The Treatment of Pulmonary Tuberculosis by Creasote and Allied Substances

A Short Study in Clinical Therapeutics

by

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consists in the breaking down of the lung tissues." I am aware that such a definition is very crude and skeletal, but it includes all that is necessary for my purpose viz a writing starting point.

The following varieties of Tuberculosis Pulmonalis are given by Professor Sir T. Fraser Stewart in his University Lectures (1884-5):

1. "Tubercular Variety.
2. Inflammatory Variety.
3. Mixed Variety (Tubercular + Inflammatory)."

To which is appended the following definition of such varieties and their subdivisions:

1) "Tubercular Pulmonary consists of a new formation growing in the stroma, and in connection with the lymphatic structures. The growth of the tubercle may be rapid or slow, local or general. It is possible for the tubercle to cease to grow."

2) "Inflammatory form. These are at least three varieties of the Inflammatory form:"
(a) That associated with Catarhal Pneumonia.
(b) That associated with Gonorrheal Pneumonia.
(c) That associated with Interstitial Pneumonia.

2) "Mixed form - In this the Inflammatory process may be superadded to the Tubercular..."
or the tubercular may be added to the inflammatory."

In the purpose of this thesis the first form is that mainly referred to, independently of any predisposing or exciting cause, such as a previous history of Pleurisy or Pneumonia.

The main object, then, of the following pages is to demonstrate the superiority of the Creasote treatment of Pulmonary Tuberculosis (as far at least as drugs are concerned), and the testimony of such authorities as Secord, Burney, etc., etc., will be given in support of this assertion.

Of course any such limited method of treatment is necessarily incomplete, as the antiseptic treatment is only one of several methods which, in certain stages and varieties of the disease, have from time to time been found useful. In instance the Climatic treatment of Pulmonary Tuberculosis is in some respects superior to any other, and believe the majority of authorities would agree that a combination of the Climatic and Antiseptic method constitutes the ideal treatment of this disease. I have, however, been deeply impressed with the fact that, in the case of those who have no chance of the Climatic treatment, the Antiseptic method, if properly and carefully carried out, will yield
astonishing results, even in the absence of hygienic and other requirements. Some of the cases which have come under my own observation have been in those patients who had everything to contend against in the way of sanitary surroundings. Their houses were very confined and fresh air was at a premium in them; their circumstances were sufficient to maintain a decent existence and little more, and in consequence the duration of their convalescent treatment had to be curtailed to the lowest limits compatible with any degree of safety. In three cases especially where such conditions obtained, the result of the antiseptic treatment was complete, and the patients are now in their ordinary health, and able to follow their usual employment.

Before submitting the following evidence in favour of the Cresylic treatment, may I urge the necessity for extreme carefulness in the matter of praising or condemning any single remedy in such a complex and often rapidly fatal disease as Pulmonary Tuberculosis. There must always be a number of cases coming under observation in which, in spite of all known remedies, a fatal issue cannot be averted. This holds true,
more or less, in every disease known to Medical Science, but it is of special importance that this fact should never be lost sight of in judging of the usefulness (or otherwise) of any remedy in this disease which is annually responsible for so many deaths in this country.

I am painfully aware of the incompleteness of this thesis. My opportunities for consulting works of reference have been very limited on account of my practice having been largely confined to country districts, and the distance from the centres of information has precluded me from taking advantage of the benefits associated with those centres.

I propose to consider the subject under 3 heads:
A. Pharmacology & Therapeutics of Crescents.
B. Statistics, Clinical Cases &c.
C. General Conclusions.

2. Squire's Companion to the British Pharmacopoeia (1874 Edition article Creasote)
Division A.

Pharmacology and Therapeutics of Creasote.

Creasote is defined in the British Pharmacopoeia as "a product of the distillation of Wood Tar—a liquid, colourless, or with a yellowish tinge, and a strong empyreumatic odour. It is sparingly dissolved by water, but freely by alcohol, ether, and Glacial Acetic Acid. Specific gravity 1.071. It does not coagulate Albumen."

Squire (Companion to the British Pharmacopoeia) defines it as "a strongly refracting liquid, colourless, or very slightly yellow, with a peculiar odour, a product of the distillation of Wood Tar. The two chief constituents of Creasote are Guaiacol and Cresol, the first of which predominates in some specimens, and the second in others."

Most authorities are agreed that, in order to obtain uniformity or anything approaching to it, Beech Wood Creasote alone should be used, containing as it does from 60 to 70 per cent. of Guaiacol.

Professor J. R. Facer in his University Lectures on Materia Medica (1883-4) says: "It possesses animal matter from decay, and therefore is antiseptic and antiseptic. It is complex in com
1. "Handbook of Therapeutics" (1950) p. 334

2. Walters (British Medical Journal 1875 Vol II p. 1486)
position, and can be entirely volatilised. Its affinity for albumen produces a white stain when brought in contact with the skin — it is astringent in dilute solutions — it counteracts salivation — it stops haematemesis— on account of its astringent action it is used in skin diseases — it is besides an anaesthetic— hence useful in toothache — it produces stoppage of the heart in large doses, accom-
panied by great prostration and paralytic spasms.

Professor Ringel, in his Handbook of Therapeutics, says: — "During its transit through the intestines, creosote appears not to undergo any change in its composition, as its characteristic odour may be detected in every part of the canal. It checks the vomiting of various diseases, as that of pregnancy, sea-sickness, cancer, ulcers of the stomach, Bright's disease. It often promptly relieves stomach pains occurring after food." (p. 335 line 5) "Creosote passes into the blood, and its odour is detectable in most of the organs, showing that it prob-
bably remains, in chief part, if not entirely, unaltered in the blood."

Walter, in a paper read before the Annual Meeting of the British Medical Association in London,
says: - "Of all the drugs which have been used in the treatment of Phthisis there are probably none which have been so widely adopted as Wood Creosote and its derivatives. Adopted in 1833 by Reichenbach, condemned in 1835 by Martin Colow, it fell into disrepute until revived by Boucharde and Guibert in 1877; since which it has been tried and approved by a long list of authorities - Dacord & Dupain-Boquet, Delafos & Germaine Ede, von Buen & Guttamin, Douglas Powell, Burney, Yes, and many more, who all agree as to its utility, while they differ as to its mode of action, dosage, and mode of administration. At the present time some are enthusiastic in its praises, while others are as strongly opposed to it; and it must be admitted that it has a nasty way of failing in some of the cases where its help is most needed. It is, however, not surprising that this should be the case. It begins with, in a disease like Pulmonary Phthisis, where destruction and repair go on side by side, and the same process is sometimes useful and necessary, at other times disastrous. It is very difficult to estimate the effect of any remedy, owing to the impossibility
of obtaining strictly comparable cases. In the next place, not only is there true or Wood Creasote, and sham or Coal-tar Creasote, but several varieties of Wood Creasote, such as pinewood Creasote, which contains more Cresols, and Beechwood Creasote, consisting largely of Guaiacol, and even Beechwood Creasote (which is usually preferred) varies in its composition. To add to these difficulties, the dose of Creasote which can be borne with impunity varies considerably with different idiosyncrasies and with the type of the disease, perhaps more than is the case with any commonly used drug. Bearing these facts in mind, it is not so much remarkable that authorities should differ as to its utility as that there should be so great a unanimity. The con- cord becomes more striking than the dis- cord. The number of cases dealt with by some of these observers is so considerable that there is at least strong prima facie evidence in favour of the utility of the Creasote compounds. —

Creasote is probably at present the most
Year Book & Treatment for 1890 p. 32.

doc. cit. p. 32.

doc. cit. pp. 32 & 33
 universally used medicinal remedy in Phthisis and, according to Professor Beverly Robinson, "it is of great value, especially in the first stage, and causes no trouble unless given in too large doses. There is evidence to show that it modifies the local changes in Phthisis. It is uncertain whether it has any direct antitubercular effect. The treatment of Phthisis by Creasote is superior in its results to any other."

Dr. C. J. Collins says that "in 150 cases of Phthisis treated with Creasote, no digestive disturbances occurred, nor any renal (even when kidney disease existed), and the results were better than under any other treatment."

Dr. Austin Kind "believes that in cases of consolidation without cavity Creasote produces prompt and decided improvement in all the phthisical symptoms; that where small cavities exist some benefit is obtained, but much less; whereas in cases with large cavities the drug has little more than a palliative influence. The effect on the Bacilli was only noted in one case, in which they diminished."

These records of the therapeutic efficiency of
"Curaibility and Treatment of Pulmonary Tuberculosis"
(Translation by Montague Lubbock (1885) p. 158)
Creasote are interesting and convincing, but the following opinion of Baccoue is of the highest value.

