

Two memoirs read before l'Academie Royale des Sciences, at Paris, on the successful inhalation of diluted chlorine, in the early stages of pulmonary consumption, as a remedy capable of prolonging life : and of alleviating the distressing symptoms in the more advanced stages of that complaint : with cases illustrating the method of administering the gas, and shewing its beneficial effects / Translated from the French of M. Gannal by William Horatio Potter.

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TWO MEMOIRS
READ BEFORE
L'ACADEMIE ROYALE DES SCIENCES, AT PARIS,
ON THE
SUCCESSFUL INHALATION
OF
DILUTED CHLORINE,
IN THE EARLY STAGES OF
Pulmonary Consumption,
AS A
REMEDY CAPABLE OF PROLONGING LIFE;
AND OF
Alleviating the distressing Symptoms
IN THE MORE ADVANCED STAGES OF THAT COMPLAINT :
WITH CASES
ILLUSTRATING THE METHOD OF ADMINISTERING THE GAS, AND
SHEWING ITS BENEFICIAL EFFECTS.

TRANSLATED FROM THE FRENCH OF M. GANNAL,
BY
WILLIAM HORATIO POTTER, M.R.I.
OPERATIVE CHEMIST.

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AMONG the numerous publications of various pretensions to the public favour, which are daily presented to the medical world,—few or none contemplate the direct application of remedial agents to ulcerated lungs. To fill up this chasm in medical literature is the object of the present memoirs: they prove in an incontestible manner that Chlorine gas, diluted with a large proportion of common air, and softened further by its combination with aqueous vapor, is a powerful therapeutic means of cicatrizing Ulcers of the Lungs, where they exist, and of preventing their formation

when a predisposition is indicated. And even where the system has already succumbed to the baneful influence of this disease, which causes so many thousands, in this country especially, to become early tenants of the tomb, even in these cases where, by the presence of all the fatal symptoms recognised by the practitioner, as indicating if not a speedy, at least a certain dissolution, the effect of this agent has been evidently to prolong life and palliate suffering : and, in some few instances, has effected an absolute and permanent cure. Such is the combined testimony of several eminent and scientific Frenchmen, and it remains for the sounder and more steady judgment of the English experimentalist, to ascertain the extent of its claim to public credence.

Of the merits of this translation the reader must be the judge. I have diligently endeavoured to preserve the *meaning* of my author, while I have shunned servilely imitating his phraseology, and I trust while I have given an English form to the French idioms, I shall not be found to have forfeited my fidelity as a translator.

WILLIAM HORATIO POTTER.

11, Old Compton Street, Soho.

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FIRST MEMOIR
OF
M. GANNAL ON THE USE OF CHLORINE,
AS A REMEDY IN
TUBERCULAR PHTHISIS.

AMONG the diseases which afflict the human species, those of the Lungs are remarkable on account of their frequent occurrence, their obstinacy, and the danger which accompanies them. This seems to depend upon the importance of the functions which these organs are destined to perform, and on the necessity of their continuous action, which cannot be interrupted for any length of time, without death ensuing.

While the greater part of the other viscera may, when inflamed, be recom-

mended by the physician to a state of salutary repose, the lungs forced to act, notwithstanding the extent of its injuries, are beyond the reach of this first therapeutic means, and are cured, with greater difficulty and slowness, of the maladies of which they are so often the seat. When diseases (of this organ) have obtained for a certain length of time, and their influence on the economy in general becomes marked, we are almost always apt to confound them under the generic term—**Pulmonary Consumption** or **Phthisis**. These have been divided into genera and species, many of which are not clearly recognizable till death has supervened; and which for the prosecution of my present object, it will be useless here to enumerate.

Two modes of treatment have been adopted by physicians to ward off the terrible incursions of **Pulmonary Consumption**; the first we may denominate indirect

or revulsive, and it consists either in the external application of topical stimulants upon the principle of counterirritation, and thus opposing the internal inflammation by one created artificially upon the surface, of sufficient energy to effect a cure, or in administering by mouth certain medicines capable of reducing the too great intensity of vital action, and thus procuring relief.

These modes are generally united in practice, but such is their inefficiency, that they seldom do more than arrest the progress of a disorder, which, when once fully developed, as manifested by the hectic fever and diarrhœa, is considered incurable by the majority of practitioners. Convinced of the insufficiency of either external or internal remedies, physicians have at different times, demanded of chemical science, some gaseous substance, which being blended with the air and carried with it to the lungs, might by direct contact sooth

the irritation of the organ, modify the secreting power of its mucous membrane, or cicatrise existing ulceration.

Great expectations were elicited by the employment of this novel and direct mode of treating Phthisis; aqueous vapours produced either from water alone, or certain mucilaginous decoctions, the vapour of tar, of sea-weed, and various other substances were employed, and were at first found useful in slight cases, but their success in cases of longer standing, where inflammation had already made considerable progress, was unsatisfactory and doubtful.

Towards the close of the last century, that brilliant epoch, when modern chemistry preceded that revolution which raised it to the foremost rank among the useful sciences; at this epoch, I repeat, the theory of Lavoisier respecting respiration, and the important considerations which flow from it, relative to the influence of oxygen gas

upon the animal functions, caused many to imagine that this gas might prove beneficial to Consumptive patients. Various experiments were made to this end between the years 1781 and 1790, the results were at first encouraging; the dyspnœa was relieved, pain was lulled, the expectoration was gradually diminished, the cough was eased, and every one now thought that a cure was at hand. But this happy state of things was not of long duration, fifteen days after these first effects of vital air, acute symptoms of excitement showed themselves in the lungs, blood was brought up in the sputas, the fever increased, the colour became more lively, the heat greater; thus it was found necessary again to recur to antiphlogistics, and the disease which seemed checked, now resumed its course, and proceeded with greater rapidity towards its fatal termination than before the gas was exhibited. Fourcroy, at once a witness and

relator of these facts, declared that oxygen gas was far from being a remedy applicable to Phthisis, as had been imagined. This check suspended further experimental enquiry, and crushed that enthusiasm which had already taken possession of the minds of many.

But now that chemistry, which at first sight appeared to have invaded the province of medicine by furnishing some certain remedies against the diseases to which we are exposed, is at last relieved from the discredit which has unjustly been heaped upon its application to the healing art, it remains to discover, if amongst the substances revealed to us, by its means, there is not one which may produce the favourable effects of oxygen, without lying open to the same objections.

That such a substance exists is most evident, and this is **CHLORINE**, first studied by Guyton Morveau, who pointed out many of

its applications. We are now well acquainted with its extensive utility as a disinfecting agent, and with its energetic action on animal matter generally. Recent facts, published by physicians of first rate eminence, have shown that it powerfully modifies organic action, cleanses and neutralizes the matter of chronic ulcers, assigns limits to mortification, suppresses long accustomed mucous evacuations, and may be given internally in scorbutic cases with advantage, as also in putrid fevers and other similar diseases.

Most of these facts have been pointed out in the works of Guyton Morveau, Hallé, and Fourcroy. But thanks to the exertions of an esteemed pharmacien, thanks to that zeal for the general good which leads men in these days to unite their efforts to procure the triumph of all that is useful, the applications of Chlorine for instance, combined in excess with the metallic oxides to which

it adheres but slightly, have been rendered general and crowned with abundant success.

Four years of experience have contributed more to setting off the advantages of this new discovery, than the twenty years which followed the fine researches of Guyton Morveau. We may then conclude from the mass of knowledge now acquired respecting Chlorine, that it not only destroys putrid animal exhalations, and is on this account the most powerful disinfectant we possess, but that it exerts a salutary influence, still more strongly marked, upon living beings themselves, and powerfully modifies the organic actions by which they are distinguished.

