, without ptyalism, as if from mercury, is occasionally produced, which disappears without special treatment. Where moisture is present, iodine sublimes below the temperature of boiling water, and remains diffused in the air even at ordinary summer temperatures. Dr. Murray† prefers the iodine vapor disseminated in an apartment, by putting five grains in two quarts of water at 160°. This gives to the air somewhat the smell of the sea-beach at low tide under a hot sun, and will make a vapor so dense as to stain the clothing a deep yellow; double this quantity will make the eyes smart. In order to obtain an artificial sea-air, Laennec sprinkled some of the wards of his hospital with fresh sea-weed, and with much benefit in certain cases.

Next to iodine, as an alterative and healing inhalation, Scudamore prefers *chlorine*. This was first recommended by the French physicians, who noticed that the workmen in a factory for printed calicoes quickly recovered from any symptoms of phthisis which they had on entering; the rooms were highly charged with the vapor of chlorine disengaged during the various processes. Laennec tried this also, in 1823, by sprinkling chloride of lime in the sick room, and with partial success. Chlorine may be readily disengaged by burning chloric ether in a common camphene lamp. Scudamore obtains the chlorine from the pure aqueous solution, beginning with six minims, and renewing this quantity every three or

* On Inhalation. London, 1834.

† On Heat and Humidity, &c. London, 1829.

four minutes, until about a drachm has been used. If it produces much irritation, conium may be added. As a sedative inhalation in bronchitis or phthisis, where the irritation is very great, he prefers the following: *R.* Acidi hydrocyanici, 3 ss.; tr. conii, 3 ss.; tr. ipecacæ, 3 ij.; aquæ rosæ, 3 ij. *M.* Of this he prescribes half an ounce, divided into two portions, three times a day; or, for each inhalation, 30 minims of tr. conii, 20 minims of tr. ipecacæ, and 2 minims of prussic acid, adding two more for the last half of the process. Dr. Lombard, of Geneva, treats catarrh, accompanied by distressing pain and sense of weight in the frontal sinuses, by opium inhalations—sprinkling a few grains of powdered opium on a metallic plate heated in a spirit lamp, and making the patient hold his head in the fumes, which afford speedy relief. Hyoscyamus, stramonium, digitalis, and other narcotics, have been used, singly and combined, warm and cold, as sedatives for cough.

It having been observed that tanners were not liable to consumption, Dr. Murray (*op. cit.*) recommends the inhalation of the vapors from a decoction of oak bark; other astringents, vegetable and mineral, are also of service in cases accompanied by profuse and exhausting expectoration. Creosote is now much employed in this manner, and acts with advantage both as an astringent and antispasmodic, and probably also powerfully disposes ulcers and cavities in the air-passages and lungs to take on a healing process. This substance is the great "*cheval de bataille*" with the "consumption-curers," as may be perceived on putting the nose within their precincts in any of the large cities. Though much abused, it is an admirable remedy. The inhalation of ether and other antispasmodics in asthma and kindred diseases is universally and favorably known. Of the advantage of breathing demulcent vapors in croup, the well-known experience of Dr. John Ware is sufficient proof. In Part VI., 2d Series, of Dr. Simpson's *Obstetric Memoirs and Contributions** (pp. 441-462), are given very interesting facts, showing the comparative immunity of wool-workers in Scotland from phthisis and scrofula and from pulmonary diseases generally. It is also shown that this immunity is in proportion to the more or less "oily" nature of the departments of work in which the operatives are engaged; the more oily the work, the more marked is the exemption from disease. The oil enters the system not only through the cutaneous absorption, but also "by inhalation through the mucous membrane of the lungs" (p. 456). The author gives rules for the external application of oil in scrofulous and tuberculous diseases, which deserve the attention of physicians; anything which promises to stay the progress of this "*opprobrium medicorum*," especially when coming from such a high authority, should at least be tried.

Any diseases which tend to enlarge the chest are said to be

* Edition of Drs. Priestley and Storer, Philadelphia, 1856.

preventives or curatives of phthisis—such are diseases of the heart, asthma, or any affection of the throat which prevents the free passage of air from the lungs, and consequently causes their enlargement. Mr. Ramadge* has met with remarkable success in curing pulmonary diseases by causing his patients to fill the chest many times a day, through tubes about five feet long and half an inch in diameter; and I think there can be no doubt of the utility of frequently inflating the lungs to their utmost capacity with pure air, as a preventive of disease. It would be interesting to ascertain if players on the cornet-à-piston, bugle, clarionet, and other wind instruments requiring long retention of the breath, are not less subject to phthisis and its kindred complaints than are the members of other trades and professions.