In his Classical treatise on the Curability and Treatment of Pulmonary Phthisis, this author says:—"Since, however, the works of Bouchard & Gimbert have shown the good effects of the pure Creasote yielded by the Beech, these remedies (Balsams, Tar, or Turpentine) have been abandoned, my own observations having confirmed the results obtained by my eminent colleagues, and shown me that Creasote is more beneficial, acting more rapidly and with greater certainty. Than other remedies, it diminishes the expectoration, and by its effect upon the bronchial tubes prevents any extension of the catarrhal lesions, thus notably reducing the extent of the pulmonary changes. Nor is this all, since Creasote seems also to have some effect upon the fundamental lesions themselves, and to promote the sclerotic changes by means of which recovery is found to occur in this disease. I have often found in patients who were
thus treated, that, when the symptoms due to peri- tubercular Catarrh have ceased to exist, and the extent over which ophtalmoscopic signs of disease could be recognised was reduced to its minimum, a second diminution of the affected part took place two or three months later, accompanied in two cases by bronchial breathing and bronchophony at the periphery of the affected part. These signs, being accompanied by general improvement in the condition of the patient, seemed due to Telerosia in the part surrounding the lesion, which therefore limited the size of the softening focus. One of these cases was observed at the hospital, the patient being a female aged 22, with deposit of Interzelle at the apex of the left lung, which was now in the softening stage.

During the three months that she remained, in addition to the ordinary treatment, cresotes, not only was employed, and at her departure was she found to have increased 15 lbs in weight, but the local changes already mentioned were found to have occurred. She remained in this improved state for almost two years, but in the intensely cold weather of December
1879 was affected by Broncho-Pneumonia, which caused her to come again under my care at the hospital in the most serious condition. Owing to some administrative difficulty she was obliged to leave at the commencement of convalescence, and it is doubtful whether after its second attack she can ever return to the state of relative immunity from disease which she enjoyed for nearly two years.

The second case was that of a Russian aged 20 years, who owed to this plan of treatment—the reduction of a softening focus at the apex of one of the lungs, to less than half its size. It is now two years since this change occurred, and my last examination of the patient, six months ago, showed that the local improvement still remained, while the general condition was most satisfactory. The treatment being continued, more improvement may possibly occur, while, in any case, on account of the hygienic conditions in which she lives, that which now exists may be looked upon as permanent, should no accidental disease affect the respiratory organs. On account,
thin, of these and other analogous facts, Creosote combined with other means of treatment, seems to act, not only upon the Catarrhal, but also upon the Tubercular lesions, causing the sclerotic changes to predominate over that due to sloughing or caseation. It may be seen that the whole plan of treatment which I adopt is with the view of obtaining this result; agents which improve the Constitution, and the constant employment of Alcohol, combining to effect this result. The fact that the latter has a tendency to promote sclerotic change is now definitely established.

Independently of these results, Creosote may also be recognised to have an antiseptic or anti-pyretic effect, on which account the pyrexia due to absorption (la fièvre de resorption), of which the importance will soon be recognised, is averted for a considerable time.

On all these accounts, therefore, Creosote is a valuable remedy, and since my own observations have confirmed those of
my colleague Bonchard, I never fail to employ it. From the moment that the special indication already mentioned is found present, Creosote is administered. The indication furnished by the catarrhal condition is constantly in existence when Tuberculosis has made the slightest progress, being only absent at the very first onset of the disease. This remedy is, therefore, one of the fundamental agents in the treatment which I adopt. It has also a permanent effect, and when once administered should be continued, since the indications which it fulfills are themselves persistent. Nor is it immediately that Creosote produces its effects. Some days must pass before any good results are obtained, while pyrexia does not counter-indicate its use, the sole obstacle to its employment being the gastralgia which at times occurs when the remedy has been taken for any length of time. Some plan should, therefore, be adopted, which as far as possible prevents the occurrence
of this complication. It is specially necessary on that account to employ a comparatively small dose. The remedy can be tolerated for months, in fact as long as seems necessary, when a small dose is administered, while it is at the same time beneficial owing to the continuance of its action. A large dose, however, may not be borne for more than a few days owing to the cause mentioned, and when once this happens, for any reason, it will be most difficult to again obtain its acceptance. It should, therefore, be the rule to administer a small dose at first, and to increase it but gradually, beginning with the amount of not more than three minims daily, which may be increased by one minim in each week or ten days until as much as five or even six minims are given. This dose should never be exceeded, and is but rarely reached, since, as has been already explained, a small dose is truly effectual, and does not expose the patient to the danger of gastralgia.
which at any period of the disease is a real complication. From three to four
minims is my usual dose, three or perhaps but two minims being administered
when the remedy is first employed.
I have ceased to administer Kreasote
alone, that is in the form of Capsules,
on account of the irritation which it
produces in the mucous membrane of
the stomach. I have also abandoned
the employment of wine containing
Kreasote, of which the taste is most
disagreeable, and which soon produces
irreversible repugnance to its use. Owing
to the inconvenience which attends the
use of these preparations, I have adopted
a plan which introduces no fresh com-
plexity into the treatment, but enables
the remedy to be tolerated for an in-
definite length of time. Cause it to be
taken with the Cod-liver oil, or originate
administered to the patient, and, with
regard to the oil, its nauseous taste
is found to be corrected by this addition,
so that many patients who refuse to
take it alone, will readily do so when it is thus modified. Three minims of Creasote may then be taken with the daily dose of oil, and if one drop of Essence of Peppermint is added, the fresh and penetrating taste of this aromatic herb will alone remain in the mouth. Thus, if the patient takes two ounces of the oil, the prescription of the remedy for daily use would be as follows:—Cod liver oil, two ounces; Creasote (made from Beechwood), three minims; Essence of Peppermint, one minim. One or more parts of this mixture could be easily kept in readiness, but care should be taken, when the dose of oil is increased, to modify the proportion of Creasote in such a way that the quantity taken daily may not exceed five or six minims, which, as I have said, is my maximum dose. It is better, if possible, to make daily a fresh preparation of the remedy.

When Glycerine is taken this precaution is less necessary, since the dose
of the vehicle remains unchanged. After
many trials, I have adopted the following
prescription as the daily dose:—Etherine
twelve drachms; Cognac or Rum, three
drachms; Creasote, three to six minims;
Essence of Peppermint, one minim;—this
representing about four tablespoonsfuls.
The mixture is pleasant to take, causes
no irritation of the stomach, and is
invariably well tolerated even when
taken for a long time; in this way it
is preferable to the Codliver oil mixture
and enables almost valuable remedy
be taken. At the same time it must
be repeated that every expedient
should be tried to establish and
continue the treatment by Codliver
oil.”

These sentences represent, as far as I am
able to judge, the proper treatment of
Pulmonary Tuberculosis as far as
Creasote is concerned, and it is most
probable that any failures that have
been recorded, owing to patients being unable
to take the remedy, may be attributed
to one of two causes—either that the 
Bacastoe has been given insufficiently 
diluted, or that too large doses have 
been given at all events at the Com-
mencement of Treatment. Two cases 
which occurred in my now practice will 
illustrate this.

I have under treatment a patient (whose 
case is fully recorded in page 70) who 
has taken Bacastoe in full form, but 
who had to abandon its use on account 
of the nausea which it created. He 
was very sceptical as to this ability 
to take the remedy in any shape or 
form, but greatly to his surprise he 
never experienced the slightest nausea 
when the remedy was administered 
in a modified form of Saccord's 
formula. I have now used this 
formula for the last seven years, 
and have never experienced any diffi-
culty in getting patients to take it 
after they had once fairly commenced 
its use. The following is the formula 
I am in the habit of using:
Beechwood Cresote, twenty-four minims; Glycerine, two ounces; Whisky, one ounce. A teaspoonful of this mixture is taken three times daily after meals. In some instances the treatment is commenced with even smaller doses of Cresote than one minim, and in no case have I had to give up the remedy on account of Gastric intolerance.

I had lately a patient who, after a prolonged attack of Catarhal Pneumonia, began to manifest symptoms of Pitrisis e.g. Hectic fever, night sweats, short hacking cough with consolidation over the left apex. I placed him on the Cresote treatment beginning with two minim doses in Glycerine and Whisky, but I had to stop the remedy on account of Nausea, and reduce the dose of Cresote to one minim. The patient took this mixture without difficulty, and after continuing its use for six weeks was convalescent. He is now taking Cod-liver Oil only.

When a case presents itself requiring immediate attention to repairing the
loss of flesh which is so often seen in cases of Phthisis, it may be advisable to combine the Cresosate with a preparation of Malt and Hypophosphites. The preparation I am in the habit of using is one made by Sumner & Co. of Liverpool who thus describe it: "This is a combination of the Hypophosphites of Lime, Soda, Iron, Manganese, Uranine and Starchine as in the Symp of Hypophosphites, but with Extract of Malt substituted in place of the Sugar, which makes it still more effective in wasting disease."

It may also be combined with an Emulsion of Cod-liver Oil, in which form patients take it readily.

We may now notice the different ways in which Cresosate and its derivatives are administered.

In addition to the formulas already given, Cresosate may be given in the form of a mixture combined with a Stomachic, as in the following formula which is extensively used by Dr. V. S. Harris in the Victoria
Park Hospital, London —

Gracovi M III - XV
Spt. Chloroformi M X - XV
Sct. Glycyrrhizae Syr
Inf. Gentian. Co. (a)

Gthonia.

Gracovi may also be administered in combination with Morphin, and it is thus put up in capsule form by Chapotseau of Paris. I have used this form in some cases, and have had no complaints of gastric intolerance from its use.

Carbonate of Gumacol has recently come into vogue as a substitute for Gracovi, and its admirers contend that it does not produce any gastric disturbances. It is a white unpalatable powder with very little odour.