In this state of things it remains to determine to what extent the Chlorine, employed with success against certain external local affections, may be administered internally, not only without injury, but with advantage, in subjects affected with Phthisis.

Analogy leads us to conclude, that since it has been found useful against copious mucous discharges from the vagina, against ill conditioned ulcers, and gangrene of the limbs, it should produce like happy effects in the ulcers and increased mucous secretions, which for the most part constitute Consumption.

Probable, as this reasoning appears, it is changed into certainty by the following important fact:—Being, in the year 1817, attached to a manufactory of printed calicoes at St. Denis, I observed that those workmen who happened to be affected with Phthisical symptoms experienced relief, and quickly recovered their health while exposed to the exhalations of the Chlorine disengaged in the various processes. I communicated this fact first to Dr. Bourgeois, then to the celebrated Laennec himself, who, in the year 1823, after my communication, made some trials with the Chlorine fumiga-

tions, at the Hopital de la Charité at Paris, which however were not followed up. M. Laennec made use of the solution of the chloride of lime sprinkled about the room of the sick, and also upon some sea-weed with which the floor was previously covered. This mixture, although it was not possible to say to which substance should be ascribed the effect produced, gave favorable results, but not sufficiently decisive to occasion them to be continued.

Since this period I have had occasion several times again to be a witness to the good effects of Chlorine, in Pulmonary Complaints. In September last, in consequence of a letter inserted in the journals, the object of which was to claim the priority of applying this agent, I was invited by several physicians to exhibit it to their patients.

The following results will show with what success:—

First of all I must point out the manner in which I have been accustomed to administer the gas. In the fumigations recommended by Guyton Morveau, the Chlorine produced in a state nearly dry and in great quantity, often mixed with muriatic acid gas, and also contaminated with small quantities of sulphuric acid carried over during the operation, produced violent irritation in the pulmonary passages; an intense heat; a feeling of oppression; and soon after, a sharp fit of coughing were the effects of its inhalation. Thus it was found necessary before the disinfecting process was commenced, to clear the rooms, and when the Chlorine was disengaged in occupied apartments, the apparatus was obliged to be moved away to some distance from the sick, who often, notwithstanding the greatest precautions, were much inconvenienced, and coughed violently.

This mode of procedure could not therefore be applicable to phthisical patients.

Guyton Morveau had proposed to substitute for the bottles of acetic acid, and other substances of but little efficacy, bottles of chloruretted oxide; but even this means, which has since proved of such general application, was not itself free from objections.

I shall not undertake to determine whether the Chlorine evolved from chloruretted oxides, differ in a chemical point of view from that which in a perfectly pure state is dissolved in water. However, I am inclined to believe that such is the case; the smell of this Chlorine is manifestly not the same as of that procured in the ordinary method, by the mutual action of hydrochloric (muriatic) acid and oxide of manganese. Though I will not at this time, venture to speak positively on this point, I think that the Chlorine disengaged from the chloruretted oxides (potass, soda, and lime) is contaminated with some particles of a foreign nature, which affect its

purity when it is immediately applied to the delicate organs of respiration. This statement is rendered more probable by considering what follows: I caused some of my patients to respire Chlorine evolved from a chloruretted oxide, but at the third fumigation they experienced a lively sensation of warmth in the chest, constriction of the throat, thirst, and all the signs appertaining to a powerful stimulus, which made me quickly desist.

Chlorine then, as produced from its combination with oxides, is not of sufficient purity to warrant our applying it to the delicate and already irritated organs of the phthisical patient.

To remedy this inconvenience, I make use of a solution of the pure gas in distilled water. I take a three-necked bottle, the first opening receives a straight tube, the extremity being plunged into about four ounces of water, the second opening has a

tube, which leaving the top of the bottle is bent at right angles, and terminates in a flattened embouchure, the third is furnished with a glass stopper;* it is by this last opening that the water is changed, and the gas introduced. The water in the bottle at the time of fumigation should be at the temperature of about 32° of the centigrade thermometer equal to $89^{\circ} 6'$ of Fahrenheit's scale; a certain quantity of liquid Chlorine is then added; and by gently shaking the bottle a portion of the gas is disengaged, which may be breathed by applying the mouth to the extremity of the bent tube. As the air is gradually withdrawn from the bottle, a fresh quantity is supplied from the atmosphere by the straight tube, bubbles up through the weak

* The apparatus fitted up complete, as recommended by M. Gannal, as also the solution of Chlorine gas, in a perfectly pure state, may be obtained at the Chemical Laboratory, No. 11, Old Compton Street.

Chlorine solution charged with the gas. The fumigation may be continued for the space of four or six minutes, after which the disengagement of gas ceases.

It is of the utmost importance, that we proceed with the greatest caution, being guided by the consideration of the energetic nature of the means employed, as also of the delicate fabric of the organ concerned. In my practice I commence with ten drops of the liquid Chlorine to two volumes : if the patient can well bear this dose, and according to the susceptibility of his lungs ; I raise it gradually to 12, 15, 20, 30, 50, 60, 72 at a time. However, there are scarcely two persons who can bear exactly the same doses ; we must therefore, as it were, carefully explore the state of the organ to be acted upon, and from thence deduce the proper quantity.

The same reasoning holds good as regards the *number* of fumigations, during

the twenty-four hours. They must be regulated by the effect produced, and the sensibility of the parts, generally the number may be from six to eight. It appears evident according to the above process, that the Chlorine inhaled cannot enter the lungs unless impregnated with a number of aqueous particles; from which circumstance it is much less irritating than in the dry state; and lastly, not being commixed with any foreign matter, its action confined to itself is not complicated with any superadded irritation.

We may also just observe that the apparatus required for its exhibition, is simple, easily obtained, and moreover portable, and being made entirely of glass, the Chlorine cannot possibly become contaminated with metallic molecules, and thus interfere with its purity; it cannot for example act upon the copper, convert it into a chloride, and in this state painfully affect the lungs,

or as there have been some instances, cause extensive inflammations.

It has happened to Chlorine, to which my letter has called the public attention, as it always happens to newly introduced remedies, hitherto unused, and against which some objections may still lie.

Patients far gone in the disease, and whose cure was considered past all hope, were selected as the first to make the experiment upon. This course was dictated as well by humanity as prudence, thus making the first trials of an uncertain remedy on almost hopeless cases. I could mention, for instance, persons to whom I have been called to administer the Chlorine fumigation, who were already verging towards the agonies of dissolution; and to some at whose abode I could not arrive but at the instant of death.

It would be useless to speak of these desperate cases, in which the spark of life,

just upon the point of being extinguished, afforded no chance of recovery. We will therefore adduce some instances when the disease in a less advanced stage, left more hopes of cure. The first is that of M. L****, of Gentilly, this man was 40 years of age, of a lymphatic and bilious temperament, and had been troubled a long time with pectoral disease when he applied to me. I sent him to Dr. Laennec (nephew of the professor); this physician after examination found that the chest under the right clavicle had a more dull sound than under the left; respiration sufficiently free throughout the right side, was *caverneuse* under the arm pit and clavicle, and accompanied with a sort of moist rattle; in the left portion, respiration was natural, only accompanied here and there by a slight wheezing.

