

Address on the treatment of pulmonary consumption, delivered at the Glasgow Pathological and Clinical Society, 14th November, 1882 : with a note of a visit to Davos-Platz / by Dr. M'Call Anderson, Professor of Clinical Medicine in the University of Glasgow, President of the Society.

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ON THE
TREATMENT OF
Pulmonary Consumption,

*DELIVERED AT THE GLASGOW PATHOLOGICAL AND
CLINICAL SOCIETY, 14th NOVEMBER, 1882.*

WITH NOTE OF A VISIT
TO DAVOS-PLATZ.

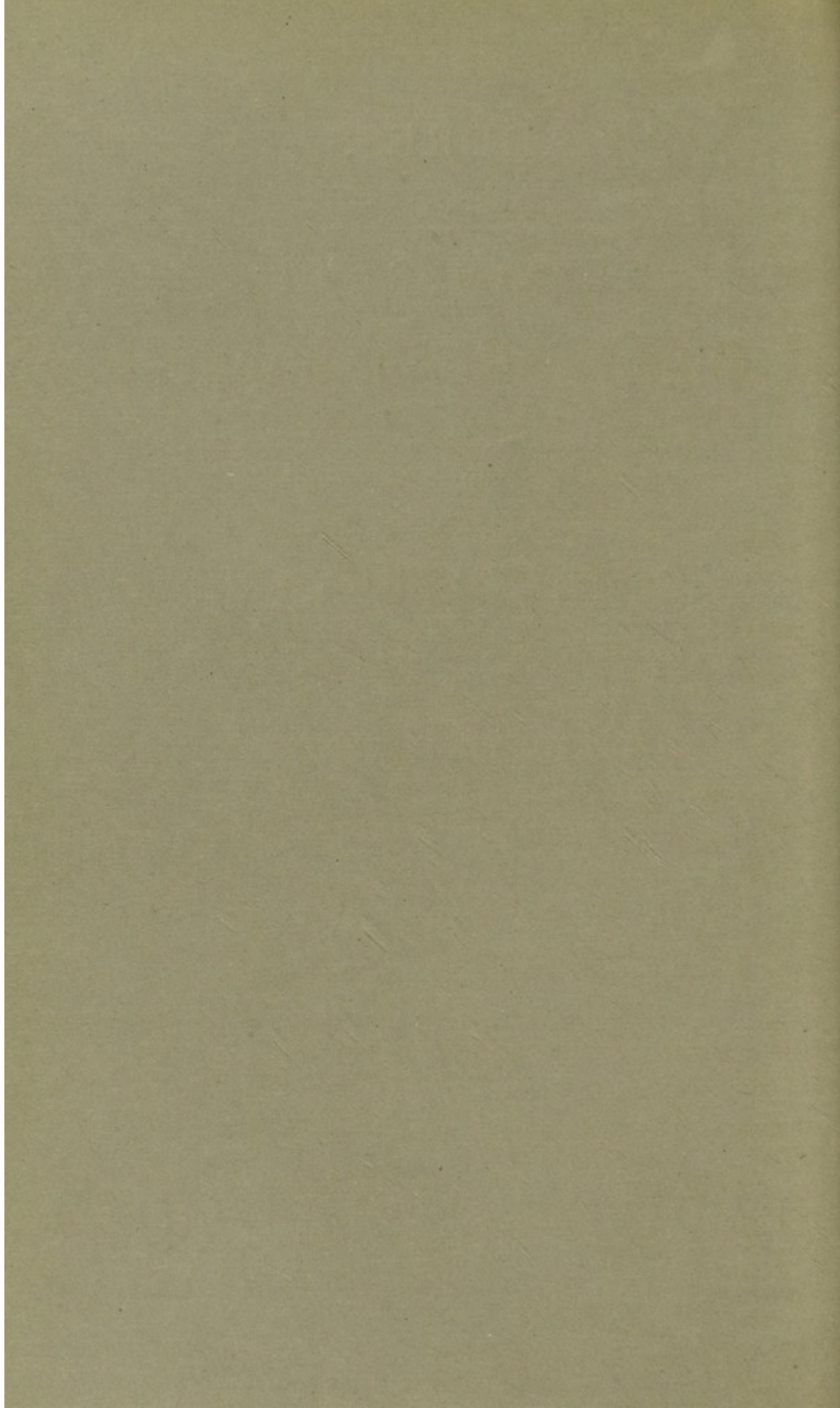
BY

DR. M'CALL ANDERSON,

PROFESSOR OF CLINICAL MEDICINE IN THE UNIVERSITY OF GLASGOW,
PRESIDENT OF THE SOCIETY.



GLASGOW:
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ADDRESS ON THE TREATMENT OF PULMONARY CONSUMPTION,

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GENTLEMEN,—The treatment of a disease which year by year carries off a considerable portion of the population of these islands, and which seems to take a special delight in seeking out for its victims those who are in the very spring-time of life, and who are eagerly pressing forward towards the goal of their ambition, cannot fail to be of the deepest interest to us. And as every year brings in its train novel views with regard to its pathology and treatment, it seems well that we should from time to time review our position as to its management, and consult together as to the best methods to be pursued.

In introducing this subject, we must be content with stating in a very general way the views which we are at present inclined to accept, in the hope that at some time during the session the subject may be discussed, and the opinions of the members of the Society fully elicited.

In the first place, then, we must make sure of our diagnosis: this is often an easy matter indeed, but sometimes

we may, for a while at least, be in doubt whether we have before us a case of phthisis, or some other disease such as enteric fever, bronchitis, bronchiectasis, or the so-called syphilitic phthisis. It would be out of place to discuss this subject fully, but we may pause for a moment in order to say that we believe syphilitic affections of the lungs to be much more common than is generally supposed, and to be usually mistaken for pulmonary consumption. And as the former affection must be treated by means of anti-syphilitic remedies, and can thus be surely arrested if seen in the early stage, we may be permitted to point out shortly a few of its more prominent diagnostic features. There is, in the first place, the history of the contraction of syphilis—generally years before in these cases which are apt to be mistaken for phthisis—and the occasional presence of concomitant syphilitic affections, such as a tubercular eruption on the skin, gummy tumours in the subcutaneous cellular tissue, deep ulceration of one tonsil, ulceration of the tongue, disease of the testicle, &c. The discovery of such conditions would lead us to suspect that the lung affection was of a syphilitic nature, but would not prove it, because there is no reason—but rather the contrary—why a syphilitic subject should not contract phthisis; but there are certain features of the pulmonary mischief itself, which, when typically present, may convert our suspicions into a certainty. In pulmonary syphilis the affection is usually unattended by fever; the right lung is much more frequently affected than the left (Pancritius found that of 94 cases, in 76 the right, and in 18 only the left was attacked); and the physical signs, instead of making their appearance at the apex, are generally at first confined to the middle portions of the chest, the reason being that the disease consists of hyperplasia of the interalveolar and peribronchial connective tissue whose starting point is the hilus, from whence

it spreads outwards and only secondarily involves the parenchyma of the lung.* Again, the examination of the sputa may sometimes help the diagnosis. For, as pointed out by Günz, little irregularly shaped, grayish-white or brownish, firm but elastic masses, which sink in water, from the size of a pin-head to that of a pea, are often found in the expectoration: these present the microscopic characters of syphilitic gummy products.† On the other hand, there is a total absence of elastic fibres, and of the tubercle bacillus of Koch, such as we find in the expectoration of phthisical subjects. Finally, we should expect either recovery or decided improvement to follow upon a judicious course of anti-syphilitic treatment, which would pretty surely prove prejudicial in non-syphilitic subjects.

Supposing, now, that there is no doubt as to the diagnosis our treatment must of course vary according to whether we have to deal with acute or chronic phthisis. By the former we do not mean ordinary cases of phthisis associated with fever, but those rare forms in which there is high and continuous fever, generally of the typhoid type, so that the disease bears some superficial resemblance to typhus, or to a severe attack of enteric fever, which tends to run its course in a few weeks, and to terminate fatally, unless grappled with energetically, and before the lungs are irremediably damaged. We need not stop to inquire whether the case is one of acute miliary tuberculosis, or of the so-called acute "pneumonic phthisis" (although we believe that the diagnosis can often be made), because it

