

A short account of the nature and properties of different kinds of airs, so far as relates to their medicinal use; intended as an introduction to the pneumatic method of treating diseases, with miscellaneous observations on certain remedies used in consumptions / [Richard Pearson].

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So far as relates to their
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INTRODUCTION
TO THE
Pneumatic Method of treating Diseases,
WITH
*Miscellaneous Observations on certain Remedies used
in Consumptions.*

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DIFFERENT KINDS OF AIRS

IN TWO VOLUMES

BY RICHARD PEARSON, M.D.

PRINTED BY T. BARNES, ST. MARTIN'S LANE

Advertisement.

THE following account of *Faëtitious* *Airs*, has been drawn up in the hopes of rendering the pneumatic method of treating diseases more generally understood than it hitherto appears to have been. The author has endeavoured to bring together under one point of view, the principal facts and discoveries relating to the subject. In the present instance he is little more than a mere expositor; but on a future occasion he hopes to add to the stock of observations furnished by others, something of his own.

That the medicinal application of *aëriform* fluids should meet with much opposition, he is not surprised. Dissatisfied with the theory of the hyperoxygenation of the blood in *phthisis pulmonalis*, he will frankly own that he was for a long time inclined to view the new proposal for curing diseases by modified air, as a visionary thing; but on reconsidering the subject, abstracted
from

from theory (and this is the way in which it should be considered) he saw analogy on its side ; and after he had bestowed further attention upon it, he saw it was supported by facts. He could therefore no longer resist.

If, as there is little doubt, substances are more operative upon the living body, in proportion as they are of a finer and more subtile nature, certainly medicines in an ærial form ought to have more effect than those which are administered in a solid or liquid state : And, if the vapour of water and other condensable fluids, have been inhaled with advantage in certain affections of the lungs, analogy points out that the like advantages, or even greater, should be produced by the inhalation of incondensable fluids. This analogical induction has been confirmed by experiments, the results of which are stated in the following pages.

BIRMINGHAM, }
January 17, 1795. }

IN order to give a just notion of Pneumatic Medicine, it is necessary to mention what takes place in the process of breathing in the common air. The chest, in which the soft and spongy organs, called the lungs, are placed, is capable of having its capacity altered by the action of the muscles which belong to the ribs, by the action of the diaphragm, and by other co-operating causes. When, in consequence of the elevation of the ribs, and descent of the diaphragm, its capacity is enlarged, the lungs are at liberty to expand, and become filled with air; i. e. we inspire. On the other hand, by the depression of the ribs, by the ascent of the diaphragm, and by the contraction of the muscles of the belly, the capacity of the chest is diminished, the lungs are compressed, and the air that was just before drawn in, is now forced out again; i. e. we expire. It is this alternate dilatation and compression of the lungs that is termed *respiration*; a process which is continually going on in the living body, and which cannot be suspended (except in animals of a particular construction) for much length of time without fatal consequences.

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Why

Why respiration is so necessary to the life of man, and most other animals, is a question which for ages has engaged the attention of physiologists and physicians; but it was not till of late years properly explained. It was generally supposed that the air which we breathe served no other purposes than to expand the lungs, and thereby allow a free circulation through them, to cool the blood, and carry off moisture. But this account of the matter is now found to be not only imperfect, but in some degree erroneous. It is true that, without a due dilatation of the lungs, the blood cannot circulate freely and completely through them; but that this is not the principal use of breathing is evident from this circumstance, that foul air, though it is equally capable with good air of filling and expanding the lungs, is nevertheless not capable of supporting life. It is also true, that a great quantity of moisture, similar to the perspirable matter from the skin, is discharged from the lungs: but it is not so clear that the blood is cooled by the atmospheric air that we inspire: on the contrary, it appears to receive a supply of heat from it.

When it was considered that air which has been frequently breathed becomes unfit for further respiration, it was natural to conclude, that, during
its

its application to the lungs, it must have been deprived of some principle necessary to life. It has been proved within these few years by very decisive experiments that this is the case.