During a recent visit to Brompton Hospital, I found that it was extensively used there in the treatment of Pulmonary Tuberculosis. Dr. Ries, one of the Physicians of the Hospital, informed me that he usually commenced with
Ten grain doses three times a day, increasing by five grains till the maximum of twenty grains three times a day was reached. Professor J. R. Fraser has also used the Carbonate of Guaiacol extensively, and is satisfied of its utility. The only drawback to its extended use amongst the industrial classes is its price, but, as I believe, Balsam can be co-administered as to obviate gastric disturbance. I see no reason why it should not be used in those cases, receiving the Carbonate of Guaiacol for such cases as cannot really take Balsam without causing nausea.

In addition to its administration by the mouth, Balsam has also been extensively used in the form of inhalation. It may be used thus in a Vaporizer, or applied to the sponge in the respirator used by phthisical patients, or in an Inhaler with steam. All these methods have been advocated and adopted by various authorities, but it is uncertain whether, except
"Manual of Medical Treatment etc." (Cassell)
Vol II. p. 36 (2nd Edition)
in the form of being dropped on to the sponge of the respirator, any beneficial effect has been directly produced on the Bacillus or its products. I must confess that I believe that the more tracing the treatment of Phthisis, the greater is the chance of recovery, and therefore I should feel inclined to condemn all inhalations except in the form of antiseptic dry inhalation from the sponge of a respirator. Moreover the demand already made on the respiratory efforts in precisely those cases, which would appear to benefit most from inhalation, is already great enough without any additional burden.

Professor Germain See has recently introduced another method of administering Creasote, which is thus described by Professor Burney: "It is the combination of the inhalation of creasote vapour with compressed air. The patient is introduced into a compressed-air cabinet containing fumigations of creasote and eucalyptus.
and he has to remain there from three to six hours daily. This combination, according to Professor Lee, causes an enormous absorption of creasote by the whole pulmonary surface, diseased and sound. The air which is pumped into the cabinet to augment the pressure is passed through a mass of shaving saturated with creasote, and is made to take up one milligramme of creasote to each litre. During a siance of four hours it is calculated that the patient breathes an average one drachm of creasote. The beneficial effects appear to have been in some cases very remarkable. Professor Lee considers it a "true general anti-septic, acting especially on the bronchi-pulmonary surface." Dr. Tapert states that in six out of thirty cases submitted to this treatment the bacilli disappeared from the sputum.

Another modification of the creasote treatment by inhalation is the use
x "The Treatment of Pulmonary Consumption" (1854), p. 342.
of the "Creasote Chamber," which I had an opportunity of inspecting during a recent visit to the Victoria Park Hospital, London. It consists of a small apartment situated in the basement of the hospital in which patients inhale a Creasote atmosphere generated by the vapours given off by a pan containing crude Creasote placed above a spirit lamp situated in the centre of the apartment. The patient at first is overcome by the pungency of the vapour, but in a short time tolerance is established. The following description is given of this process by Harris & Beale:—"Another of our colleagues, Dr. Arnold Chaplin, has instituted a Creasote chamber in which crude Coltar Creasote is boiled over a spirit lamp into this chamber patients are introduced daily for a longer or shorter time. Under such conditions there can be no doubt that much of the vapour is inhaled. At first the fumes are decidedly irritating to the mucous membranes, but after a time tolerance is established. Having seen some of the results from the use of this..."
X. "Year Book of Treatment for 1875" p. 62.

X². "Revue de Bibliographie Médicale" 1876.
    quoted in "Year Book of Treatment for 1876" p. 61.
chamber we are able to speak hopefully of it in certain cases, especially in those in which there is excessive secretion, as in cases of Chronic Fibroid Phthisis and in Bronchiectasis."

The following description of the "chamber" is given by Dr. W. Kingston Roffe (late Pathologist to the Hospital): — "The chamber is a room eight or nine feet square; the patient, with his eyes protected by glasses and his nostrils plugged, is placed in it, and a few ounces of commercial Cresote are heated in an iron dish over a spirit lamp; the fumes rapidly come off till the room is thick with vapour which the patient breathes; he is kept in it for an hour."

Cresote has also been administered hypodermically in the form of Guaiacol solution in oil, but this mode of administration is not unattended with danger, as a case of death from this cause is recorded by Peter due to Jesuitism caused by the injection.

Here then are the various ways in which Cresote and its derivatives are

X. "Year Book of Treatment for 1894" p. 58
administered. We now have to consider how creasote acts. There are, as far as I am aware, two main theories as to the action of Creasote in Phthisis.

One theory is that it acts as a direct antiseptic on the Intercilli Bacillus; the other theory is that it acts as a general tonic on the system, and, by strengthening the system generally, renders the lung an unsuitable medium for the growth of the Bacillus. Both these theories are advocated by different observers.

Professors Burney, etc., say:—"It is known that the Bacillus of Intercilli can with difficulty be cultivated in sterilized blood serum containing 1/1000 its volume of Creasote, and it seems possible that even in moderate doses it may render the lung tissues a less favourable culture medium for this microbe."

Dr. Jaffet (already quoted on page 26) is more decided, for he says: "In six out of thirty cases submitted to this (Creasote) treatment the bacilli disappeared from the sputum."

A. Albrecht, on the other hand, holds that
Xth Year Book of Treasurers for 1895-6
Laboratory experiments have shown that creosote does not even lessen the virulence of the Bacillus.

Dr. sitting Dyffe gives an account of very elaborate series of experiments conducted by himself, and of which he gives the following detailed account:—"If a guinea-pig is thus inoculated (in the leg) with the Bacillus, it appears invariably to occur that in a few days the popliteal glands are affected, then the inguinal, and finally the lumbar; after fifteen days the spleen and liver are diseased, and in a month or five weeks the animal dies with involvement of lung. It is therefore possible to gauge the virulence of the injection by the extent of the mischief done. Thus, if at the end of fifteen days, when the liver, spleen, and glands should be affected, only the glands are the seat of disease, it is fair to say that the virulence of the organism is less than normal. The resistance of the guinea-pig may be regarded as a constant quantity."
The first series of observations was made upon patients who were inhaling creosote, and at the same time taking Cod-liver oil or Hypophosphites. All had definite physical signs, with bacilli in the sputum; they were in an early stage, and showed fairly rapid change. The sputum taken was that coughed up in the early morning. This was injected into guinea-pigs before treatment of any kind was begun.

After two months another specimen of sputum was injected, and the results were compared, the animals in each case being kept one month before being killed. Of twelve such cases, the sputum in every case caused tuberculosis of glands, spleen, liver, and lungs. Hence it may be taken that the inhalation of creosote has no effect whatever upon the virulence of the Bacillus. The patient's general health improved greatly, but the physical signs remained unaltered. This improvement is, therefore, evidently due to the increased force of resistance of the patient, and not to lessened virulence.
ence of the Bacillus.

In the next series the patients took Cresote by the mouth, and here the results were distinctly more encouraging. The dose varied from 2 to 12 minims thrice daily. Taking first the patients treated with 2-drop doses, in one case a guinea-pig inoculated before the commencement of the treatment died in eighteen days, whereas, when the patient was taking 2-drop doses of Cresote, the guinea-pig inoculated did not die for seven weeks. In another case the animal inoculated with the untreated sputum was killed after fifteen days, and was found to have tubercle in all its organs; while another, inoculated at the end of two months’ treatment, and killed also on the fifteenth day, showed no tuberculosis of the glands, but no affection of internal organs. With larger doses of Cresote the effect was nine striking. Thus, inoculations from the untreated patient caused death on the twentieth day, with the usual post-mortem appearances. After two months' treatment—
with 6 minims of Cresote thrice times a day, one
Guinea-pig inoculated lived for nine weeks, and
another was killed on the fifteenth day, with
Infective Bacilli in the lumbar glands but not in
the viscera; the glands were inflamed, but not
swelling; the bacilli were few, small and
thin, not congregating into colonies, and an
attempt to cultivate them did not succeed.
Inoculations were then made from patient-
taking up to 12 minims thrice daily. The
longest time that any Guinea-pig lived was
three months after inoculation from a case
taking 10 minims at a dose; while another,
inoculated from a patient on 12 minims,
lived a shorter time. If the animal was
kept long enough, it always died of Tubercu-
losis. The observations on patients-
treated by the Cresote chamber are in-
complete, though it may be noted that
the Guinea-pig inoculated lived for
thirteen and fourteen weeks respectively.
Further experiments also seemed to show
that the injection of Cresote into the
Guinea-pig at the same time as, or
after, the inoculation with sputum,

has a definite restraining effect on the poison of Phttrisio.

The observations may be summed up as follows: In the first series of cases, those that were taking Bacoto as an Inhalation in addition to other drugs, no effect on the virulence of the disease was noted. In the second series, where the drug was given by the mouth in doses varying from 5 to 12 minutes three times a day, though when the smaller doses were given the diminution of virulence was slight, yet when the larger amounts were reached it was extremely marked. In the third series, although the animals lived longer than in any other case, it is impossible to dogmatise from so small a number. Fourthly, Bacoto injected under the skin in tuberculous guinea-pigs had a markedly restraining effect, provided that the disease was not too far advanced. Repeated attempts were made to grow Bacilli in serum from
Animals inoculated with tuberculous spores from patients taking Creasote in large doses either by the mouth or by means of the Creasote chamber but without success.