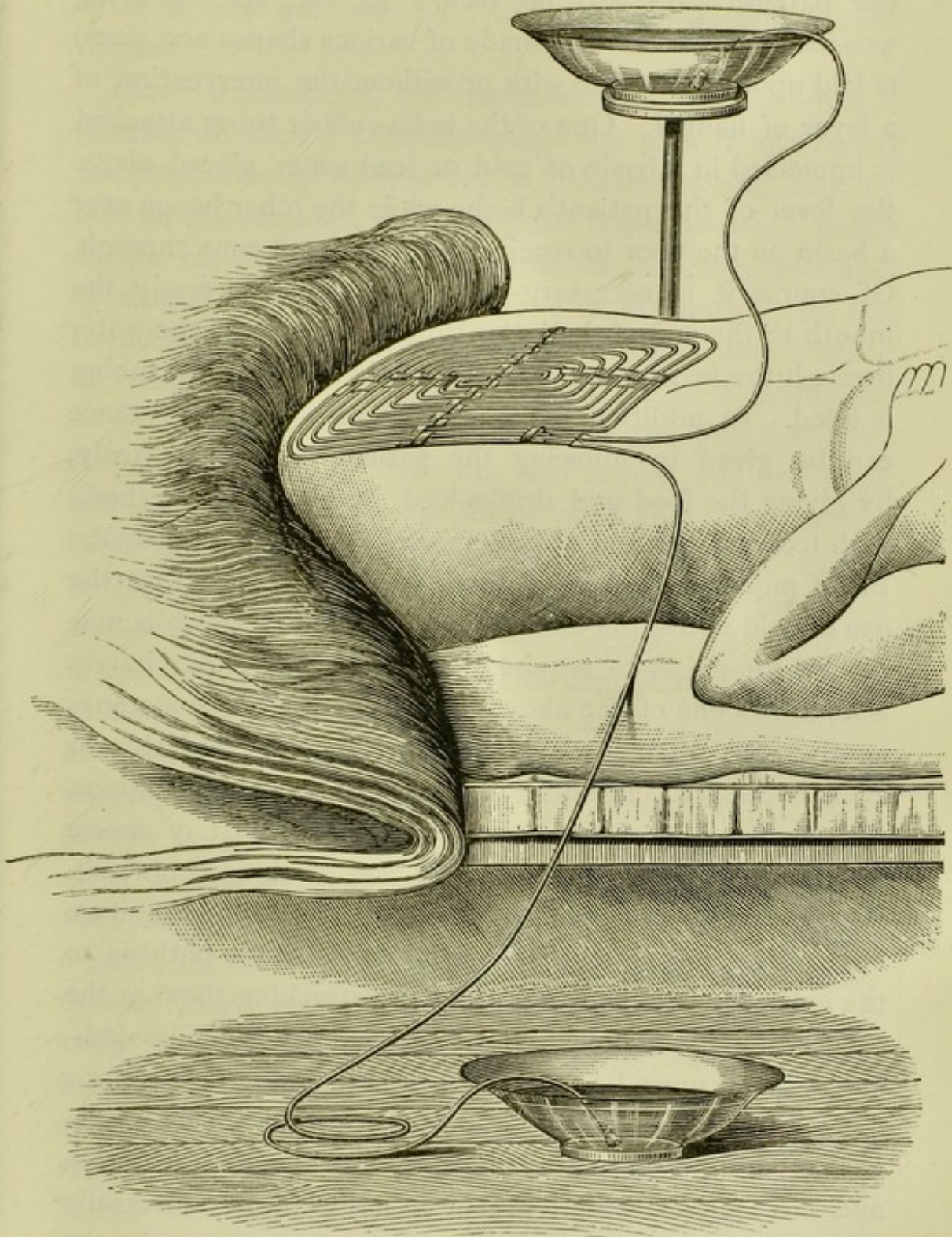
* *Ueber Lungen-Syphilis – Erfahrungen aus der Praxis.* By Dr. F. W. F. Pancritius, Berlin. Quoted from the *London Medical Record*, 13th July, 1882, p. 296.

† *Diagnose der Lungen Syphilis am Lebenden durch gummöse Sputa bei gleichzeitiger Hämoptyse.* Von Dr. J. Edmund Günz, in Dresden. — *Betz Memorabilien*, 1882. 4 Heft.

is now pretty generally believed that tubercle is the essential basis of both, the tubercular deposit being the prominent feature in the former, while inflammation is the most striking characteristic of the latter ; but we may be allowed to express the opinion that of the two, the most surely fatal is the "pneumonic" form, because it is associated with such rapid and widespread destructive inflammation. It is unnecessary to dwell at length upon the treatment of acute phthisis, as we have already given the results of our experience in former communications, to which in the main we still adhere.* The two principal indications are—first, to keep up the strength ; and second, to bring down the fever. In endeavouring to fulfil the first indication the services of a thoroughly trained and reliable sick nurse are indispensable, and the hygienic and other surroundings of the patient should be satisfactory ; hence it happens that when the disease is encountered amongst the working classes, who are unable to afford them, it is pretty sure to terminate fatally. The patient should be fed on fluid food every hour, or even every half hour, day and night, and stimulants are required early in the attack, and may often be taken with advantage even to the extent of half-an-ounce every hour. In fact, the dietetic treatment should correspond with that of a case of fever presenting symptoms of a similar degree of severity. The second indication is met by the use of antipyretic remedies, such as Niemeyer's antipyretic pill, consisting of a grain of quinine, half a grain of digitalis, and a quarter a grain of opium, which may be given every four hours ; or large doses of quinine (from 10 to 30 grains) given once in 12 to 48 hours, and, if possible, at the time when the temperature commences to rise ; or cold in some shape or other. Until recently, we have been in the habit of applying iced cloths to the abdomen in

* For illustrative case see Appendix A, p. 23.

the manner formerly described,* but now we often prefer to



use Leiter's Temperature Regulators, as they can be em-

* See Author's *Clinical Lectures on the Curability of Attacks of Tubercular Peritonitis and Acute Phthisis*. Glasgow: James MacLehose. 1877. (P. 35.)

ployed with much greater ease, and without disturbing the patient. As will be seen from the accompanying woodcut the lead tubing (made of various shapes and sizes) is laid upon the surface with or without the intervention of a layer of flannel. One of the india-rubber tubes attached is immersed in a basin of cold or iced water placed above the level of the patient's body, while the other hangs over a basin on the floor to receive the water as it runs through. Of course it is necessary—to begin with—to apply the mouth to the end of the latter tube, and to suck the water through the instrument until the whole length of the tubing is filled. In addition to these measures some assistance can be given by allowing the patient to suck ice freely, by giving the food and drinks iced, by sponging the body with iced vinegar and water, or even by using iced enemata. But if milder measures fail there is nothing for it but the use of cold baths, the mode of employment of which is now so well known as to require no description at our hands. Sometimes one of the above measures succeeds, sometimes another, but often a combination of them is desirable or even necessary. In addition to all this, any complications, such as diarrhœa or excessive perspiration, must of course be attended to just as we do in a case of chronic phthisis. A considerable experience points to the conclusion that if we are to bring our patients labouring under acute phthisis to the harbour of convalescence, it is by attacking them at the earliest possible moment, and somewhat on the lines indicated, but it must be done *with energy, and with confidence as to the issue*, else it will be imperfectly done. The members of our profession are very conservative in their instincts, and are loath to admit that a disease, almost universally regarded as necessarily fatal, can be brought within the range of therapeutics, but we believe that sooner or later it will be generally admitted that acute phthisis may be

recovered from in a considerable proportion of cases, just as it is now admitted that chronic phthisis is a curable disease.

Before commencing the treatment of a case of chronic phthisis we should carefully weigh the patient, and repeat the process every week or two, a little book being kept by him for the purpose: this is of great importance as a gauge of the efficiency of our measures, for a progressive gain of weight is a sure indication of improvement. In this form there is a great tendency towards a routine method of treatment such as cannot fail to be most prejudicial to the interests of our patients. On the principle that the system must be built up, beef steaks, mutton chops, cod liver oil, and strong tonics are often given in the most indiscriminate way and without sufficient regard to the surroundings of each case, as we have seen over and over again. The time at our disposal will not allow of our considering the treatment of complicated cases, such as those in which Bright's disease, amyloid degeneration, or tubercular disease of the larynx are present; but in uncomplicated cases there are two factors which must always be specially taken into account before deciding upon a plan of treatment. The one is the presence or absence of fever, the other the state of the digestive organs: the first is more or less present in almost every case in which the pulmonary mischief is advancing, especially towards the evening, while dyspepsia is a very common concomitant, and indeed often precedes the lung disease. The fever must be attacked in the manner already specified in connection with acute phthisis, although the antipyretic remedies do not require to be pushed with such vigour, and the diet, though supporting, must be of the lightest kind, and approaching to that given to a person labouring under one of the specific fevers. The dyspepsia,

on the other hand, must be treated on the same principle as we would treat similar derangements of the digestive organs occurring independently of phthisis. Into this subject it would be quite inopportune to enter fully at this time, but we may say that in addition to careful dieting, excellent results are often obtained by the use of a teaspoonful of Benger's liquor pepticus, or m viii. to x. of dilute hydrochloric acid in a glass of water an hour after meals. We cannot tell beforehand which of these will be likely to prove the more beneficial, although a deficiency of acid is more frequently at the root of the matter than a deficiency of pepsin, but each may be tried in turn; for we do not think it probable that our patients will submit to have a portion of the contents of their stomachs removed, and samples tested with these agents to see which more powerfully acts upon them as suggested by Leube. "I let the patient," says Leube, "take about twenty-five grammes of Carlsbad salt on an empty stomach, so as to cause anything which may remain in it to pass downwards; then about noon some plain, cold roast veal, with or without bread. In from one to two hours afterwards I take out a portion of the contents of the stomach with the stomach-sound, and convince myself concerning its smell and reaction, as well as how far the process of solution has advanced in the pieces of roast meat. I next put into three bottles equal quantities of the filtered contents of the stomach, and hang in each of them a bundle of boiled fibrin of about equal volume. Into one of these bottles I put nothing further, into the second two drops of hydrochloric acid, and into the third two drops of a neutral solution of pepsin. All three bottles are then placed in a large vessel of water, the temperature of which is kept at 95° - 104° Fahr. The digestion which takes place in the two last bottles will show whether one or the other of the

additions effects a more rapid solution of the fibrin than occurs in the first bottle, or whether they remain without import." *

