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CONSUMPTION
ITS TREATMENT BY THE
HYPOPHOSPHITES
—
THOROWGOOD

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ON
CONSUMPTION,
AND ITS TREATMENT BY THE
HYPOPHOSPHITES.

BY

JOHN C. THOROWGOOD, M.D., LOND.,

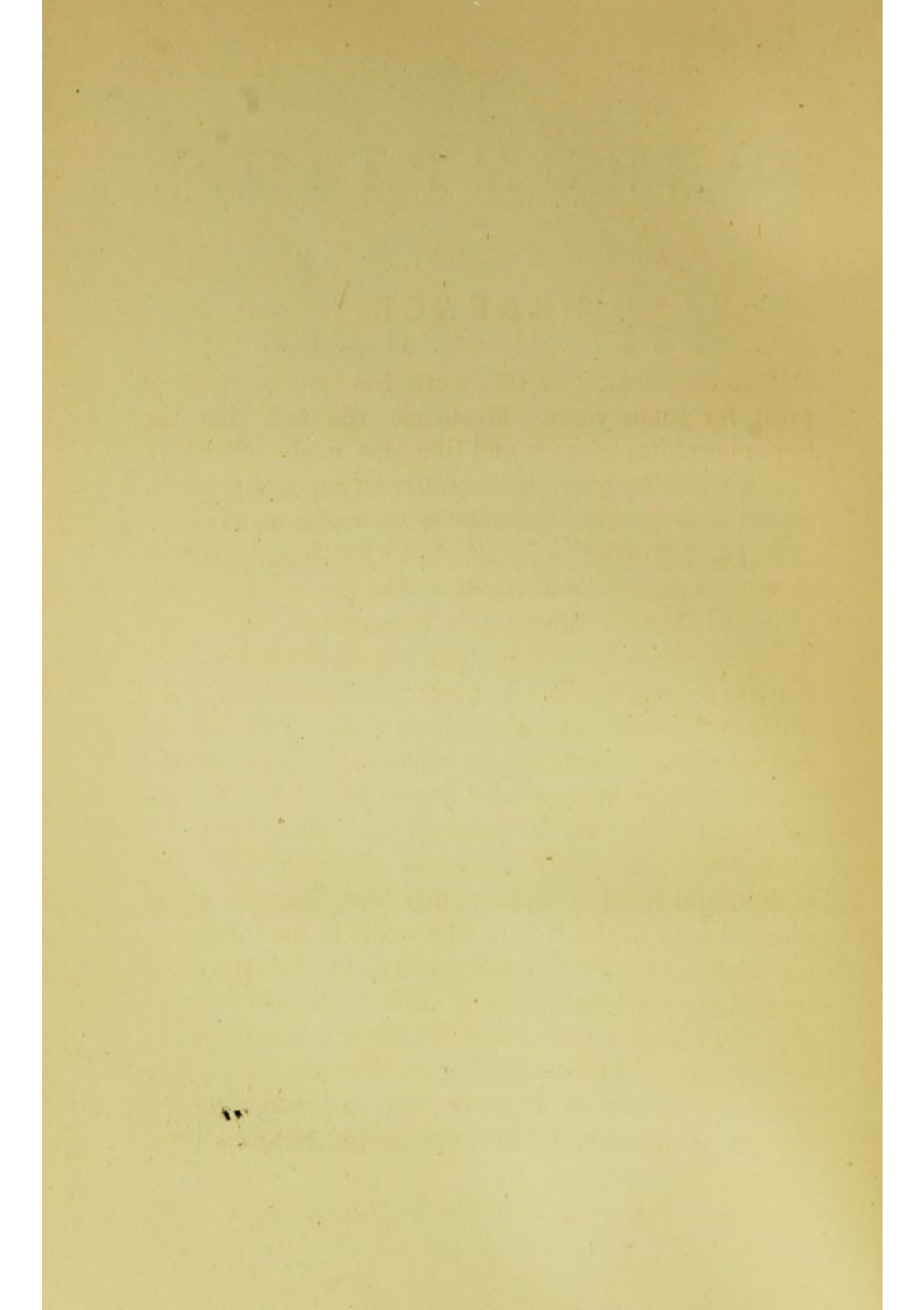
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HOSPITAL FOR DISEASES OF THE CHEST, VICTORIA PARK; PHYSICIAN TO THE
WEST LONDON HOSPITAL; AND LECTURER ON MATERIA MEDICA AT
THE MIDDLESEX HOSPITAL.

THIRD EDITION.



LONDON :
BAILLIÈRE, TINDALL, AND COX,
20, KING WILLIAM STREET, STRAND.
1880.

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PREFACE.

THE second edition of this work has now been out of print for some years. Meantime, the fact that the hypophosphites of soda and lime are made official in the British Pharmacopœia, renders any special pleading for their recognition as remedies no longer necessary.

In the following pages my object has been to deal as closely as possible with facts, and to enter but slightly into the land of theory and speculation; my object being to promote a further and more extended trial of the hypophosphites in pulmonary consumption.

Many of those who have been induced to use the hypophosphites have, while beginning in much doubt, ended in a greater or less degree of faith. As examples, I may refer to cases treated with the hypophosphites by Dr. Charteris* of Glasgow, Dr. Sinclair Coghill† of Ventnor, and other observers. A medical man in the North, who wrote to me informing me that his case was pronounced to be phthisis, made trial of the hypophosphite of soda with such advantage, that in six months' time his life was readily taken for insurance. The case, as reported to me, was highly interesting; but as I never saw or examined the patient personally, I have not given it among my records.

* *Lancet*, 1876, p. 704. † *London Medical Record*, 1879.

How far the hypophosphites fulfil the claim of Dr. F. Churchill for them as being specific anti-tubercular agents, I leave the reader to judge for himself; and in forming his opinion, it may be well for him as a practical man to reflect as to how far our present state of knowledge of the drug treatment of consumption enables us to point to any true anti-tubercular medicine.

Over the results and products of inflammatory action in the lungs the curative action of the hypophosphites is very decided; but there is a more subtle and destructive agent than mere inflammatory action that in too many cases adds greatly to the peril of the patient, and over this tuberculizing process, whether it be of septic origin or not, we want not only hypophosphites but a clear dry bracing atmosphere in order to afford the patient a good chance of recovery. Under the use of the hypophosphites conjoined with favorable climatic surroundings the chance of recovery for one in an early stage of true tuberculosis seems to me by no means a bad one. It may be that, as Dr. C. J. B. Williams suggests at page 327 of his recent work on Pulmonary Consumption, the hypophosphite increases the affinity of the blood for oxygen, and so nutrition is maintained in a healthy condition.

The points I would seek to impress as of great practical importance to all who may employ the hypophosphites in consumption may be briefly summed up as follows:

- 1st. Test the hypophosphite, and see that it corresponds to the purity tests as given in the British Pharmacopœia.

2nd. In prescribing, let the salt be administered in as simple a form as possible. Patients have attributed very good effects to the use of a simple aqueous solution of the hypophosphite, and I have known excellent results follow on the use of the simple syrups of the hypophosphites as made by Swann of Paris.

3rd. See to the surroundings of the patient as to atmosphere, and ascertain his habits with respect to eating and drinking.

4th. Examine him carefully to see if he have any hepatic or renal disease, or atheromatous vessels.

A want of attention to these points may easily lead an observer into the formation of an erroneous opinion regarding the remedial value of the hypophosphites in the treatment of pulmonary consumption.

61, WELBECK STREET,
CAVENDISH SQUARE,

February, 1880.

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CONSUMPTION AND ITS TREATMENT

BY THE HYPOPHOSPHITES.



HYPOPHOSPHOROUS acid was first obtained as a concentrated acid solution by Dulong, in 1816. It is the lowest and most unstable of the acid combinations which phosphorus forms with oxygen, and is represented by the chemical formula H_3PO_2 , the formulæ of the more highly oxygenated compounds known as phosphorous and phosphoric acid being H_3PO_3 and H_3PO_4 . As the salts formed by the combinations of these two last-named acids with bases are termed respectively phosphites and phosphates, so the combinations of the hypophosphorous acid are known as hypophosphites, salts which have a strong affinity to absorb more oxygen, and so pass into phosphates.

In consequence of this tendency on the part of the hypophosphites, they have to be prepared with great care by the chemist; and, in evaporating their solutions in order to obtain crystals, it is essential that the temperature be kept within certain limits, other-

wise a mixed salt of phosphite and phosphate results, which is of no use therapeutically. The degree of oxidation of the phosphorus in well-made hypophosphites is so low that they will, when warmed on a spatula, take fire and burn like pure phosphorus: a ready test of their genuine nature. In this combustion the hypophosphite splits up into pyrophosphate, phosphoretted hydrogen, and water.

The hypophosphite of soda is more deliquescent in air than the lime salt, but far less so than the hypophosphites of potash and ammonia. It crystallizes in rectangular plates, and is readily soluble in water or alcohol. The aqueous solution is neutral, and, if quite free from any trace of phosphite or phosphate, gives no precipitate with solution of barium chloride.

The hypophosphite of lime is not deliquescent, crystallizes in rectangular or six-sided columns, has a slightly bitter taste, and, when pure, is perfectly soluble in water. By decomposing this salt with oxalic acid a solution of hypophosphorous acid is procured.

In appearance the lime salt resembles the hypophosphite of ammonia; but this last, on being heated with lime, gives off free ammonia. The potash salt is a scarcely crystalline powder, ignites readily by heat, and is extremely deliquescent.

The aqueous solutions of the hypophosphites of soda and lime are almost tasteless, and this gives them a great advantage over the phosphorated oil of the British and Prussian Pharmacopœias, as well as over the ethereal tincture of phosphorus of the French codex; for these preparations of the drug, given even in moderate doses of three or four drops, are most

nauseous in flavour, and almost certain to disturb a delicate stomach.

The chief medicinal use of phosphorus, in the form of the oily solution or ethereal tincture, has hitherto been in diseases of the nervous system, and both Dr. Radcliffe and Dr. Anstie have commended it as a very useful medicine in restoring exhausted nerve force; the former of these observers suggesting that, being itself an important constituent of healthy nerve tissue, it may, when given internally, act as a nutrient to the worn-out nerve, much in the same way as the preparations of iron act as nutrients to weak and impoverished blood.

The late Dr. Glover wrote in favour of phosphorus as an excellent medicine in depressed states of the nervous system. In constitutional struma also the oil seemed to this physician a good medicine.

In the year 1860 I was much interested in observing a trial made by the late Dr. Cotton, at Brompton Hospital, of phosphorated oil in the treatment of pulmonary consumption.* The oil was prepared according to the formula of the Prussian Pharmacopœia, so that five minims would contain one-twenty-fourth of a grain of phosphorus. Of twenty-five patients who took this oil, four improved greatly; one, in the first stage of disease, got quite well; and the other three, in whom the disease was more advanced, left the hospital materially improved in every respect. In sixteen cases the phosphorated oil seemed to exercise no beneficial effect. One great objection to the use of the oil was

* *Medical Times and Gazette*, 1861, vol. ii. p. 7.

its tendency to cause loss of appetite and disturbance of stomach.

Wishing, in 1863, to try the phosphorated oil among out-patients under my care at the City of London Hospital for Diseases of the Chest, at Victoria Park, I made inquiry at the establishment of Mr. C. H. Warner, in Fore Street, as to the best way of preparing the oil, and making it agreeable to the stomach. Then, for the first time, I became acquainted with the hypophosphite salts; and the amount of phosphorus contained in these was demonstrated by the ignition of the salt when warmed on a spatula over a flame. In looking up the literature of the hypophosphites, I found that the originator of their use as remedial agents was Dr. Francis Churchill, who, in July, 1857, drew the attention of the French Academy of Medicine to the hypophosphites of soda and lime as specific remedies for pulmonary tuberculosis, on the hypothesis that the proximate cause, or at all events an essential condition, of the tubercular diathesis is the decrease in the system of the phosphorus which it contains in an oxygenizable state.

On this hypothesis the cure of the disease is to be found in presenting to the system some preparation of phosphorus, which shall be directly assimilated, and be at the same time at the lowest degree of oxidation.

The hypophosphites of soda and lime are considered best adapted to fulfil these ends; and Dr. Churchill having tried these medicines on thirty-five consumptive patients, found that nine recovered, eleven improved, and fourteen of them died.

Subsequently to these announcements of Dr.

Churchill's, the hypophosphites were tried by numerous observers in England; and the results of the trials, as published, are so singularly contradictory, that I cannot think the same remedy can have been used by all the experimenters.

It is impossible in this essay to quote all the observations that have been made for and against the hypophosphites. I would however refer to a trial of hypophosphites, made by Dr. Risdon Bennett* in the Victoria Park Hospital, in twenty cases of true consumption. Four only out of this number made marked and decided improvement, and these were in the earlier stages of the disease.

Compounds which, like the hypophosphites, were rich in phosphorus and yet convenient of administration, promised well as means of supplying phosphorus to the system; and in the belief, from what I had observed of the effect of nervous depression in inducing the development of tubercular disease, that the part of the animal economy most involved in the early production of phthisis is the nervous system, or that part of it which presides over cell growth and development on the one hand and the destructive metamorphosis of tissue on the other, I was led to employ the hypophosphites in the same way as I had employed zinc, quinine, and other nerve tonics, in the early stages of tubercular disease, with a view to some special restorative action over imperfect or irregular innervation.

Under the influence of these ideas as to the kind of case in which phosphorus, administered in the form of a hypophosphite, might be serviceable, I proceeded

* *Medical Times and Gazette*, 1861, vol. i. pp. 438, 467, 489.

to try the remedy, selecting those cases where symptoms of consumption seemed to be developing in consequence of the patient being subjected to depressing and debilitating influences. The results of the treatment may be judged by perusing the following notes of cases :

CASE I.—Rosa G., married, æt. thirty-five, living in the City, came to me August 3rd, 1863, stating that she had been ailing for more than four months with general debility, loss of flesh, and a troublesome cough every morning when she rises.