The atmosphere which we breathe has been found to consist of two kinds of air. That part of it which is consumed by the act of respiration (and by some other processes) is called *Dephlogisticated Air*, *Vital Air*, or *Oxygene Air*. During its application to the lungs, this air, or some part of it, is absorbed by the blood, to which it imparts a florid colour, and a quantity of heat*. Animals live much longer in a small quantity of this than of any other air. When breathed in a larger proportion than that in which it naturally occurs in the atmosphere, it raises the spirits, promotes the circulation, increases the heat of the body, and heightens the colour of the blood. If it be breathed alone by healthy animals, in large quantities, and for any length of time, its

* Not all the oxygene air that disappears, after an animal has repeatedly respired a given quantity of atmospheric air, is absorbed by the blood. Much, and perhaps the greatest part of it, is used in the formation of fixed or carbonic acid air, which is produced in great plenty by the process of breathing. This air seems to be formed in the lungs by the union of the coaly matter of the blood with the basis of the oxygene air. Hence, in respiration, not only is something added to the blood, but something also (besides the perspirable vapour before-mentioned) is taken from it.

stimulant effects are carried to excess, and febrile and inflammatory symptoms ensue. This air is further distinguished from all other kinds of elastic fluids, by its property of promoting combustion, and increasing the vehemence and vividness of flame. It may be procured from various substances ; but for medical use, it is best obtained by subjecting the mineral called manganese to a red heat. At the first time of using it, this air should be mixed with eight or ten times its bulk of atmospheric air.

The other kind of air which enters into the composition of the atmosphere, and which constitutes by far the greatest part of it (amounting to nearly three-fourths of the whole*) is called *Phlogisticated Air*, or *Azote*. If this air is applied to

* According to late experiments, 100 parts of atmospheric air consist of *about* 28 oxygene, and 72 azote. I say about ; for it is never (at least to a certain height from the surface of the earth) free from a small quantity of fixed or carbonic acid air ; and in the neighbourhood of marshes, moats, sinks, &c. in short, wherever animal substances, or mixtures of animal and vegetable substances, are putrefying in stagnant water, the atmosphere contains some inflammable air. But these are to be considered as accidental admixtures.

From all the experiments that have hitherto been made upon the subject, the constituent parts of the atmosphere appear to be mixed together in the proportions above-mentioned. But it is to be wished, that these experiments were more extensively repeated in different latitudes, and in different places of the same latitude, by sea and by land, among mountains and in plains, in open situations, and in countries covered with woods. We know not yet
what

the animal body with a less proportion of oxygene than that which is naturally mixed with it in the atmosphere, it lowers the spirits, weakens the circulation, and darkens the blood: and if it be entirely deprived of oxygene, it becomes unfit for the support of life and flame. This air is distinguished from the other unrespirable airs, which are afterwards mentioned, by not being absorbed by water, by not precipitating lime from lime-water, and by not being inflammable. Besides its use as a diluent of the oxygene, it may serve some other purpose with which we are yet unacquainted.

This air may be easily deprived of its natural admixture of oxygene, by burning a candle, or any other combustible body, in a quantity of it properly inclosed. If the remaining air be afterwards shaken together with a sufficient quantity of lime-water, the fixed air produced by the burning candle will be separated from it, and pure azote will be obtained; or it may be procured in large quantities, by agitating with lime-water the mixture of fixed

what variations, in this respect, may be produced by difference of climate, difference of elevation above the sea, proximity to, or remoteness from the sea, exposure to particular winds, &c. Amid such a variety of local differences, it is to be suspected (as a gentleman well versed in chemistry hinted to me) that the assigned proportions are not in every place, and at all times, the same.

and azotic air, obtained, according to Mr. Watt's method, by passing common air through burning charcoal. The fixed air will be separated and absorbed by the lime-water, and the azotic air will be left unmixed.

At the first time of using it, this air should be mixed with four or five times its quantity of atmospheric air. The proportion may afterwards be increased according to its effects.

Now, as neither of these airs could for any length of time be safely breathed alone, Providence has made the atmosphere to consist of both, mixed together in such proportions as doubtless are most fit for the support of animal and vegetable life in general. But although these proportions are best adapted to the maintenance of animated beings in a healthy state, yet there is reason to think, they are not so well suited to every diseased state of the living frame. Thus, in certain cases, where the circulation is languid, the heat deficient, and the powers of motion and sensation nearly exhausted, a greater quantity of oxygene, i. e. a greater quantity of vital stimulus than the common air affords, should be of use: on the other hand, in an opposite state of disease, lessening the quantity of oxygene by applying a greater proportion of azote, in other words,

words, withdrawing a part of the atmospheric stimulus, ought to give relief.