We shall now suppose that fever and digestive derangement are absent, or have been removed, and that we have to deal with an uncomplicated case of chronic phthisis. Under these circumstances the remedy *par excellence* is cod liver oil, which is best given of the finest quality, and without any admixture if possible, although a little salt may be put upon the tongue before and after it is swallowed. The amount taken should not exceed three ounces per day, as it has been proved that when larger quantities are administered some of the oil passes through undigested; but the more nearly we can approach that amount the more likely are we to get the full benefit of the drug. In some cases Kepler's Malt Extract with cod liver oil may be substituted for the pure drug; and children often take greedily and with benefit Mackenzie's Compound Cod Liver Oil Emulsion, which, however, is generally too luscious for adults. When cod liver oil is mentioned our patients are exceedingly apt to say, "I never could take cod liver oil," or, "Give me anything but that;" and in our experience there is far too great a tendency to yield to their remonstrances, and to give instead cream or some other comparatively inefficient substitute. The fact is, that in cases such as those which we are now considering nothing can take the place of cod liver oil, and we should tell our patients that in objecting to it they are quarrelling with the best friend they have in the world. A little firmness and tact and perseverance are usually all that is required, and it is often surprising to observe in a little

* "On the Treatment of the Diseases of the Stomach," by Prof. W. O. Leube, in Jena. *German Clinical Lectures*, p. 487. The New Sydenham Society. London, 1877.

while how those who said they could not take it, come to swallow it in full doses and even with relish. It may, however, be omitted for a few days from time to time, if the weather is hot, or the appetite fails, or if the patient becomes bilious, (in which case a little antibilious medicine may be cautiously administered,) but in no case should it be discontinued for a single day after the cause for which it has been laid aside has disappeared. In many cases phosphorus may be given with advantage either in the form of pill or in the shape of Richardson's Phosphorised Cod Liver Oil; and sometimes benefit is to be derived from the use of the hypophosphites, although we confess that we are unable to endorse the extravagant encomiums which have been passed upon them in some quarters.

Tonics, such as quinine, the mineral acids, and vegetable bitters, are useful adjuvants, and must be selected in accordance with the surroundings of each case. The usual accompaniment of anæmia has led to the most wholesale and indiscriminate use of iron, which seems generally to be regarded in the light of a specific in anæmic states. The view which we have been led to take with regard to the value of the preparations of iron is, we fear, very heterodox, but still we are bound to state that while we hold steel, given in the form say of Blaud's pills to the extent of six daily, to be an absolute specific in the treatment of true chlorosis, we believe it to be of very subordinate value in cases of anæmia, and we think it not unlikely that one reason why it is held in such high esteem in the treatment of the latter is, that chlorosis is often mistaken for anæmia. At all events, we have no hesitation in saying that in anæmia such as we meet with in phthisis, arsenic is infinitely preferable to iron, and it is now pretty generally admitted that iron fails while arsenic sometimes succeeds—if we see the patient early enough—in that terrible form

of bloodlessness known by the name of pernicious anæmia. The virtues of arsenic have long been recognised in the treatment of skin affections (indeed in them the tendency is to give it as a matter of mere routine), and we believe the time is not far distant when it will be regarded in the light of the most valuable tonic in the pharmacopœia.

The night sweats of phthisis give rise to great discomfort and intensify the weakness of the patient, so that it is very desirable to arrest them. Being the combined result of fever and debility, they are likely to be alleviated by any of the foregoing measures which are calculated to reduce the fever and give tone to the system, and thus to some extent the treatment of this troublesome symptom is merged in the general treatment of the disease, but usually special measures are required in addition, which may not only entirely remove the sweating, but also in some cases do good in other respects. During the last two years we have, with the kind assistance of Dr. William G. Dun, been making comparative trials of various remedies, and the conclusions to which we have come may be summed up as follows :—When night sweats are present the patient should be fed by night as well as by day, and should in every case have some food and stimulant the last thing before falling asleep: he should also use a gauze flannel night dress, which absorbs the moisture without rendering the patient uncomfortably hot. Sponging the body is often of service, but vinegar and water, the usual application, while agreeable to the patient, has little effect as a rule: it is very different, however, if a tablespoonful of a mixture of equal parts of tincture of belladonna and water is employed, or a drachm of quinine dissolved in a pint of alcohol, as recommended by Dr. Currie of Lebanon.* He recommends that

* *Michigan Medical News*. Quoted from the *London Medical Record*, 25th July, 1882, p. 271.

a small part of the body should be sponged at a time, care being taken not to expose the skin to the air. It may be repeated if required every two hours, and he holds it to be infallible. (?) Oxide of zinc and phosphate of lime given in doses of grs. x and $\mathfrak{z}\mathfrak{i}$ respectively, and quinine and sulphuric acid in ordinary tonic doses have proved comparatively useless, while small doses (grs. iii) of Dover's powder, ergotine (grs. ii to iv) and agaricus (grs. x to xx), on the other hand, are more effectual; and we can speak most highly of the use of a saturated watery solution (about 1 in 180) of picrotoxine, the alkaloid of *Cocculus Indicus*. Dr. Murrell recommends $\mathfrak{z}\mathfrak{i}$ of this solution to be mixed with $\mathfrak{z}\mathfrak{viii}$ of water, of which he gives from $\mathfrak{z}\mathfrak{i}$ to $\mathfrak{z}\mathfrak{iv}$ at bed time, or $\mathfrak{z}\mathfrak{iii}$ to $\mathfrak{z}\mathfrak{v}$ during the day, the last dose being taken at night.* We have found, however, that this remedy is much more effectual when given subcutaneously, the initial dose being 5 min. of the undiluted saturated solution, which may be gradually increased either until the desired effect is produced, or until there is some evidence of its disagreeing. But of all remedies that which has proved most certainly efficacious is the active principle of belladonna—atropia. It may be given by the mouth, in pill or solution, at bed time, the initial dose being $\frac{1}{10}$ grain, but it is often necessary to increase the strength, which it is quite safe to do so long as the disagreeable physiological effects of the drug (dryness of the throat, dilatation of the pupils, dimness of vision, &c.) are not apparent. It is, however, preferable, when possible, to give it subcutaneously, and the solution which we are in the habit of using is gr. i of sulphate of atropia dissolved in 500 mins. of water, the initial dose being $\mathfrak{m}\mathfrak{v}$ ($\frac{1}{100}$ gr.). The following case, from among many others, illustrates the value both of picrotoxine and of atropia.

* *The Practitioner*. October, 1879.

Mrs. W., æt. 30, admitted to the Western Infirmary, 1st September, 1880, labouring under phthisis of eighteen months' duration, involving a considerable portion of the upper part of the left, and the apex of the right lung, with moist râles. When admitted she sweated so much that in the morning her night dress and bed sheet required to be changed. On the 2nd September the subcutaneous injection of $\frac{1}{100}$ gr. of sulphate of atropia was commenced, and continued for about fourteen days. The sweating during the day ceased at once, and at night it became gradually less, so that at the end of the fortnight it had ceased altogether. The injections were then accidentally discontinued, and slight sweating again appeared, but never to the same extent as before. On the 22nd October the hypodermic injection of a saturated watery solution of picrotoxine was ordered, the initial dose being 3 mins., to be increased by 2 mins. each night until the sweating was controlled. This was continued for four nights only when it was stopped on account of the skin at the sites of the punctures becoming inflamed. Slight perspiration was observed by the patient for two nights, after which it ceased completely. The only other medicinal treatment consisted in the use of a simple cough mixture, and up to the date of her dismissal from hospital, upon 8th November, 1880, there had been no return whatever of the sweating.

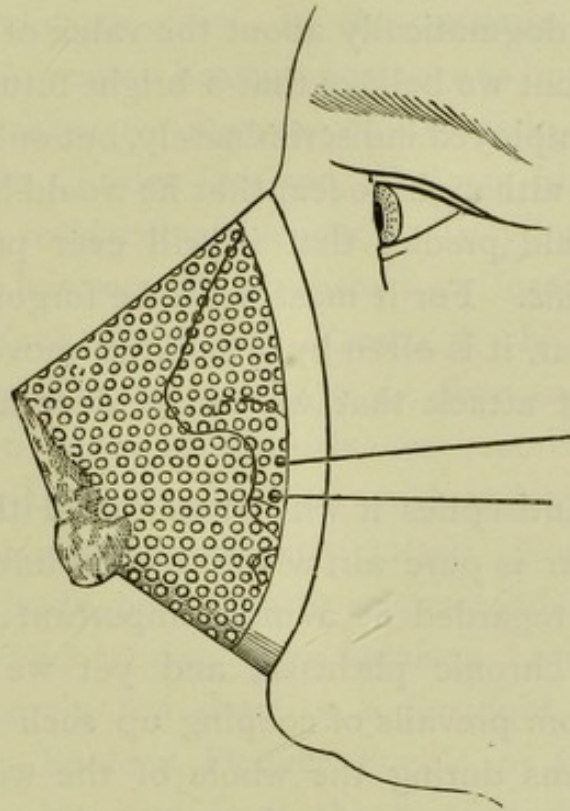
Sometimes the best results are obtained by giving the atropia and picrotoxine solutions in combination; but whatever drug is used we must on no account stop it whenever the perspiration has been arrested, else a relapse is pretty sure speedily to occur, as in the case just quoted.

It may seem strange to some that we have not hitherto alluded to cough mixtures, which appear to be so popular with the profession in the treatment of pulmonary affec-

tions, but the reason is that we hold them to be of very subordinate importance, and that taken overhead mankind would probably be gainers and not losers were they entirely discarded, for not only are they often ineffectual, but they are apt to derange the digestion and to take away the appetite. We do not, of course, mean to say that they should never be employed, but charily and with great discrimination, and when given it is well to combine them with tonics; thus, $\mathfrak{m}\text{iii}$ of dilute hydrocyanic acid and $\mathfrak{m}\text{v}$ of ipecacuan wine, with x of spirit of chloroform and dilute nitric acid may be given with $\mathfrak{z}\text{ss}$ of infusion of calumba; but often we can best relieve the cough by giving an opiate at night such as $\mathfrak{m}\text{xxv}$ of chlorodyne, leaving the stomach unfettered to perform its functions by day.