She has never coughed up any blood, but usually expectorates a grey phlegm. Has much tightness and oppression at the chest; at times is feverish. Pulse 100, feeble.

Physical Signs.—Right subclavicular region is duller than the left, and the breath sounds here harsh and tubular; elsewhere chest seems sound. Ordered nitric acid in infusum aurantii till August 11th, when she was again seen, and the cough was found to be better, but there was much dyspnœa on any exertion, with feeling of sinking and weakness at the chest. Cod-liver oil was strongly urged upon her, but she has often tried it in various ways, and is scarcely able to keep one dose on the stomach.

Under these circumstances she got :

℞ Sodæ hypophosphitis, gr. iij.;
Tinct. camph. co., ℥x.;
Aq. camph., ʒj. M. ter die.

This mixture was taken up to August 18th. At first

it caused slight nausea, but soon it was easily taken, and in one week more the patient came to say she was free from cough, could breathe well, and required no more medicine.

February 10th, 1864.—The same patient came again to me, with much dragging pain in the chest, cough, quick pulse, and emaciation. Breath sounds very tubular at right infra-clavicular region, and pain here, as well as on left side.

℞ Sodæ hypophosphitis, gr. v. ;
Infus. calumbæ, ʒj. M. ter die.

February 18th.—States that the mixture soon relieved her chest ; to continue it, and to take ʒj. of cod-liver oil twice daily.

March 3rd.—Feels almost well, and is going for change to Ryde. Since then I have not heard of any relapse.

CASE II.—Mary G., æt. thirty-nine, out-patient at Hospital for Diseases of the Chest.

January 4th, 1864.—Complains chiefly of much tightness and oppression at the chest, with a troublesome cough and difficult expectoration ; never raised any blood.

Physical Signs.—Prolonged expiration and very slight dulness under right clavicle.

Till February 13th, the treatment consisted in expectorants, and then tinctr. ferri c. liq. morphiæ ; but none of these medicines appear to have given any relief to the symptoms, and she got on February 13th :

℞ Sodæ hypophosphitis, gr. v. ;
Aq. menth. pip, ʒj. M. ter die.

February 22nd.—Finds so much relief to the cough and chest oppression that she asks to be discharged now, as she feels well.

The respiratory signs, however, are not altered; and the morning cough, with expectoration, continues, though in less degree.

Repeat mixture for fourteen days, and return, if not cured. She was not seen by me again.

CASE III.—Jane C., æt. twenty-one, dispensary patient, complains of much debility and exhaustion, and frequent dry, hacking cough; tongue white, appetite bad, a good deal of pain about left shoulder. Pulse 120.

Physical Signs.—Harsh and coarse breathing at left infra-clavicular and supra-spinous regions; nothing else noted.

℞ Acid nitric dil., ℥x.;
Dec. cinchon., ʒj. M. ter die.

In a week she felt stronger, but the cough was worse, and the scanty sputa visibly streaked with blood.

℞ Sodæ hypophosphitis, gr. v.;
Aq. camph., ʒj. M. ter die.

After ten days of this, she came and said the medicine revived and strengthened her. Cough and spit very much better. She continued taking same medicine a few weeks longer, and then left off attending. Pulse being then 80, and the cough a mere nothing.

CASE IV.—Eliza D., æt. nineteen, weak young woman, suckling an infant. Since confinement has

complained much of oppression and tightness of the chest, with frequent cough.

The left apex is duller than right, and respiration very jerking and uneven; chest feels tight and stuffed.

For three or four weeks the treatment consisted in the application of *tr. iodi.* to the left chest, and in the administration of cod-liver oil and *chalybeates*. At the end of a month the notes before me record no improvement, and it appears that on October 22nd five grains of hypophosphite of soda were given in *aq. camphor.* thrice daily, and the oil continued.

November 5th.—Great improvement, less pain in chest, breathing free.

November 29th.—Has continued the hypophosphite, and considers herself well.

CASE V.—Elizabeth F., *æt.* twenty, living in Essex, came in July, 1863, to the Hospital for Diseases of the Chest, at Victoria Park. Pale complexion, has been getting weak and losing flesh, with frequent cough and pains about the chest.

July 23rd.—She was examined by Dr. Andrew, and the note of the physical signs was:—Tubular respiration, with increased vocal resonance at right apex. On her being passed over to me soon after, I treated the case with cod-liver oil, nitric acid, and bark; then with *syr. ferri iodid.* for nearly two months; till, towards the end of September, the patient began to spit blood, and to show signs of the left apex being congested.

October 8th.—I gave her three grains of the hypophosphite of soda thrice daily, with twenty drops of ether in camphor-water.

The amendment was marked and persistent ; so that on November 2nd she was discharged cured.

CASE VI.—A widow, æt. twenty-seven, resident in the country, was sent as an out-patient to Victoria Park Hospital, having been under treatment for presumed tubercular disease of the left lung.

When seen, face was flushed, and pulse 130. She complained of frequent cough, with thin expectoration, pains about chest, and shortness of breath. No hæmoptysis.

Physical Signs.—Some dulness at left infra-clavicular region, with very harsh breathing. She has undergone much treatment, but has never been able to take cod-liver oil.

℞ Sodæ hypophosphitis, gr. iij. ;
Infus. calumbæ, ʒj. M. ter die sumend.

After three weeks, came and said she felt better ; pulse 120, less spit, less pain ; physical signs as before. Pt. med.

In another three weeks further improvement, and she can take a teaspoonful of oil twice in the day.

This report was given by her on December 17th, 1863, and she was not again seen till April 25th, 1864, when she presented herself much worse in every respect.

Note of April 25, 1864, runs thus:—She feels very weak and prostrate ; at times is burnt up with fever, and at night is drowned in perspiration ; severe pain on left side when she breathes, and coughs up much thick spit that sinks in water ; once or twice coughed

up blood. Pulse 120, weak and irritable; tongue much furred behind.

Physical Signs.—Upper left chest very tender; moist crackling distinct; right supra spinous fossa dull, and the breathing bronchial.

Requests some of the same medicine she had before, which did her so much good. She gets accordingly—

Sodæ hypophosphitis, gr. v.;
Infus. calumb., ʒj. M. ter.,
and ʒj. of pale oil twice daily.

May 3rd.—Much the same. Pulse 118; much pain in chest, and ‘very heavy night sweats.’

℞ Calcis hypophosphitis, gr. v.;
Infus. calumb., ʒj. M. ter die sumend.
Pulv. ipecac. co., gr. v. Omni nocte.

With the exception of a week of rest from physic, the patient took the above mixture till May 23rd, when, in her own words, she felt a ‘new being,’ with clean tongue, pulse 88, no pain, and respiration greatly improved; slight cough and scanty expectoration.

Some months after, when engaged in the election of a child into a charitable institution, she casually called at my house and reported herself well.

CASE VII.—A little girl, æt. fourteen, coming from Kent, presented on October 19th, 1863, all the signs of incipient phthisis in the left lung. Pulse 130; much cough at night; no hæmoptysis.

Physical Signs.—Slight dulness at left infra-clavicular region, with uneven tubular respiration. Nothing further.

Alkalies with bitters, cod-liver oil, and chalybeates were given till December 7th, when, as there seemed no improvement, she was ordered

Sodæ hypophosphitis, gr. iij. ;
Infus. calumbæ, ʒj. M. ter.
Ol. morrh. ʒij. Ter die.

After intervals of this medicine, with applications of iodine over left infra-clavicular region, she improved gradually, and on

July 15th, 1864—was finally discharged, apparently cured.

I heard of her in August, 1865, as keeping perfectly well in all respects.

The next case is one in which the patient had a return of consumptive symptoms after they had been completely arrested during fourteen months by means of the hypophosphite of soda alone.

Frederick A., æt. thirty-six, a labourer, living in Bethnal-Green, came to Victoria Park Hospital, March 28th, 1864, and gave the following account of himself and his ailments.

He has, till ten days ago, had as good health as any man living ; his weight at one time was fourteen stone, and he could run up hill, or raise a heavy weight, without anything like dyspnœa.

Shortly before his coming as a patient, after a day of no special exertion or excitement, he awoke at two in the morning with a fit of coughing, and soon began freely to expectorate florid blood. This cough and bloody expectoration kept on at intervals for about a week, and then he sought advice.

The notes of March 28th, 1864, are scanty, and run thus: Pale and anxious face, clean tongue, feeble pulse, much cough with sanguineous sputa.

Physical Signs.—Right infra-clavicular region decidedly dull, and moist sounds heard. Ordered, a mixture with dilute sulphuric acid and syrup of poppy.

April 11th.—Not much better. Chest feels very stuffed. Cough is troublesome, and the sputa mixed with blood.

℞ Sodæ hypophosphitis, gr. v. ;
Glycerin, ℥xx. ;
Aq. ʒj. M. ter die.

He took this up to May 16th, 1864, without any cough pill, or cod-liver oil, and by degrees the cough and spitting left him, and he returned to his work, having lost all cough, all spitting, and with a greatly improved appetite.

October 9th, 1865.—This same man came again to the hospital, and confirms the literal truth of the last note made of his case. Since then he has remained so well that he has not lost one day's work ; but during the last week the cough has returned, and the sputa is again very much mixed with blood. He feels much oppression at the chest, chiefly on the right side, and here there is dulness and numerous humid clicks. The respiration in the left lung is very feeble.

Tincture of iodine applied to right chest, and five grains of hypophosphite of soda given three times a day in camphor water.

October 16th.—Feels much better. After three days

of the mixture the cough was better, and the sputa free from blood. Pulse 84, tongue clean, looks pale and thin about the face, and says he has emaciated a good deal lately.

Continue medicine and take ol. morrh. ζ ij. ter die.

He could not take the oil, but he returned to work quite well, with perceptible gain of flesh.

CASE IX.—William P., æt. fourteen, living at Plumstead, came to Victoria Park Hospital, December 14th, 1863, in the following state:—He is a pale, thin lad, complains of constant cough with much expectoration, loss of flesh and strength, and frequent attacks of diarrhoea.

Physical Signs.—Left chest is flattened, very dull on percussion, and its upper half is full of moist crepitation. Right lung expands fairly, respiration in it is harsh, and expiration notably prolonged at infra-clavicular region. He states that he has been ill for three years, and has taken much cod-liver oil.

R̄ Ol. morrh., ζ ij. ter die.

Calcis hypophosphitis, gr. v.;

Decoct. cinchon., ζ j. M. ter die.

December 21st.—Much the same; continue for fourteen days.

January 11th, 1864.—Feels much better. Pulse 96, spit is very much less. Diarrhoea ceased.

25th.—Progressing well. Pulse 96. Much less moist sound in left lung, but at one spot respiration is hollow, as if a small cavity had formed. The boy looking very pale and anæmic, got in place of the hypophosphite and bark—

Tinctr. ferri. $\mathfrak{m}\text{x}$. ;
Infus. calumbæ, $\mathfrak{z}\text{j}$. M. ter.
Pt. ol.

February 8th.—Decidedly worse for the change in the medicine. Diarrhœa returned and pulse risen to 100. Cough and expectoration not increased. Resume hypophosphite and bark as before.

He soon improved again, lost his cough, gained flesh and strength, and on April 4th he was let go with a quinine mixture to take for a fortnight.

The moist sounds in the left lung were almost gone, but the hollow breathing over a small space continued unchanged.

Nothing more was seen of this patient till May 15th, 1865, when he again presented himself. He says that after his discharge on April 4th, 1864, he kept in good health up to six weeks back, when the cough returned with profuse expectoration, and sickness and vomiting. The diarrhœa also has of late troubled him much.

The signs of a cavity in the left lung are most unmistakable now, and some moist clicks are distinct in the right lung. Pulse 124. Ordered ol. morrh. $\mathfrak{z}\text{ij}$. ter die., and tinc. ferri c. liq. morphiaë for fourteen days.

May 29th.—No better in any respect; vomits his food when he coughs.

Continue the oil and take, in place of the morphia and steel mixture—

Calcis hypophosphitis, gr. $\text{ii}\mathfrak{j}$. ;
Decoct. cinchon, $\mathfrak{z}\text{ss}$. M. ter die.

June 12th.—Much better; less cough, less expectoration, and no diarrhœa; continue treatment for a fortnight.

He improved considerably, but left off attending before I was at all satisfied as to the disease being fairly arrested.

CASE X.—Early in January, 1864, a pale, emaciated man, not long out of the workhouse, came to me as a hospital patient, and told me that his illness commenced nine months back, with attacks of profuse hæmoptysis. From that time to this he has been losing strength and flesh, has much cough with often bloody expectoration, and is so short breathed that he can hardly walk across the room, and can speak but few consecutive words at a time. Pulse 124; tongue large and clean.

Physical Signs.—Breathing very bronchial, with moist sounds at right infra-clavicular region and supra-spinous fossa; bronchophony decided in both these places. The lower part of the left lung seems the seat of some congestion, as evidenced by impaired resonance, and a good deal of fine crepitation at its base.

There was probably at this time some sub-acute pneumonia going on in the left lung. This would to some extent account for the great dyspnœa of the patient on moving. He received a liniment, cod-liver oil, and five grains of hypophosphite of lime to be taken thrice daily in camphor water.

By January 23rd he had made great and unmistakable improvement, and the left lung seemed much clearer. To continue mixture and oil.

This man, though living in great poverty, continued,

with a few short intervals, the treatment by the hypophosphite of lime with cod-liver oil, and now and then a chalybeate mixture by way of a change, till September, 1865, when he felt so well and strong that he returned to his work as a weaver. The cough scarcely troubles him, and he has now no hæmoptysis, but his breath is short, and there seems a quiescent cavity in the top of the right lung.

CASE XI.—The next case is one which exemplifies well the action of the hypophosphite of soda given with an alkali.