On this is founded one part of the pneumatic medicine; and the trials that have already been made of it, have been attended with so much success, that there is every reason to expect, that, by means of it, physicians may now be enabled to afford great relief, if not to effect a cure, in many diseases which have hitherto resisted the usual modes of treatment.

Besides the airs above-mentioned, of which the atmosphere is composed, there are various other kinds of airs, or permanently elastic fluids; and as they have active properties different from those which the constituent parts of the atmosphere possess, it was thought that they, too, might be advantageously applied in certain deviations from health. Experience has proved this reasoning to be just. They have been applied with great success in several disorders.

As in certain essential properties, such as levity, tenuity, transparency, compressibility, expansibility, and *permanent elasticity*, these fluids agree with the common atmospherical fluid (though they differ from it very materially in other respects, and par-

ticularly in the circumstance of being alone unfit for the support of life) they go under the general name of *Airs**, and though some of them are produced by the operations of nature, yet as they may at any time be obtained by artificial processes, they are called *Facilitious Airs*. The names and properties of such as are used in medicine, are now to be mentioned.

They may be referred to two heads, the *Inflammable* and *Uninflammable*.

By *inflammable air*, called also *Hydrogene*, is meant that kind of permanently elastic fluid, which, though incapable by itself of supporting flame, does, when mixed or brought into contact with atmospheric or oxygene air, take fire on the approach of an ignited body, or on the application of the electrical spark. Alone, though it produces no irritating effects, it is unfit for respiration. Its other distinguishing properties are, that it is not absorbed by water, and that it is by far the lightest of all known fluids.

There are several species or varieties of this kind of air, differing in their specific properties according to the different nature of the substances

* They are also called *Gases*.

from

from which they are produced. For our present purpose, it will be sufficient to mention three different sorts, viz. inflammable air from heated iron and water, or *martial hydrogene*; inflammable air from melted zinc and water, or *zincic hydrogene*; and, lastly, inflammable air from red hot charcoal and water, or *carbonated hydrogene*, called also *hydro carbonate*.

All these species or varieties of inflammable air, when breathed along with atmospheric air, have one common operation upon the human body, though some of them produce their effects more suddenly, and in a more powerful degree than the rest. All of them diminish the heat and lower the pulse. Hence they have a cooling and sedative effect; and in this way are serviceable in some kinds of consumption and other inflammatory affections of the lungs.

The martial and zincic inflammable airs may, especially if they are set by a few hours before they are used, be administered pretty freely, viz. in the proportion of one part to five or six parts of atmospheric air; but the doses of inflammable air from charcoal, should be considerably smaller, viz. it should at first be mixed with as much as fifteen or twenty times its bulk of common air. For further remarks on the proportions in which these
airs

airs should be diluted before they are applied to the lungs, the medical reader is referred to the publication quoted at the end of this pamphlet.

Under the head of uninflamable air, it is only necessary on the present occasion to take notice of *Fixed or Carbonic Acid Air*. Like azotic and inflammable air, it extinguishes flame; but, unlike to them, it is absorbed by water, to which it communicates acid properties, and it precipitates lime from lime water. It is heavier than any of the other elastic fluids of which we have been treating. This air is produced in the process of respiration, as we have before mentioned. It is thrown out by wort and the juices of vegetables, while they are undergoing fermentation. It is also let loose when vinegar or oil of vitriol is poured upon lime-stone, marble, or chalk; but for medicinal use, it is best procured from chalk by heat alone. Applied to the lungs, fixed or carbonic acid air produces effects somewhat similar to those produced by the inflammable airs: It is cooling; but, when properly diluted, by no means so depressing or sedative as they are; and it further differs from them in its property of checking putrefaction, and correcting the foetor of mucous and purulent matter. Hence it has proved serviceable in ulcerations and abscesses of the lungs*.

* Percival's Essays, Vol. 1, p. 308, and Withering on Foxglove, p. 205.

Applied

Applied to cancerous sores on the surface of the body, it quickly removes or abates the pain*, and gradually improves the discharge; and in one instance it has caused a remarkably large ulcer of this kind to heal†. When applied to the lungs, this air should be diluted with ten or twelve times its

* As fixed air is so surprisingly efficacious in abating the pain of cancerous ulcers and of blistered parts, might it not prove a valuable external remedy in burns and scalds, the pain and irritation from which are seldom much allayed by the applications commonly used. Hence, when the excoriation is of considerable extent, violent fever, delirium, &c. supervene; and in young subjects, convulsions and death: All which might possibly, in many cases, be prevented by a speedy removal of the pain.