It is far otherwise, however, with regard to the inhalation of medicated vapours. These have long been used to a certain extent, even in the times of Hippocrates and Galen, though often with a wavering hand, and on theoretical grounds rather than with a practical hope of success. But recently a new impulse has been given to such measures by the remarkable results of the investigations of Koch and others, which seem to show that there is a veritable "materies morbi" at the root of consumption—the "tubercle bacillus"—and which can best be destroyed by attacking it directly in its citadel. Indeed, the fear now is that antiseptic inhalations will be used in the most wholesale way, and without due regard to the surroundings of each case. For it must never be forgotten that the more the acute form of the disease is approached, the more cautious should we be in the use of stimulating vapours. In carrying out this treatment we confess that we have a preference for the naso-labial respirator of Mackenzie, or Mayer and Meltzer's modification of the same, or—in the case of hospital patients where expense is an object—Dr.

Burney Yeo's cheap substitute ;* but whatever instrument is employed it should not be used for more than one patient, even after disinfection, if it can be avoided, owing to the



possibility of transmitting the disease to others. As all are aware, an immense variety of medicaments have been used, such as carbolic acid, tar, creasote, turpentine, tincture of iodine, eucalyptol, fir wood oil, &c., but that for which we at present have a preference, of which we have had most experience, and from which good results have been obtained, is a mixture of equal parts of *pure* creasote and spirit of chloroform, the latter serving to dilute the former, while at the same time it acts as a sedative to the inflamed surfaces, and tends to relieve the cough. The

Which may be obtained for a few pence from Messrs. Corbyn & Co., 300 High Holborn, London. For a description of this see *The Contagiousness of Pulmonary Consumption and its Antiseptic Treatment*, by J. Burney Yeo, M.D. London : Churchill, 1882, p. 56.

respirator may be used at first for about ten minutes two or three times a day, but whenever the patient has become accustomed to it, it may be employed for gradually increasing periods until at last it is worn all day. It is too soon to speak very dogmatically about the value of this method of treatment, but we believe that a bright future lies before it, if it is not employed indiscriminately, but only in properly selected cases, although we fear that he would be a sanguine man who would predict that it will ever prove to be a veritable specific. For it must never be forgotten that, just as in actual war, it is often by a flanking movement rather than by direct attack that we can achieve a victory over disease.

But of all antiseptics it will be admitted that the most valuable by far is pure air, which, with suitable surroundings, is justly regarded as a most important factor in the treatment of chronic phthisis; and yet we find that a common custom prevails of cooping up such patients in a couple of rooms during the whole of the winter months, regardless of the serious disturbance of the general health which almost inevitably follows upon such a course. The question of climate, then,—especially during the winter and spring months—merits the most serious attention of those who would grapple successfully with this disease. It would be quite out of place, within the scope of a paper, to discuss this subject at length, but we may say that, without desiring to depreciate in any way the value of the health resorts in the south of England, the Riviera, &c., we have seen the best results to follow upon a residence in high mountain valleys, and from long sea voyages. As regards the former we have an abundant choice in various parts of the globe, such as the Neilgherry Hills, the Kirghiz Steppes of Asiatic Russia, Davos Platz and the Engadine in Switzerland, and numerous health resorts in the United States, Ecuador, and

Mexico. We have already in a former communication * sufficiently indicated the special virtues of a residence at Davos Platz which is peculiarly applicable to those who have sufficient means at their disposal, and whom a cold and bracing climate suits. In the opposite class of cases many of the American health resorts are to be recommended. As types of these we may select Colorado, and Quito in Ecuador. Dr. Charles Denison, who was himself cured of phthisis by a residence at Denver, a city lying at an altitude of 5,200 feet, has recently published an interesting volume on *Rocky Mountain Health Resorts*.† He tells us that from January 1874, to July 1879, *i.e.*, four and a half years, only fourteen cases of phthisis are recorded as having originated in Denver, several of which at least he found on inquiry to have been erroneously classed. For consumptives visiting Colorado he specially recommends camping out. "Let the invalid tourist," says Denison, "on his arrival in Colorado, remain ten days or a fortnight in one of the lower towns—Boulder, Denver, Pueblo, or Canon City, as the case may be—and from thence, if desirable, advance gradually, by rail, horseback, or wagon, to higher levels, as the enfeebled lungs accustom themselves to the rarefied air.

"One of the best methods of gaining the altitudes, and of obtaining the highest possible benefit from air, sunshine, exercise, and elevation, is by *camping out*. In the pre-railroad days, when all who crossed the plains were compelled to do so in a wagon, or with an ox-team, the degree of improvement was greater among the consumptive invalids than it is at the present time, because then all phthisical patients, even though they left home upon a mattress, *must* live in the dry open air, sleep under the stars, and often *do their own cooking*. . . .

* See Appendix C, p. 30.

† Boston: Houghton, Mifflin & Co. 1881.

"The charm of this unique country lies in its variety, its capability of developing new and interesting features, and the novel experiences it offers wherever one may turn. The mountains, with their beautiful parks and canons, are accessible from most of the first stopping points upon the railroad, by less than a day's ride.

"Armed, equipped, and outfitted, a party may follow one of the creeks up a rugged canon, camping at nightfall upon the banks of the stream beneath the crags; finally they reach a park above, where they pitch their tent in a wooded vale near a tumbling mountain stream, or,—

‘By shallow rivers, to whose falls
Melodious birds sing madrigals,’

and spend weeks delightfully, sketching, botanising, geologising, fishing or hunting, but always and ever recuperating. . . . As one has wisely said, ‘No one need be afraid of the sunlight of Colorado. It has all the beneficial effect of sunlight in other countries, with none of its enervating effects common elsewhere. *Bask in it*, enjoy it all you can, for few have as yet fully appreciated the beneficial effects of the chemical action of sunlight on the blood.’

"As for the sunsets of Colorado, they are, as we have said, truly unsurpassed. No artist, without incurring the imputation of exaggeration, could do full justice to the vivid tints and gorgeous colours which bathe our western skies after the sun has sunk below the mountain horizon.

"To see one of these camping parties coming in from the mountains after ‘roughing it’ for a month or two, is sufficient to convince the most incredulous of the utility of the *régime*. They left the plains thin, languid, and pallid; they return bronzed and rugged, with elastic tread and full chests, gladly owning that to the experiences of camping out they owe a new lease of life. It is an opinion which I have previously expressed, that to the fact of *sleeping upon*

the ground in the pure dry air, amid the balsamic exhalations of this primitive resting place, may be attributed much of the happy result of camping out. The system, roused by the tonic influences of earth and air, wakes into new life and vitality, and morbid feelings and conditions wear away."

Quito, in Ecuador—on the line—with a population of 70,000, is about 9,000 feet above the level of the sea, and backed both east and west by mountains, the highest of which has an elevation of nearly 20,000 feet. It is thus well sheltered, and the atmosphere is both dry and warm, and equable. Dr. Domec, who spent about four years there recently, states "that in a large room, with the door and window open day and night, he found the temperature to oscillate all the year round between 57° and 65° Fahr. . . . and that during four years he watched daily the thermometer, placed in a large drawingroom of the house in which he lived, without a fire, and open to every wind day and night. He never saw it, between 6 P.M. and 10 o'clock at night, above 63° or below 57° Fahr. Sometimes in the night, with the wind from the mountains, the thermometer was lower, but the falling of the temperature was always of short duration, and its fall never reduced that of the room below 57°. . . . He only saw two or three cases of spontaneous phthisis among natives during that time, and in all cases of inherited phthisis from the seacoast that he met with, the progress of the disease soon appeared to be arrested." *

As regards the latter (sea voyages) it must be noted that a voyage has a very different effect from a residence on the coast, and sailors have frequently informed us that they always suffered from colds when on shore, which never

* *Consumption as a Contagious Disease.* By Daniel Henry Cullimore. London: Baillière, Tindall & Co.

disappeared till they were fairly out at sea again. One of the most suitable voyages, and from which most excellent results have often been observed, is round the Cape to Australia in a *first class* ocean steamer, the voyage being so timed that the patient leaving this country in October arrives in Australia about the close of the year. But a mistake which is very commonly made by patients who have recovered their health on the voyage out, is to disregard instructions, and, instead of returning after a short stay, to remain in Australia, and especially in towns such as Melbourne, where consumption is very rife, and where all the improvement they have experienced is apt soon to be lost, too often never to be regained. Much benefit is also frequently obtained from a trip to the Mediterranean during the winter and spring months.

We are well aware that many points in connection with the treatment of phthisis have not even been touched upon and that others have been treated in a most cursory way, but all that we could attempt to do was to give a slight sketch of the views which our present experience has led us to adopt, and we shall consider that the time of the members of the Society has not been entirely misspent if we have succeeded at any point in interesting any of you with regard to a subject of the deepest importance, and in connection with which a wide divergence of opinion may reasonably be entertained.

APPENDIX—A.