These then represent the latest views as to the anti-bacillary effect of Creasote. It is premature yet to dogmatise on the exact place of Creasote as a germicide in the lung tissues themselves, but sufficient has been proved by the authors already quoted to warrant us in saying that, in some cases at least, Creasote has a directly anti-bacillary effect in Phthisis.

From the foregoing experiments and clinical observations I think we are warranted in making the following deductions as to the value of Creasote in Tubercular Disease of the Lungs:—First—That the administration of Creasote by inhalation is perceptibly of less value than the administration by the mouth; and that, in some cases at least, the inhalation is not
Altogether free from danger owing to the demand made on the respiratory efforts already severely taxed.

**Second**—That, in the guinea-pig at all events, Creasote acts as an antiseptic directly on the Tubercle Bacillus, and may therefore be supposed to have some similar action on the human subject when the remedy is administered by the mouth, and carried to the various tissues by the blood.

**Third**—That as soon as the Tubercle Bacillus has been detected in the sputum, Creasote treatment should be begun, and careful observations made from time to time.

This may be a convenient opportunity for discussing the Bacillary Cause of Phthisis. I am not at all convinced that we are on the right lines in endeavouring to wage war against the Tubercle Bacillus, for this reason, that the exciting cause of the disease is probably to be found in the phlegmasia or other alkaloids produced by the
This "Nomaïne Pathology" rightly or wrongly has displaced, in some measure at least, the "Bacterial Pathology" recently facile princeps.

On this subject the late Sir William Arbuthnott makes the following remarks:—

"It is obvious, therefore, that we have not yet succeeded in tracing all infective diseases to micro-organisms; and it is possible that further researches may even modify the views now held by some with regard to the relations of the micro-organisms to diseases in which they are regarded as the cause. This is especially (true) so in regard to the views now beginning to be entertained as to the relation of microbes to the generation of poisons by them. Hitherto the microbe has been looked upon as directly causing Disease by its effect upon the tissue of the patient; but since chemical investigation has been applied to the processes of Disease, and to the
products of putrefaction and fermentation, and to the products resulting from the artificial cultivation of microbes in nutrient media, we must now look upon many of the symptoms which occur in consequence of the action of microbes as due, not to their direct action on the tissues, but to their indirect action in generating poisons; that they are, in fact, the active agents in the formation of poisons."

In the course of some enquiries I made in 1888 into the Etiology of East African fevers, I attempted to explain the cases of Dr. Livingstone's disease that in African fever it was useless to give quinine till some purgative had first been administered. The reason was, that, what is now known as the Bacillus Malariae produced an alkali-sid or alkaloids in the intestine which had first to be got rid of by a brisk purge—E. g. Calomel, or what is known among African travellers as "Livingstone Ponces" before the specific action
of the Plasmodia could be exerted on the organism that secreted these alkaloids. The subsequent discovery of the plasmodia, etc., in this disease, bears out this line of reasoning. And perhaps this accounts for the success of our predecessors in their much-maligned antiphlogistic treatment of inflammation. Though they knew nothing of Bacteria, 
Pomaines et hot germe omen by these modern names, yet there can be no doubt that their treatment was essentially scientific, for by a brisk purge you can get rid of a great number of such excreta, and so aid the phagocytes in the blood in their never-ceasing battle against the Bacilli.

Now, supposing that Pulmonary Tuberculosis is the result of alcaloidal poisoning of the lung tissues, produced primarily no doubt by the Inhaled Bacillus, have we not got an inklings as to the probable action of Carasole and other antiseptics in this
disease.

Viewing the matter in this light, therefore, it follows that if we could render the tissues aseptic, we should soon solve the problem of getting rid of the harmful effects of the Bacilli. Just as in surgery we have got from the Antiseptic to the Aseptic stage, so I believe that we shall only make true progress in Bacteriological Medicine on similar lines. It is therefore of prime importance to use every effort to strengthen the tissues against the invasion, not so much of the Bacillus, but of the alkaloids produced in certain "Toils" by it. In this direction lies a great future for the scientific treatment of diseases caused by micro-organisms, and all climatic and dietetic aids should be pressed into service in such diseases. Let us now pass on to review some statistics collected on the subject of the beneficial action of Creasote in Pulmonary Tuberculosis.
Division B.

Statistics of Cryptocoe Treatment

Clinical Cases etc.

During the course of a recent visit to the Victoria Park and Brompton Hospital, London, I was very much interested to find that the treatment of Pulmonary Tuberculosis by Cryptocoe and Iodine was almost universal. The various physicians employed the remedy in various ways—some instance Dr. Biss and Mitchell Bruce at Brompton used the Carbonate of Iodine principally, while Dr. Harris at the Victoria Park Hospital used Cryptocoe in the form of a mixture, the formula of which is given on page 28. They are all of opinion that the remedy is of decided utility in Phthisis, and are even inclined to endorse Jacquin's high praise of it.

Of course one cannot expect brilliant results from Hospital cases of Phthisis, so long as these buildings are situated in the immediate neighbourhood of large industrial centres, and also as the patient...
Xth Year Book of Treatment for 1890-19-19
are, in a great number of instances, too far gone before seeking admission to the hospital. In all the cases referred to, as in Saccard’s practice, the treatment was supplemented by Cod liver oil, sometimes by maltine etc. The benefit received by out-patients in early stages of the disease is very marked.

As far as I can gather from the reports of those in hand, the statistics published by Professor Beverly Robinson are the most elaborate. They are thus condensed in handy form in the Year Book of Treatment for 1890:

"He inclines to the view that Cresarate favours the growth of fibrous tissue by which recovery takes place in this disease, and that it acts rather by aiding the general nutrition than as a direct Bacillicide. The effect is most marked when it is given both internally and by inhalation. Beechwood Creosote alone must be used—not the commercial form, which is obtained from Coal Tar. The dose should be small or moderate for some time,
or the stomach may become intolerant. From three to six minims daily may be taken for many months in half-minim doses every two or three hours according to the following formula: —

\[\text{Creasote MVI} \]

\[\text{Glycerin Zi} \]

\[\text{Sp. Frumenti Zii} \]

Creasote must be perfectly dissolved and freely diluted, otherwise it is irritating. It may also be taken in capsules of one minim each with cod liver oil, two or three at a dose.

The inhalations used were these: —

1st. Iodoform, Creasote, Eucalyptus, Chloroform, Alcohol & Ether.

2nd. Iodine, Creasote, Carbolic Acid and Alcohol.

3rd. Creasote and Alcohol.

One hundred and forty-three cases were treated with the Creasote mixture and inhalation, and there were good results of 66 of these. The duration of the treatment was from one week to 2 years 11½ months. There were 37 first-stage cases, 6 second,
third, 4 doubtful, and the rest unrecorded. The following were the results as regards the special symptoms:

**Cough.**  
1st stage: Cured, 10; improved, 24; unaltered, 3.
2nd stage: Improved, 3; others unaltered, and deteriorated.
3rd stage: Improved, 5; deteriorated, 1; no record (all stages) 17.

**Dyspnoea.**  
1st stage: Cured, 4; improved, 15; unaltered, 1; no record, 4.
2nd stage: Cured, 1; improved, 2; unaltered, 1; no record, 2.
3rd stage: Improved, 5; no record, 6.

**Sputa.**  
1st stage: Cured, 5; improved, 18; unaltered, 1.
2nd stage: Improved, 14.
3rd stage: Improved, 4.

**Night-Sweats.**  
1st stage: Cured, 8; improved, 4; unaltered, 3; deteriorated, 1; no record; 15; new present in 8.
2nd stage: Cured, 1; unaltered, 1; no record, 4.
3rd stage: Cured, 1; improved, 2; no record, 7.
Appetite: 1st stage: Improved, 17; unaltered, 8; deteriorated, 0.
2nd stage: Improved, 1; deteriorated, 1; no record, 3.
3rd stage: Improved, 4; no record, 7.

Weight: 1st stage: Increased, 18 (3 to 25 lbs); unaltered, 4; diminished, 3.
2nd stage: Unaltered, 1; diminished, 2; no record, 3.
3rd stage: Increased, 2; unaltered, 1; diminished, 1; no record, 7.

Haemoptysis: 1st stage: 4, very moderate, but all had occurred before treatment.
2nd stage: 1, when it had occurred before. No record, 46. Hence Grant does not promote haemorrhage.

Fever: Removed, 7; diminished, 9; unaltered, 8; increased slightly, 1; no record, 41.

Strength: Increased, 26; unaltered, 1; lessened, 4; no record, 36.

Swot-Affection: Cured, 6; improved, 7; unaltered, 2; deteriorated, 3.

Wring: Generally unaltered, Where albumin previously, it remained so. It had
X
"Year Book of Treatment for 1894" p. 57.
no odour of Creasote, and in only one case was the presence of the drug shown by tests.

Physical Signs: 1st stage: cured, 2; practically cured, 2; improved 10 (at all stages).

Conclusions. Creasote is of great value, especially in the first stage, and causes no trouble unless given in too large doses. There is evidence to show that it modifies the local changes in Phthisis. It is uncertain whether it has any direct anti-bacillary effect. The treatment of Phthisis by Creasote is superior in its results to any other.