From these symptoms M. Laennec, announced the existence of a tubercle on the top of the right lung, and "I dare even

affirm," he adds, "that the whole of this lung is more or less covered with tubercles of various magnitudes, indicated by the peculiar and variable sound attending respiration, as also by the crackling rattle. I think," says M. Laennec, in conclusion "that this case is one in which the Chlorine fumigations may be tried, but with discretion, however, on account of the disposition to hemoptysis, and to pleuritic inflammation."

This man who had been ill three years, commenced on the 18th of October, 1827, to use the fumigations, the dose being ten drops, eight times a day, from the 18th to the 23rd; respiration became less obstructed, the sense of oppression was much diminished, the expectorated matter from being purulent assumed a mucous appearance, the diarrhœa ceased, appetite returned, and the digestive organs again performed their healthy functions, and he passed more tranquil nights.

On the 23rd, however, from eating herrings, symptoms of indigestion were produced, the expectoration was tinged with blood, but notwithstanding this, the Chlorine was still continued and the patient gradually progressed. No inconvenience was felt from breathing the gas, the patient seemed extremely sensible of the least atmospheric change, colicky pains were experienced on the 17th of December, but were relieved by emollient applications, the appetite continued good, digestion went on well, the patient had one stool daily, his nights were undisturbed, the nocturnal perspirations were not so frequent, the expectorated matter purulent in the morning was mucous during the day. The sense of oppression is almost gone and the cough is much less frequent. On the 23rd of December, the pulse was 62. The season was much against the successful exhibition of the remedy, and if the man is

not cured, we cannot refuse to admit that the Chlorine on the one hand, never incommoded him, and on the other produced such alleviation that without doubt the patient's life was evidently prolonged.

The second case I shall mention is that of M. D——; I cannot better describe this than by copying the report of his physician, Dr. Honlet, to one of his friends who desired the particulars. “ Consulted early in the month of September, by M. D—, I declared him a consumptive patient, so far advanced in the disease, as to judge him incurable. On the 8th of the following October, by the advice of somebody whose name I do not recollect, Chlorine fumigations were proposed, as a means likely to effect a cure; and, as you may imagine, most cheerfully acceded to on my part; so much the more as this mode of treatment was totally unknown to me. As a further proof of its beneficial action, I declare candidly, that

not only was this very evident to myself, but also to each of the other physicians (M M. Cretin and Guersent) who also saw this patient.

“ The fever and the coughing fits yielded to the remedy instantly : the digestive organs experienced a freedom of function hitherto unknown : the cough was now less frequent ; and the sputas from a purulent character became changed to muco-purulent, and lastly more decidedly mucous. The fumigations were repeated four, five, and six times a day, three or four minutes at a time, and these which were more or less charged with Chlorine, sustained our hopes for some time. The patient taking advantage of his partial restoration, ventured to walk from the Faubourg St. Martin to la Place Royale ; but at his return his imprudence cost him much, he was seized with a fit of coughing, blood was expectorated, attended by a febrile paroxysm, from

all of which it was evident that the mucous surfaces of the bronchiæ and stomachic viscera becoming the seat of disease, extended their morbid action to the neighbouring lungs.

“All hope was now at an end, and the patient given over. The fumigations were, however, still persisted in at the wish of the patient, for he was in the habit of saying, and repeated the same to-day, that “they expanded his breast and stomach, and procured him some internal delightful sensations.” (These expressions were copied in a letter of the 19th December, 1827.)

The third case I shall mention is M. Le Comte de ***, who had been ill for about two years, he had taken large quantities of pectoral medicines, a blister had been applied to his arm when he left Belgium to return to Paris, according to the advice of his physician. His cough was troublesome, obstinate, always accompanied by

purulent expectorations ; he slept only at short intervals ; a dull sound was heard at the upper part of the left lung. M. D., of a dry and warm temperament, by the advice of several physicians, whom he had consulted, continued the plan of treatment already pointed out, and was recommended by them to pass the winter at Nice, in Italy, or in some other southern country.

When I was called to him I commenced the Chlorine fumigations on the 21st October, 1827. Their first effects were to diminish the frequency of the cough, and the quantity of expectorated matter. The appetite improved, colour returned to the cheeks, the skin remaining dry and hard, baths were ordered, and Dr. Begin recommended a mild regimen. The health of the patient has been improving since the 1st of November, and excepting certain unfavorable changes produced by atmospheric

variation, things have worn a promising aspect, and at present there is a well grounded hope of a perfect cure. The peculiar sound in the left lung has ceased, the appetite is good, the nights tranquil, the usual strength recovered, and every thing shows fair for a speedy restoration.

I have commenced the fumigation treatment in various hospitals, especially in l'Hotel Dieu, under the direction, and by the desire of the physicians of this establishment, but my experiments are not yet in a sufficient state of advancement to lay them before the Academy.

It is evident from the account that has been already given, that the internal use of Chlorine lies not open to the same objections as oxygen gas, according to the observations of Fourcroy.

Every one of my patients has received some relief; every one has had his respiration rendered more free, his expectoration

diminished, the sense of oppression lessened; not one has experienced heat in the region of the chest and lungs, or fever, or hemoptysis. If the latter symptom showed itself in the case of M.D. it ought to be attributed rather to his imprudence, than to the use of the Chlorine, since the administration of this agent diminished the spitting of blood, and did not in any degree increase it, which could not possibly have been the case, if it were the cause of its appearance.

Inspiring the gas in its pure state is certainly better than inhaling it as produced from the chloruretted oxides, or when conducted through metallic tubes to the organs of respiration.

Lastly it is to be observed, that by the influence of Chlorine, all the patients breathed freer, dilated the chest more easily, that they felt a pleasant sensation while inhaling the gas in a remarkable manner, and

that their appetite returned, and often so as to render it necessary to increase the quantity of food allowed them. All these facts indicate a diminution of pulmonary irritation, and an increase of energy communicated to all the vital powers.

It follows, therefore, from what has been premised,—

1st. That in no case has the inspiration of Chlorine proved hurtful or troublesome.

2nd. That in cases where the disease had made considerable way towards its consummation, and was therefore incurable, it afforded relief and prolonged life.

3dly. That in cases where other medicinal aids were of no avail, it succeeded

in effecting a cure after a shorter or longer interval, and that from all these considerations, it is one of the most efficient means that medical art can oppose to Tubercular Phthisis.

SECOND MEMOIR

M. GANNAL ON THE USE OF CHLORINE,

IN THE TREATMENT OF

TUBERCULAR PHTHISIS.

SECOND MEMOIR.

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M. GANNAL ON THE USE OF CHLORINE,

AS A REMEDY IN

TUBERCULAR PHTHISIS.

IN submitting to the judgment of l'Academie des Sciences my first observations upon the employment of Chlorine, in tubercular Phthisis, my aim was to invite a serious discussion of facts, which appear of great importance, and thus to awaken the attention of every person attached to the interests of practical medicine. I have so often heard physicians lament the inefficiency of common remedies against a disease, whose frequency of occurrence has rendered it the scourge of the human race; I have had myself so frequently to bewail the im-

potence of art in similar circumstances, that I thought an account of a plan of treatment, which I have proved not only to be *innocuous*, but attended with *manifest advantages*, would be received, if not with favor, at least with indulgence.

Animated by the sole desire of being useful, and speaking without any reserve, I hasten to present to the Academy a new series of observations, more conclusive than those already adduced; but instead of receiving that encouragement that my candour and disinterested feeling might have justified me in expecting, I have found, with a few honorable exceptions, only coldness and indifference, or something of a still less flattering character.