CASE ILLUSTRATIVE OF THE SUCCESSFUL TREATMENT OF ACUTE PHTHISIS.*

ADAM B., aged 25, carter, was admitted into the Western Infirmary of Glasgow May 20th, 1879. His father and mother seemed to have died of heart-disease; and, of a family of five, two died in infancy, while a brother and sister, both older than himself, were alive and well. He had been very intemperate in his habits, but never had an hour's sickness until the onset of the present illness, four weeks before admission. It set in on a Sunday morning with a feeling of sickness, which caused him to return to bed. In the evening, he began to cough, and expectorated blood, at first black and clotted, he said; afterwards, bright red. The hæmorrhage continued for four days, but in greatly diminished quantity, and consisted more of a blood-stained spit than of unmixed blood. The cough continued severe all this time, but disappeared in great measure with the hæmoptysis, about the fourth or fifth day. The day after the onset of the hæmorrhage, he experienced severe pain in the right side of the chest, referred to the mammary and suprascapular regions, aggravated by coughing, and by lying on the right side. A week after he lay down, the bowels began to be troublesome, moving frequently as often as five times in twenty-four hours; the stools being thin, and yellowish in colour, but not very copious. They had continued in this state ever since. He had never passed any blood. At first, the

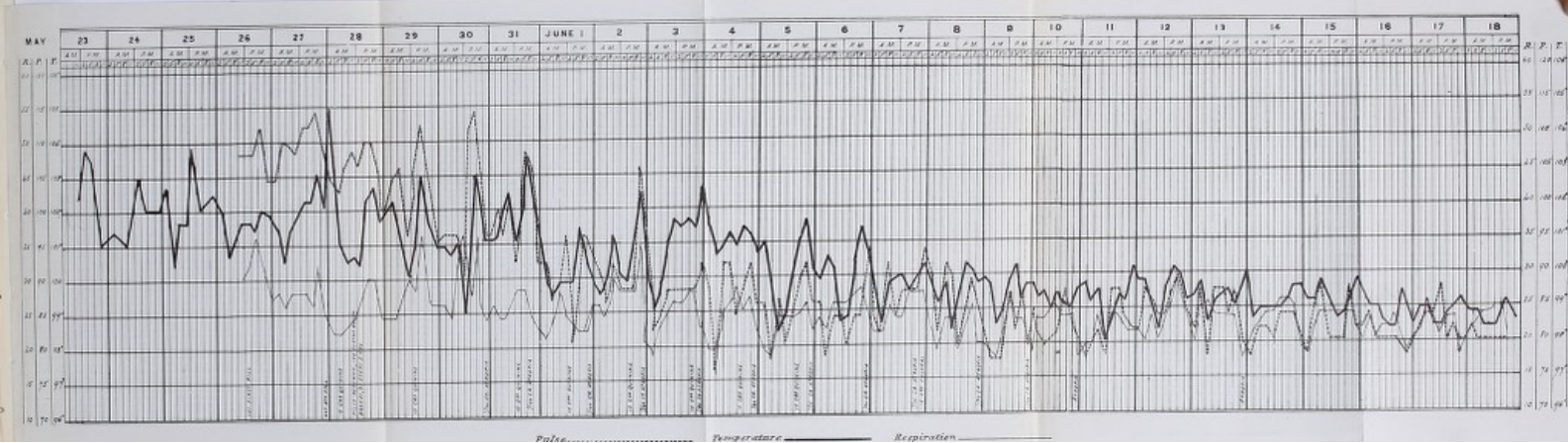
* For other cases, see the Author's *Lectures on Clinical Medicine*, delivered in the Royal and Western Infirmaries of Glasgow, p. 156. London: Macmillan & Co.

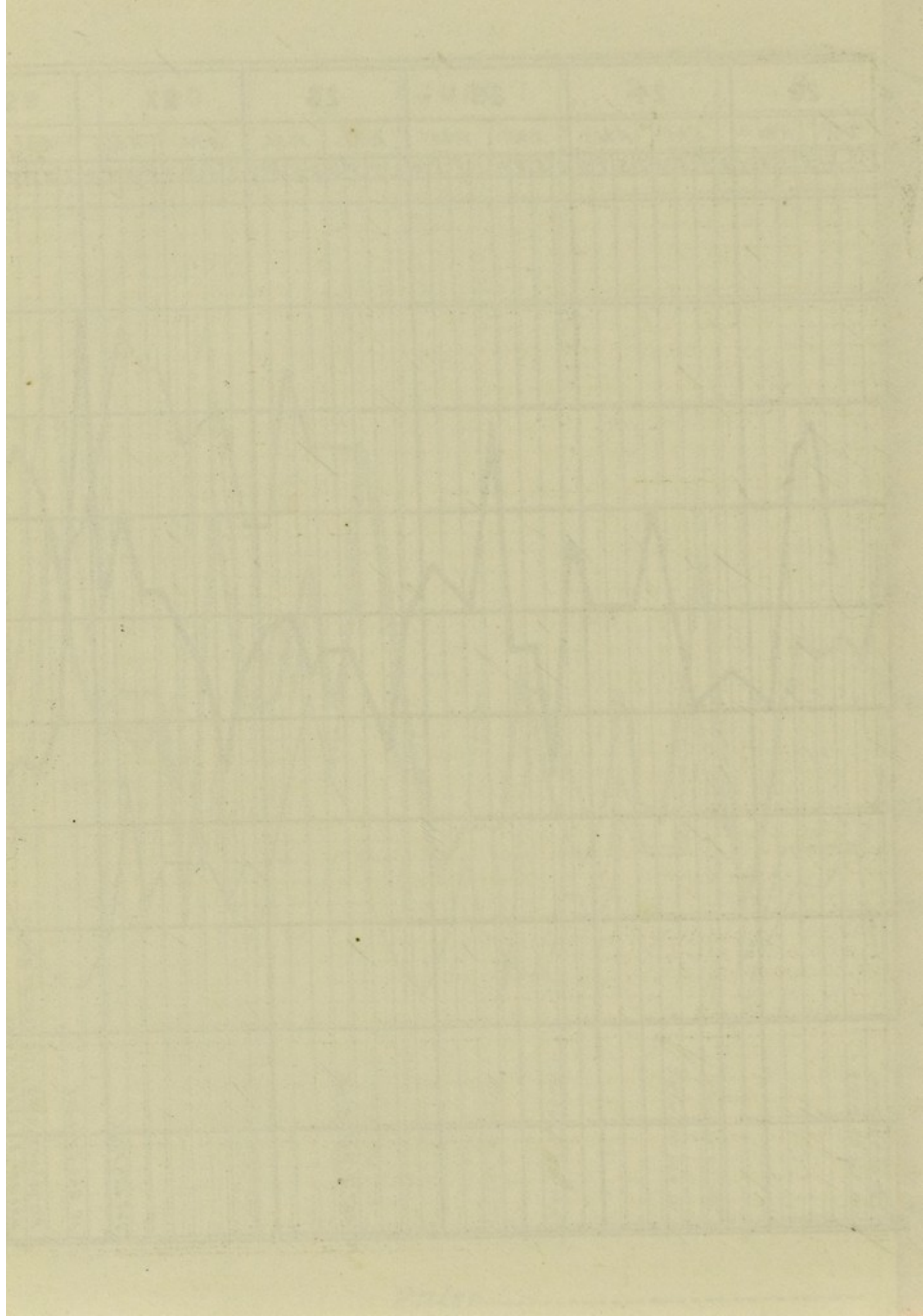
urine was passed very frequently, as often as every five minutes, though not much at a time, but there was no trouble of that kind now.

Examination on Admission.—The patient was much emaciated, and very weak and exhausted. The skin was dry and hot, with perspirations at night, and temperature 103° ; pulse 110, feeble; respirations 40, shallow and noisy; pulse-respiration ratio $2\frac{3}{4} : 1$. He had occasional slight cough, with scanty clear mucous expectoration. Decubitus was dorsal. He had a slight flush on each cheek, and slight lividity of lips. The alæ nasi dilated on inspiration. The tongue was slightly coated, and moist. He had anorexia. The bowels were loose. There was no distension of the abdomen; no gurgling or tenderness in either iliac region; no eruption. The urine was 32 ounces, high-coloured, acid, of specific gravity 1025; it contained a trace of bile, but no albumen. At the base of the right lung were signs of very moderate pleuritic effusion, viz., slight bulging with defective movements, marked dulness, feeble breathing, diminished fremitus and resonance. At the left apex (especially in the supraclavicular and infraclavicular regions) were defective movements, slight flattening, moderate dulness. Moist (subcrepitant), mixed now and then with dry, *râles* were heard, and there was increased fremitus and resonance. At the base of the same lung posteriorly, there was marked dulness, with very coarse crackling *râle*, and increased fremitus and resonance; over the rest of the lung, there was a general want of resonance, with a mixture of dry and moist (subcrepitant) *râles*. There was no evidence of disease in any other organ. For temperature, pulse, and respirations, see accompanying chart.

Treatment.—May 26th. He had milk or soup every hour, the latter being avoided so long as there was looseness; also quinine one grain, digitalis half a grain, opium half a grain, every four hours. The opium in the pills was increased on the 30th to three-fourths of a grain, on account of the looseness; but, on June 10th, as he was sweating a good deal, as the other symptoms were moderating, and as there had been no motion for four days, the pills were diminished to three daily.

On May 28th, iced cloths were applied to the abdomen for half an hour every two hours (it was afterwards ascertained that they had not been thoroughly used until the





evening of June 4th, after which the temperature fell more decidedly). In the later stages, they were omitted whenever the temperature was below 100° . At the same date (May 28), two drachms of brandy every three hours were prescribed.

May 30th.—Subcutaneous injections of atropia each night were commenced— $\frac{1}{100}$ of a grain, gradually increased to $\frac{1}{70}$. Eight times during the course of the illness, a dose of ten grains of quinine was given when the temperature tended to be high, which was generally in the afternoon or evening; and occasionally the body was sponged with iced vinegar and water.