In a review of the present treatment of Pulmonary Tuberculosis in France by T. Dinn of Nice, that writer says: "The hypodermic administration of Creasote is much advocated in France, but it is not considered that the drug should be given in all cases of Phthisis. None in the first and second stages are rejected; and the greatest
success is obtained when the fever is absent or very slight, and the progress of the malady is slow. As Cereascite is eliminated by the broncho-pulmonary tract with an increase of Congestion or Hyperaemia, it should not be used when inflammatory or congestive states exist, or where fever, renal tremors, or haemoptysis are present. In conclusion it may be stated that the opinion in France respecting the Cereascite treatment is that it is the best method which at present exists to prevent the multiplication of the Bacilli. There is considered to be no doubt that a modification of the Chronic Inflammation of the Broncho-pulmonary Membrane follows its use; and even if it prevents the invasion of the Bacilli rather than destroy them, it is regarded as the best modern means with which to counteract Intersexulosis.
"Year Book of Treatment for 1844" £ 0.58.
f. Simon considers that, though the constitutional treatment of tuberculosis by large doses of Creasote cannot claim in any way a specific effect, yet it can be positively stated that as a symptomatic treatment it excels every other form at present known. The patient, gain in weight, their appetite improves, night sweats diminish, expectoration becomes less purulent, and in many cases, especially if not too far advanced, the disease appears to be actually arrested. It is only rarely that patients cannot digest the large doses of the drug. But it is absolutely necessary that the Creasote should be perfectly pure, and that it should be taken immediately after meals.

A. Alton of Berlin holds that Creasote has no effect upon the tuberculous process in the lung, but considers it a useful remedy, perhaps the best at present known. In most
X "Year Book of Treatment for 1894" A. J. W.
patients it is a good expectorant for
many a stomachic, often it acts
as a tonic; but it does not cure the
disease."

As Albus's experience is based on the
administration of Creasote in full
form, it is probable that he has not
yet got the best results obtainable, such
as are shown in Dac's practice.

J. J. Whittaker comes to the following conclusions
on the subject:

1. When pure, Creasote is harmless.
2. It has no direct action upon the
   Tubercle Bacillus.
3. Tuberculosis pulmonum is chiefly a
   secondary affection by a Streptococcus.
4. Creasote has no direct action upon
   this Streptococcus; hence none whatever
   upon hectic fever.
5. It destroys lower organisms, especially
   those which produce fermentation,
   without affecting the process of digestion.
6. Hence the virtue of Creasote, which is
   undeniable in most cases, is chiefly,
Year book of treatment for 1874 1. 60
but not wholly, due to its influence upon
infection.

D. M. Rees gives a summary of 101 cases
processed in Cole's clinic in Philadelphia
with Quinaol, and it must be admitted
that his results are almost negative.
His conclusions are:—"Practically, Quinaol
appears to have no definite effect upon
the temperature, pulse, or respiration; nor
does it seem to check the sweats. In a
number of cases, however, cough and
expectoration lessened during its use.
In a few instances the physical signs
improved; but there is no evidence that
the remedy had special influence
upon the Bacilli. In early cases the
general nutrition is benefitted, and
the appetite improves. Quinaol has
this important advantage over Quinin—
it is less liable to produce jaundice
disturbance. In no instance of the
series did it seem in any way to
interfere with digestion."
It is impossible to reconcile these statements with those of other equally competent observers, but I think these cases clearly show that we have yet to find out the secret of success (partial or complete) in the hands of one observer, and the failure of the drug in the hands of another. But it is not alone in the case of Crescote that such disparity of opinion holds good. Indeed, it may not be too much truth that the same conflict of opinion gathers round the majority of the drugs used in Practical Therapeutics. Take for instance the case of Digitalis in Pneumonia. Certain authorities are quite satisfied that the Digitalis treatment of Pneumonia as a routine method is an unqualified success; others, equally competent, hold that Digitalis is unnecessary if not positively harmful, and at all events should be used with great caution, and only in those cases where the heart's action is very weak, and never unless this symptom is present.
If such differences of opinion exist in a comparatively simple disease such as Pneumonia, need we wonder that there is a difference of opinion in such a complicated disease or group of diseases as in Pulmonary Tuberculosis. In one thing we must never lose sight of the fact that constitution or temperament must exert some influence on the treatment, and it is quite obvious that comparisons, to be of any value at all, must be much more carefully made than seems to have been the case. It is unnecessary to point out that the post-mortem room has revealed cases in which the disease has become arrested without any treatment, and it is equally certain that there exist a number of cases where treatment is absolutely valueless as far as the ultimate result is concerned.

I am afraid that some observers have not approached the subject without bias, being anxious to lend their own specific. In this, as in other matters, it appears
X  "Manual of Medical Treatment"  2nd Edition
that the Latin proverb holds true
"knowledge, great potential," which
may be also found in the well known
epigram "Many men, many minds."

The following observations as given by
Professor Burney as to this matter
seem to me to merit most careful con-
sideration, as he seems to approach
the matter free from bias, and with a
view of determining, with some ap-
proach to scientific accuracy, the
exact place which Bresle occupies
in the treatment of Pulmonary Tub-
erculosis. He says: "It is impossible,
in the rational treatment of Pulmonary,
for one sight of the fact that there is an
infective organism not only developed
and developing in the lung, but actually
diffused through the mucous and muco-
purulent secretions in the air passages.

he knows that the Tubercle Bacillus, in the
vast majority of cases, reaches the lung
from without, that it is taken in with the
inspired air, and finding in the lung
the conditions suitable to its existence and multiplication, it lives and multiplies. 

Here, if we could alter or disturb these conditions we might hope, if not to arrest its vitality, at any rate to modify and diminish its morbid activity.

There are two channels by which we can attack and influence the infective organism in Pulmonary Phthisis: one is the artery, same channel by which it most commonly gains access to the organism, the air passages of the lungs; the other is the blood.

There are also two conceivable methods by which we may influence the life and activities of this bacillus: —

1. By producing conditions more or less directly hostile to its existence; i.e. (anti) directly anti-bacillary.

2. By increasing the existing power of the pulmonary tissues to its attacks.

But it will naturally be asked what has been the practical gain from the use of antiseptic remedies. We have seen it stated, and with authority,
(Graham's Harveian Oration 1888) that the use of antiseptics in the treatment of Pithosis has been attended with no good results. Our own personal experience, as well as the recorded experience of the most competent and experienced observers, in our own and in all other countries of the world, proves the inaccuracy of this statement. It is possible to get good results, or no results from the use of antiseptic agents, according to the amount of judgment exercised in the selection of cases, according to the amount of sincerity, earnestness and discrimination with which we employ the agents at our command, and according to the amount of co-operation and good faith we encounter in our patient.

But when patients and their attendants have patiently, perseveringly, and adequately carried out the use of antiseptics, by inhalation and other methods of administration, we have seen remarkably good
results, some of which we have published. No other antiseptic has met with such general acceptance and approval in the treatment of Phtisis as Cresote, and one of its derivative, Griscol, is largely used in its stead. It has been employed in the treatment of Phtisis for many years, and may be regarded as a direct descendant of the old tar treatment, so much in vogue in the last century. Of late years it has steadily gained in favour, and is now perhaps more widely used in every country in the world than any other remedy for Phtisis. The advocacy of Bouchard and Simonet in France, a few years ago, gave a great impetus to its adoption in that country as a remedy for Pulmonary Tuberculosis. They published the details of a large number of cases in which they had given it, and the results were regarded, on the whole, as unusually favourable. They urged the necessity of using the pure
Wood Creasote, obtained by distillation from the tar of the beech-tree. Prof. Secord, who is a warm advocate of the Creasote treatment, believes—as we do—that Creasote exerts a curative influence on the tubercular lesions in the lung, by promoting sclerotic changes. It diminishes the expectoration, lessens its purulency, and removes any factor it may possess; it reduces the extent of the catarhal lesions, and so reduces considerably the area of the pulmonary changes. It lessens the tendency to haemoptysis. It tends to clean the tongue, and promotes appetite and the capacity of taking food by its stimulating action on the stomach. Some patients object greatly to its taste, and in some few cases it seems to set up gastric irritation ...........
(p. 26) We are convinced of the efficacy of Creasote, and its derivative, Guineal, in arresting the progress of Phthisis in many cases, and its efficacy is not limited to early cases, but is also
of great use in many chronic forms. It does not cure incurable cases, as some would seem to expect; but if properly, adequately and carefully administered, it does as much in the way of remedying them as seems possible. How it acts it seems premature to determine. It is known that the Bacillus of Inebioli can with difficulty be cultivated in sterilised blood serum containing \( \frac{1}{4000} \) its volume of Crecosto; and it seems possible that even in moderate doses it may render the lung tissues a less favourable culture medium for this microbe.

The above extract represents, to my mind, the exact position, as the present time, of Crecosto in relation to the treatment of Pulmonary Inebioli's by drugs, and seems to me to be the most accurate estimate of the value of Crecosto in this disease.

I propose to give a somewhat lengthened extract from what I suppose is the most
Xth Treatment of Pulmonary Consumption, p. 121649.
recent contribution to the literature of this subject.