Before entering into the detail of the new observations I am about to present to the Academy, I must again recur to the apparatus I make use of. Full information respecting it must be obtained before we

can expect with any degree of certainty to arrive at satisfactory results. First then, it is necessary to make use of a bottle, the capacity of which is about half a litre, (1.0566 English pint.) If it were smaller, the patient would most probably be subjected to violent fits of coughing, because on the one hand the liquid Chlorine would not be sufficiently diluted, and on the other, the water would cool too quickly, and not emit enough aqueous vapour to saturate the gaseous Chlorine. It is likewise of consequence that the tubes, with which the bottle is furnished, (whether a three-necked bottle, or a bottle with one neck, fitted with a cork perforated with two holes, is made use of) should be at least five lines in diameter. I employ with some patients, bottles called Boudet's bottles, which are used for æthereal fumigations; but I have remarked that inspiration was then painful and laborious. This inconvenience was removed

by substituting, for these little bottles and tubes, the apparatus I have described. The quantity of Chlorine employed, at each fumigation, and the number of times they are to be repeated each day, is by no means, as I have hinted already, an indifferent circumstance.

I have always observed that the gas produced no effect if inhaled less than six-times a day ; and, I believe, it may be repeated as often as eight times without any bad effect ensuing. But we must not, as I have often seen done, intermit these fumigations without sufficient reason.

Many physicians are alarmed by the accession of a slight oppression, the natural consequence of the application of a new substance to the interior surface of the air passages, and which shortly disappear by the continued contact, to which the mucous membrane of the lungs soon habituates itself.

The only symptom which made me modify the treatment, was irritation of the trachea, which obtains, in some subjects, after each fumigation, particularly in cases of a morbid state of the larynx. We must then reduce the quantity of the gas, or even suspend its employment altogether, if the irritation continues several days. I adopted the following plan with certain persons, who, having commenced with ten drops, and wishing to increase the dose too rapidly, experienced this tracheal irritation :

I reduced the dose to five drops, and increased it by one drop at each successive fumigation, until this disagreeable symptom was re-produced. I then diminished the dose of Chlorine to five drops, as before, and as gradually increased it ; and thus, in a few days, I was enabled to administer as much as from 20 to 25 drops. In every instance, the patients recommencing with the minimum dose, were

enabled to exceed the quantity which had originally produced irritation. Besides, this mode of procedure is more certain of producing a stable and permanent effect; for it often happens that, during the first fifteen days, the amelioration is very sensible, though slow, but after this time the disease becomes stationary during a longer or shorter period. I have seen two patients, who, after having been relieved during nearly 20 days, have remained for a month at the point where they had previously arrived; while others, to whom I had administered the gas, in the gradual manner indicated above, have experienced a steady unvarying approximation towards a cure.

Lastly, the quality of the gas should be considered as of the utmost consequence. Many persons think that any sort of Chlorine will do; this is an error: no good results are to be expected from the employ-

ment of any but a perfectly pure gas, for be the quantity ever so small that it may contain of the muriatic acid gas, the patient will be sure to find it out. In order to give some idea of the extreme susceptibility of the respiratory organs in this respect, I shall relate what happened to one of my patients. I had prepared the Chlorine which he was to inhale, from oxide of manganese and muriatic acid, and in order to collect it, I made use of Woulf's apparatus, arranged in the usual manner, and thought I might employ indifferently the solution of Chlorine contained in either bottle; but at the first fumigation, which was made with 25 drops of the water from the first bottle, the patient felt a considerable degree of oppression, and complained that *the remedy did not act well*, he was seized with several fits of coughing, and experienced for half-an-hour a pungent sensation of heat in the throat. I made the next

fumigation from the contents of the third bottle; this time he found the Chlorine much better, and told me *it did now very well*. Last of all I tried the solution of Chlorine from the second bottle; he found it not so good as the last, and still complained *it did not act as well*. This fact proves how necessary it is that the gas should be absolutely pure.

In the laboratories, that which is contained in the second bottle is considered pure, but it certainly is not so, since some patients have found out the difference. I must here say a few words in refutation of a theory lately developed before l'Academie de Medicine, by Dr. Bourgeois, physician of St. Denis, who having also remarked that Phthisical subjects were cured in the bleaching houses, was of opinion that the cure was due to the Chlorine constantly diffused in large quantities in the atmosphere of these places, but he should have known

that there is no considerable disengagement of this gas, except, when the liquid Chlorine is brought into contact with the pieces of calico, as they are substituted for those that have already been subjected to the action of this liquid, and consequently the evolution of gas can only take place at shorter or longer intervals.

For want of paying attention to this circumstance, he has fallen into a great error, in proposing to arrange a place so as to cause Chlorine to pass constantly through it, and make the patients live in this atmosphere. It would be necessary in this case, to fill the apartment with aqueous vapour before the Chlorine was allowed to enter, for it is proved I think, from all I have just been saying, that anhydrous gaseous Chlorine cannot be breathed without danger; but this vapor of water mixed with Chlorine, would be decomposed by the action of light, and give rise to the forma-

tion of muriatic acid gas, the effect of which is certainly very different from that of Chlorine. It is equally true, that the same decomposition takes place in the bleaching houses, but although it may be less dangerous, on account of the emanations being frequently renewed, it even there causes the workman to be attacked with violent fits of coughing, and it is this that has led him to seek a means of preventing all formation of muriatic acid in the application of Chlorine. We may add, that in the process of Dr. Bourgeois, it would be almost impossible to calculate the quantity of gas necessary to keep an atmosphere constantly uniform in its composition, and to avoid introducing either too little or too much Chlorine.

The memoir of Dr. Bourgeois should be consulted with care on this head, otherwise it deserves every attention from the man of science, and I refer to it with plea-

sure, although it seems directed against me, since it proves that a respectable physician acknowledges the possibility of curing Phthisis by the agency of Chlorine in common with myself.

I leave time to prove the superiority of the process that I have been the first to announce, and before any body had an idea of using this gas, in this class of diseases. It is also, as I have said already, the most simple means—the most convenient—the most economical.

I will now introduce the account of my new observations, by remarking, that the chief part of my patients, to whom I have exhibited Chlorine, had arrived at the last degree of marasmus and exhaustion ; and if I cannot adduce a greater number of successful cases, it is that I have scarcely ever had an opportunity of treating the disease, except in the advanced stage referred to. We might almost apply the epithet “ cada-

veriques " to the observations which I have been permitted to make, and it would therefore be unjust to draw rigorous conclusions from the facts I am about to relate.

FIRST CASE.

The patient whom I mentioned in my first Memoir, continued the fumigations during the month of January, and lived till the latter part of February. It will be recollected that Dr. Laennec, pronounced that this man had evident pectoriloquism, accompanied by cavernous respiration, at the top of the right lung. With such a disorder, and in the state of exhaustion in which the patient was, it was impossible that he could survive more than two or three weeks under the usual modes of treatment. Thus the use of Chlorine prolonged his life for more than three months, and had

the advantage by the procurement of ease, of sustaining the spirits, and hope of the patient, even to the last.

SECOND CASE.

The second, who was under the care of Dr. Honlet, died soon after the act of imprudence referred to in detail in my first memoir, and the probable results of which I then foretold.

THIRD CASE.