June 10th.—The patient looked and felt very well, though weak and thin. The tongue was moist, and only slightly coated with a white fur. The appetite was much improved. There had been no movement of the bowels for four days. The perspirations were still considerable, but only in the mornings. Pulse 80, of fair strength; respirations 25; pulse-respiration ratio $3\frac{1}{5} : 1$. The temperature during the last twenty-four hours never rose to 100° , the highest being 99.8° ; and, during the previous twenty-four hours, it only reached 100° on one occasion, and once it was normal. The cough was less troublesome than on admission; expectoration was very scanty, and consisted of clear mucus. The physical signs were improved to this extent, that the very coarse *râles* at the left base had disappeared, being replaced by *râles* which were partly musical and partly moist. The effect of the digitalis on the secretion of urine was well marked; for, on the four days preceding the administration of the pills, the amount discharged was 32, 30, 26, and 23 ounces; and, on the following four days, 60, 72, 90, and 73 ounces.

It is unnecessary to give the whole of the reports, which were taken from time to time, but the following are sufficient to illustrate the progress towards recovery.

June 17th.—There was decided improvement in the physical signs, the *râles* having almost disappeared from the chest, except at the left base, where, however, they were much less distinct than formerly. The temperature for the last few days had been normal, or nearly so, and there had been very little perspiration. The digestion was fair, and the bowels regular, though the motions were still inclined to be pale and loose. Three moderate meals daily were now allowed, and the atropia was stopped. On the

22nd, the pills were likewise omitted; but, on the 25th, as the perspirations had slightly returned, the atropia injections were resumed.

July 2nd.—There was still slight expectoration, which was yellower than formerly; respirations 22; pulse-respiration ratio normal, the pulse being 86, and of good strength. All *râles* had disappeared from the left side of the chest, with the exception of occasional musical rhonchi posteriorly. The signs of effusion at the right base were diminishing. The temperature was normal, and the digestion natural; but the motions were still occasionally inclined to looseness. He was having good diet, including beef-steaks, etc.; and on the 1st, cod-liver oil in small doses was commenced, but was omitted on July 3rd on account of looseness, which recurred when the oil was resumed on the 8th. For this, a mixture of morphia and bismuth was given.

August 1st.—He was going on favourably in every respect, and was rapidly gaining flesh and strength. The diarrhœa and perspirations had completely disappeared. Pulse 84, regular, of good strength; respirations 18. The expectoration was almost gone. The *râles* had disappeared from the chest altogether, and the dulness on percussion was much less pronounced than formerly, though there were still signs of moderate effusion at the right base. He was now taking six drachms of cod-liver oil daily, which was gradually to be increased to an ounce and a half. The morphia and bismuth mixture, from which he had derived much benefit, was continued, as also two ounces of brandy; and the atropia injections were ordered to be given every second night, or when necessary. He now walked out in the grounds occasionally.

August 14th.—There was steady improvement. All the symptoms mentioned in the last report were less pronounced; in particular, there was distinct diminution in the dulness all over the chest. He was much fatter, and there was now a good deal of colour in his cheeks.

August 29th.—He was now practically convalescent. There were no general symptoms whatever. His colour was excellent, and he had gained three-quarters of a pound within the last week. He had neither cough nor expectoration. Respirations 16 per minute. There was no trace of *râle* in any part of the chest, and the signs of pleuritic effusion at the right base were steadily diminishing. At the left base, the respiratory murmur was still somewhat

feeble; and at the infraclavicular region there remained flattening, defective resonance, and harsh breathing. There was also dulness in the suprascapular region.

October 10th.—As the patient was continuing to improve steadily, and as Dr. M'Vail, who was acting for me, was able to corroborate the statements in the last report, he was sent to Lenzie Convalescent Home.

This patient was readmitted at my request for a few days on November 27th, and was examined, with the following result, on the 30th. At the left apex, there was slight flattening with defective expansion, and slight dulness on percussion; the breathing was a little jerky, and the heart-sounds very loud. The heart had been drawn up, the apex being nearly at the nipple. At the left base, there was still some dulness remaining, but the breathing was almost natural; and, at the right base, where the effusion had been, there was also some dulness, and the breathing was slightly feeble. There were no chest symptoms, and he felt in perfect health.

The following note shows his progressive increase in weight:—

							St. Lbs.
August 18th,	-	-	-	-	-	-	9 1
„ 25th,	-	-	-	-	-	-	9 1 $\frac{3}{4}$
September 1st,	-	-	-	-	-	-	9 4 $\frac{1}{2}$
„ 10th,	-	-	-	-	-	-	9 5
„ 15th,	-	-	-	-	-	-	9 7 $\frac{1}{4}$
„ 29th,	-	-	-	-	-	-	9 9
October 6th,	-	-	-	-	-	-	9 9 $\frac{1}{2}$
December 11,	-	-	-	-	-	-	9 11 $\frac{3}{4}$

APPENDIX.—B.

FATAL CASE OF ACUTE PHTHISIS, ILLUSTRATING THE QUESTION OF DIAGNOSIS.

JANE D., aged 19, mill-girl, was admitted into the Western Infirmary of Glasgow on March 1st, 1880, having been seen by me on the previous day, in consultation with Dr. William Young of Parkhead. The history of her illness, as obtained from her mother, was that, in the beginning of winter—it might be November—she caught cold, but not on account of any unusual exposure; and since then, she had a trifling cough.

Two months ago, while at work, she had an attack of hæmoptysis, and also during the same evening after going home; but, although the quantity of blood was said to have been considerable, no more precise estimate could be obtained. The blood at first was said to have been bright in colour, rather thickish, and not frothy. It continued to be expectorated during the next three days at frequent intervals, and, for some days following, she continued to have blood-tinged sputa. Previously to this, the cough was unaccompanied by expectoration, but a pain was occasionally complained of under the left nipple, and also at times under the left clavicle, during the act of coughing. About four weeks before admission, her appetite began to fail; and, ten days ago, she returned from her work complaining of shivering and general *malaise*, followed by burning heat of skin, and perspiration. At this time, too, the cough became more frequent, and she began to suffer from some shortness of breath. For the last few days, her bowels, which were generally costive, had become rather loose.

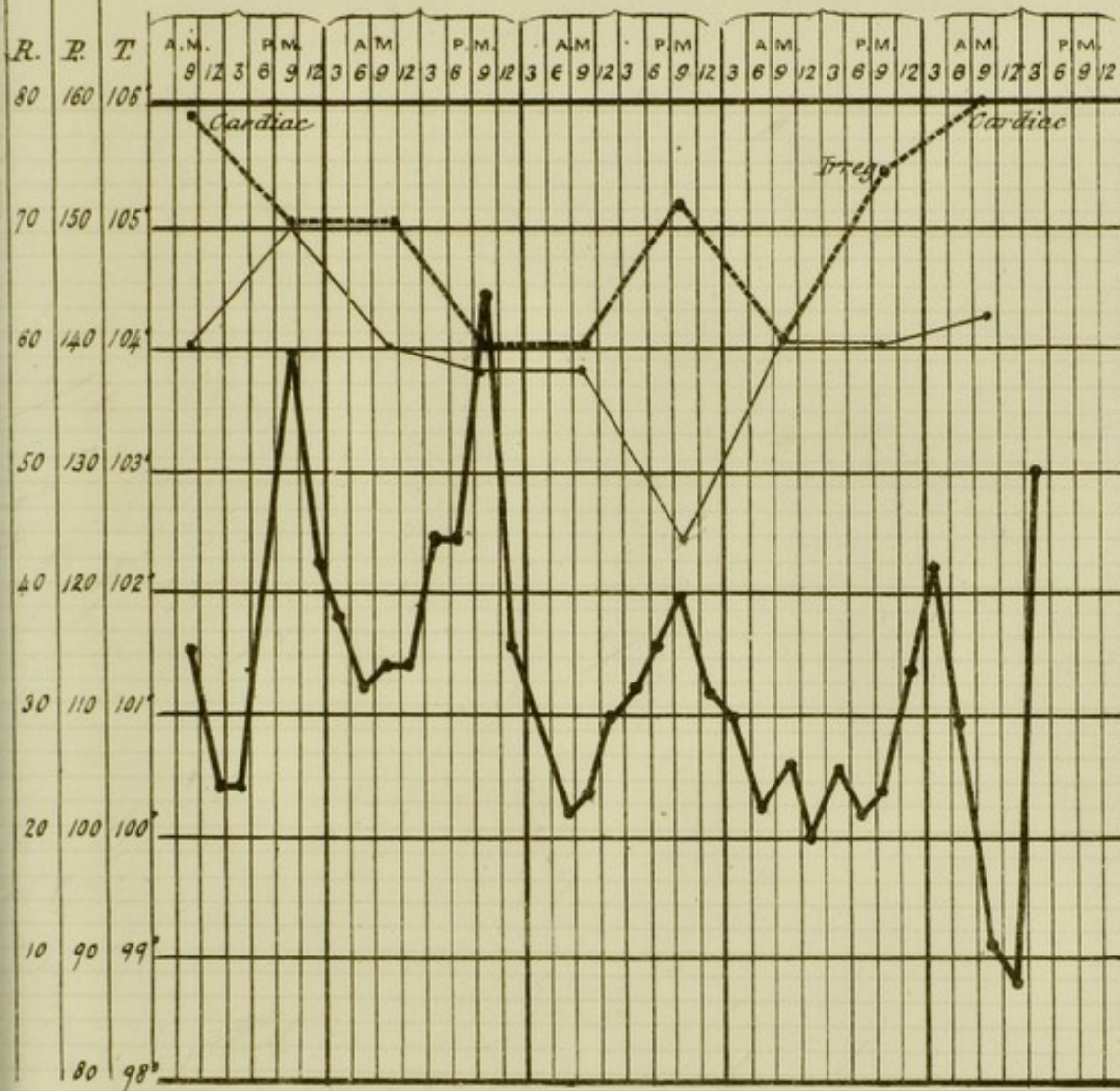
She seemed to have enjoyed good health until her present illness began; indeed, her mother said she was exceptionally healthy, and very stout. Menstruation began about fifteen, and had been very irregular, the last flow having been about four months ago. Her father and mother were alive and well. She was one of a family of eleven, three of whom died at the ages of ten, eighteen, and twenty, respectively, of consumption; the first said to have been of galloping consumption, after nine weeks' illness.