Mrs. A., æt. thirty-six, in comfortable circumstances and the mother of several children, came to me on December 29th, 1864, with the following history of the commencement of her illness :—

She has always been delicate, and had a cough with expectoration, often sanguineous, for several years; about two months ago she was confined, and soon after, her chest troubled her very much, and the two medical men who attended her agreed that the right lung was much congested in its upper part.

After her previous confinements she has been troubled from the glands in the neck swelling, and more than once suppuration has taken place; but after this confinement nothing of the kind followed, while an obstinate cough, with bloody expectoration, hung about her most persistently.

The appetite is fair, but there is a bitter taste in the mouth, and she is liable to bilious attacks, and quite unable to bear the smallest dose of cod-liver oil. The tongue is large, with furred centre, and red edges. Pulse 108, feeble.

Physical Signs.—Right lung seems improving; the percussion note is rather dull; in parts breathing is extremely feeble, at other parts it is tubular.

At the left acromial angle clicking sounds can be heard.

℞ Sodæ hypophosphitis, gr. v.;
Sodæ bicarb., gr. x.;
Infus. calumbæ, ʒj. M. ter.

January 2nd, 1865.—Less tightness about the chest, less palpitation of the heart, cough and expectoration very troublesome. Pulse 104.

Continue the same mixture.

The medicine was continued till February 6th, when she felt herself almost well, very little cough, and hardly any expectoration. She remarks that her spirits are much better. Respiration in the right lung is still feeble, but the left seems quite sound.

March 6th.—She was seen, and then had at times a little cough in the morning, otherwise she seemed in good health.

It is well-known that consumptive females are apt to experience a fresh start of the disease soon after their confinement, a circumstance partly due to an excess of plastic material being thrown into the circulation, and this not being properly eliminated, may engender tubercle in the lungs. This patient, in addition to increase of chest symptoms after previous confinements, had suffered also from suppuration of the cervical glands, and thus probably an outlet was afforded to tubercular mischief in the constitution. At this last confinement there was none of this gland

affection, while the chest symptoms were more threatening than on any previous occasion. In the treatment nothing was given except the hypophosphite of soda in an alkaline infusion of calumba, and the result was all that could be desired; what few suspicious signs there were in the left lung went quite away, the tubular breathing in the right lung got much better, though the general feeble breathing in this lung will probably always continue to exist.

CASE XII.—John H., æt. eight years, of remarkably strumous aspect, came with his father to Victoria Park Hospital, September 22nd, 1864. Has been ill for several weeks with cough and expectoration, and has rapidly lost flesh and strength; he has never coughed up any blood, and his present ailment is believed to have commenced with a cold and a cough. Pulse is 120; tongue clean and moist; skin cool.

Physical Signs.—Left lung good; right, dull on percussion, and abundance of crepitation heard all over its upper third.

℞ Sodæ hypophos, gr. iij.;
Infus. serpentariæ, ʒss. ter. die,

with lin. terebinth. to right chest.

September 29th.—Less moist sound in right lung, and general state improved. Tinct. iodine applied over right front, and a teaspoonful of cod-liver oil given three times a day; continue mixture.

In a month from this time he had gained flesh and strength, could breathe freely, and the only physical sign noted was harsh respiration over the right chest.

I have not room to give the notes of two other cases

remarkably similar to this one; in the one, a long and most judicious course of treatment had been for a long time followed to no purpose, while the hypophosphite of soda in six weeks' time had cleared off all the moist sounds from the lung, and made the patient feel quite well enough to resume his duties as landlord of a country inn.

The other was the case of a small boy, and the hypophosphite and sea air must divide the credit of a most satisfactory result between them in this case; a few moist sounds can yet be heard at the top of either lung.

Not to occupy attention with the details of more cases, I would just say that those already recorded are taken from 115 cases of phthisis, treated partly or entirely with hypophosphites, of which I have kept notes, and out of this number I have been able to set down twenty as most decidedly and permanently benefited by the use of the hypophosphites of soda and lime. In five of these, cavities seemed to have formed, and in the other fifteen the disease had in every instance gone to the extent of producing moist sounds in the respiration varying in extent and degree. In thirty-four other cases, where the evidence of the disease was very decided, great relief was gained from the hypophosphite treatment, more, perhaps, than by any other medicine employed.

CHAPTER II.

ILLUSTRATIVE CASES—*continued*.

THE twelve cases of which the notes have been given, were among those published in the first edition of this work as examples of pulmonary phthisis in various stages, treated by means of the hypophosphites of soda and lime.

The increased experience of fourteen years has served to confirm the high opinion I had formed of the remedial efficacy of the hypophosphites in consumption; and I here continue the reports of such cases as seem to me to illustrate this remedial efficacy in such a way as to make them useful guides to any who may be disposed to try the hypophosphite salts in phthisis. Tabular statistics of results of treatment in consumption I myself regard with distrust, inasmuch as the disease is apt not unfrequently to come to a spontaneous and temporary standstill, and that, perhaps, at a time when the patient may have abandoned the use of medicine.

CASE XIII.—Henry W., æt. thirty-four, plasterer, came to Victoria Park Hospital, April 1st, 1876, with a bad cough of twelve months' duration, with much loss of

flesh. During the last two months he has had frequent hæmoptysis, and has been under medical treatment for some time, taking cod-liver oil pretty regularly. Respiration in right chest appears normal; at left apex impaired resonance and very distinct crepitation.

R Sodæ hypophos.

Sodæ bicarb. a.a. gr. v. ;

Infus. calumbæ, ʒj. M. t. d. s.

Continue oil.

May 6th.—Cough gone, all but a little hack when he rises at 4 a.m. Pulse 80. No crepitation now at left apex, breath-sound weak there; tells me he used to be coughing and spitting all day, and could hardly carry three bricks; now he can carry a sack of cement easily. This man was most temperate in his habits, taking very little beer and no spirits. H. W. had in the spring of 1877 a slight relapse, with return of morbid sounds at left apex, but the hypophosphite of soda soon restored him to health.

CASE XIV.—This case was a good one to test the powers of the hypophosphite of soda.

Henry G., a thin, pale man, with crackling sounds in the respiration over the left chest, much cough, and thick expectoration, with emaciation; got 5 grains of hypophosphite of soda in camphor water, on April 15th, 1867.

On the 29th he declared himself quite free from cough and spitting; his chest is sore, and he remarks that what he has been taking 'seems a very wonderful medicine.'

Ordered to continue the medicine, and take ʒij. of cod-liver oil three times daily.

June 1st.—Let go cured; respiration good on both sides of chest.

July.—Return of cough, very prolonged expiration at left apex, much substernal soreness.

This time he was ordered *vin. ipecac. c. tr. opii. c. potass. nitrat.*; the result noted was increase of cough and spitting; a change to the hypophosphite of soda soon put him right, and he returned to work.

December, 1867.—He again fell ill, with return of cough and shortness of breath; this time I gave him the bicarbonate of soda, but he did not find this to relieve the chest, and remove the expectoration; so that I had to order the hypophosphite again, and on it he gradually amended.

Henry G. is still (January, 1878) under observation. He is thin, with a chest much flattened under the clavicles; during the winter he has much cough and dyspnœa, and suffers severely during a thick fog. Respiration all over chest is of a harsh rough type, and on left side a few sub-crepitant râles are heard. He attends to his business as a collector, and declares that his cough and breath have very greatly improved since he has abstained from all forms of alcohol. The case is one of chronic fibroid phthisis, an example of what people call a consumption turning to an asthma.

CASE XV.—Wm. G., æt. forty, from Essex, has had cough and hæmoptysis for sixteen weeks, with loss of flesh and strength.

Left upper chest dullish, with some crackling

sounds. Right is not clear on percussion, and breath sounds very feeble. Ordered 5 grains of hypophosphite of soda three times a day in *infus. calumbæ*. From this medicine he derived much benefit; but in August, as he complained of exhausting night-sweats, it was changed to the hypophosphite of lime.

September 24th.—Let go, much amended; has gained in flesh and strength, still has some cough, with yellow expectoration, and respiratory sounds are feeble in both lungs.

December 3rd. — A bad relapse. Cracklings distinct at upper left chest, much thick spit. He was now ordered cod-liver oil as well as the hypophosphite of lime, and by December 31st he felt himself quite well again; 'nothing near so much cough and spit,' no more hæmoptysis; pulse 72; appetite good.

He went on very well for two months, and then the cough returned, with free expectoration. This time I gave him the liquor calcis saccharat. of the B. P. in half-drachm doses, to see if its effect was the same as that of the hypophosphite of lime; but even though he had cod-liver oil, he got no relief till 5 grains of hypophosphite of lime were added to his mixture; then he improved, and regained very fair health.

CASE XVI.—Benjamin B., æt. 8 years. A short time ago this boy's father died of phthisis; the boy himself has been long troubled with cough, and has been refused admission into an orphan home, as the examining physician reported both his lungs to be unsound. In consequence of this report his mother brought him to Victoria Park Hospital. He is very pale, and losing flesh fast, while on both sides of the

chest crepitating râles are heard below the clavicles.

Ordered 3 grains of hypophosphite of lime, with 10 drops of the liq. calc. sacc., B. P., in water three times daily.

Gradually this boy regained flesh, the râles vanished entirely from his breathing; in a short time he was able to take cod-liver oil, and in two months was dismissed perfectly well, and has remained so ever since.

About the same time that this boy was under treatment, a patient came to me who, in the year 1864, was for a long time under my care for cough, with purulent expectoration and frequent hæmoptysis, moist cracklings being audible in the left lung. Various remedies were tried, to no purpose. At last, under the influence of the hypophosphite of soda in camphor water, all these symptoms grew much better, and the young man at once ceased further attendance, having, apparently, an aversion to doctors and physic. I judged he would soon have a relapse, and probably die, but early in the year 1867 he came before me, bringing a young relative for whom he wished me to prescribe, and I was able then to certify to myself, and a friend who was with me, that the cure had been both perfect and permanent; the youth told me he had strictly followed my advice to be much out of doors, had joined the volunteers, and had been all through the fatigues of the Brighton review, feeling all the better for it.

In three somewhat similar cases occurring among young men, the symptoms being cough, emaciation, hæmoptysis, and irregular breathing, with some little crackling at the lung apex, the hypophosphite of soda

was given in camphor water, and rest from work enjoined for a few weeks. Two of the patients were able to return to work, and have continued well; the third, whom I have had now for three years under observation, got well at first so fast, that he himself said, 'I did not think I could have improved so fast in so short a time;' yet still there was very distinct crackling in the right chest, and recently signs of a small cavity have appeared, so that I have been obliged to make this patient leave London to pass the winter at St. Leonards.

CASE XVII.—James R., seen May 9th, 1867. Pale, thin man, losing flesh rather fast, much cough, and now and then hæmoptysis. Left lung full of moist crackling; pulse 104, no fever; cold sweats at night. Cannot take cod-liver oil, as it always sickens him.

Ordered 5 grains of hypophosphite of soda, in camphor water, three times daily.

He gradually improved, and the moist crackling in the left lung was, by degrees, replaced by a dry creaking sound; at the same time the cough got better, and he did not spit 'nothing near so much' as formerly.

He was soon able to begin cod-liver oil, and eventually left to go to his home in Wales, feeling himself quite well.

CASE XVIII.—Elizabeth D., æt. thirty-five, living at Poplar; she has been under treatment for about one month for free hæmoptysis and cough, exhaustion, and much tightness and oppression at the chest.

Percussion note is fair; breathing very feeble at both infraclavicular regions, and under the right clavicle clicking sounds are evident.

The medicines that have been hitherto employed have been opiates, tonics, and cough mixtures; but the disease appears in no way influenced by them: indeed, the patient is conscious of feeling worse than when she first came under my treatment.

She now had 5 grains of hypophosphite of soda in camphor water, three times a day, and one teaspoonful of cod-liver oil after meals. She continued this treatment for a month, and was then discharged with complete loss of all chest pain, scarcely any cough, not a trace of blood in the expectoration, and no morbid sounds to be heard in the chest.

This patient, while taking the hypophosphite, was able to digest and assimilate a small quantity of cod-liver oil, and I find it not uncommon for persons to be able to digest the oil after a course of hypophosphite of soda, whereas before, they have been perfectly unable to retain it on the stomach.

CASE XIX.—M. V., a shoemaker, æt. twenty-five. In July, 1862, this man states that he was an in-patient of Victoria Park Hospital, and was then set down as in the second stage of phthisis. He was under the care of Dr. Peacock, and improved greatly during his stay in the hospital, gaining much, both in weight and strength, and leaving very greatly improved. His weight on leaving was 7st. 2lb.

December, 1862, he became an out-patient under Dr. Ingram; and the note recorded softening going on in the upper part of the left lung, no hæmoptysis. He was treated with cod-liver oil, quinine and steel, and got somewhat better.

October 16th, 1865.—I saw him for the first time;

he had then much thick yellow expectoration, and abundant loose crepitation, audible all over the upper half of the left lung; clicking sounds are heard also over the right lung.

He now got 5 grains hypophosphite of soda in camphor water as his only medicine, and began at once to amend; after a few weeks he had ʒij. of oil three times a-day, and on January 29th, 1866, he remarks that his weight is now 8st. 5lb. The expectoration, from being thick and yellow, is now described as diminished in quantity, and of a watery nature. The left chest is dull and flattened, a few moist crackling noises are heard, with very weak breathing. The breathing in the right lung is weak, but free from any abnormal sound.

He was seen in 1870 in very good health.

It was noted here, how, as the man got better, the thick yellow corpuscular expectoration became smaller in quantity, and changed in quality to what was described as a thin, watery, scanty spit. The same change was noted in some other cases.

If, by any chance, these cases of arrested phthisis contract an attack of acute bronchitis or pneumonia, the danger of a fatal result is very great, and after death a good deal of fibrous tissue is found in the lung, though, possibly, there may be but little real tubercle.