The Count de la Hutte continued to get better, and left Paris, the 8th of April, perfectly restored. The following is a copy of a letter, respecting him, by Dr. Begin :—
 “ The Count de la Hutte, by the persevering use of the fumigations, perceived both the oppression and the expectoration, which were exhausting his strength, gradually disappear. He was in the habit of taking

an account of the daily number of his fits of coughing, as also of his sputas, and both diminished in a constant progression. His appetite was as good as in any former period of life, and might be satisfied with safety. The patient felt no longer a sense of constriction in the thorax, he slept perfectly well, enjoyed the pleasures of walking, and the theatre, without any inconvenience. The sound which had been perceived in the chest, under the clavicle, was heard no more, and every thing indicated a cure at once as substantial as unexpected, at least, as far as regards shortness of time, when we recollect the Count's long previous illness." Since his departure I have kept up a correspondence with him, and, very lately, he has written me, by his physician in ordinary, Dr. François de Mons, the following details relative to himself:

" I can assure you," says Dr. François, " that, at this time, Count de la Hutte en-

joys the best possible health in every respect. It might almost be doubted that his chest had ever been affected, so free at present are his respiration and speaking, notwithstanding rather hard exercise, and a regimen not quite in accordance with the laws of health. With some similar examples, Sir, I promise you an ample harvest of glory, in spite of the withering breath of envy, always directed against the most useful discoveries.

“ I have watched, with pleasure, your continued success, whatever your medical journals may have said; too often made available by persons interested to deceive. We Belgians, strangers to your chit-chat, and to that gossiping spirit so hurtful to the progress of science, will be delighted with a detailed account of the actual state of things concerning your happy discovery. If you can spare the time, amidst your varied occupations, I shall be greatly

obliged by your giving me some information respecting it, which it will be a source of delight to me to publish in our journals; as impartial judges, you are sure of finding in us both attention and justice.

“ I shall be charmed, on my part, with being charged with a communication, which cannot but conduce to the advantage of science and humanity.”

FOURTH CASE.

If in the following case, the result is less happy, the post mortem examination will prove that extensive lesions of the lungs existed, and that consequently we can assign the death of the patient only to the natural progress of a disorganization, which was evidently beyond all human power to cure. We shall likewise see, that by plunging his hands in cold water for two or three hours, those symptoms were renewed, the

violence of which had been greatly mitigated by the agency of Chlorine. It will also appear beyond doubt, that an accidental supervening erisypelatous affection of the head, in an exhausted subject, must have had great influence in hastening the fatal consummation, in spite of all opposing efforts.

I ought to observe here, that this individual is the only one that has been under my care in the hospitals, notwithstanding my numerous calls, and that consequently it is unjust to attribute to me, the want of success that has attended this case. The state of this person who was received at the Hotel Dieu, in the department of Dr. Husson, is here described, such as it was communicated to me by M. Verrier, a pupil belonging to the division of this physician, and who had the medical charge of this patient,

Fremont, born at St. Marguerite, department de la Seine Inferieure, twenty-two years of age, a printer, tall and of a deli-

cate constitution, came to the Hotel Dieu on the 1st December, 1827, having had for five months all the symptoms of pulmonary consumption. The patient was put upon a mild regimen until the 18th, when the fumigations were commenced, his state at that time was as follows : general leanness, dry skin, *normal* pulse, unhealthy appearance, strength sensibly diminished, diarrhœa and sweats, cough troublesome and frequent, especially at night, expectoration thick, whitish, lumpy, abundant; slight dull sound in the left side posteriorly, hurried respiration; in front, a dull sound under the left clavicle, cavernous wheezing, pectoriloquism; rattle, loss of appetite, with scarcely any sleep at night. We commenced by giving five drops at each fumigation, five times a day.

From the first, the cough and expectoration diminished, the strength increased, for the patient assured us that he was

enabled to go up three pairs of stairs, which he could not have done eight days before. On the sixth day, the cough, the expectoration, and the perspirations were increased; on the seventh and eighth, they were again diminished. January the 8th, much less cough and spitting, the matter brought up assumed constantly a round form. Quiet sleep and a good appetite, the perspiration, diarrhœa, and pectoriloquism remain the same. On the 14th, the perspiration disappeared. 19th, The matter expectorated changed its form and was yellowish. 20th, The diarrhœa ceased: this day the patient put his hands into cold water (to change the water of leeches), and thus increased the cough and spitting. 23rd, No change for the worse. 28th, Slight pain in the chest, cough frequent, with thick, round, greenish expectoration, little or no rest at night, violent tooth ache. February 1st, M. Gannal ordered only five drops in each fumiga-

tion, and to add one each successive repetition; 2nd, M. Husson now discontinued them altogether; 4th, Erysipelas commenced in the mastoid region, the looseness reappeared with so much violence as quite to exhaust the patient; 8th, Increased expectoration sometimes tinged with blood, 9th and 10th delirium; 18th, The erysipelas disappeared after having occupied successively the mastoid region, the face, the neck, the shoulders, and part of the back. M. Husson endeavoured to subdue it by the application of twelve leeches behind the mastoid process, bleeding from the foot, pediluvia and cataplasms, as the disease indicated.

From the time of this erysipelatous attack, the disease pursued its ordinary course, and rapidly conducted the patient to the tomb.

*Examination of the body twenty-four hours
after death.*

Of the exterior.—Great degree of marasmus, by percussion in front, at the top of the left lung a metallic *tinkling* sound was heard.

Of the interior.—The lungs were larger than usual, and very red on the external surface, the left lung presented two excavations, each capable of containing a fowl's egg; and filled with matter of the colour of wine-lees, the remaining portion was studded with tubercles, and was hard and red. We observed a cavity about five or six lines in diameter, on the top of the right lung, which upon being pressed, exuded a liquor of a red appearance mixed with bubbles.

Of the Abdomen.—Ulceration of about three lines in circumference, accompanied by a number of smaller ulcers scarcely visi-

ble in the ilio-cæcal valve; the other organs were not examined. The liver did not appear like that of a person affected with Phthisis.

Notwithstanding the most scrupulous attention, the least effect of Chlorine could not be perceived.

FIFTH CASE.

The following case selected by Dr. Moret, to whose kindness I am indebted for it, will show, better than any assertion of mine, what beneficial effects Chlorine can produce, even in cases where consumption is in a stage so advanced, as to leave no hope of a radical cure. It is Dr. Moret who speaks.

“ M. C. a painter, 30 years of age, five feet four or five inches high, of a spare habit, with black hair, of a sanguine nervous temperament, his father having died

of pulmonary consumption, as also a sister ; he himself having several times in the years 1824 and 1825, spit up a quantity of blood, following upon habitual epistaxis, which symptoms however, yielded to the application of cupping, diluents, and a low mild regimen.

“ Summoned to attend this patient, June 21, 1826, I found him labouring under fever attended by hæmoptysis. Bleeding from the arm and foot, leeches, and cupping upon the chest and back, with the exhibition of diluent potions, and a strict regimen, so far restored M. C. that he was enabled to attend to business, and even undertook several rather long journies.

“ He still spit a little blood pretty constantly, and what appeared likely to render any irritation liable to be determined to the lungs, was moreover troubled with dyspnœa, and a dry cough. He was under medical surveillance for a month, towards

the end of which, an issue was made, and kept open in his left arm.

“ This uncertain state of health continued until June 21, 1828, when a fresh attack of hæmoptysis recalled me to M. C. Bleeding and leeches with an antiphlogistic regimen, conjoined with a spare diet, were persevered in for several days, and produced a like result to the first, in the space of three or four weeks, but the dyspnœa and cough remained undiminished. Tubercular formations in the lungs became more indicated, the expectorated matter mixed with blood, assumed a purulent character, and Dr. Brune, who was called in consultation, pronounced the disease to be in the third stage, and consequently incurable.