† History of two Cases of Cancer, &c. by Dr. Ewart. The cure of ulcerated cancer of the mamma, in the instance of Susan Alford, of the Bath Infirmary, would have been very decisive in favour of fixed air, if arsenic had not been prescribed at the same time. But it may be asked, whether it is probable that such an active substance, given in the dose of the *16th part of a grain, three times a day for nine or ten weeks*, should produce no sort of effect? If it produced any, it must have been a good effect, as the amendment was progressive during its use. The abatement of pain and irritation, the improved smell, and improved appearance of the discharge, were evidently owing to the topical application; but as there was not such a rapid amendment in another patient, in which arsenic was not given, it may be questioned whether this mineral had not some share in the cure of the first.

Whatever might be the operation of the arsenic in Alford's case, the good effects of carbonic acid air applied to cancerous ulcers in Dr. Ewart's way are so conspicuous, that every person who has the misfortune to be afflicted with sores of that nature must be eager to have it tried.

bulk

bulk of atmospherical air ; but when applied to external sores, it should be used unmixed.

If to these airs, of which we have just given an account, we add the two kinds before described, which enter into the composition of the atmosphere, we shall have six sorts of air for medicinal use, viz. oxygene and azote, three species of inflammable air, and fixed or carbonic acid air. These are by no means all the different kinds of airs that may be obtained, nor perhaps all that may be found useful in the cure of diseases ; but they are as many as have yet been tried with this intention, and therefore as many as it is necessary to notice on the present occasion.

From all that has been said, it appears that there is in fact but one kind of air, viz. oxygene, that is capable of supporting of life ; but, that being of a highly stimulant nature, it is largely diluted in the atmosphere with another kind of air

If Mr. Justamond did not succeed so well with the same remedy in such cases, it was probably owing to some imperfection in the mode of applying it. Had the atmospheric air been entirely excluded, and the fixed air constantly applied, the event of his trials might have been different. Whoever wishes for further information on the internal and external use of this species of elastic fluid, should consult *Dobson's Commentary on Fixed Air*.

(azote)

(azote) of directly opposite qualities: That the natural mixture of these airs, though best accommodated to the healthy state of animal life in general, does not appear to be best suited to every morbid state of the living body; and, therefore, that by varying their proportions, such mixtures may be obtained as are capable of mitigating or curing many formidable diseases: That, moreover, there are various other kinds of airs, besides those which enter into the composition of the atmosphere, which possess peculiar and active virtues, and which, under proper management, may also be applied to the same purpose.

Thus, then, it appears that the pneumatic medicine comprehends not merely the application of more or less oxygene, more or less azote; but the application also of various other kinds of airs, mixed and diluted in proper proportions.

How much may be done by applying elastic fluids directly to the lungs, it is easy to conceive after what has been said on the subject of respiration. Part of the air thus applied, is, in some instances, taken into the blood, and quickly conveyed to every part of the body*. In other instances

* In explaining the manner in which factitious airs produce their medicinal effects, we are far from attributing so much to absorption

the inhaled air acts upon the secreted and effused humours, correcting their foetor, consistence, and chemical properties ; or, acts immediately upon the ulcerated parts, abating inflammation, irritation, and pain†. And, lastly, in other instances the inspired air produces a powerful effect upon the system at large, by its action upon the nerves.

In which soever of these ways their effects are produced, certain it is that great benefit has been derived from some of them in disorders of the lungs, and other complaints. In consumptions, in particular, the inflammable airs have afforded surprising relief; and it is said that in some paralytic and nervous affections, good effects have been pro-

forption as others might do. It appears to us, that the subject has been treated by an author of great abilities somewhat too chemically. Before we place the origin of diseases in chemical changes of the blood, we should prove that these changes are antecedent, and not consequent to the altered action of the solids. But this, in most cases, will be no easy matter. In the mean time it is well for pneumatic medicine, that it is not to stand or fall according to the validity or invalidity of any hypothesis, but is to rest on the basis of fact and experience.

† In ulcerations and abscesses of the lungs, the abatement pain and inflammation which generally attends or follows the inhalation of inflammable and fixed air, is perhaps not entirely owing to the peculiar action of these airs, but in some degree to the exclusion of a quantity of the common atmospheric stimulus, namely, oxygene air, which proves so irritating to ulcers in other parts. White (of York) Beddoes, Darwin.

duced

duced by means of oxygene air. This air has also been employed with great success in cases of suffocation from drowning, or other causes.