Harris & Beale in a recently published work say: — "Creosote must now be ranked next in the order of special drugs. The attention of the profession has been drawn to its use every now and then for many years, and in another section it will be seen that it was considered of special value at the beginning of this century. The main objection at first found to attend its use was the smallness of the dose patients were able to take without great disturbances of digestion. Drop doses only, given in the form of Pil. Creosoti or in gelatine capsules, increased to two drops, were found to be as much as the stomach could stand. Whether the drug now in use is purer than that obtainable formerly, we do not know, but it is an undoubted fact that patients are now able to take much larger amounts of the drug. (I think Jacord has given the proper explanation of this fact, when he insist
that Cresote, to be beneficially employed, must be largely diluted, and not given in solid form at all).

"We often give it in the form of a mixture as follows:

R. Cresote n. III-IX
G. Chloroform m. XIV
Est. Hyocyamineq 3i
Inf. Gent. Co. 2i

By this method patients are able to take half a drachm, or even, in some cases, a drachm in the course of twenty-four hours, and, moreover, without either nausea or other disturbance of the digestive functions. In this way it is seen that the former objection to the administration of the drug is reduced to a minimum. Of course, cases do arise every now and then in which a tolerance of the drug cannot be set up. The exact value of this drug in the cure of Phthisis is not known, and further experience is wanted before any dogmatic statement can be made upon the subject."
"Immediate results of treatment by the so-called Anti-bacillary treatment must not be looked for or expected. The improvement which takes place, when it does take place, is essentially gradual, and hence treatment, whatever it may be, should be steadily persevered in for weeks, or even months, without intermission. It is no doubt owing to this great perseverance that a larger proportion of good results are obtained in medical treatment in those countries where faith in medical treatment and the value of remedies is greater than in our own."

"According to our experience in the treatment of large numbers of patients by this means, it is seldom necessary, or indeed advisable, to give more than twenty to thirty minims, and, generally speaking, six to fifteen minims in the twenty-four hours is a sufficient dose. Darminger, whose account of the breacase treatment is much to be commended, states that he himself generally
gives about half a gramme in the day, and only in the cases in which the digestive powers are particularly good does he raise the dose to one gramme: roughly speaking, this amount would be about eight to sixteen minims, or rather more. According to our experience, it is useless to expect creasote to cure tubercular phthisis except indirectly. We are quite at one with those who entirely repudiate the theory that creasote acts as an antiseptic in this disease. We have no evidence sufficient to support the theory that an animal body saturated with creasote can resist the attack of the tubercle bacilli any more successfully than one not so treated. From a careful examination of the results of the treatment of many hundreds of cases with creasote we are inclined to think, although evidence in support of such an opinion is necessarily somewhat indefinite, that creasote exercises a favourable influence upon the course
of many cases of Phthisis. The chief
good effect noticed is a decided im-
provement in the digestion; the tongue
becomes clean and moist; the appetite,
if anything, improves, and the feelings
of discomfort after meals are relieved.
Nausea and vomiting are seldom found.
Some, and emacipation is an exception.
We have not seen the great increase
of weight—which has been obtained
by Bouchardt; on the contrary, increase
in weight—marked degree is more
common with other kinds of treatment.
The cough is sometimes markedly im-
proved, and with this improvement
there is often a diminution of the ex-
pectoration. The night-sweats and
fever not infrequently subside. When
we have said this, we have completed
all that can in our experience be said
in praise of the biercaste treatment in
consumption. No case treated with
this drug could be in our opinion
considered as cured by it, in no case
was fever which Pasteur says means
of treatment brought under control, nor were night-sweats stopped by creasote when other drugs had been without effect.

On the other hand, we are able today that, except that some (a few) patients were altogether unable to take the remedy, no untoward symptom arose traceable to its employment, no great a fatal harm
shape, no marked acute dyspepsia from jaundice failure, neither have we seen cases in which, even when the dose of the drug has been great, any injury could be traced to the administration. Many untoward events, however, have ap-
parently occurred in the practice of others with reference to one of these supposed results of creasote treatment. We think it unlikely that the deposition of new
insects in the lungs and elsewhere can be logically laid to the charge of this remedy. Our own opinion on the matter is that creasote cannot be considered to be either so powerful for good a for evil as has been supposed. Its effect upon intestinal disease appar
so as to have been altogether exaggerated. The marked improvement, however, which is frequently found to exert upon the digestive processes is of considerable importance, since it enables the physician to increase the amount of nourishment given to the patient per diem, and this, taking into consideration the important part which the feeding plays in the treatment of this disease, is of much assistance.

This language is certainly very different from that employed by Prof. Burney. Yes, and at first sight seems altogether hostile to the idea of creaseot as a means of cure for pulmonary phthisis. But the practice of the authors at Victoria Park Hospital seems to show that they expect good results at least from the administration of creaseot, else they would not employ it in almost every case under their charge. Dr. Harris kindly placed his case-books at my disposal, and I was quite surprised to find that almost every case
of Pli-thus is admitted to his wards during the past 30 or 40 years had been treated into silic with Creasote.

But they themselves, in their book already quoted from, make an important admission, one which, I think, shows undoubtedly that Creasote is generally considered the remedy par excellence with which to combat Intercellular Pulmonary disease. On page 388 (loc. cit.) they say: — "From the time of its first introduction until now, Creasote has been more or less in use in the Cure of Consumption, and it has been claimed for it by an undisputed authority that it "alone of all the remedies which have been employed for the same purpose, has stood the test of the experience of so many years." This statement is no doubt true, but it should be recollected in connection therewith that Creasote has not been continuously employed since its first introduction. It has,
however, been a remedy to which physicians have been prone to turn now and again after the failure of this or that remedy, which, having been introduced with a flourish of trumpets as a Specific, has disappointed expectation. During the past six or eight years it is an undoubted fact that Bresothe and the drugs directly or indirectly obtained from it have been very popular in the treatment of Tubercular disease, and that at the present time their use is very extensive in this connection. He might even go a step further and say that no other drug is so popular.

Now the mere fact that Bresothe has been turned to as an oasis in the desert of failures elsewhere poses, I think, that there must be some virtue in it; else the vast majority of recognized authorities in this and other countries would not have resorted to it when all else failed them. I have already said to point out that Bresothe occupies a very definite relation to
Phthisis, if, even only as a means of holding the disease in check, till the system is sufficiently built up to enable it to wage an internecine warfare against the invading Bacillus. Dr. Harris has had rich opportunities of witnessing the rise and fall of many vaunted cures for Phthisis, and his experience is most valuable, but I think he has rather minimized the good results obtainable from creasote, in trying to steer clear of the rock of recommending it in all and sundry cases of pulmonary interculosis. That he feels this to be the case is in apparent affinity, because I have in my possession a letter on the subject from him in which he says, in answer to this criticism: "I agree with what you say about creasote, we do seem to turn up somewhat too unfavourably concerning it, and we do use it very extensively. I think, however, we require more experimental evidence as to its action."
From such a mass of evidence as the foregoing, I think we are justified in saying that, though we are not yet in a position to dogmatise on the exact way in which the action of creasote is produced, there can be no doubt that it acts favourably, in curable cases, on the system generally, and also particularly in the respiratory tract. I hope that, in the near future, with increased knowledge of the various elements in Pittiriis we shall be able to say more definitely what are the conditions in which we have a right to expect that creasote will act favourably to hasten the recovery of the patient who is in great danger so long as the ravages of the Bacillus and its products go on unchecked.

In another part of this Thesis I shall endeavour to point out some considerations which should guide us in the administration of creasote in Pulmonary Intercullosis.
Clinical Cases.

The following notes are from cases which were treated principally by Croscote. They are interesting from the fact that in these cases out of four recorded Croscote has not only improved the condition of matters in the lungs, but the absence of physical signs at this date (February 1876) seems to show that a cure has been effected, at all events, in the meantime.

Case I.

J. S. A. Macaulay—aged 29—formerly a Medical Student, now of no occupation—

Personal History. At age 4 patient had a mild attack of Measles, and at age 7 an attack of Whooping Cough—also mild. At the age of 10 he had a severe attack of Rheumatic Fever (January—March 1877). Patient has enjoyed good health from that date till the spring of 1891 when he had Influenza, with suppression of urine for 18 hours. He was convalescent in about a fortnight. In 1892 he had two mild attacks of Influenza. About the middle of December 1893 he had Influenza followed by Bronchitis.
Slight cough and expectoration continued till March 1893, when he gave up writing College and came home. About this time night-sweats began, very slight at first. He felt very weak, but the cough & expectoration were not so marked. In June 1893, as he was walking up the street, after an easy cough, his mouth filled with blood. This was repeated almost immediately— the total loss being about 30 & tablespoonfuls. He called in his family doctor, who prescribed rest & rest. After this, the night-sweats became very violent. In August he removed to his uncle's (about 400 feet above sea-level) to try the effect of hill-air. On August 25th (1893) from damp feet he caught a chill which developed into right-sided Pneumonia and Pleurisy. The left lung was quite unaffected. He had a cough, but little or no expectoration after convalescence set in—the night-sweats were still very bad. About October 20th he was able to take exercise on horseback in fine weather. The night-sweats gradually stopped, but from time to time there was expectoration checked with blood especially
after sudden exertion. Dyspnoea was marked all along. In June 1894, patient consulted me. He was then suffering from a short hacking cough with purulent expectoration. On examination the sputum revealed the presence of tubercle bacilli to a moderate extent.