CASE XX.—Joseph D., a thin, pale young man, with much cough, and frequent spitting of blood—symptoms which have troubled him about twelve months—came as a hospital patient on January 31st, 1867.

Resonance of chest is fair, but expiration is pro-

longed under both clavicles, chiefly under right, and here a good deal of coarse mucous râle is heard. Pulse 114; tongue clean; has lost 20lb. weight in six weeks.

℞ Calc. hypophos. gr. v.;
Liq. calc. sacc. ℥xxx.;
Aq. menth. pip. ʒj. ter die.
Pil. conii. co. om. nocte.

February 14th.—Feels much better; pulse 88; still some hæmoptysis. Pt. hst.

28th.—Some sonorous râle on right side; still has cough, and at times hæmoptysis.

Magnes. sulphat. ʒss.;
Acid. sulph. dil. ℥x.;
Infus. calumbæ, ʒj. ter die.

March 7th.—Worse; pulse 100; increase of the hæmoptysis; return to the hypophosphite. By the middle of April he was able to return to work, and continued in very fair health, although the respiration in the right lung is not free from abnormal sounds. This man tried cod-liver oil, and also steel, but the only remedy that agreed well, and seemed really to check the progress of his disease, was the hypophosphite of lime. What eventually became of him I do not know.

CASE XXI.—Esther R., widow, æt. thirty-nine, seen March 21st, 1867. Pale and thin, though living in a healthy suburb, and well cared for. Complains of much cough and expectoration, with, at times, hæmoptysis. The left side of the chest is dull, and full of crackling

noises, the right is resonant, and the breathing strong.

Ordered sodæ bicarb. c. sodæ hypophos. for two weeks, at the end of which time there was not the least improvement.

℞ Acid. nitric. dilut. ℥x.;
Aq. camphor. ʒj. ter die.

On this mixture she amended considerably; she took it for a month with relief to her symptoms.

In May, after a short interval of rest from physic, the cough, expectoration, and exhaustion seemed worse than ever, and we again made trial of the hypophosphite of soda. At this time, too, the catamenia had stopped, the cough caused her to vomit her food; the left chest was very tender, and full of moist crackling.

This time the hypophosphite answered well; the vomiting ceased, the respiration became more natural in the left lung, and in six weeks' time she was pronounced convalescent, having taken for the last fortnight some small doses of iron, but no cod-liver oil, as this did not agree with the stomach.

In July the catamenia returned naturally.

In October there was a return of the symptoms, and she had, for a time, carbonate of ammonia with infus. serpentariæ. On this medicine the disease evidently gained ground, but on returning to the hypophosphite of soda, the symptoms changed for the better in a way that elicited her very warmest praises; especially she noticed the breathing to get so much more free and easy while taking the hypophosphite with some ether in camphor water. The cracklings in the left lung

were replaced, to some extent, by proper respiration, and, for a time, she continued in very fair health.

CASE XXII.—Miss R., æt. twenty-five, having been pronounced to be consumptive on the left side of her chest, spent several months at Ventnor with apparent benefit. On her return, I saw her for the first time, November 28th, 1876, and found her complaining of cough, with at times spitting of blood and loss of flesh.

Pulse 120, and abundant crackling sounds under left clavicle. During six weeks she took the following mixture :

Sodæ hypophosphitis, gr. v. ;

Tinct. camphor. co. ℥xv. ;

Aq. camph. ʒj. t. d. s.

January 9th she informed me that her cough had ceased, she had become much stouter, and now felt able to take a small quantity of cod-liver oil. Pulse 80. In her own opinion she was cured of consumption ; but creaking sounds could still be heard under the left clavicle, and in my opinion she prematurely desisted from regular medical treatment.

It is well to remember, that in this case the patient had enjoyed all the advantages of a residence at Ventnor ; while during the time of treatment by the hypophosphite, she was living in a suburb of London, and by no means favourably placed for passing the winter.

CASE XXIII.—Mrs. R. was under my care in the West London Hospital for obstinate bronchitis, coupled with dulness and very tubular breathing, persistent at

the right apex. The bronchitis passed away, and she became an out-patient. Under the use of the hypophosphite of lime, the cough ceased and flesh was gained; but the dulness at the upper part of right lung, with bronchial breath sound and prolonged expiration, still continued.

I possess, in considerable detail, the notes of numerous cases of catarrhal disease of the lung (alveolar catarrh of the apex), marked by impaired resonance, slight flattening, crepitant râles, bronchial breathing, and, in some instances, hæmoptysis, originating in an attack of bronchitis from taking cold, which have improved speedily and decidedly on the administration of the hypophosphites of lime and soda.

The patient has lost cough, gained flesh, and felt his condition greatly improved; but I have observed that so long as distinct morbid sounds continue at the apex of a crepitant character, there is danger of a true tuberculosis of the lung being set up, and the patient, however unwilling he may be, should continue under medical observation.

In cases where a pneumonic or pleuritic process has produced some obstinate consolidation or thickening in the tissues, I would strongly advise the use of the hypophosphite of soda. Given in good time, it may be the means of preventing a phthisis of caseous or fibroid nature setting in.

CASE XXIV.—Miss I., aged seventeen years, seen in December, 1869, in consequence of an attack of pleuropneumonia of left lung of three weeks' duration. Pulse 104. Temperature 100; much cough, with scanty ex-

pectoration, dulness all over lower left back, with bronchial breath and voice sound at inferior angle of scapula; no crepitation. The prognosis here I considered favourable, though the excellent doctor—now deceased—under whose care the young lady was, spoke most emphatically to the certainty of phthisis setting in. Five grains of hypophosphite of soda with tincture of orange-peel were given three times in the day steadily for three weeks, and by the end of two months the respiration was pronounced normal in the left lung. Three years after, I heard of this lady as being in perfect health.

In another case, which I find noted in comparison with the above, a pleurisy of the right side, with thickening of tissue, dulness and feeble breathing, in a man who had experienced one or two attacks of hæmoptysis, improved so much on the hypophosphite of soda, that in three weeks the patient could leave his room and return to his employment; he returned also with great vigour to his drinking habits, and in three months' time died suddenly in a fit of apoplexy.

CASE XXV.—This case was a more critical one than either of the foregoing to test the power of the hypophosphite over an obstinate consolidation.

Adam C., aged thirty-eight years, seen November 7th, 1874, a pale, dark, handsome man, by trade a smith, has had a cough for four months, with some shortness of breath. Left lower back is dull, and crepitation very distinct with inspiration. Pulse 100. Informs me that three years ago he had an inflammation on the chest, but which appears to have soon passed away. Now he

has much thick yellow expectoration, and has lost flesh.

℞ Sodæ hypophos.
Sodæ bicarb. aa. gr. v. ;
Infus. calumbæ, f ʒj. t. d. s.
Pil. conii co. gr. v. h. s. s.

December 5th.—Pulse 100, feels better. Spit as before. Dulness and crepitation continue at left base. Right respiration full and good.

The progress of this case was very slow; on changing from the hypophosphite of soda to a mixture containing steel, while at the same time cod-liver oil was given, his pulse rose to 120, and he began to be troubled with hæmoptysis.

February 8th, 1875.—He commenced to take 5 grains of hypophosphite of potash, and on February 13th he expressed great satisfaction with this medicine. Pulse still keeps at 120, but the expectoration is less, the dulness is diminished, and crepitation only heard at close of forced inspiration.

April 10th.—Pulse 80, has gained weight, cough much better, and he can get on with his work. There is still some impaired resonance at left base, and very forced inspiration brings out slight crepitation.

I heard no more of him till November, 1876, when his daughter reported him to me as being quite well.

The case was one that had derived more real good from the hypophosphites of soda and potash than from any other medicine that I had employed; but, like many others, the patient prematurely gave up treatment, on his own conviction that he was cured.

I have been called at times to see patients who are supposed to be convalescent from an attack of pneumonia; but the trouble is that the consolidation of lung continues, together with bronchial voice and breath-sound although iodine and other absorbent remedies may have been judiciously and perseveringly used for some time. The majority of these cases begin at once to improve on the administration of the hypophosphite of soda, potash, or lime, the consolidation resolves, and the danger of phthisis or of tuberculosis of lung is averted. There are, however, cases like that of Adam C. just reported, where the improvement under the hypophosphite treatment is slow and uncertain, and the best that can be said of the medicine is, that it will do more good than anything else. When the pneumonia is of a catarrhal, rather than of an exudative croupous character, then the curative powers of the hypophosphites are critically tested, as in the following case.

CASE XXVI.—Robert R., æt. thirty-five, a tall, fine man, with luxuriant hair, came to Victoria Park Hospital, December 21st, 1863, complaining of cough and spitting of blood. Pulse 100. Dulness under left clavicle, with bronchial breath-sound, and some little crepitation. He was ordered 5 grains of the hypophosphite of soda in infusion of calumba, and a dessert-spoonful of cod-liver oil three times a day. By the end of January he had lost all cough, and discharged himself as feeling perfectly well.

November 7th, 1865.—He came again to the hospital with bad cough, much yellow expectoration, and night-sweats. Pulse 100. Crackling sounds distinct

over upper part of left lung. Ordered, as before, hypophosphite of soda and cod-liver oil.

November 14th.—Feels better and stronger, less cough ; pulse 120. Left front full of crepitant râles.

November 23rd. — Has had some troublesome hæmoptysis. Pulse 120. To leave off every form of alcohol, and take nitric acid mixture.

January 29th, 1866.—Much emaciated, voice clear and good, coughs till he vomits. Pulse 130. Appetite very good ; been taking hypophosphite of soda and cod-liver oil for last fortnight. Abundant loose large râles all over left lung. Bronchial breath-sound at right apex. His impression is that the cod-liver oil has done him good, but he has not found much relief from any medicine. Shortly after this he ceased to attend the hospital, the long journey from his home in Essex being too much for his feeble strength. The following note I find appended to my report, dated January, 1866 : *In these cases of phthisis where digestion is perfect (as in Robert R.'s case), the fault, or vice, seems to lie with the lymphatics or absorbents ; oil agrees well in these cases.*

Now (February, 1879), I believe there is more in this statement than I might have thought when I noted it, for it seems to me that when the lymphatic system of the lungs becomes infected, either in consequence of obstinate alveolar catarrh or any other kind of persistent inflammation, that then it is we must look out for a true tuberculosis. The hitherto phthisical patient has become tuberculous, and the peril of his state is increased accordingly. The hypophosphites, by efficiently removing congestion, inflammation, and

exudative or catarrhal products, will, I believe, do more than any other known remedies to prevent the advent of tuberculosis; but not wishing to prejudice the use of the hypophosphites by claiming too much for them, I must say that my present experience does not warrant my going further than this.

CASE XXVII.—In this case the hypophosphite seemed most distinctly indicated, and was given with good effect.

Miss S., æt. sixteen, seen May 24th, 1878. She has had a cough, with scanty yellow-streaked sputa, for three months; has lost appetite and flesh, and has a pulse of 130.

Under left clavicle, and at left supra-spinous fossa, crepitation is distinct; there is no notable dulness on percussion, and the rest of the lungs presents no abnormal sound. Voice becoming hoarse.

℞ Calcis hypophosphitis, gr. iij.
Liq. calc. sacc. ℥x.
Syrupi, ʒss.
Aq. ad. ʒj. t. d. s.

One dessert-spoonful of Kahl's extract of malt at bedtime.

June 1st.—Pulse 116. Cough not nearly so bad. Continue medicine.

June 19th.—Pulse 120. Take quinine and digitalis for one week, and then resume the hypophosphite.

August 8th.—Breathes well; gained slightly in weight; some falling in under left clavicle; breath-sound here is weak, and a few crepitations are audible.

September 27th. — Written report says, 'Much better; eats well; takes plenty of exercise, and has very little cough. If any return of symptoms, she will come and see the doctor.' Having heard nothing further, I conclude she continues well.

CASE XXVIII.—In the case of this young man, a pneumonic process at the base of the lung seemed likely to lead to phthisis or tuberculosis.

Mr. D., æt. twenty-five, farmer. Family healthy.

January 25th, 1875.—Came complaining of cough, loss of flesh, and has had more than one attack of blood-spitting. Pulse 96. Chest fairly resonant; breath-sound at left apex weak, at right very harsh. Left base deficient in normal clearness, and deep inspiration brings out a few crepitant râles.

Up to April 19th, 1875, the treatment consisted in very small doses of tartarated antimony with citrate of potash, then digitalis, and after that dilute nitric acid. Under these remedies the hæmoptysis continued in diminished degree, and the breath-sound at left base improved slightly.

April 19th.—℞ Sodæ hypophosphitis, gr. v.

Potass. citratis, gr. x.

Syrupi, ʒj.

Aq. ad. ʒj. M. ter die.

After prescribing this mixture, I saw no more of him till October 9th, 1878, when he came to me in consequence of slight dyspeptic disturbance. He then made no complaint of cough, and respiration was free from any abnormal sound; he considered himself as perfectly well.

CASE XXIX.—Evan H., of Deptford, æt. thirty-six, carpenter, came to Victoria Park Hospital, July 19th, 1876. Six years ago was cured, by operation, of a fistula, at St. Mark's Hospital.

For last two months he has had a cough, with much yellow expectoration ; never any blood.

Respiration over left chest good. Right base is dull, and abundant crepitation audible.

Citrate of potash mixture ordered, with 5 grains of hypophosphite of soda.

March 18th.—Rests well ; cough a mere nothing ; pulse 88. Continue mixture, and take ʒij. of cod-liver oil three times daily.

March 25th.—Says he is quite well ; much less crepitation at right base. Continue mixture and oil.

April 29th.—No cough ; pulse 80 ; tongue clean ; crepitation at right base not entirely gone.

May 27th.—Considers himself cured, and goes away into Pembrokeshire.