We shall not attempt to enumerate all the diseases in which pneumatic medicine promises to be of use. It will be sufficient to state in a general way, that those are proper cases for the application of factitious airs, which resist, or do not readily give way to the common modes of treatment: such are consumption, asthma, scrophula, palsy, &c. It should be understood, that the application of mixed airs to the lungs, is not to prevent medicines from being taken into the stomach in the ordinary way; and in those cases in which speedy and effectual relief is procured by the remedies already in use, the pneumatic method is of course superfluous.

Under proper management, the application of modified airs to the lungs is perfectly safe and easy. The mixed airs are breathed out of bags; and no trouble or exertion is required on the part of the patient. That some of them possess very powerful and active properties, is no objection to their use; for the same may be said of opium, and certain preparations of antimony and mercury, which are daily prescribed, and which only do mischief in the hands of unqualified persons. These airs, like all
other

other medicines, may be overdosed; but practitioners, who are acquainted with their effects, will take care that they are not too freely or too frequently applied. With such precautions they may be pronounced to be as safe as most other medicines.

In consequence of the success which has already attended the medicinal application of factitious airs at Bristol and other places, a proposal has been made for the establishment of a public Pneumatic Institution in London, for which subscriptions are now opened in this and several other towns. Apparatuses for obtaining the different kinds of airs, have been introduced into the Hospital and Dispensary here; and in process of time, when the preparation and uses of these elastic fluids come to be generally understood, we may expect that these apparatuses will be found in the laboratories of most of the apothecaries. Physicians will then have opportunities of prescribing the pneumatic treatment in all cases in which they may judge it to be proper.

The writer of this tract has aimed at nothing more than to give a general view of the subject. Medical readers and others, who wish for further information concerning the effects of elastic fluids, and the methods

methods of obtaining them, are referred to "*Considerations on the medicinal use of factitious airs. By Thomas Beddoes, M. D. Bristol, 1794;*" and to a "*Description of a Pneumatic Apparatus. By James Watt, Engineer, second edition, Birmingham, 1795.*"

Miscellaneous Observations

Some REMEDIES *used in* CONSUMPTIONS.

CONSUMPTIONS are very rare in the West-Indies ; but the Negroes employed in the plantations, are not wholly exempt from them. When they happen to be attacked with such complaints, it is a practice in some of the islands to send them to the sugar-houses, the air and vapour of which are, according to the testimony of a

French author, Raullin, a remedy in such cases*. In the space of two months the consumptive negroes are (we are told) generally greatly relieved, or quite cured, by this method. Doubtless the air of the boiling-houses is an atmosphere of a lowered standard, containing much fixed air, besides some oily matter, extricated from the juice of the cane, during the boiling. And the air of the still-houses must be strongly impregnated with carbonic acid, thrown out from the open cisterns in which the melasses, scummings, and lees, are set to ferment.

THE relief which some consumptive persons are said to have received from breathing the air of cow-houses, is too much connected with the present subject to be passed unnoticed. The antiphthical effects of this remedy, seem to be owing, as Dr. Beddoes has suggested, to the subtraction of oxygene ; and I would add, in some degree also to the fixed air largely produced by the respiration of the cattle. Bergius has well remarked, that this remedy is generally tried in such a random manner, as is more likely to do harm than good.

* *Finke mediciniſche Geographie*, 1 band. 464.

Persons have gone in the depth of winter, and dwelt for several weeks successively in common cow-houses, wet, filthy, and full of air-holes, with thin walls and slight doors. No wonder, if under such unfavourable circumstances, they have often become worse than they were before. He soon saw that the only way of ascertaining the effects of this mode of treatment, would be to fit up a room for the purpose. This was accordingly done by a gentleman of rank and fortune at Stockholm, whose lady was ill of a consumption. Stalls for four cows were put up in a large hall on the ground floor, and a stage was raised in the middle, so high as to be even with the heads of the cattle. This stage was large enough to hold the patient's bed, a table, chairs, &c. The windows and other openings were properly closed; and though the heat of the cattle kept the room tolerably warm, yet a little fire was lighted in the stove every morning. The patient went into this apartment in the month of September. She was very far gone in a consumption. For two years past she had been gradually losing strength, had spit blood, laboured under difficulty of breathing, hectic fever, night sweats, cough, and great expectoration, and was exceedingly emaciated. Her breathing was so difficult, that she was obliged to be raised in her bed; and she was now affected with a constant

diarrhæa and swelling of the ankles. She was given up by her physicians.