In connection with simple inhalations, I would repeat what was said before (Jan. 7, 1858, p. 461), with regard to the superiority of a dry steady cold, even of considerable intensity, to a warm moist air accompanied by sudden changes, as a preventive and curative of pulmonary disease. In other words, the climate of Lake Superior, Canada, or Northern Maine, I consider far preferable to the Brazils, the Indies, the Mediterranean, or the Atlantic Islands. Perhaps the cold climates might not answer for their own native residents; it is undoubtedly true, as Celsus said of the affections alluded to, that “the worst air for a patient is that which has given rise to the disease.”

It has thus been seen that the results usually expected from alteratives, narcotics, antispasmodics, astringents, and expectorants, taken into the stomach for the relief of pulmonary diseases, may be more directly, speedily and effectually obtained by the inhalation of the same substances through the lungs. The chief articles, and the principles on which they are used, have been sufficiently detailed; any intelligent physician can add to the list as his cases require. Without undervaluing the constitutional treatment of phthisis—the use of cod-liver and other oils to correct the deficiencies of nutrition and assimilation—the administration of salts of lime to favor the cretaceous transformation of tubercle—or the employment of suitable remedies as general tonics and alteratives—I wish most earnestly to call more attention to what may be called the “*surgical treatment*” of pulmonary diseases. I maintain that the cavities in the lungs, and the ulcerations in any part of the air-passages, should be treated by *direct medication* to the morbid surfaces, just as much as any cutaneous lesion should be treated by external applications; and the only way to do this is by *medicated inhalations*, either of the temperature of the surrounding air, or raised to blood-heat. Diseased surfaces may in this way be stimulated to take on the healing process; and the parietes of cavities, by the constant pressure of the air-cells, enlarged

* F. H. Ramadge, New York, 1839.

by inhalation, from without inward, may be brought in contact so as to favor the formation of cicatricial tissue. Such auxiliary treatment, based on reason and experience, is, I think, a great addition to the armament of the physician in his battle with the "great destroyer."

February, 1858.

DR. GAIRDNER'S CLINICAL LECTURE ON INFLUENZA.

[Concluded from page 39.]

THE most characteristic symptoms of influenza are intense feverishness, usually with great tendency to chilliness or shivering, until the patient takes to bed, and reaction is fairly established. Then come racking headache, with pains in the back and limbs, which sometimes constitute the principal source of suffering; extreme sensation of debility; total prostration of appetite, with less of thirst than is usual in fever; and with these, coryza or mild catarrh, bronchitis, broncho-pneumonia, as the case may be. But though catarrh is frequent, and may be severe, the disease is essentially a fever, not a catarrh. Nay, the catarrh may be absent, or insignificant; not infrequently it is so. In one of the cases I saw among yourselves, there was absolutely no catarrh; in another it was very slight. And I saw two very curious cases a few days since, which enable me to put this point yet more strongly. The catarrh may, in fact, be absent in the very case in which you would, *a priori*, expect its occurrence. A gentleman, who has been long afflicted with spasmodic asthma, with intervals, however, of fair good health, and with no appreciable organic disease of the chest, came to me after he had been struggling for several days with debility and prostration, with chilliness and feverish sensations. These were with him the only manifestations of influenza. [He afterward, at an interval of ten days, had a slight cold in the head, without fever; in the meantime, his whole family sickened with feverish colds, some of them with chest affection, from which he himself remained exempt throughout.] In another case, a gentleman, who also suffers from habitual asthma and bronchitis, and in whom I suspect a morbidly enfeebled heart, sent for me in a great hurry on account of the alarming prostration, produced by this strange and inexplicable "influence." He was, however, more frightened than hurt; in a couple of days he was convalescent, and the amount of bronchitis in his case never gave me the slightest uneasiness.

Even the complications in influenza are not always of a catarrhal kind, nor even confined to the chest. Ten years ago, in connection with a great and general epidemic of influenza, I witnessed in this hospital a succession of cases such as I have never seen since