In this case, as in the preceding, and in numerous others of which I possess notes, the pneumonic or catarrhal process had not actually destroyed the cell wall of the lung ; the adenoid tissue was not affected. Under these conditions the prognosis is favourable and the curative action of the hypophosphites is well displayed, especially after other well-chosen remedial agents have ceased to be of service.

Although I am not one to attach very great importance to statistics as proving the value of any special remedy in disease, yet I have gone over the notes of one hundred cases observed in private, as here the records are more complete than it was possible to make

them among my hospital out-patients. From these are excluded all whose cases are given separately and numerically. Of these hundred cases nine were cases of persistent bronchitis of several months' duration; no positive signs of phthisis were present in any one of these cases, they were all grown-up persons, well cared for in middle life, and in three of them hæmoptysis was specially noted. Every one of these, within one month, was perfectly cured of all cough, shortness of breath, and expectoration by 5 grains of the hypophosphite of soda, lime, or potash, with the addition of some sodæ bicarbonas, liquor calcis saccharatus, or citrate of potash, according to the particular hypophosphite ordered. I am not able to ascertain that any one of these patients has had any return of the symptoms subsequently.

One case was that of a very active clergyman, in London, who came to me (May, 1872) in consequence of loss of flesh, very troublesome morning cough with expectoration, and slight hæmoptysis. His father and two of his brothers having died of phthisis, he was naturally anxious as to his own prospects. Fourteen days' treatment, with hypophosphite of soda in alkaline infusion of calumba, removed all trace of cough, and he continued, to my knowledge, for more than two years in excellent health. One day he came to me with his son, who had contracted an obstinate bronchial catarrh at Oxford, and he too was rapidly cured by the hypophosphite of soda. The father, I heard, died in 1877 of some affection of the nervous system.

Where bronchitis has existed for some time, and appears to have caused some thickening or exudation

about the air-tubes, and when ordinary expectorants and tonics have failed to afford relief, then it is well worth while to try the hypophosphite of soda in alkaline infusion of calumba. If there be tendency to diarrhœa, sickness, or sweating at night, then the hypophosphite of lime with saccharated solution of lime, glycerine, and water will probably suit better than the soda hypophosphite. When the expectoration is fetid, and signs of dilated bronchi are apparent, I have seen 5 grains of hypophosphite of potash prove most serviceable, and far superior to the iodide of potassium or iron, which I had tried also in the case.

CASE XXX.—Susan N., aged thirty-five, living in Kent, came for advice, January 28, 1867.

About two months ago she was laid up with bronchitis; the acute attack yielded to treatment, but there remains now a troublesome cough, with thick, very fetid expectoration, and much tightness and oppression at the chest. The voice has become hoarse and weak, tongue slightly furred; respiration harsh, and tubular at left apex.

Under the use of 5-grain doses of hypophosphite of potash in camphor-water, the cough and expectoration rapidly ceased, and towards the end of March she was dismissed perfectly cured.

On omitting the use of the medicine for a week, in the course of the treatment, the fetid expectoration at once returned, but again subsided on resuming the mixture.

In the case of a gentleman, seen with Dr. Wilton, of Sutton, in 1878, a persistent bronchitis had issued in a condition of things closely resembling that above

described; and we found the hypophosphite of potash superior to any other remedy in relieving the cough and checking the unpleasant expectoration.

The removal of persistent bronchial catarrh is important enough in the case of grown-up persons who wish to avoid falling into a true pulmonary consumption. In the case of young children, the matter is even of more consequence; for with them it seems cellular production is very rapid, and the tendency to filling of the pulmonary alveoli with cellular and epithelial formations is more active than in adults.

CASE XXXI.—Timothy S., a small boy of ten, had contracted a bronchitis; and as his cough and expectoration remained obstinate, his mother brought him to me as an out-patient, at Victoria Park Hospital, April 23, 1874.

His illness had come on gradually with cough; and now he has lost much flesh, and at base of left lung resonance is impaired and crepitant râle very distinct.

He took 3 grains of hypophosphite of lime daily, and on April 30th was greatly improved in every respect.

He now was admitted into the hospital, and by July 30th had gained flesh and lost all his pulmonary symptoms.

CASE XXXII.—A more severe case, also of catarrhal origin, was of Henry W., aged fourteen years. This lad, in infancy, was liable to croup, and had always been, like his mother, very delicate in the chest.

December, 1877, he was brought to the hospital with a bad cough, and much yellow expectoration; no blood in it. The present attack is attributed to cold caught from a severe wetting.

The chest resonance is fairly good. Over right lung, breath-sound very coarse and harsh, and mixed with râles.

Under small doses of hypophosphite of lime, and a pill of extract of hyoscyamus and oxide of zinc at bedtime, he lost all his symptoms, and by February 9th was discharged 'fairly well,' says the note.

July 14, 1878, he again came under my notice with aggravated return of all his symptoms. Skin hot, pulse 120. Dulness and crepitation over left lung, and much crepitation over right also. Ordered again to take the hypophosphite of lime as before.

He took the medicine, and seemed to make no progress; so I took him into the hospital, and gave him first quinine, and then a mixture with nitro-hydrochloric acid. Cod-liver oil always made him sick.

September 4th. — Temperature 100°. Cavernous breathing, and coarse crepitation over left front, and large crepitation over right; much dyspnoea. Again he was put upon the hypophosphite of lime, as he was now more favourably placed than when attending as out-patient, and he soon gained flesh, while at the same time cough and expectoration diminished. We found, also, that he could now take 1 drachm of Leslie's almonised cod-liver oil twice a day without nausea.

October 15th he quitted the hospital, amended, with much increase of weight, but still presenting all the signs of cavities in each lung.

The last we heard of him was at the end of November, and the report was of a return of cough and spitting.

Had this lad been in affluent circumstances, and able to go for the winter to Ventnor or Bournemouth, instead of to his home at Bethnal Green, the chances are that his disease would have become decidedly arrested.

There could be no doubt of actual destruction of alveoli and lung substance having taken place, tissues that with this lad had probably been always weak ; poorly nourished, and therefore vulnerable by disease. Hence the unsatisfactory result.

In the case of Timothy S. (XXX.), the cell-wall of the lung was not destroyed, and his recovery was therefore perfect.

I introduce the notes of those last two cases, and I could add some others of a very satisfactory kind, to show the value of the hypophosphites of soda and lime in removing a bronchitic or catarrhal pneumonic state of lung, and so preventing the development of phthisis. The only remedial agent comparable to the hypophosphites for this purpose, in my own experience, is a well-selected climate.

Having now excluded from the 100 cases the 9 whose symptoms were rather those of persistent bronchitis than of phthisis, and every one of whom made a perfect recovery under treatment by the hypophosphites, I pass on to see what results can be got from an analysis of the remaining 91 cases.

27 are set down as in the first stage of phthisis. Among these, the physical signs were confined to one lung only ; and of this number, 12 seemed to me to get quite well, no instance of any relapse having as yet come under my notice. In 9 out of the 12, hæmop-

tysis was specially noted, and in 2 of them the strong family tendency to consumption was very prominent.

In 2 cases, the final note was, 'much amended,'—in one of these the further history is unknown; in the other, a great tendency to diarrhœa complicated the case. In the 12 recoveries I find no report of any complication.

Of the remaining 13 out of the 27, I have only to say that they were decided cases of phthisis; but I am unable to report any beneficial result from either hypophosphites or any other remedy during the limited time the patients were under my own observation.

58 cases were approaching in the second and third stages of the disease. One of them has, I find, been taken for report, as Case XXVII. The recovery has, I have every reason to believe, remained permanent thus far.

Another of the cases was a relative of my own, and has been already reported in the *Lancet* of April 24, 1875. The young man had every sign of a moderately sized cavity in his right lung, and has experienced more than one severe attack of hæmoptysis. Phosphorus, in the form of Savory and Moore's, phosphorated cod-liver oil, was the curative agent, and little else in the way of medicine was taken. Iron was given, but without any evidence of benefit; while under the intermitting use of the phosphorated oil a complete recovery has taken place, the gentleman being at the present time entirely out of the doctor's hands and in very good health. A considerable flattening, with weak breath-sound over right chest, was the only

evidence of past disease that I could find the last time I examined him, some twelve months ago.

From the 56 remaining cases I ought to exclude one case of pneumonia at the lung apex in a little boy, seen some years ago with Mr. Roper, of Blackheath. Here I was a little led astray by the very well-marked crack-pot percussion note at the apex; but the very speedy and perfect recovery that ensued on the use of hypophosphite of soda and citrate of iron made it clear that there was no true phthisis.

There appear, therefore, to remain 55 genuine cases of phthisis in the second and third stages. In 14 of these, the diseased action seemed arrested by the hypophosphites of soda and lime. One of these died suddenly of hæmoptysis, a vessel apparently having given way on the wall of a large cavity. The young lady first came under my notice in September, 1871. She had then a considerable excavation in her left lung; she had crepitant râles in the right lung, was much emaciated, liable to diarrhœa, and, not very long before, had lost her mother from phthisis. The patient had been under the care of a very skilful physician, who told me he hardly thought she would live a week. After examining the patient, I confirmed this opinion, advised a trial of the hypophosphite of soda, and took my leave, hardly expecting to see the patient again.

Contrary, however, to my expectation, I saw this patient at intervals during the ensuing four years; and though she was scarcely able to take any cod-liver oil, she lost much of her cough, was able to travel about, and, much against my advice, to go out to evening parties. There seemed, indeed, every hope of

recovery, although the hollow cavernous breathing on the left side of the chest, and the very slight evidence of contraction in the cavity there, kept me in a constant state of apprehension as to what might happen. Whether she caught a cold, or had made more blood than the weak vessels could bear, I can hardly say, but she died suddenly of hæmoptysis in 1875.

After her death, I was told that, owing to the unfavourable opinion I had given at my first interview, this lady said she had no wish to see me again. In a fortnight's time, having taken the hypophosphite of soda regularly, she changed her mind, for she said that the medicine was the only thing she had ever taken that seemed to be doing her good.

Another patient who came under my care, in far-advanced phthisis, invariably found that a 'perle,' containing $\frac{1}{32}$ of a grain of phosphorus in cod-liver oil, always checked the profuse expectoration which came from a great excavation in the left lung. In this instance the change from phosphorus and hypophosphite of lime to iron, quinine, or mineral acids, was always a conspicuous failure.

12 patients, in confirmed phthisis, got decided benefit from treatment by the hypophosphites, but did not present those symptoms of gain in flesh and strength, and loss of cough, that were observed in the 14.

Of the 29 that yet remain, the notes extend over too short a period to warrant my drawing any very positive conclusions. Most of the cases were severe and advanced, many were complicated with diarrhoea

and laryngeal disease. All I can say with certainty is, that in no case was I able to find a medicine that had a better influence over the diseased state than the hypophosphites of lime and soda. Any good that iron, quinine, or cod-liver oil might be capable of doing, had been well tested before the patients came under my hands.

Of the cases yet remaining, 6 were examples of rapid acute tuberculosis, strongly hereditary, and attended in all with fever and rise of temperature.

With respect to these, I can only say that the hypophosphite of soda seemed of more value in checking cough and relieving dyspnœa than any other medicine.

I may also unhesitatingly affirm that in no one instance was the abandonment of the hypophosphite and substitution of quinine, digitalis, or salines with small doses of antimony, attended with the slightest benefit to the patient. Indeed I have seen this last kind of change in medicine prove a most unsatisfactory one for a patient affected with a true tuberculosis.

In pneumonic phthisis the case is different, and minute doses of antimony are at times worth something.

Dr. Churchill, the introducer of these hypophosphite salts into medical practice, claims for them the power of preventing and curing actual tuberculosis. I should say that they are the nearest approach to such a remedy that we have as yet discovered; but I am obliged to own that my success with the hypophosphites in acute tuberculosis has, as yet, been far from what I could desire.

CHAPTER III.

PRACTICAL ADMINISTRATION OF PHOSPHORUS AND
HYPOPHOSPHITES.

HAVING obtained a thoroughly trustworthy preparation, it is often enough to give the patient 5 grains of the hypophosphite dissolved in water three times a day. A very intelligent man, who had been phthisical for some time, found much benefit from taking the soda hypophosphite thus dissolved, and could always tell whether he was taking a genuine preparation or not by the effect on his cough and symptoms.

At times it is an advantage to give some excess of alkali along with the hypophosphite; thus 5 grains of bicarbonate of soda and 5 grains of hypophosphite of soda go well together, and as this dose sometimes causes nausea and flatulence, there is no objection to adding some tincture or infusion of calumba to form the vehicle for administration.

In the same way 3 to 5 grains of the hypophosphite of lime may be given, together with 10 to 15 drops of the saccharated solution of lime, and for this glycerine and water forms a good vehicle.

Syrup of tolu will go well with the hypophosphite of lime, but I do not know of any other addition that adds to the remedial value of the salt.

In adapting the medicine to the patient it is well to see if the lung disease be complicated with hepatic, renal, or intestinal mischief. If it be, the chance of doing good by any of the hypophosphites is doubtful, and the physician had better not be too sanguine.

If the patient be liable to bilious disorder, and have a furred tongue and inactive bowels, the soda hypophosphite will suit best. If he be liable to diarrhœa and night sweats, and has profuse expectoration, then let him have some of the hypophosphite of lime with glycerine or syrup of tolu. Diarrhœa may be checked by such a medicine, together with a milk diet; and I have had the thanks of a patient, far gone in phthisis, for the relief thus given, by the superseding of bulky powders of tannin which had been ordered for the purpose of restraining the severe diarrhœa, and which dried up stomach and mouth in a way that was most unpleasant.

Phosphorus itself appears to act in the same way as the hypophosphites. As a nerve tonic it is now fairly established, and as an absorbent medicine for glandular swellings and enlargements it has considerable power. Some maintain that the absorption of a lenticular cataract may be brought about by rubbing phosphorated oil over the brow of the affected eye.