(In all my examinations of sputum referred to in this Thesis, I have adopted the method of Henry C. Stites as recommended by Graham Brown in his "Medical Diagnosis" [p. 163].)

The patient complained of pain on the right side, about 2 inches below the clavicle. On percussion there was a distinct rise in the pitch of the percussion note over the affected area (after coughing). On auscultation there was found marked Bronchial breathing over the right after with moist rales. On a limited area there was also increased vocal resonance. It was evident that there existed here a small cavity - the lower lobe of the lung anteriorly revealed the usual
symptoms of a previous pleurisy attack. He was very dyspeptic, and in the slight exertion burst out into profuse perspiration. His temperature was 99.8°, and he had a hectic flush. His appetite was very poor, and he was much reduced. I advised him to stay in bed till mid-day, when he might go to the front of the house (Southern exposure) for half an hour daily in fine weather.

The affected part of the chest was painted with equal parts of the tincture and tincture of iodine, and he was aded the following mixture:

\[ \text{Sig. One Tablespoonful thrice daily after food.} \]

He took this for about ten days, and in June 28th 1874, he began taking Cresoli in the following mixture:

\[ \text{Sig. One Tablespoonful thrice daily after meal.} \]
He soon began to improve under this treatment, but continued the mixture till December 1894, when I substituted Capsule of Creasote with Morrhuis (Capsules Morrhuii Creasoter de Chappetan) which he took till the end of March 1895. As regards the night sweats they persisted with unabated frequency during July and August 1894, after which date they gradually diminished until October 1894 when they ceased. But till February 1895 they had not returned. The expectoration too ceased about November 1894, and showed no signs of recurrence.

In September 1895 he met an old friend in Surgeon-Lieutenant Grant (M.S.), who examined him carefully and could find nothing but a little bronchial catarrh on the right side, and the evidence of adhesions from the previous attack of Pneumonia. He stopped taking Creasote in March 1895, and enjoyed fairly good health till in October he again had an attack of Influenza. He was left with almost dry cough, but...
had had no night-sweats, no expectoration, and no return of haemoptysis. I saw him again in December 1895, when he looked well, and was getting stout. He certainly presented a great contrast to his previous condition in June 1894. He could now take a deep inspiration without difficulty, and had absolutely no pain on the chest. Respiration both sides gave an similar note, and on auscultation beyond a few dry rales, no abnormality could be detected in the right after. For the right base anteriorly there were a few faint friction sounds, but otherwise nothing abnormal. His temperature was 98.6°, his appetite good, and he could walk a considerable distance without fatigue. He had had no night-sweats for over a year. There were no tubercle bacilli in the sputum examined. Maccormack of the presence of a hint cough, I advised him to take a short course of the cream treatment again. In February 1896, he reported himself as perfectly well.
As regards this patient's family history there is no evidence of Tubercular disease in either side. With the exception of his mother, who died of Tubercular Pneumonia when he was born, all his ancestors have lived to be 70 years of age; one died aged 96 years.

This is a case in which I am inclined to attribute the patient's recovery to the use of Creasote. The presence of Tubercular Pulmonary Disease was well established; as, apart from the physical signs and the presence of Tubercle Bacilli in the sputum, there was the accompanying Haemoptysis, hectic fever and night-sweats. Within three months of commencing Creasote treatment all had vanished, and after an interval of 16 months have not recurred. It may be too soon yet to say that the patient is absolutely cured, but in the meantime the disease is arrested, and I think the prognosis is very favourable.
All the more so that the patient has since had an attack of influenza, and has passed through it practically unscathed. It may be hinted by the sceptical that this is one of the cases of Phthisis in which we may have been effectual, but it is at least worthy of note that on previous occasions the night-sweats and dyspnoea had returned after longer or shorter intervals, and only after the Creasote treatment did more than a year elapse without recurrence of these subjective symptoms. Looking at the case from all points of view, I cannot help feeling that after the Creasote treatment the patient is now in comparatively good health, and to all intents and purposes cured of his Infebrile manifestations. The patient himself is convinced that, if the Creasote treatment, he is indebted for his recovery so far. It is interesting to note that in 1893 this patient had endeavoured to take
Creosote pills but failed, owing to the intolerable nausea they produced. He never experienced the slightest difficulty in taking the creosote either in mixture or in the form of capsules with woodvine.

Case II.

James Monat - aged 36 - farm labourer.

Personal History. Patient had no illnesses till November 1877 when he had Rheumatic Fever - He has never been so ill since. In November 1879 he had an attack of Pneumonia, and was laid up for six weeks. In November 1890 he had Pneumonia again, and was laid up for seven weeks - So further particulars of these attacks can be ascertained.

In August 1894 I was sent for here to visit this patient, and found him suffering from Pleurisy on the left side - the friction sounds being audible over the upper 3/5 of the anterior surface of the lung, and extending as far as the mid-
axillary line. His temperature was 104.2°. His attack yielded to treatment by bromine and counter-irritants, but he was left with a short dry cough, night-sweat, loss of appetite, and fine crepitations were audible over the apex of the left lung. On August 4th he had slight haemoptysis under 1 oz in quantity altogether, but the sputum was streaked with blood for a day or two afterwards. He lost weight rapidly. As soon as the acute symptoms had subsided, patient was put on a mixture of the Hypophosphites

On August 22nd he began the Creosote treatment (in Glycerine and Whisky) in one ninth doses three times a day, combined with the external application of equal parts of the turpentine and trichlor jodine. He also had an astringic pill (10 gr.) at bedtime to help in checking the night-sweat. He rapidly began to improve under this treatment, and was soon able to leave home for a short change—of course Cen-
Winning the Cresate mixture, I saw him several times during the course of the winter 1894-5, and in spite of the almost unexampled severity of the weather, he was able to follow his employment, and felt stronger than he had done for years. I may say that previously he had had a recurrence of cough every winter with mucopurulent expectoration. This ceased altogether about the middle of October, and has not since returned. In December 1894 he took Cod-liver oil in addition to the Cresate, which was continued till the end of May 1895, when he was practically cured. He rejoined himself to me in December 1895, and I failed to find any trace of Pulmonary disease. He had besides increased in weight by over 15½ lbs. All his relatives were and are healthy, with the exception of his maternal grandmother, who died of Phthisis aged 90. I regret that no examination of sputum was
made in this case, but the signs otherwise present left no doubt in my mind that the patient was suffering from Pulmonary Tubercular disease, which was arrested by the continued use of Creasote. In February 1896 I found that the patient is in good health, having had no cough this winter at all.

Case III.

Mrs Milne - age 31 - Housewife.

Personal history. Patient had none of the illnesses incidental to childhood. She was married in 1880. In 1881 (after her first confinement) she had an attack of pneumonia, and was confined to her room for a month, but she recovered completely. She has had nine children.

In 1890 she developed symptoms of Bronchial Catarrh, for which she was treated, but the cough persisted till April 1895. There was little or no expectoration latterly, and no haemoptysis till that date when she "put up several mouthfuls of blood"
at intervals. Her appetite was very poor, and she was rapidly losing flesh. She had been troubled with night-sweats since the autumn of 1894, and these had latterly been increasing in amount and recurring more frequently.

On examination there was found a cavity in the left apex. The right lung, beyond a few moist rales over the root of the bronchus, was normal. Her temperature was 99.2. She began taking Cocasone on 12th April 1895 and continued it (in the form of mixture with Euporin spiritously) till the end of August, by which time she had regained her appetite, lost her cough entirely, gained weight considerably; and, as she herself expressed it, was able to do things she hadn’t done for years before. I examined her again in October 1895, and could find no abnormality except that there was a slight increase of Vocal Resonance over the left apex. In April 1895 I examined the sputum, and found Tubercle Bacilli present in moderate amount.
In October the Bacilli had entirely disappeared as far as I could find. In December 1895 patient's husband reported that she was "as well as ever," and had had no return of the cough.

Family History. There is no history of Tuberculosis in any of this patient's relatives. All of them are either alive and healthy, or had died after reaching the age of 80.

It is, of course, too soon yet to claim this case as a complete cure of Pulmonary Tuberculosis by Creosote, as a long enough time has not yet elapsed to enable one to dogmatize, but at all events the present condition of the patient holds out the hope that the disease has been arrested, and her complete cure is, in my opinion, only a matter of time.

Case IV.

I venture to insert what notes of the following case, as one in which Creosote
failed entirely, and the patient
died in less than three months from
Acute Disseminated Tuberculosis
of both lungs.
John Alexander, Mackay - aged 16 - Apprentice Engineer.

Personal History. Patient was a healthy
child, and had no previous illnesses,
except an attack of Bronchitis at the
age of 14 years. In June 1895, patient
went to Glasgow to learn the trade
of an Engineer, and in August caught
a cold, took Bronchitis, neglected it
and came home to die.

He reached home early in November,
and when first seen he had
a violent cough with purulent expecto-
ration, profuse night sweats, hectic
fever, and temperature varying from
100° to 101°. The sputum was loaded
with Inhaled Bacilli. On examination
his chest was found to be full of
moist rales, both anterior and poster-
iorly, and both lungs seemed to be
equally affected. He was besides
very much troubled with gastric colic, accompanied by vomiting, and had entirely lost his appetite. There was however no diarrhea. He was treated with the following mixture:

- Py Syr Picos lb (U.S.P.) $\frac{3}{4}$
- Sol Azoq. (Sp. 153) $\frac{3}{8}$
- Qt Chloroform $\frac{3}{4}$
- Cy Camomile $\frac{3}{8}$

Liq. one Tablespoonful every four hours.