Her new abode at first appeared very strange to her. The noise which the cattle made deprived her of rest; for no sooner had she fallen asleep, than she suddenly awoke in a fright. By degrees, however, and under the hopes of a recovery, she became reconciled to her new situation. In about a month's time, there was some appearance of amendment. The diarrhæa was less urgent, and her breathing was so much easier, that she could dispense with some of the pillows that had been used to support her. Before Christmas she was surprisingly better. The fever was abated. The pulse was become slow and natural, and she coughed and expectorated little in the day time. The swelling of the feet had nearly subsided, the diarrhæa had almost ceased, the difficulty of breathing was much less, and she had now a pretty good appetite. After Christmas there was an unpleasant occurrence, viz. an inflammation in her eyes; which, however, was removed by proper remedies. She remained in this apartment during the rest of the winter and spring, till the beginning of June; when the weather becoming warm, she removed into the country, where she passed the summer, and by the help of milk and Seltzer water, and daily exercise on foot, she gained

gained flesh, had her catamenia again, but still had some little cough, and shortness of breath when she walked. This amendment continued throughout the summer. In the autumn, when the weather became cold, her physicians advised her to have recourse to the cows-breath again. She could not now be prevailed upon to remain constantly in the hall where the cattle were, as before; but consented to pass her nights there, which she continued to do during the severity of the winter. The spring following she caught cold, was seized with an inflammation of the lungs, fever, &c. which reduced her considerably. However, during the summer she in some measure recovered; but in the autumn the phthifical symptoms again returned. She could not now be prevailed upon to try the air breathed by the cows. She kept to her own room, and died at the end of the winter. She had borne children, and was about thirty years of age. *Bergius über Lungensüchtiger Cur im Viehstalle. N. Swed. Abbandl. 3r. Band.*

The inflammation of the eyes with which this patient was affected is, according to Bergius, a common occurrence to those who continue for any length of time in the atmosphere of cow-houses. He ascribes it to the ammoniacal effluvium constantly arising from the excrementitious discharges

from the cattle. But if this vapour or effluvium is so highly acrid and stimulant as to produce inflammation in the eyes, it is not likely that it should be a proper application to inflamed and ulcerated surfaces of the lungs. Yet the irritation that might arise from this source, seems to have been counteracted by the lowered state of the atmosphere of the apartment, in consequence of the subduction of a portion of the common vital stimulus (dephlogisticated air) and of the production of a quantity of fixed air, by the respiration of the cattle.

Although no cure was accomplished, yet the relief was so considerable, that this patient's case may be adduced as an instance of the anti-phthifical effects of an atmosphere of a lowered standard. When she first breathed the air altered by the respiration of the cattle, she was rapidly sinking under hectic fever, constant expectoration, profuse sweats, and colliquative diarrhæa. In a few weeks these symptoms abated; at the end of three months she was in every respect surprisingly better; and in the beginning of summer she was so much restored as to be able to remove into the country, where she walked out in the open air, and quickly recovered strength and flesh. On the return of winter, had she persevered in using the remedy in the same manner as she did before, more lasting benefit might have

have been obtained ; but now she would only consent to try it during the night. Still, however, some advantage was derived, and she got over another winter ; and if she had not imprudently ventured into the country again before the warm weather set in, and could have been prevailed upon to have continued the remedy on the approach of the third winter, the event might have been different.

The remark we would make upon this case is, that if the above-mentioned rude and disgusting mode of applying modified air in consumptive cases is capable of affording so much relief, how much more may we not expect from a proper and well-regulated application of the same ? Certainly the West Indian treatment, and the cow-house remedy, are strong recommendations of the pneumatic method.

It may be proper to add, that in the above-mentioned case, little other medicine, besides the modified air, was made use of. What she took consisted chiefly of milk and Seltzer-water, and Chervil-whey*.