In the earlier degrees of consumption, with congestion or pneumonia of an insidious and latent form, phosphorus appears useful, for it aids the absorption and dispersion of pneumonic and catarrhal products.

The best way to give the phosphorus is in the form of phosphorated cod-liver oil, and the proper dose with

which to commence is $\frac{1}{50}$ th of a grain three times daily, dissolved in cod-liver oil and enveloped in a gelatine capsule. Given thus, the phosphorus is preserved from oxidation, and is not apt to cause nausea. Finely divided phosphorus may also be given incorporated with suet in a pill, according to the formula of Dr. Althaus. Phosphorus should never be given dissolved in any vegetable oil.

The dose of phosphorus may go up to $\frac{1}{30}$ th of a grain three times a day, but need never exceed this, for larger doses—or even small doses too long continued—may produce jaundice and disturbance of stomach, and set the patient resolutely against a continuance of the medicine.

Beyond slight nausea I have never seen any unpleasant effects follow the administration of phosphorus, and have seen the phosphorated cod-liver oil prove very valuable in consumption uncomplicated with renal or hepatic disorder.

Phosphorus appears to increase the amount of fatty matter in the blood, so that its action may be akin to that of cod-liver oil, and the two certainly work well together as remedies.

In seeking the curative action of phosphorus or the hypophosphites in consumption, in order to give a fair trial to the remedy, it is right to attend to the surroundings of the patient; and though some of my earliest, and to me most impressive, cases were among people living at Bethnal Green, Wapping, and Rotherhithe, still it is certainly an advantage for the patient to live in an air that is pure and dry.

I have seen wonderful recoveries take place in people, most undoubtedly consumptive, from a residence in a bracing air on an elevated situation, and I have seen the disease greatly expedited in its progress by a mild, moist, relaxing climate.

The condition, however, most conducive to the rapid progress of pulmonary consumption is close confinement in a warm, ill-ventilated room. A thoroughly vitiated and highly septic atmosphere is thus maintained around the patient, cough is aggravated to a degree that is truly fearful, and anyone who may have an opportunity of watching one of these melancholy cases need not be told of what consumption can become under a high state of cultivation. Even under such conditions as these I remember a poor creature pausing for an instant in his incessant cough to say that he thought he had found good from the use of phosphorus.

Now that we are all so alive to septic poisons and disease germs in the air, we can fully appreciate the antiseptic method as applied to consumptive people, in so far as to give them the purest possible air to breathe, and now and then to use a medicated vapour of creasote or of tar in the patient's room, or to cause him to respire through one of Dr. S. Coghill's antiseptic respirators.

I have thought that sometimes the patches of pneumonia we find at a *post-mortem* examination in the lung that has been reckoned least diseased, may have had their origin in some disease germ drawn down the air-tubes from the lung that is advanced in phthisis.

When the patient has an elevated temperature and quick pulse, it is necessary that he be kept at perfect rest, either on a sofa or in his bed. Of the great advantage of this method, so long followed by my colleagues at Victoria Park Hospital, I am now thoroughly convinced.

I am also convinced of the evil that may result from sending a patient abroad to travel when, though his pulmonary symptoms are slight, yet he has fever and some increase of temperature.

During the period of rest in bed digitalis and quinine may be of more immediate service than the hypophosphites.

If spitting of blood recur and prove troublesome, it is well to lay aside the hypophosphite and give a mixture with sulphuric or phosphoric acid. These acids seem to strengthen the capillary vessels and diminish the tendency to hæmoptysis.

It would be out of place to enter on the diet of consumptive persons in this small treatise. Milk should enter largely into it, and, when meat is taken, good sound stout, or claret with water, is a suitable beverage. Strong wines and spirits tend to create feverishness and predisposition to blood-spitting, and are, therefore, best avoided; and I observe that those who feel compelled to resort freely to these last-named drinks seldom last long.

Cough medicines should be dispensed with as much as possible. Opium and morphia check the action of the liver and stomach, and the more we can avoid their use the better. The tincture and juice of conium I have found a very good sedative in the troublesome

cough of acute phthisis, and its use is not followed by the disagreeable headache and constipation that generally ensue after the use of opium. For night sweats belladonna is useful, if the practice of feeding with milk during the night is not enough to keep this symptom in abeyance.

CHAPTER IV.

ON CONSUMPTION OF THE LUNGS, AND THE FORMS AND STAGES OF THE DISEASE MOST FAVOURABLE FOR THE CURATIVE ACTION OF THE HYPOPHOSPHITES.

THAT the timely administration of the hypophosphites of soda and lime, as well as of the phosphorated cod-liver oil, can do much to prevent the development of pulmonary phthisis and tuberculosis, is evidenced to my mind by observation of the way in which threatening cases with quick pulse, elevated temperature, and a few clicking or crepitating sounds in the respiration at one lung apex, recover under the employment of these medicines, coupled with judicious hygienic precautions.

When an acute tuberculosis has invaded both lungs, then we can hardly look for any very satisfactory effect from hypophosphites, though they do appear notably to retard the progress of the disease in some cases.

By acute tuberculosis I understand a peculiar growth of grey miliary tubercles in the lymphatic tissue of the lungs and other parts of the body. This tubercular eruption may be set going as a secondary infection

emanating from a scrofulous or caseous inflammatory deposit, or more rarely may arise spontaneously and run a rapid course to a fatal termination. Great privation and excessive nervous depression appear sometimes to act as causes of this acute miliary tuberculosis. Dr. Peacock has recorded a characteristic instance in a young lady, æt. twenty-two, who having previously enjoyed good health, had been working hard for a certificate of proficiency in a college. After accomplishing her object, she suffered apparently from an overwrought mind; but after a while seemed to recover. On May 14th she was feverish, and on the 24th complained of shortness of breath; by the 29th she had a pulse of 130 and respirations 80 per minute. Chest resonance somewhat impaired generally; a thrill was felt by applied hand, and the ear detected a harsh character in the respiration. On June 1st she died. Both lungs were found after death infiltrated with miliary tubercles. The left was adherent by old adhesions, and most affected with these tubercles; the right was greatly collapsed. In no part was there any trace of softening. The tissue of both lungs was remarkably airless.

These, fortunately uncommon, cases of true galloping consumption, I venture to think may be prevented by the early administration of such nerve tonics as phosphorus, hypophosphites, and a digestible form of fatty food, such as cod-liver oil. Pure air and cheerful non-depressing surroundings are also most important means of preventing the onset of acute tubercle.

In naming these adjuvant means of treating a case of acute tuberculosis in its early stage, I would be

understood to mean by pure air, a quiet existence in such, and certainly not an exciting tour with friends in Switzerland, Italy, or the South of France. Such a course keeps up feverishness, and materially aids the spread of tubercle through both lungs. Absence of mental excitement and worry is a very important matter, for it seemed to me, and also to my friend Dr. Roberts Thompson of Bournemouth, that in one case presenting every symptom and sign of acute tuberculosis, a fatal metastasis of the disorder to the brain was brought about by a sudden access of anxiety of mind coming unexpectedly upon the patient.

When a youthful patient is seen, who has some hoarseness of voice, quick breathing, rapid pulse, elevated temperature, and at one or both apices a few clicking or crepitating sounds; possibly too an increase of vocal thrill over his chest generally, we have a most threatening case to deal with; and an essential condition of recovery is absolute rest, a diet composed mainly of milk, abstinence from alcoholic stimulants: and then the administration of the hypophosphite of soda in 5 grain doses three times a day with citrate of potash in plain water, should be perseveringly tried. At night a pill of digitalis and quinine may be given by those who have confidence in such a pill as a reducer of abnormal temperature.

This is the plan of treatment I would suggest for acute tuberculosis; and provided the tuberculising process have not pervaded both lungs, I believe it will be found successful in arresting the progress of the disorder.

Those who are familiar with the aspect of lungs full

of true miliary tubercles, as seen after death, will understand how important it is that the disease be taken in its earliest onset, if hypophosphites or any other medicines are to have a chance of doing good.

When there seems danger of tuberculosis being set going, in consequence of an attack of blood-spitting, the hypophosphite of soda may be given with care; and I certainly have never seen it increase the tendency to hæmoptysis.

In hæmoptysis much depends on the circumstance, whether the bleeding has taken place into the air-tubes, or into the substance of the lung. (See Dr. Dobell's recent work on blood-spitting and lung disease, page 25.) If the bleeding be from the air-cells, the corpuscles may find their way into the lymphatic tissue, and set up such irritation in this tissue and in the cell wall of the lung as may lead to the development of tubercles.

In cases of recurring attacks of hæmoptysis, feverishness and tendency to limited attacks of pneumonia, the prognosis as to the effect of hypophosphites on the case is not encouraging. Among those who seemed to derive no benefit from hypophosphites, I find many illustrating this form of pulmonary disease.

Most of these had been hard drinkers, and alcohol persistently imbibed produces a degenerated and rotten state of the capillaries of the lung, eminently favourable both to hæmorrhage and very destructive phthisis.

I come now to examples of scrofulous and catarrhal disease of lung, which, if neglected, will give rise to softening and destruction of pulmonary substance, and

sooner or later to invasion of lymphatic tissue by tubercle.

In this species of phthisis, one more amenable to treatment than acute tuberculosis, the hypophosphites are medicines that may be hopefully tried.

Catarrhal disease may arise from a degenerated condition of the epithelium of the air-cells, resulting from confinement in a close impure atmosphere.

A most instructive account of this form of lung disease is found in the report of the health of the Royal Navy for 1860. When H.M.S. *St. Jean d'Acre* was in the Mediterranean, the seamen were packed very closely in their hammocks on the lower deck, and the surgeon noticed the atmosphere to become exceedingly close and oppressive. On April 8th he found the temperature above the hammocks to be 81° , while in the space below it was 69° . As summer advanced, it became impossible to keep the ship cool, and in September sixty-five men were invalided with 'pulmonary disease of a phthisical, or at all events of an asthenic character.' The surgeon reports:

'On examining the chest by auscultation and percussion, abnormal sounds were generally heard, varying from unusual coarseness of the respiratory murmur in the upper lobes of the lung, to decided evidence of pulmonary induration. . . In some fatal cases tubercle was indisputably present, and the symptoms, both general and physical, were all suggestive of phthisis in its early stage. . . Still a great number of those who were invalided rapidly improved when they arrived in England, and were soon able to rejoin the service.'

The surgeon most judiciously classed these cases as

'cachexia pulmonalis.' The disease seemed to commence with inflammation of the terminal bronchia, and thence to extend to the cells of the lung.

It appears to me that in cases of the above nature the air-cells of the lung apex become choked by an imperfectly developed epithelium. A bad atmosphere being the principal cause of such imperfect development of epithelium, the most rational cure lies in removing the patient to a pure and healthy climate. Commencing mischief of this kind in the lung apex has repeatedly come under my notice among out-patients at Victoria Park Hospital, who are poorly nourished and much confined in a close atmosphere. The administration of the hypophosphites is strikingly beneficial in these cases, and if the patient remove for a while to the country his recovery is pretty certain. Children who do not get enough air and exercise may be affected with signs of this catarrhal form of phthisis, and the effect on them of the hypophosphite of lime is often most satisfactory. Preparations of iron are very little use unless the patient get plenty of air. Injudiciously given, the iron may cause hæmoptysis as well as hepatic congestion, and some have said it may even aid the formation of tubercles ; but I have never had evidence of this effect come under my notice, though I have seen iron act very prejudicially on the patient.

When I have noticed the good effect of the hypophosphites in these cases, I have often had brought to my mind an observation made to me in 1867 by Dr. C. J. B. Williams. Dr. Williams said that it seemed to him as if in some cases the hypophosphites increased the aptitude of the system for absorbing

oxygen. The remark showed how quickly and correctly the speaker had apprehended one sphere of action of the hypophosphite salts.*

When the catarrhal process in the air-tubes and lung-cells is the result of cold, and the patient has a persistent cough, dulness at one apex, or perhaps at one lung base, and when a variety of medicines have been tried with little result, then much good may often be done by the hypophosphites, or by the phosphorated cod-liver oil. I have had cases of this kind sent to me at the hospital, as decided, if not hopeless, cases of consumption, and have treated them as out-patients with a result that has a good deal surprised my friend who had sent the case.

In cases where softening and excavation of lung has taken place, the hypophosphite of lime is of great value in checking further progress of disease; and if the temperature fall to the normal range the patient may live on with one lung for many years.

In more than one case of advanced consumption, with cavities of large size, I have given a most unfavourable opinion in consequence of the persistent elevation of temperature, and yet have been amazed to see the improvement that has taken place under steady employment of hypophosphite of lime, after such a form as this:

R Calcis Hypophosphitis, gr. iij.
Liq. Calcis Sacc., ℥xv.
Glycerini, ℥xx.
Aq. ad. ʒj. ter die.

* See 'Pulmonary Consumption,' by Drs. C. J. B. and C. T. Williams, page 327.

Keeping steadily to this mixture, the temperature has, after fourteen days, fallen from 100·5 to 99°, but the extensive disorganisation in each lung has prevented any hope of ultimate recovery. It may be remarked, in reference to the case now specially before me, that any change from the hypophosphite of lime, during the three months of the patient's stay in the West London Hospital, was always attended with loss of ground, and with a request to return again to the hypophosphite. The cough improved under the use of the hypophosphite so much that the night cough-mixture usually stood untouched by the patient, and the less cough-mixture and opium a consumptive patient has the more hopeful is his chance of recovery. The cough-mixture may quiet the cough for a while, but this relief is usually obtained at the price of loss of appetite, congested liver and constipated bowels.