Examination on Morning of Admission.—There were great prostration and slight emaciation. Sweating was profuse and pretty constant. Decubitus was dorsal with the head elevated. She had great shortness of breath; slight lividity of the cheeks; the tongue was dry and cracked; great thirst; complete anorexia; bowels loose (three or four motions in twenty-four hours). Cough was frequent and soft, but there was no expectoration. The pulse was so rapid and feeble, that it could not be counted; but the cardiac pulsations were 160 per minute; respirations 60. The abdomen was natural; no distension; no tenderness anywhere, even on the firmest pressure; and no eruption. *Right Lung:* There was no dulness anywhere, but bronchitic *râles* all over; moist and pretty abundant at

1880.

JANE DOUCAN. OCT. 19TH

MARCH

1ST2ND3RD4TH5TH

Temperature ———

Pulse
.....

Respiration ———

the base, musical above. *Left Lung:* Breathing was feeble over the whole lung, with distinct dulness and resistance on percussion in the left infraclavicular region, from the second rib downwards for a couple of inches, and to a less extent in the corresponding region behind. In the last situation, there was indistinct subcrepitant *râle*, which, however, was more decided at the base. The urine was acid, scanty, with a copious deposit of urates; specific gravity 1028. The chlorides were normal; no albumen. For the temperature, pulse, and respiration, see the accompanying chart.

The opinion formed with regard to the case was, that it was one of acute phthisis, very probably tubercular; but, as some doubt had been thrown on the accuracy of my diagnosis in former cases, I determined to get the opinion of two of my colleagues, who, however, could not satisfy themselves as to the nature of the case.

The patient died on March 5th, five days after admission. The *post-mortem* examination was made by Dr. Foulis, with the following result. The body was not emaciated. On opening the chest, the left lung was found collapsed; and the left pleura, which was covered with a thin grey layer of very recent soft lymph, was filled partly by air and partly by slightly turbid serum. There were a few old adhesions near the left apex. The left lung was quite compressed, and flattened against the spine. An attempt was made to detect a possible rupture in the lung-tissue, by filling the chest with water and inflating from the trachea, but without success. On laying the lung open, it was seen to be studded with numerous miliary tubercles, in groups and single. At the lower and anterior part of the lung was a small pus-filled cavity, about the size of a plum; and, near it, several minute cavities. In the vicinity of these cavities, the tubercles were softer than elsewhere. In the right lung, the tissue was bright red, crepitant, and free from tubercles, except at one or two spots. On the posterior wall of the larynx was a slightly eroded patch, with an apparent infiltration of the mucous glands near it. No tubercles were seen in any other organ.

In this case, the fatal issue was evidently due to the complication of perforation of the lung.

APPENDIX—C.

ON THE CLIMATIC TREATMENT OF CONSUMPTION, WITH
SPECIAL REFERENCE TO A VISIT TO DAVOS PLATZ.

*(Read before the Medico-Chirurgical Society of Glasgow,
12th December, 1879.)*

IT is generally admitted that, in chronic pulmonary phthisis, a change of climate often constitutes a most important part of the treatment, especially during the months of winter and of spring. And although a residence in the sunny south is often beneficial by allowing patients to be much in the open air, and by guarding them against great and sudden atmospheric changes, still it must be admitted that the balance of opinion is in favour either of long sea voyages, under suitable conditions, or of a residence at high altitudes. The latter has long been recommended by physicians in America and on the Continent of Europe, but it is only now beginning to be discussed seriously by the profession in this country.

Having during the past summer paid a visit to Davos Platz, the most famous of Alpine health resorts, I propose giving a few particulars of the locality, and my opinion of its value in the treatment of consumption.

The actual travelling between Glasgow and Davos, irrespective of journeyings to and from railway stations, and haltings by the way, occupies forty-three hours,* so that the invalid can easily accomplish the journey in about a week, and at a cost of from £8 to £12 in all, according to the mode of travelling. The cost of living there varies from six to ten francs a day.

For ten or twelve years it has been a favourite health resort with Germans labouring under pulmonary complaints, but it is only within the last four years that it has been frequented by our own countrymen in search of

* Glasgow to London, 10 hours ; London to Paris, 10 hours ; Paris to Basle, $10\frac{1}{4}$ hours ; Basle to Zurich, $2\frac{1}{4}$ hours ; (a) Zurich to Landquart, $3\frac{3}{4}$ hours : Landquart to Davos Platz (by diligence through the Prätigau), 7 hours. (b) Or Zurich to Coire, $4\frac{1}{4}$ hours ; and thence by diligence through the Landwasser Thal, in $8\frac{1}{2}$ hours.

health, and now it is gaining rapidly in popularity, so much so, indeed, that there is a fear, which has already in a measure been verified, that many unsuitable cases may be sent there. In the winter of 1875 there were only about 6 English patients in Davos; in 1876, 16 to 18; in 1877, 36; and in 1878, about 200; and it is thought probable that this winter there will be close upon 350. "The first two patients," says a recent writer,* "of which the place can boast, were happy in their choice, when they selected Davos, some dozen years ago, as the spot to test on their persons the then still debated system of treating consumption by a residence in high Alpine air. One of them was a German medical man of experience, who arrived with good diplomas in his pocket, but a very bad lung under his waistcoat. He was accompanied by a young friend of pleasing but effeminate exterior, whose face, guiltless of the capillary appendages usual to the masculine countenance, gave rise to the belief in the minds of the then unsophisticated peasantry that he was a Polish princess in disguise; and the uncomfortable result was that the door of the one modest hostelry was for long closed against the pair on that wintry afternoon. Notwithstanding this inauspicious reception, the German physician and his supposed lady-love regained health rapidly, and when they showed themselves again in Germany, were admirable living advertisements both of the system and the place."

Davos is 5,200 feet above the level of the sea, and is very prettily situated in a valley of considerable breadth, which runs N.N.W. and S.S.E., so that the sun shines upon it for many hours even on the shortest winter day: its soil is dry, and the air is still, for, except towards the S.E., it is sheltered by high mountains in every direction, while of course it is highly rarefied, being nearly one-fifth lighter than it is at the level of the sea. The ground is covered from November to March with snow, which is crisp and hard, and does not melt under the influence of the hottest sun, unless the Föhn, or generalized south-west wind, makes its appearance, a comparatively rare phenomenon, fortunately, for it is very depressing, and apt to prove injurious to patients.

* *Davos Platz; a New Alpine Resort for Sick and Sound in Summer and Winter.* By One who Knows it Well. London: Edward Stanford, 55 Charing Cross, S.W. 1878.

The solar radiation is intense, although the air itself is cool and refreshing : this is illustrated by the fact that the temperature in the shade may be below the freezing point, while Casella's black bulk vacuum thermometer may register 130° F. in the sun, so that the snow does not melt upon the ground. In winter, the solar radiation may be such that the thermometer may register even 165° F., but at night the temperature may fall very low, even some degrees below zero. When I was there, in September, the temperature in the shade was 44° F., while, in the sun, the black bulb thermometer registered 120° F., and one could walk with comfort and with pleasure. "To sum up," says Dr. Williams, "Davos . . . has a winter climate of which the characteristic is a still, cold, and dry, rarefied atmosphere, easily permeable to the full effects of the solar radiation." *

The first person who addressed me on my arrival was an active, healthy looking man of middle age, and who was afterwards described to me as being now "a very powerful man." He came from the north of Germany about six years ago, labouring under phthisis, from which he has completely recovered, and is now manager of one of the principal hotels, which, as most of us are aware, is no sine-cure. On sitting down to dinner the same evening, I found opposite me a German gentleman, with whom I entered into conversation. He also has resided at Davos for the greater part of six years. When he arrived he was suffering from hæmorrhagic phthisis, and now he is strong and well ; and, as he finds himself in better health there than anywhere else, he intends making it his home, and occupying himself as a teacher of languages. He is in the open air, he told me, the whole of the twenty-four hours, as he sleeps with his window open both in summer and winter. The day following, I was introduced to a lady of middle age, active, energetic, and full of spirits, and who was just upon the point of starting for a pic-nic a good many miles away, which she herself had organised. She took up her abode at Davos about four years ago, and hers was a "bad case of phthisis ;" yet in two years she was well, but she seems to enjoy the place, and to feel better there than elsewhere, so that she has taken up her abode there permanently, although she leaves it for three

* *The Lancet*, 9th August, 1879.

or four months in summer, going to Geneva, Aix-les-Bains, or Paris.

Many other instances of a similar nature were met with, but it is unnecessary to refer to them individually. I therefore pass on to speak of a few of the cases which I had the opportunity of examining for myself, along with my friend, Dr. Ruedi, and which were taken pretty much at random, except in so far as they illustrated the effects of a residence at Davos for different periods of time.