“ M. C. was still so weak, that six or eight steps taken in his room, although he was supported by both arms, occasioned such shortness of breath, that it was nearly

a quarter of an hour before he could speak a word. One day, when I called on him, he told me that a friend of his, a pharmacien at Montrogne, had recommended him to try the Chlorine fumigations, and as I had mentioned the subject to him some time before, he felt disposed to employ the remedy.

“ We therefore commenced, and the first fumigation was administered on the 13th of April. We persevered for a fortnight, repeating them eight times a day, four minutes at a time, the dose being three drops from a half setier of water, in the beginning of the course, and increased to eight, which quantity was never exceeded. The patient having complained of a sensation of heat and dryness in the throat, after each inhalation, I alternated them with marshmallow fumigations. Under this treatment the cough was alleviated, and the blood, as also the purulent expectoration,

disappeared. The strength was re-established, appetite returned, but the dyspnœa still continued, though much diminished. M. C. can now walk from the Rue St. Germain--l'Auxerrois to Thermes, where he has been living more than a month; he can speak and converse without much fatigue: going up stairs still puts him out of breath, so as to oblige him to rest at every floor.

“ The cough is troublesome in the morning and evening; in the daytime it almost entirely ceases, as also the expectoration. This being a solitary case in my practice, I cannot deduce from it the general efficacy of Chlorine in the cure of pulmonary consumption. I do not even consider M. C., the subject of the above observations, as completely cured, but still exposed to the possibility of a fatal relapse. I think, however, that this means has acted powerfully as a palliative, or rather has effected this incomplete cure, which may

prolong to an indefinite period, the life of an individual, who was considered near death's door.

“ I think it also warrants the making of new experiments, in cases which offer a chance of success; namely, upon patients who have not passed the second stage of the complaint.”

SIXTH CASE.

On the 16th of October, I received the following letter:—

“ SIR,—My physician proposed yesterday that I should breath the Chlorine gas. I recollect having seen in the *Journal des Debats* an article that you inserted on the 27th of September last. I communicated it to my doctor, who desired to have an understanding with you on the subject,” &c. &c.

The letter finishes thus:—“ My physician tells me that the use of Chlorine is no

new discovery, but he is ignorant whether your process possesses any advantages over those already known,—Believe me,” &c. &c.

I had an interview at the house of Mr. E. with Dr. Laroque on the 18th. It was agreed that I should commence operations on the 20th, which I accordingly did. The fumigations were continued during the months of November and December. On the 18th January they were suspended: resumed towards the end of the same month, and finally abandoned the end of February.

Since which period M. E. has married, and continues to enjoy good health.

In vain have I made the most urgent requests, at several different times, of M. Laroque to furnish me with information respecting the state of M. E., be it what it might. My solicitations have been unattended to, notwithstanding a promise that he would oblige me. Animated by the love of his art, Mr. Begin has made a point

of seeing this patient, although he had not the medical charge of him, and has succeeded in obtaining from him the details of his complaint, and can, when necessary, explain them. It will be remarked, that I prefer making a transcript of the notes taken by several physicians, which they have had the kindness to send me, rather than relating from my own experience the facts I have observed. *I* might be accused of prejudice or *partiality*, feelings unknown to disinterested men, worthy of entire confidence, and accustomed to the most attentive observation of disease.

The following case has been selected by M. Devergie, whom I will leave to speak for himself.

SEVENTH CASE.

A man named Pielle, an old cook, who had discontinued culinary occupations three years since, on account of the heat causing

dryness in his chest, and affecting his general health. Every winter he was troubled with an obstinate cough, and under its malarious influence, the digestive organs were incapacitated to fulfil their healthy functions. Three or four months in the year he kept his room, and any sudden change of temperature brought on a dry cough, accompanied by indigestion.

Every year he was losing flesh and strength, his cough got worse, and no other remedies, save diluents and purgatives were made use of to combat the consumption, which was rapidly undermining his health; when on the 26th January, I was called in to cure a violent hæmoptysis, which had been preceded for three days by striated expectoration at first tinged with blood, pure blood was afterwards brought up in small quantities. For three months the patient kept his bed or room, spitting abundantly mucus mixed with pus, proceeding from tubercles

in a suppurating state, the appetite was pretty good, notwithstanding the existing nausea. Every evening an accession of fever, followed by nocturnal perspirations prevented sleep, was accompanied by thirst, and terminated in the morning by a copious expectoration. Paleness, general emaciation, pulse full and feverish: a dull sound was perceived throughout the extent of the right side of the chest, respiration difficult, spitting of blood, the tongue covered with a blackish fur, loss of appetite, dry skin, great general heat, intense thirst, and constant hoarseness.

In five days, by bleeding twice in the arm, three applications of leeches to the breast, and one to the anus, the use of hand baths, diluent pectoral potions, and low regimen, the hæmoptysis which had slightly reappeared, ceased. On the tenth day, four blisters were applied successively to the chest, which again became sonorous,

throughout a great part of its extent, the appetite now re-appears, light food is given, the patient improves, but by degrees, the purulent expectorations and night sweats resume their sway, a bad taste in the mouth is constantly present, and the tongue scarcely ever clean. In the middle of February, I proposed the use of Chlorine, M. Gannal administered it, regulated the doses, &c. &c.

In a few days the scene was changed, and the patient felt himself better. On the tenth day, the appetite returned, the tongue became clean, the night sweats were sensibly diminished, the expectoration assumed a more healthy appearance. The fifteenth day, more perspirations, more pus in the matter brought up which was now reduced to almost nothing, the cough had nearly vanished; in a month his complexion was of a more healthy tint, the patient got stouter, digestion became good, the pectoral symp-

toms were all greatly ameliorated, the voice sonorous; he is gay and cheerful, his sleep is tranquil and prolonged. The patient, not paying attention to our advice, and tormented by hunger which we permitted him to satisfy in a reasonable manner, quits the prescribed routine, abandons his light diet, and eats whatever comes in his way, without any discretion. In fifteen days, (the latter end of March,) by the stimulus of too much food, indigestion was produced, and the lungs soon participated in the irritation thus caused, diarrhœa with fever now supervened. On the ninth day, there was slight spitting of blood; four leeches to the anus, and a low diet stopped both the excessive alvine evacuations, and the bloody expectoration; the tongue however was covered with a thick fur, which was removed with difficulty.

However, by again having recourse to the fumigations, the patient was restored in

the course of the month of April, but never did he attain that degree of convalescence he enjoyed in March. The expectorations assumed by degrees a purulent aspect, digestion was performed with difficulty, the sputas were streaked with blood, night perspirations with diarrhœa again made their appearance, the throat was inflamed, with hoarseness. Ten days spent in the country procured no alleviation of the symptoms. The patient followed his inclinations as to eating, passed all the month of May as described above, and at last, about the middle of June, he died of confirmed Phthisis, evidently, to my great astonishment, arrested in its course by the good effects of the Chlorine, the doses of which were regulated by M. Gannal, according to the state and strength of the patient.

In the *eighth and last case* I shall mention, analagous in many respects to those related by MM. Devergie and Moret,

Chlorine, although incompetent to a complete cure, of which the great extent of the organic lesions precluded all expectation, has nevertheless so mitigated the symptoms as to be eminently worthy of the attention of practitioners. Although this agent should be limited in its power, to produce *alleviating* effects, still it would be exceedingly desirable to have recourse to it in numerous cases; for it certainly excels in efficacy, all the known remedies that have been extolled for the cure of Phthisis.