The surprising benefits that result from the employment of the hypophosphite of lime in cases of true phthisis or consumption of lung with cavities of even large size, gives great encouragement to us in administering the hypophosphite in the early stage of consumption marked by alveolar catarrh at one apex, from whatever cause arising; and, as has been said and proved by reports of cases, these are the conditions under which a true curative effect may very often be obtained, and that of a permanent and enduring nature.

CHAPTER V.

CONTINUED REMARKS ON THE CASES LIKELY TO BE
BENEFITED BY THE HYPOPHOSPHITES.

AT page 40 reference has been made to nine cases of persistent bronchitis, of several months' duration, which were completely cured by a course of treatment by the hypophosphites of soda, lime, or potash.

In these cases I apprehend a certain amount of congestive and exudative thickening about the lining membrane of the air-tubes had taken place, and this was removed by the administration of the above-named salts.

The power possessed by the hypophosphite of soda to cause absorption of exudative thickenings and consolidations I have often seen illustrated. In 1879 I had a man, aged forty, in the Victoria Park Hospital, who seemed by the loud rough rubbing sounds heard over the chest, and thrill felt by applied hand, to have some considerable chronic thickening of both pleuræ, and a decided tendency to fibrosis of the lung. Six weeks of treatment by the hypophosphite of soda entirely removed these rough scraping sounds, and the man left very materially improved in every respect.

In catarrhal pneumonia, or alveolar catarrh at one lung apex, I have seen excellent results follow on the administration of the soda hypophosphite.

The case of Miss S., at page 37, is a fairly typical one, and this patient now (December, 1879) I know to be in perfect health, and notably to have gained flesh during a summer spent at Margate.

To ensure a good result in these cases of alveolar catarrh at the apex, it is important to get the case early under treatment by the hypophosphite, for if the wall of the air-cells and minute bronchi has become infiltrated to any great extent by cell formation, and so destroyed and ulcerated, then a true phthisis of the lung is established, and the cure of the case becomes protracted and doubtful. The nature of this cellular infiltration of the alveolar wall in a lung can be readily studied from the admirable diagrams given at pp. 361—363 of Dr. Green's 'Pathology' (4th edition).

Strumous individuals are very prone to early invasion of the alveolar wall, and hence consumption with them is often a rapidly destructive disease.

The following case illustrates this statement well :

Charles W. was sent up from the country into Victoria Park Hospital under my care in March, 1879. The young man was of a very strumous aspect, and came of a consumptive family ; his voice was hoarse, his cough severe, respiration hurried, pulse 120, and temperature 103. At left apex subcrepitant rales were distinct.

My prognosis in this case was unfavourable. I believed the cell wall of the lung to be involved, and that ulcerative destruction of lung substance would

ensue. Hypophosphites of soda and lime were given, digitalis was tried, and latterly small doses of tartarated antimony. On May 3rd we heard large gurgling crepitation at each lung apex. May 10th, pulse 124, respirations 76; and on May 11th he died.

The *post-mortem* examination, made by Dr. S. West, showed cellular pleuritic adhesions, ragged cavities in upper part of right lung, then a zone of lung tissue, and below this the cells were stuffed with granular cheese-like matter, giving an arborescent form to the section. The left lung presented similar appearances; both lungs were airless. Ulcers were found on the vocal cords, and ulcers were found in the intestine. The muscle of the heart was fatty. No genuine grey tubercle found anywhere.

This instance of C. W. is one of those where increased temperature, quick pulse, and bad history make the prognosis very unpromising.

In the cases of Adam C.—XXV., p. 33—and Robert R.—XXVI., p. 35—the alveolar wall was doubtless invaded, hence the unsatisfactory progress of the last of these two patients. In Case XXIV., p. 32, and XXXI., p. 42, the disease of lung was of more recent origin, the alveolar wall not damaged, and the recovery of the patients complete and lasting.

Under certain conditions of constitution we know that the affection of the alveolar wall of the lung may lead to diseased action in the peribronchial lymphatic tissues, and a growth of grey miliary tubercles may be set up, and then the case is held by most authorities to be of very serious import. Under such conditions it has been said that the hitherto phthisical patient

has become tuberculous, and the danger of his condition thereby much aggravated. Probably this statement contains truth, but it is well known to all practical physicians that a phthisical patient may be in a state to cause the greatest anxiety without having got any true grey tubercles in his lungs; witness, for instance, the case of Charles W., just referred to.

The great importance of obtaining by suitable therapeutic measures the complete absorption and removal of pneumonic deposits and pleural exudations has been always much insisted upon, for if such deposit and exudation do not disperse within the space of two or three months, at the longest, it will assuredly lead to ulceration of the alveolar wall, destruction of lung, and pulmonary phthisis.

Dr. Graves of Dublin, Dr. Munk of London, and Dr. Rush of Philadelphia, many years ago advocated the use of mercury as a valuable means of promoting the dispersion of these pneumonic consolidations, and so obviating the development of phthisis. 'When,' says Graves (1843), 'a scrofulous inflammation of the lung has arisen suddenly and in consequence of some obvious cause, such as taking cold or the occurrence of hæmoptysis, then in such cases of commencing phthisis, and in such only, mercury may be employed with advantage.'

From what I have experienced of the unmistakably curative action of mercurial medicines in many cases of bronchitis due to inflammatory action set up by cold, I can fully agree in the foregoing statement of Dr. Graves. It is over the inflammatory elements of the disease that the mercury exercises a controlling

action; further than this its curative power does not extend. By checking inflammatory processes the mercury sets absorption going, and thus the work of removing a deposit or exudation commences. Sir Dominic Corrigan, writing many years ago, says that the use of mercury is in removing that degree of low local inflammation, which, allowed to remain unchecked or improperly treated, would terminate in tubercular deposition and consequent phthisis ('Medical Gazette,' Oct. 23, 1840).

When the patient comes under observation with loss of flesh, profuse expectoration, and apparent breaking-down of lung tissue, then the time for mercuric medication is over, the opportunity by such means of checking the disease has passed, and our hope must be in the hypophosphite of lime or of soda.

The following case illustrates these points. A young marine officer, aged nineteen years, who had hitherto enjoyed excellent health, took cold while going round Cape Horn on his way back from Australia. He had bad cough and some shortness of breath, and for these symptoms had no regular treatment till he came to me on October 5th, 1875, four months after the first setting-in of symptoms. I found him then with a cool skin, pulse 104, much yellow expectoration, never blood-tinged, and some loss of flesh. The upper part of the right lung was dull on percussion, and abundant subcrepitant rale audible; the rest of the chest presented nothing abnormal.

Here I considered the lung tissue to be invaded, and no good could now be obtained by the use of mercury. I therefore advised the use of hypophosphite of lime

and small doses of Savory and Moore's Phosphorated Cod Liver Oil. Under these means the pulse soon fell to 96, expectoration diminished, strength improved; but we could not get rid of crepitant sounds under the right clavicle. I learned that this young man so far improved that he actually resumed duty on shipboard, and in 1878 he again made a voyage to Australia, and in that country he died. From the progress he made while kept quiet at Hastings I felt hopeful that he might have to a great extent recovered had he not been so imprudent as prematurely to resume his laborious duty.

The case shows how an inflammatory attack at the lung apex, when left without treatment, may set up phthisis in a hitherto healthy subject.

The superiority of the hypophosphite salts over preparations of mercury and iodine as absorbent and alterative remedies, is most marked in instances of alveolar catarrh at the lung apex.

This alveolar catarrh appears due to excessive cell-formation, and also to degeneration of the epithelial lining of the air cells and smallest bronchi. Examples often come before us in the persons of weak and poorly-nourished children, or in children imperfectly convalescent of some acute bronchial or pulmonary attack.

When called upon to treat a child weakly and depressed after an attack of measles, and where there may be discovered a pneumonic consolidation persisting at the base of one lung, or symptoms of catarrhal pneumonia at one apex, we may with great confidence employ the hypophosphite of lime in doses of 2 or 3

grains along with syrup and water. Dr. Eustace Smith, whose experience in the diseases of children is very large, says that where softening of a pulmonary deposit has commenced, the influence of the hypophosphate of lime is often very remarkable.*

The presence of some degree of pyrexia is no barrier to the use of the hypophosphate of lime; but under this condition, on no account should hypophosphate of iron, or, indeed, iron in any form whatever, be administered—my own belief according with that of Trousseau and some others, that the preparations of iron are more likely to cause tuberculosis than to cure it if given when there be any feverishness of system.

The following table represents Dr. Andrew Clark's provisional arrangement of the varieties of pulmonary phthisis, as given in Aitken's 'Practice of Medicine,' sixth edition.

Having added a third column, I have therein placed, according to the best of my present knowledge and experience, the effects of the hypophosphites on each variety of phthisis. That the more favourable the general prognosis, the more certain is the curative action of the hypophosphate, cannot be denied.

* 'Clinical Studies on Diseases of Children,' p. 178.

<i>Name.</i>	<i>Anatomical Characters.</i>	<i>Prognosis.</i>
1. Tubercular, granular, or specific phthisis	Grey granulations; cellular, pigmentary, fibrous tubercles	Unfavourable. Checked for a time only by the hypophosphite of soda.
2. Scrofulous or epithelial phthisis	Primitive yellow tubercle. Accumulation and disintegration of epithelium-like cells	Not good. Early use of hypophosphite indicated. Pure fresh air essential to maintain the cure
3. Catarrhal or bronchial phthisis	Ulceration of bronchi, with fibroid and cellular deposits, which degenerate	Favourable. In early stage curable by hypophosphite, even if hæmoptysis has occurred, and ulceration be not extensive
4. Pneumonic phthisis	Disintegration of recent or old deposits occurring in pneumonia, primary, secondary, common, or Scrofulous	Favourable. Often very good results by the use of the hypophosphite
Pneumonic phthisis		Cure more uncertain and protracted
5. Fibrous phthisis	Fibroid deposits. Chronic pleurisy	If uncomplicated by renal or hepatic disease, often cured by hypophosphite
6. Lardaceous phthisis		
7. Syphilitic phthisis		
8. Hæmorrhagic phthisis		

Of 6, 7, 8, lardaceous, syphilitic, and hæmorrhagic phthisis, my records of cases hardly warrant any general deduction.

Lardaceous disease of lungs is so commonly complicated with similar disease in other organs as hardly to warrant a good prognosis. One of the earliest cases, however, of phthisis that I treated with the hypophosphite of soda was a most typical example of chronic phthisis complicated with lardaceous enlargement of liver, the whole being attributed to a carious condition of several ribs. The cough and expectoration diminished greatly under the hypophosphite, the patient gained flesh, and the late Dr. Cregeen, of Rotherhithe, under whose care the man was, expressed much surprise at the effect of the medicine on the patient. I have now lost sight of him, but for ten years he continued in sufficiently good health to be able to earn his living.

This is but an individual case, and I leave it to be taken for what the reader may think it worth.

Of syphilitic phthisis as influenced by the hypophosphites I cannot give any great experience. In one case where there had been free hæmorrhage from the lung, a very complete, and, it appears, durable recovery took place under hypophosphite of lime and mercurial inunction of the chest. The patient was brought to me in March, 1878, by Mr. Alfred Cooper, under whose care he had been for syphilis, in consequence of the hæmoptysis; and at right apex cavernous breath-sound and abundant subcrepitant rale were both well marked. When I last saw the patient, in May, 1879, he had lost all cough, and at right apex I could hear a dry hollow breath-sound. He told me that several years ago he had been pronounced consumptive in the right lung.

In this case, though a cavity had formed, the arrest of the progress of disease seemed complete and apparently lasting.

In hæmorrhagic phthisis it is best to arrest the bleeding by digitalis or ergot; and when it has entirely ceased, to give a regular course of the hypophosphite of soda, at the same time enjoining abstinence from all forms of alcohol. Provided this second condition be fulfilled, the case of one who has had his disease set in with an attack of hæmorrhage may be regarded hopefully. (See also remarks at page 58.)

In connection with the Tabular Classification of the varieties of phthisis, it may be of interest to study a few notes of cases, each being placed to illustrate one of the tabulated forms of phthisis in reference to prognosis and treatment.

No. 1. Granular tubercular phthisis is exemplified in the history of Augusta H., an orphan girl, sixteen years old, admitted under my care at the West London Hospital on May 15, 1877.

This young woman had been ill six weeks, and her case had been pronounced to be typhoid fever; but she never had any diarrhœa, and Mr. T. Gunton Alderton, who had seen her at times out of the hospital, was of opinion that the case was one of acute tuberculosis. Mr. Alderton informed me that the medicine that had seemed to him most beneficial was some hypophosphite of soda which the girl had taken.

On admission, I noted a rather livid hue of nose and lips, slight cough, and dyspnœa. Pulse 116; temperature in evening, 102°. No abdominal tenderness; no dulness of chest on percussion; crepitant rales

scattered over left side of the chest. Patient has never menstruated, and never spat any blood. She was ordered :

Vini Antimonialis, $\mathfrak{m}\text{x}$.

Mixt. Salinæ, $\mathfrak{z}\text{j}$. t. d. s.

Pil. Fulv. Digitalis, gr. j. om. nocte.

No benefit whatever from this treatment—so runs the note: feels weak and faint.

May 29th. Pulse 140; temperature 102° . Note made of prolonged expiration over right lung; left, full of crepitant rales, and dull at base on percussion. Complaints of sickness.

Ordered mixture of hypophosphite of lime (3 grs.) with liquor calcis.

June 5th. Pulse 100. Feels better, and is not sick. Less cough and spitting.

June 12th. Looks very livid. Pulse 130; temperature 102° .

Ordered: Tinctr. Digitalis, $\mathfrak{m}\text{x}$.

Quiniæ Sulphat., gr. j.

Aq. Menth. Pip., $\mathfrak{z}\text{j}$. ter. die.

June 26th. Pulse 140. Much crepitation over each lung; says that the medicine makes her sick, and expresses a wish to return to the hypophosphite of lime.