The first was a young lady, whom I saw in the neighbourhood of Glasgow, in consultation with her medical attendant, in the month of July. She was then suffering from chronic phthisis of fully a year's duration, without marked general symptoms, but with consolidation of the whole of the left lung, especially at the apex and base, in both of which localities, but especially at the base, moist râles were very distinct. I examined her, with Dr. Ruedi, (who agreed with me in thinking her case peculiarly well suited for the locality,) and found her rather better than on the former occasion, in so far as the moist râles had in great measure disappeared from the apex. She was none the worse for the journey—indeed, she felt rather better than when she started, and I mention her case only to show that patients may travel to Davos without any bad effects following.*

The next patient was a clergyman, 29 years of age, from one of the midland counties of England, who, as the result of overwork, contracted phthisis in the winter of 1876-7, and who has had slight hæmoptysis on four occasions since. He took a voyage to Australia in 1877-78, and last year wintered at Arcachon and Biarritz, but without

* Dr. Ruedi's Report of Miss M.'s case, dated 1st December, 1879:—
 "Is doing very well. Pulse, 88. Respirations, 14. Temperature, 36°.7 C. Circumference of the chest, 78 centimetres (2 more than at first). Weight, 120 Swiss pounds (5 pounds more than at first). Particularly the lower part of left lung much dryer, with very few moist râles, and hardly dull. But during the month of November a new feature has appeared, which must be considered. A small cavity set in in the left apex, without any fever or any pulmonary symptoms whatever. The cough is diminished, as well as the expectoration, though not very much. I regard the cavity as a sign of healing, because in a diseased apex, with adhesions all round, the formation of a cavity certainly can be produced by contraction of the connective tissue in the infiltrated parts: that there is no sign of new mischief the absence of fever, the general health, and increase of weight demonstrate."

any material benefit. He felt so ill when about to leave home, that he had grave doubts as to the propriety of starting. On his arrival on the 23rd of August last, he was so weak, and had so much dyspnœa as to be unable to walk. His cough, also, was very distressing, with abundant purulent nummular expectoration; his digestive organs were weak, although his appetite was fair. He was feverish; temperature, 101° Fahr.; had night sweats; was much emaciated, and very depressed in spirits; weight 109 Swiss pounds; pulse, 96; measurements of chest—right side, 40 centimetres; left, 43. The two upper lobes of the right lung were dull, with bronchial breathing and moist râles. The left apex was also consolidated, though in a less degree, and was likewise the seat of moist râles.

When I examined him on the 25th September, a month after his arrival, the dulness at the left apex was less pronounced, and the moist râles almost gone from that part. On the right side, too, the râles had greatly diminished, and at times none at all could be heard. Measurements of chest—right side, 42; left, 43; being a gain of 2 centimetres on the right side. Pulse, 82. He told me that he thought he was gaining weight, that his digestion was much improved, and that the night sweats had disappeared. There was no fever; the cough had much moderated; the expectoration was one third less; the dyspnœa was so far gone that he had no inconvenience from it, and could walk four miles easily at a good pace. He felt much stronger, his spirits were excellent, and he was satisfied that the place had suited him better than any other which he had previously visited.*

A builder, a married man, 59 years of age, of phlegmatic constitution and strongly made, who had always previously enjoyed good health, and whose family history was good, caught cold in the winter of 1875, and since then he has never been free from cough. In 1876 he was operated upon for fistula. During the winter of 1877-78 he had a little hæmoptysis, became hoarse, and could hardly speak above

* Dr. Ruedi's Report of Mr. C.'s case, dated 1st December, 1879:—"Is going on very nicely. General health good; cough and expectoration further diminished. But in consequence of contraction of the upper part of the right lung vicarious emphysema is becoming developed at the right base posteriorly. The circumference of the chest is two centimetres greater than at the date of your examination, and he has gained 6 lbs. in weight."

a whisper till the July following. The pulmonary symptoms having continued throughout the winter of 1878-79, he was recommended to go to Davos, where he arrived on the 25th of June. He then had much cough, especially at night, with heavy expectoration and shortness of breath. His weight was 124 Swiss pounds, being 14 pounds less than before his illness commenced. His bowels were habitually costive, but his digestion otherwise was pretty fair. Circumference of chest 85 centimetres; 44 on the right side, 41 on the left. At the right apex there was some dulness with crepitation. On the left side moist râles were very distinct at the base, while the whole of the upper lobe was very dull, with hardly any normal breath sounds, and there were the usual signs of a large cavity, with metallic sounds under the clavicle.

When I examined him on the 24th September, about three months after his arrival, there was still slight dulness at the right apex, but the crepitation was gone. On the left side the moist râles at the base had almost disappeared: in the upper lobe occasional moist râles were still to be detected, and the signs of excavation were still present, although the cavity was rapidly contracting, as shown by the lowering of the apex, the flattening of the chest wall over it, and the elevation of the apex of the heart to the level of the nipple, signs which were absent on his arrival. Circumference of chest 87 centimetres; on the right side 44; on the left 43; being a gain of two centimetres on that side. His cough was comparatively slight, and absent at night, the expectoration and dyspnoea were about one-third less he thought; his digestion was perfect, and his bowels quite regular, while he had gained 5 pounds in weight.

One more case will suffice, that of a young gentleman, 20 years of age, who had no hereditary tendency to consumption, and no previous illnesses, but who had sadly overworked himself, and whose illness commenced in the winter of 1876. On his first arrival at Davos on the 1st August, 1878, there were the usual signs of infiltration of the whole of the left lung, with very extensive moist râles, and a large cavity was detected at the lower part of the upper lobe. On the right side there was absence of good breath sound, with subcrepitant râle at the apex: Circumference of chest 76 centimetres; 39 on the right side, 37 on the left. He had a violent cough, with much purulent and nummular expectoration, great dyspnoea, night sweats, and fever (temp.

103·2° Fahr. at night, 101·5° in the morning). His digestion was pretty good, and appetite fair. He weighed 113½ Swiss pounds.

He remained at Davos till 14th February, 1879, during which time he gained 19 pounds, and improved so much that he insisted upon going home, from which, however, he returned on the 21st of June, having lost 13 pounds, and having suffered much in health in the interval.

I examined him on the 24th of September, when I found that the moist râles had disappeared from the lower part of the left lung: the cavity in the upper lobe was still present, though much contracted, and the moist râles were much less abundant. The subcrepitant râle had disappeared from the right apex. Circumference of chest 80 centimetres; 41 on the right side, and 39 on the left, being a gain of 2 centimetres on each side. His digestion was much improved, and fever and night sweats were absent. The cough and expectoration were slight, and the dyspnœa no longer complained of, indeed the day before I saw him he had walked 18 miles, including an ascent of 2,500 feet.

The class of cases likely to be benefited by a residence at Davos may now be mentioned. Of course, no one would think of recommending those whose symptoms are at all acute in character to leave home; and cases complicated with organic disease of the circulatory or nervous systems are unsuitable, the place being too intensely stimulating for such persons. It is likewise contra-indicated where a very large amount of lung tissue is involved, or when the disease occurs as a complication of bronchitis with emphysema; for, in this highly rarefied atmosphere, there is not a sufficiency of lung surface to ærate the blood, and such patients run the risk of being suffocated. The cases, in fact, which are most certain to do well are pretty much those which are most likely to improve elsewhere—namely, non-hereditary, uncomplicated cases of chronic phthisis, in which the extent of lung tissue involved is not excessive, with this proviso, however, that, while the prognosis of phthisis with pronounced stomach symptoms is not good at home, these are the very cases which should be sent to Davos, for there the appetite usually improves rapidly, and the digestive organs soon resume their normal vigour. It is a mistake to suppose, as some have done, that a tendency to hæmoptysis constitutes a contra-indication; and those who are interested in this point will find in the *Lancet*, for the 9th

August, 1879, a very good illustration to the contrary, from the pen of Dr. Williams. Finally, laryngeal phthisis is only a little less likely to terminate unfavourably at Davos than at home.

It is pretty generally stated that patients must, of necessity, leave the place in the month of April, when the snow is melting. This, however, is not the case; indeed, they are less likely to suffer there than in other localities during this, the most trying season of the year; but in May and June it is advisable for them to have a change, not on account of the climate, but because they are apt to become *ennuye* and are likely to be benefited by a change of scene, and of diet and regimen for a time. Hence, they are recommended to visit such places as Baden-Baden, Heidelberg, or Paris, and later on, if they feel disposed, they may return to England. The months of December, January, and February are those during which patients at Davos are most certain to be benefited, and if they do not improve then, and if there is no sufficient cause to account for it, their future prospects are far from bright.

There is much difference of opinion as to the cause of the benefit derived by consumptives from a residence at Davos, but there are good grounds for believing that it is due to a combination of causes. In the first rank must be placed its elevation, with, as a consequence, its rarefied atmosphere, its bracing coolness, and its purity and antiseptic qualities. It is a mistake, however, to suppose that the inhabitants of elevated regions enjoy a complete immunity from phthisis; indeed, even at Davos, although it is very exceptional, Dr. Ruedi has seen five or six cases within the last few years, but these he could generally trace to errors of diet and hygiene. One case in particular he mentioned, that of a young man who contracted the disease from living in a filthy, badly ventilated, and damp apartment, in which fungi were growing in profusion between his bed and the wall; but a few weeks after his removal to a more wholesome dwelling, the consolidation at the apices of his lungs had entirely disappeared, and he was completely restored to health.

Its virtues are likewise to be attributed, in part, to the intensity of the solar radiation, and to the dryness and stillness of the air; and if to this we add that the accommodation for patients is good, the sanitary arrangements fair, the diet wholesome and nutritious, and the mode

of living of the invalids (who are in the open air the greater part of the day, even in the depth of winter), carefully supervised by excellent medical men, we recognise a wonderful combination of beneficial influences, which our common sense tells us must yield good results, and which makes us cease to wonder that, year by year, increasing numbers of sufferers from consumption should hie to it in search of health.