The case which follows has been drawn up under the inspection of Dr. Honlet, her physician.

EIGHTH CASE.

Madame Mitteau, 25 years of age, short, and of a delicate constitution, experienced, in consequence of a shock occasioned (April, 1827) by a sudden announcement of bad news, a violent degree of oppression, at-

tended by difficult respiration. Having consulted a physician, she was bled in the right arm; in the evening, 25 leeches were applied, part to the anus, and part to the right side of the lower belly: refreshing drinks were prescribed with a low diet, or at least very little aliment was allowed for several days. This treatment produced great relief, and for a month the patient was tolerably well: however, every now and then she felt a pricking at the upper part of the right shoulder.

At the end of a month, this pricking sensation became a sharp and lasting pain, which was not referred to the posterior part of the thorax alone. The whole of the right lung had become painful, and the upper part seemed particularly to be the seat of disease. Madame Mitteau had a cough, which from being at first dry and seldom, was now frequent and accompanied with purulent expectorations; leeches

were applied to the sternum, which produced some benefit. Thus matters went on until November, at which time the expectoration became more abundant. Inflammation attacked the abdomen, and the patient made water with difficulty, which was attended, for the space of two months, with violent pains; the menses were suppressed, and Madame Mitteau's health was much on the decline till the end of the winter. Dr. Honlet, who attended her for three months, invited me to see her: she was at this time excessively thin and weak; her appetite was gone; her sleep short and restless. A febrile paroxysm was observed every evening, with frequent colic and diarrhœa. The left side of the chest indicated a healthy state, but the upper part of the right side had a dull sound, which was continued to the upper third part. In the centre was heard a mucous rattle with wheezing. The expectoration was surprisingly abundant, very

thick, and of a most repulsive odor. It was in this state that, on the 28th of March, I commenced the fumigations.

During the first eight days no change was perceived, but towards the 18th of April she felt stronger: her rest was also more tranquil; the skin became firmer; the chest freer, and the appetite returned. The relief appeared wonderful. The patient coughed less from the early part of May, at which time she was so far recovered as to be able to walk on the Boulevards.

Early in June the expectorated matter had lost its bad smell, became mucous and less abundant. The strength was so far restored that the patient could walk, every day, from No. 129, Faubourg, St. Denis, to No. 31, la Rue Bourbon--Villeneuve. Madame Mitteau still feels, occasionally, slight pains in the upper part of the right shoulder, but they are not of long duration; the left lung seems perfectly healthy. In the

right may be observed marked pectoriloquism, towards the upper part, but the rattle that was there remarked, is now scarcely audible. She goes on as well as it can possibly be expected, although she is not particular in her choice of food, nor in the quantity she eats. We must surely consider the disease, if not cured, at least singularly ameliorated.

The effect of the Chlorine, in this case, has been evidently to prolong life, relieve pain, and to restore to her usual pursuits, a patient whom every one had given over.

END OF SECOND MEMOIR.

The following very striking case by M. Costa merits particular attention, as in it, the efficacy of Chlorine appears in a most prominent point of view. The ex-

istence of considerable pulmonary lesions is well marked, not only by the indications of the stethoscope and percussion, but also by the combination of symptoms, more especially the peculiar odor of the expectorated matter and the excessive leanness. It will be also observed that M. Costa, when he had recourse to Chlorine, seems to have had no idea of its *curative* powers in Phthisis, therefore he could have had no favourite theory to demonstrate, nor any prejudices in its favour to have misled him.

Case of Pulmonary Consumption in the third stage, cured by Chlorine fumigations, by M. Costa.

On the 12th March, 1827, I was called to Mademoiselle Genny Wick, a native of Switzerland, aged twenty-eight years, to cure her of what she called a neglected cold. Her high stature, (five feet three

inches), her contracted chest, her delicate constitution, her complexion which resembled the withered leaf of autumn, her eyes that shone with a morbid brilliancy, as also the expectorated blood; the suppression of the menstrual flux, the presence of a cough, dry at first, afterwards attended by an expectoration, abundant, and composed partly of mucous lumps, the great and increasing loss of flesh which accompanied and followed this assumed cold, the oppression which was experienced on the least motion, the difficulty of lying on the right side, the daily shivering fits, the fever and perspirations which attended every night, the want of appetite, the thirst, and above all the dull sound proceeding from the anterior upper part of the left side of the chest, and the total absence of all respiratory sound in this part. From all these symptoms united, I felt assured that it was no mere cold I had to en-

counter, but a consolidation of the upper part of the left lung already probably in an indurated state. I had the greater reason thus to conclude, because the disease was of five months' standing (having commenced in October 1826), because the mother and two brothers of Mademoiselle Wick had died of diseased lungs, and because in several colds she herself had taken since the age of eighteen years, she had not experienced, either hæmoptisis, suppression of the catamenia, nor in a word, any of the symptoms which indicate any particular injury referrible to the lungs.

My opinion in this case, seeming to me well founded, I ordered, with the intention of resolving the consolidation, twenty leeches to the part affected, emollient cataplasms to be renewed several times a day, foot baths, a pectoral mixture, a cup full of asses milk, a waistcoat of flannel, with a vegetable and milk diet.

The leech bites bled abundantly for several hours, from this depletion no good was derived to the patient, for they weakened her greatly, diminished the expectoration and rendered it more difficult, it also increased the oppression and the febrile symptoms. This first failure joined to the natural aversion the patient witnessed to leeches, made me careful, and prevented my recurring to their use, which in some analogous cases, had given me cause to congratulate myself on my success. I contented myself therefore, at least for the present, in pursuing the other means already mentioned, and towards the 20th March, the patient was restored to that state in which I saw her the first time. From the 20th to the 30th of the same month, there was no change in the health of Mademoiselle Genny, with the exception of her expectoration being streaked here and there with blood, and the patient now and then experienced

slight pains in the region of the chest, which she never had felt until then. Prescription; continue the same means, the white looch.

From the 30th March to the 15th April, the expectoration became easier and more abundant; its form was no longer *arrondie*, as it was five days before, but more homogeneous. It began to diffuse a mousy or musty odor; a characteristic, as I have always considered it, of the formation of tubercles. The want of appetite, the thirst, the fever, and the nocturnal perspirations still remain, and seem even to increase. The patient also became visibly thinner, and began already to think herself incurable. The application of the stethoscope to the anterior superior part of the left region of the chest, now indicates an incipient pectoriloquism, corresponding to the middle of the second rib, and a slight mucous rattle exists in its vicinity. Prescription: a blister to the left arm; warm aqueous

fumigations administered by the mouth. Continue the use of the means as before.

From the 15th to the 30th April, the pectoriloquism increased, and became more extensive. On applying the stethoscope or ear to the affected part, a bubbling noise was perceived, produced evidently by a motion communicated by breathing to matter contained in a cavity, formed in the left region of the thorax. That this cavity existed was incontestibly proved by percussion on the chest, which gave a hollow sound in that situation, as also by the nature of the expectoration, and the peculiar manner of its ejection, even if the pectoriloquism and the bubbling sound, before mentioned, could leave any doubt on the subject. The matter expectorated is, at present, decidedly purulent and foetid, more abundant, of a flattened form, and brought up, particularly in the morning, with a degree of ease,

known only to those who have vomicae communicating with a large bronchial canal.

The fear of incurring those consecutive misfortunes, which always attend the absorption of a portion of the matter contained in an open vomica, and the desire of destroying the strong and foetid smell, which infected the breath and sweats of my patient, I determined to have recourse to the employment of the Chlorides, which possess, as every body knows, the property of arresting the decomposition of animal substances, and of restoring to pus the good qualities, of which it is deprived by remaining in a deep seated cavity in contact with air.