In addition ordered him to have an Atropine pill ($\frac{1}{8}$) at bedtime, and put him on a diet consisting of milk and soda water, with the yolk of an egg beaten up in a little milk, and brandy twice a day. He continued this treatment for about a fortnight, when the gastric symptoms moderated. Then substituted for the last mixture the following:

- Py Sol Malti & Hypophosph $\frac{3}{4}$
- Cocasite $\frac{3}{4}$

Liq. one Teaspoonful in a wineglassful of water three times a day after food. As the night sweats still continued substituted Apericin pills ($\frac{1}{8}$) for the
Atropine, I also added fish to his diet.

Notwithstanding all treatment he gradually got worse, and died towards the end of December.

I have recorded this case as one of those where I think treatment of any kind is useless, except as a palliative. The Bacilli had evidently invaded almost the whole of the lung tissues, and the acuteness of the symptoms showed the frightful rapidity of their work of destruction. I can conceive of no method of treatment, unless it be in an infused Serum Therapy, which will deal satisfactorily with 2 cases like this.

They must, at present, be left in the category of incurable cases, and their inclusion in any statistics of treatment by a special drug is eminently unfair.

On looking over my notes of cases I find that they are similar to the first three quoted at length.

In order to show somewhat more definitely,
that the improvement set up in some cases by brocseite is really due to that remedy, let me relate the following incident which occurred in my practice in Fife county, Kincardineshire in 1892.

I had under treatment by brocseite a patient who had all the subjective symptoms of Phthisis. She was a married woman, about 38 years of age, and was engaged in looking after 2 milk cows and otherwise in assisting the owner at a full man's country seat. She suffered from persistent cough, with loss of flesh and appetite, night-sweats, etc., but was rapidly improving under brocseite. I may say that she came from the docklands district of Dumfriesshire, notoriously "consumptive" locality. In about six months, she was completely cured and has had no return of any of the symptoms mentioned. I wrote to her on the subject in December 1895, and her answer was that she had
been perfectly well "since you cured me." A friend of this patient's from Lochmaben came to stay with her to put herself under my treatment. This second patient had had several attacks of Bronchitis, which had been treated by Pontecorvo, and whenever the patient felt the slightest constriction over the chest, she immediately swallowed herself in practices—she was a very thin person, about 35 years of age; narrow-chested, could eat very little food on account of gastric pain, had a persistent dry cough, with occasional streaks of blood in the small quantity of phlegm expectorated, but beyond this had had no hemoptysis. She had been subject to night sweats for some time, and was evidently the victim of Pulmonary Tuberculosis. I put her on the Breece, Glycine and Whisky mixture, and ordered her to paint her chest about the mammae with
equal parts of the tincture and
mixture of iodine, and on no account
to use poultices without my author-
ity. She improved very rapidly
for the next two months, gained
considerably in weight, lost her
cough and night-sweat, and was
altogether greatly better. She now
returned to work again, promising
to continue the Creasote treatment,
which however she did not do.
Shortly afterwards she had another
attack of Bronchitis, treated by
eceptorants and poultices, but
she never recovered and died 3 or
4 weeks afterwards. I believe that
had she remained longer in a
more hygienic environment and
continued the creasote treatment,
she would not have succumbed
so rapidly. Of course she might
have died of Pthisis, Creasote
notwithstanding, but considering
the improvement set up by Creasote
at a former period, it is just as
likely that she would have continued to improve. There can be no doubt at all events of the wisdom of following Sacco's advice, and keep up the Creasote treatment for months on end.

With these cases and statistics I feel confident that I have made out a good plea for the extended use of Creasote in Pulmonary Tuberculosis, especially in the first stages of the disease.

I shall now gather together a general conclusion the main facts brought to light in the preceding pages.
General Conclusions

From the mass of evidence which has been tabulated in the foregoing pages in favour of the Bresosate treatment of Pulmonary Tuberculosis, I think it is evident that of all the medicinal agents at present in use, Bresosate appears to be the most satisfactory in its results. The evidence of Lecondo, Barneby, Eos, Bessey, Robinson, Harris and Reel and the other observers and authors quoted, taken all, in varying degrees no doubt, in favour of Bresosate as the most popular and widely used drug in this disease. And though, unfortunately, we cannot yet say definitely exactly how Bresosate exerts its action in Phthisis, we know enough of that action to justify us in laying down as a proved fact in medicine that at all events it tends to the building up of the system generally, and to the promoting of sclerotic change in the lung locally, both of which actions are in very direct relation
to the arrest of the tubercular process. I have no doubt but that in the near future we shall be able to classify the Pulmonary Tubercular diseases into well-known and sharply-defined types. When that takes place we shall be better able to judge in what type or type of the disease Creasote is likely to be beneficial; for it must be conceded at once that there are cases—and many of them—in which Creasote fails to effect any improvement, just as there are cases of Malaria in which Quinine is useless, or at all events unable to avert a fatal issue. But, further, I am inclined to believe that where the Tubercular foci are not limited in area, but are disseminated over the surface of the lungs, and have impregnated the greater part of the pulmonary substance and tissues, Creasote, or indeed any medicinal agent at present known, is absolutely useless except as a very temporary palliative. Under
this category I am inclined to place Case III already referred to.
I would faint hope that, in the near future, Serum Therapy may be far enough advanced to give us a satisfactory agent with which to deal with such of these cases as are not absolutely incurable. Koch's Interbacillus was rightly discredited on account, I believe, of its too great potency, but I still cling to the hope that some future worker will yet be able to produce some Interbacicular Antitoxin, which will do for some at present hopeless cases of Interbacilosis what the Diptheria or the Hydrophobia Antitoxin have already accomplished in their respective fields.
It is surely needless to warn the profession against expecting perfect results from any one medicinal agent - all we have a right to expect is, that with increased knowledge of Pathology and Clinical Therapeutics, some further develop.
ment in the treatment of these pulmon-
ary affections will take place. At
all events those of us who have been
working with creosote in this class of
cases have reason to take courage,
and to feel confident that Tubercular
phthisis has lost many a victim
since the extended and protracted use
of creosote and its derivatives has
been incorporated in Medical
practice.

Before concluding this Thesis, I
should like to refer shortly to the
general treatment to be adopted
along with the purely medicinal
agents employed.

I believe we should get far better
results in Pulmonary Tuberculosis
if our special hospitals for these
cases were situated in open country
districts, instead of being planted
in the midst of large towns and
shallow, no case of Tubercular
Pulmonary disease should be
admitted into a general Medical
ward - not only is this undesirable from the contagious nature of the disease, but the wholesome rational treatment of Phthisis seems to me to consist in atomic or tracing systems, and not in debilitating and "invaliding" one. Of course this takes for granted that the cases come for treatment soon enough to be able to stand the hardening process. An important item in the treatment of Phthisis is fresh air, and except when contraindicated by any special complication it is perfectly safe and judicious for the patient to take as much fresh air as possible, always avoiding damp, and in most cases accustom himself to sleep in a room with the windows open from the top in order to keep the air of the apartment as fresh as possible. An out of door life is to be encouraged as far as compatible with safety.

The erection of 'Consumption Homes' al-
Bridge of Weir seems tome a step
in the right direction, and if the
medical officers in charge could
be induced to try the effects of the
creasote treatment, along with the
dietetic and hygienic advantages
to be found there, one would feel
certain that medicinal treatment
would have a fair chance of suc-
cess. Given such valuable aids
to our Therapeutic armamentarium,
Tubercular disease would soon lose
a great part of its terrors, and the
present enormous mortality from
Phthisis would rapidly diminish.

I do not intend to touch on the
question of the various complications
that occur in this disease. These
must be dealt with on general
principles as they arise, but only
such complications should be al-
lowed to interfere with the regular
and prolonged use of creasote
or one of its derivatives.

My object has been to show, from
the accumulated evidence already existing, that we have in
breast a remedy for Pulmonary Tuberculosis, which is powerful for good in hun-
dreds of cases, which never does any harm, and which deserves
extended trial at the hands of the Practitioners of Medicine who is
called upon to deal with this hydra-
headed monster.

Bearing in mind that no single
remedy or combination of remedies
is always successful, even in
diseases much simpler and more
amenable to reduction to type than
Pulmonary Tuberculosis, we
must be content in the present
state of our knowledge, with "the
day of small things," hoping and
striving for the day of more perfect
knowledge and fuller revelation on
this and other, at present, unknown
matters. It will only be by persis-
ten application and careful ob-
sevation that we shall ever
extend the horizon of the knowable, and drive further and further back the receding shadow of the unknown. There is doubtless a limit to human comprehension, but I think we are a long way off that yet. With extended trials and careful enquiries I believe that our treatment of Phthisis will improve year by year, but meanwhile the balance of evidence seems to me to be in favour of the treatment of this disease by creasote or its derivatives, feeling sure that if it be properly, adequately, and carefully administered it will be found to give the best results at present attainable.
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