* *Scandix cerefolium* Linn. Chervil-whey (serum lactis cerefoliatum) is prepared according to Bergius (Mat. Med. tom. 1, p. 218) by steeping the fresh herb in common whey made hot, and afterwards expressing the liquor from it. This seems to be a favourite

If this experiment had been made in England, where the air of our rooms is so partially heated, most of the salutary alterations which took place might have been attributed to the equal degree of temperature which was constantly kept up in the apartment by the warmth of the cattle; but in Sweden, where the houses are warmed by means of stoves, and the external air is well excluded by double windows, this explanation will not hold. In all probability the patient breathed in her own room an atmosphere of the like equal temperature, without, however, experiencing any kind of benefit. Therefore the good effects which ensued, must be ascribed to something more than to warmth alone.

ALTHOUGH it does not strictly belong to pneumatic medicine, the writer of the preceding observations cannot let go this opportunity of mentioning, that he has found the *Vapour of Æther* remarkably serviceable in phthical cases. It abates the hectic fever, checks the sweats, removes the dyspnæa, and greatly improves the smell, colour,

yourite remedy in consumptions with the Swedish physicians; but British practitioners will not be disposed to have great faith in it. Indeed it is not probable that it contributed much, if at all, to the amendment that took place.

and

and other qualities of the expectorated matter. Like the inflammable airs, it abstracts heat; but it does not like them induce languor, nausea, or giddiness. On the contrary, like fixed air, it has a refreshing effect. Patients who have inhaled it two or three times, find it so grateful to their feelings, that they are disposed to have recourse to it too often, and cannot readily be prevailed upon to lay it aside when it is no longer necessary.

His mode of applying it, is to direct one or two tea-spoonfuls of æther to be poured into a tea-faucer, which is held up to the mouth, and the vapour arising from it is drawn in with the breath. The inhalation is continued till the faucer becomes dry. This is repeated two or three times a day, or oftener if necessary.

When he first prescribed this application, he directed the faucer containing the æther to be placed over a tea-cup filled with hot water, in order to promote the evaporation; but he soon found this to be unnecessary, as this highly volatile fluid assumes the form of vapour rapidly enough in the common temperature of our dwelling-rooms, even in the winter time. Besides, when the faucer is heated, the æther evaporates so fast, that much of it is wasted; and the last part of the vapour acquires

quires an empyreumatic taint, which, though it may not be hurtful, is very unpleasant.

None but well rectified æther should be used for this purpose. Left it should contain any loose acid, it is adviseable to put a little alkaline salt into the bottle in which it is kept, and to shake them together now and then. Hitherto he has only prescribed vitriolic æther. Nitrous and muriatic æthers would be highly improper.

Æther impregnated with musk, camphor, opium, asafoetida, and the like, may in some cases be preferable to pure æther. These ingredients, however, should be added only in small quantities; otherwise sickness, giddiness, and other unpleasant symptoms will arise.

Where, as in certain asthmatic affections, the object is to remove spasmodic constriction of the bronchia, and to promote expectoration, the æther may be impregnated with squill, by adding to it either tincture of squill, or squill triturated with a little water of ammonia, as æther alone does not seem to dissolve this drug in any great quantity. The finer particles of the squill applied to the lungs in this manner along with the vapour of æther,
gently

gently stimulate the secreting surfaces of the bronchia, and promote the mucous discharge; and if applied in sufficient quantity produce sickness, which takes off the spasm, and is otherwise serviceable in such cases. An emetic given in this manner is very different from an emetic thrown into the stomach in the ordinary way; for besides having the same general effect upon the system with this last, it has at the same time a peculiar topical operation.

But on this subject the author refrains from further remarks at present, intending to give a more particular account of the uses of the *Vapour of Æther* on a future occasion.

In the mean time this vapour is not to be considered as equal in power with Factitious Airs. Wherever they can be had, they seem to be entitled to the preference; but where they cannot be procured, or where there are objections to their use, this easy and simple application will in many cases be found to be no bad substitute.

gently stimulate the localities of the brain, and promote the various discharges; and applied in functional diseases, produce effects, which are of the nature, and is otherwise described in such cases. An emetic given in this manner is very different from an emetic thrown into the stomach in the ordinary way, for besides having the same general effect upon the system with this last, it has at the same time a peculiar topical operation.

But on this subject the author returns from further remarks at present, intending to give a more particular account of the uses of the *Opium of India* on a future occasion.

In the mean time this volume is not to be considered as equal in power with *Johnson's Atlas*. Wherever they can be had, they seem to be entitled to the preference; but where they cannot be procured, or where there are objections to their use, this early and simple application will in many cases be found to be no bad substitute.