It was, I confess, with this twofold idea, rather than with any expectation of its being directly useful to my patient, that I advised a trial of it, by adding to the water used in her fumigations, morning and even-

ing, a pinch of Chloride of lime, and to breathe the vapor thus medicated, for three or four minutes at a time. My advice was followed, and when I paid my patient a visit, five or six days afterwards, she informed me, with an appearance of satisfaction difficult to describe, that the expectoration and perspirations were less, and no longer diffused the least unpleasant smell.

A result thus quick and efficacious, induced me to increase the number of fumigations, not that I had, as yet, the least idea that they would ever effect a cure, but with the sole intention of exciting a slight cough, and thus preventing the matter, secreted by the sides of the vomicae, remaining too long in their contact. This was the 10th of May; and from this day forward, the fumigations were increased from two to three per diem; but on the 15th, the chest becoming painful, the oppression, as also the

fever being increased, we were under the necessity of suspending them until the 20th, and of confining ourselves to the use of the other means. During this short intermission, the expectoration, though less abundant, took again its bad qualities which, with the disappearance of those symptoms, which had at first induced us to suspend the fumigations, now determined us again to have recourse to them, beginning with one in the evening of two minutes' duration.

On the 25th we increased them to two.

On the 30th, the patient was not at all inconvenienced by her fumigations, on the contrary her expectoration was less abundant, of a better character; her nights were more tranquil; the fever and perspirations were sensibly diminished; the strength and appetite were increased; the pectoriloquism became more circumscribed. Prescription: go on as before.

On the 10th of June, the patient was attacked with a violent colic, similar, as she said, to what she had formerly experienced, at each period of menstruation. During the night of the 11th, the menses appeared, in the morning of the same day the patient was calm and cheerful; she had slept part of the night and woke this morning, free from perspiration; the pulse indicates but little fever, the expectoration is almost entirely mucous, white, inodorous, and insipid, the pectoriloquism scarcely exists, and that portion of the lungs which two months ago was consolidated, is becoming permeable to air; the courses are abundant. Continue the same prescriptions. The 15th the menses have ceased only yesterday, and although the patient has lost much blood, she is stronger to day, more cheerful, and her complexion is clearer than before. The cough has almost ceased, and it is only every now and then, that the patient expec-

torates a matter entirely of a mucous character, her strength, appetite, and embonpoint rapidly increase, her nights are good, there is no fever, the perspirations have ceased. Prescription, issue to the left arm, suspend the Chlorine fumigations, a drink of iceland moss, milk, and fruits. The 25th, increase of cough, respiration free, the lung is permeable to air throughout, at least all but a very small part corresponding to the centre of the second rib, which I look upon as the cicatrix left by the obliteration of the vomicae. Continue the same regimen. The issue still continues open, from this time her strength and embonpoint increase rapidly, the menses keep their regular times of appearance. In the month of October, namely three months and a half after her cure, Mademoiselle Wick was married, her change of life did not however at all affect her health, so far from it, she is become pregnant and is brought to bed in

due time of a fine child. Neither her pregnancy, nor her lying in, occasioned any dereliction from health, so that I think myself fully authorised to consider her cure as complete and permanent.

REFLECTIONS.

This case needs no comment to show the good effects of Chlorine, as evolved from chloride of lime, as it is, in effect, of the same nature as those which demonstrate in an incontestible manner, the efficacy of any therapeutic agent. Mademoiselle Wick takes cold during the winter of 1826; she neglects it at first, hoping that it might end like those she had had for ten consecutive winters. But this time, whether it was that the bronchial inflammation rose higher, in consequence of the frequent recurrence of the same morbid phenomenon,

or whether it was that the natural predisposition she received from her mother, found a more favourable opportunity of developing itself, the malady did not, as before, confine itself to the mucous surface of the bronchiæ; it passed these limits, and invaded the parenchyma of the lungs, a considerable consolidation results, hæmoptysis, fever, menstrual suppression, and the development of a greater or less number of tubercles, awakened at last the attention of the patient, but when I was called in, five months had elapsed, and consumption was manifestly present. Too unhappily convinced, that when an affection of the chest has arrived to this degree, it is almost universally beyond the reach of art, I confined myself in the first instance to the use of palliative means. I had at once recourse to leeches, with the view of diminishing the extensive consolidation I had to encounter, but this, far from relieving the patient,

seemed rather to add a fresh impulse to the activity of the disease. Thus it was easy to conclude, that from this period the tubercles were softening, that in fact, the suppurative process had commenced; lastly, that the disease had proceeded to the third stage. What gave us the greatest confidence in the opinion, was, the nature of the expectoration, the increase of febrile symptoms, and lastly, the indications of the stethoscope and percussion. The vomica having been formed and now burst, the state of Mademoiselle Wick became more critical, in consequence of the air in contact with the suppurating membranes, vitiating their secreted products. Thus it was, that in a few days afterwards, the expectorated matter until then puriform, became purulent; that the odor of must or mice which it had at first, changed to fœtid, that the fever and colliquative sweats which terminated the febrile paroxysms also in-

creased. It was at the same time that the want of appetite, the thirst, the marasmus, and lastly, all the terrible assemblage of symptoms which characterize Phthisis advanced to the third degree, proceeded with rapid strides. Now I ask, what would have been the end of such a malady, without the beneficial effects of Chlorine? The answer is not a doubtful one, at least in my estimation. It may, indeed, be objected that Bayle, Laennec, MM. Cayol and Rullier have witnessed the spontaneous healing of vomicæ—granted; but in the case of spontaneous cure, the vomicæ were almost constantly produced by acute inflammation, caused frequently by a blow or fall upon the chest, in persons, strong, of good stamina, and free from any predisposition. Here, on the contrary, the vomicæ were the result of the suppuration of a portion of lung slowly consolidated, produced by an internal cause, and consequent

upon predisposition; What a striking difference!!!

In the greater part of the instances of spontaneous healing of vomicæ, found in authors or collected from private sources, nature has had all the credit of the cure: art did scarcely any thing. Here, on the contrary, Art has done every thing: Nature would, evidently, have been powerless without the agency of the chloride of lime; it is to it, and to it only, that we owe the happiness of being enabled to publish this interesting case. It was the employment of the chloride of lime which ameliorated the deadly qualities of the expectoration. It is it which enabled the ulcerated sides of the vomicæ to form healthy pus. Again, it is this agent, that by provoking a slight cough, favoured the expulsion of matter contained in their cavity, and prevented its accumulation. Lastly, it is to this twofold effect, that we owe the rare happiness of

seeing the sides of the vomicae contract themselves, approach each other, collapse, and thus obliterate a cavity that would infallibly have been the cause of the death of Mademoseille Wick.

This interesting case attests, in common with many others, the eminent blessings that chemistry has conferred on mankind, by discovering to us the chlorides, which have already rendered so many and great services to humanity, and which perhaps, as far as man is concerned, is destined to become a powerful and efficient means for the preservation of his health.

In addition to the foregoing testimonies, I am authorized by Mr. Wade, of Dean Street, Soho, to state that, in his practice, he has made use of Chlorine in some few

cases of Phthisis. He has generally found that its employment has diminished the excessive perspirations, and by renovating the digestive organs, has improved the general health. All the cases in which he has used the Chlorine, were in a very advanced stage, a mitigation of symptoms was, therefore, all that could have been rationally expected.

FINIS.

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