She took this up to July 17th, when I was much struck by the great diminution in the subcrepitant rales which we had heard so plainly. I called my house-physician (Mr. Lucas) to verify with me the

return of vesicular breathing. Pulse 120. Takes food well.

July 24th. We noted one or two spots on abdomen, like those said to have been seen at the commencement of the illness.

I never expected from the first anything like a recovery in this case, and learnt, on return to hospital duty, that Augusta H. died at the end of August. Mr. Lucas reported the result of the *post-mortem* examination to me as disclosing :

Lungs not collapsed, and free from adhesions ; on section these organs looked grey and granular, being stuffed with small grey seed-like bodies. There were no cavities.

Bronchial glands large and full of cheesy substance. No fluid in pleuræ.

Liver enlarged, pale, not greasy on section.

Kidneys normal.

General peritonitis, with effused fluid. Peritoneum granular. Mesenteric glands caseous. No report of ulcers in intestines.

With this case may be compared the one given at page 56.

My experience of this acute form of tuberculosis is not extensive, and, as far as treatment goes, not encouraging. The failure of such methods as I have as yet pursued would make me disposed to try mercurialisation of the system, to see if that would arrest the rapid eruption and growth of the grey tubercles. Two of these cases of acute tuberculosis have appeared to me to die from a sudden supervention of cerebral meningitis, whether truly tubercular or not I was not able

to discover, as no *post-mortem* examination was obtained. See page 57.

A good illustration of variety No. 2, scrofulous phthisis, with primitive yellow tubercular and cheesy degeneration, with excavation of lung, is afforded by the case of Charles W., at page 65.

The case was a severe one of this form of strumous consumption, and from the first of unfavourable aspect. Of the effect of treatment I leave the reader to form his own opinion.

As has been already said in scrofulous phthisis, early recognition of the disease and early treatment are alike most important matters.

To aid medical treatment, a residence in the pure air of such a sea-side station as Hastings or Bournemouth is also most desirable during the winter, and such a place as Harrogate or Malvern for the summer months. The most remarkable and permanent arrest of this form of phthisis that ever came under my notice seemed effected by a winter spent in Canada. The young lady had lost a sister from phthisis; and cough, with frequent hæmoptysis, made me pretty sure she was going the same way herself. I urged her to avail herself of the opportunity to go to Canada; and she has now been back some four years, lives in the country, and is, I hear, in perfect health.

The case of Mrs. A. (XI., page 17) is an example of a scrofulous phthisis setting in after confinement without much feverishness, and promptly relieved by the hypophosphite of soda.

In the case of John H. (XII.), the good effect of the hypophosphite in strumous phthisis was well shown.

Also in Benjamin B. (XVI.), where the cure was most complete.

Cases of No. 3 catarrhal, or bronchial phthisis, are very common among hospital patients. The story is of repeated attacks of bronchitis during successive winters, then hæmoptysis, and finally invasion of air-cells of lung by ulceration, and so a destructive consumption is set up.

The nine cases at page 40 will serve to illustrate the cure of early catarrhal phthisis by the hypophosphites. In three of these nine, attention was drawn to blood-spitting at times with the cough, and all the patients were in a good condition of life and well cared for.

Young females working all day at a sewing-machine, or other employment, in a hot crowded room, and who have then to walk home in the damp and cold, are very likely to acquire phthisis, which commences with bronchitis, and finally invades the weak, poorly-nourished air-cells of the lung.

With men who are not so much confined and who live fairly well, the bronchitis leads to fibroid and emphysematous change in lung tissue rather than to ulcerative phthisis.

Examples of pneumonic phthisis, with disintegration of recent or old deposits, occurring in vesicular, lobular, or lobar pneumonia, primary or secondary, common or scrofulous, can be found on referring to such cases as No. XXIV., Miss I., who recovered completely of a consolidation of left lung under the use of hypophosphite of soda. No. XXV., case of Adam C., was more obstinate in its nature than the preceding, and the

recovery not so complete. Of cases XXXI. and XXXII. it may be said that in the first the cure was perfect; in the other a temporary arrest of symptoms took place under the use of the lime hypophosphite (see page 43).

In the case of a young man sent to me from Essex several years ago, in consequence of the non-resolution of an old pneumonic consolidation at the left base, and where loss of flesh and slight hæmoptysis gave every reason to fear the approach of phthisis, I found six weeks of treatment with the hypophosphite of soda to clear off subcrepitant rales and diminish dulness in a way that satisfied me well.

A somewhat similar case was sent to me in May, 1876, by Mr. Dryland, of Kettering. Dulness and crepitant rales were very persistent at the left base. The man was thirty-seven years old, and had never had any spitting of blood. A pill of nux vomica and phosphorus seemed to act favourably on the lung symptoms, but the patient declared it produced such a strange state of brain excitement that he refused to continue it. There was no amount of fever, and under the use of the hypophosphites of soda he made a recovery which up to the present time has remained permanent.

Were common inflammation and its products, in the way of exudations and thickenings, the sole destructive agent in pulmonary phthisis, I believe there would be comparatively few cases in which the absorption of these products might not be brought about by the judicious employment of the lime and soda hypophosphites; but it seems that in the bad forms of scrofulous

pneumonia, something more than common inflammation is added as an actively destroying agent. A growth of tubercles may be set going in the lymphatic tissue, and modern opinion seems to indicate that the inflammation may acquire a kind of septic nature, and so become pernicious and intractable.

I am not aware of any special antiseptic power possessed either by phosphorus or any of the hypophosphites, and it may be that those cases where the hypophosphites, in common with other remedies, fail of doing good are cases of septic poisoning. If it be so, we are encouraged to urge removal to a clear, cold, dry air like that of Canada or Davos, while we use for inhalation atomised spray such as that of creasote or solution of benzoate of soda, and inspiration of tar vapour with a view to antiseptic effect. Carbolic acid spray seems to depress and cause faintness, otherwise in theory it is indicated.

In one or two cases of severe phthisis at Victoria Park Hospital, the resident physician, Dr. Orlebar, has given salicylate of soda with very good effect in reducing the temperature, decreasing secretion from a cavity, and materially improving the condition of the patient. We have tried small doses of arsenicum also, but I have never seen any marked effect from this medicine in arresting true phthisis, although it has been recommended on good authority.

If a septic action be connected with the progress of phthisis, whether pneumonic or tubercular, it is easy to understand how it is that confinement in a close hot room, or residence in a humid and warm climate, can urge on the progress of disease most actively.

Further, too, we can comprehend how it comes about that in Italy, Spain, and some other warm quarters where chamber ventilation is practically ignored, pulmonary phthisis is regarded as communicable, and is looked upon by the inhabitants almost in the light of a deadly and contagious fever.

Consideration of these matters in connection with a septic action destroying the lungs, would lead us to try the effect of a clear, cold atmosphere on the patient; and experience is continually proving how some forms of consumption are firmly arrested by a residence in a clear, cold climate such as that of Canada or Davos Platz. The pure cold air seems the best of antiseptic inhalants, and under its influence great amount of lung mischief becomes arrested, and, in a degree, repaired.

In a purely inflammatory case, as that of one just convalescent from pneumonia or pleurisy, a mild air is best and safest.

Next, to consider No. 5, Fibrous Phthisis.

In illustration of the effect of hypophosphite of soda in arresting the progress of this form of consumption, I would refer the reader to the case given on page 63. The physical signs in that man's case pointed to thickening of the pleuræ, and this, by extending into the lung, gradually produces fibroid phthisis and that form of inflammation of the interlobular tissue called by some interstitial pneumonia.

The arrest of the fibroid affection of the pleura is therefore important in order to save the lung tissue, To promote this arrest the hypophosphite of soda is very serviceable and more to be depended upon than

any of the preparations of iodine, excepting in cases where a syphilitic taint may be present in the system. The subjects of this fibrous phthisis are often of a rheumatic constitution; and for such it is very beneficial to prescribe the hypophosphite of potash in five-grain doses with fifteen grains of citrate of potash in *aqua chloroformi*.

I would here suggest to the practitioner to examine into the state of the heart and blood-vessels in all cases of fibrous phthisis. The vessels may be rigid and atheromatous, and this condition will most materially retard the progress of recovery. The urine of the patient should also be tested to see if it contains any albumen.

Of syphilitic and hæmorrhagic phthisis specially, notice has been already taken. So far as my practical experience goes, I would in the former of these affections commence the treatment with the perchloride of mercury internally, and inunction of mercuric oleate over the diseased portion of the chest; and then follow this beginning with hypophosphite of lime and cod-liver oil. In one very unpromising case already given, this practice appears to have resulted in a most satisfactory cure.

In consumption beginning with blood-spitting, we have to do with a threatening form of the disease, if it be that the poured-out blood has found its way into the lung tissue and set up diseased action in the lymphatics. I have known a patient bring up suddenly a large quantity of blood, and yet have no sign of pulmonary disease develop for full five years after this event; while, on the other hand, I have known a

moderate hæmoptysis to be followed by persistent fever, quick pulse, loss of flesh, with, on auscultation, a fine crepitant rale, audible at the inferior angle of the scapula or in some other part of the chest. In the first case, the blood came up freely and left the lung substance clear; in the second case, the tissue of the lung was penetrated by the blood corpuscles, and a slow irritative action set up there, almost certain to issue in the establishment of tuberculosis. After steadying the circulation in the first instance by means of digitalis, it is certainly well to give the hypophosphate of soda, with a view to relieving local congestion and promoting absorption of effused products, for by the attainment of these objects destruction of lung will be prevented. In the case of a gentleman who had always enjoyed good health, and in whose family there was no consumption, an operation for the cure of a fistula in ano was followed some four months after by an attack of hæmoptysis. For some weeks I could hear a crepitant sound at the inferior angle of the left scapula; the pulse was quickened, and the evening temperature ranged from 100 to 101·5. Cough and a slightly tinged expectoration also continued. The treatment of this case consisted almost entirely in the use of the hypophosphites of soda and lime, and the patient did well. I advised him to spend the winter in the South of France. I learned that while there he was actively engaged in shooting, being often exposed to much cold and wet. The result was an attack of left-sided pleurisy, which eventuated in pneumothorax and death. When the patient left England I could detect no morbid signs in his chest; his pulse was

quiet, temperature normal, and the diseased action seemed quite arrested.

The relation of this case shows the great need of caution for many months after an attack of hæmoptysis. It also encourages us in the use of the hypophosphite of soda, with a view to the prevention of destructive change in the lung tissue.

CHAPTER VI.

ON THE INFLUENCE OF THE HYPOPHOSPHITES ON SOME OF THE COMPLICATIONS OF PULMONARY PHTHISIS.—PHTHISIS COMPLICATED WITH DISEASE OF LIVER, KIDNEYS, STOMACH, AND BOWELS.—LARYNGEAL PHTHISIS AND ITS TREATMENT.

FEW will dispute the statement that the more simple and uncomplicated a case of consumption, the more hopeful is the prospect of a cure by medical treatment.

Those cases of consumption that I have observed to be thoroughly cured by phosphorus or hypophosphites have been pretty uniformly free from any complication.

A few weeks ago, I had a woman under my care in Victoria Park Hospital, whose physical sign of chest disease consisted in dulness with crepitation at base of right lung; she had no marked fever, and her history told us that she had been troubled with cough for fifteen months, ever since the death of her husband from consumption. At times, she had noticed her expectoration to be tinged with blood. In this case I fully expected to see a great change for the better,

after six weeks treatment by the hypophosphite of soda.

The patient improved but slowly, and one day my attention was drawn to persistent pain at top of right shoulder, and to tenderness along the margin of the liver, though no enlargement or unevenness of this organ could be made out. I believe the hepatic congestion retarded the progress of the recovery of the lung, so I gave for a time nitromuriatic acid, with taraxacum, to promote a more healthy condition of the liver. At the end of the patient's six weeks in the hospital, her cough and expectoration had diminished, troublesome sickness had ceased, and we all noted that the moist and crepitant sounds at the right base had very greatly diminished and given way to a dry creaky sound, as if the alveolar catarrh was settling into a fibroid state of lung, with a promise of arrest of disease for a time.

The fact of the lung symptoms having come on after a close and anxious attendance on a husband dying of consumption, was a point worthy of note in reference to the possible infective origin of the disease.

A sluggish congested and inactive state of the liver functions is very detrimental to the progress towards recovery of a consumptive subject. A slow pulse is not uncommon in these hepatic cases, and that at a time when lung mischief is in active progress. In the instance of a young man aged twenty-three years, with phthisis following on enteric fever, and about whom Dr. Andrew Clark, Dr. Moon of Greenwich, and I, formed a most unfavourable opinion, the pulse ranged from 64 to 80, while the temperature was 100°. Utter

loss of all appetite and most obstinate constipation of the bowels were prominent symptoms in this case.

The best treatment for these hepatic complications of phthisis is the use of such a pill as this :

R Pil. Hydrarg., gr. ij.

Pil. Conii Co., gr. iij. Ft. pil. o. n. s.

and a dose of Carlsbad Sprudel salt every morning. At times a pill with half a grain of podophyllin resin may be serviceable. Alcoholic drinks, and especially all cough medicines containing opium or morphia, should be avoided.

The fact that phosphorus oil may produce jaundice, and that such jaundice, when so produced, is apt to be very obstinate, should be remembered. I have never seen a case of phosphorus jaundice, and never saw any approach to this condition as a result of the administration of the hypophosphite of soda or lime.

When consumption is complicated with renal disease and albumenuria, but little good is likely to come of the hypophosphite treatment. An exhausted and depressed state of the nervous system, often a cause of the development of tuberculosis, can be most materially improved by the administration of phosphorus and hypophosphites ; a fact I believe now pretty universally acknowledged.

Where gastric and intestinal complications in the way of obstinate vomiting and diarrhœa harass the patient, the hypophosphite of lime is to be preferred to the soda salt, and one of the best forms for its administration is that found in the Victoria Park Hospital Pharmacopœia :

R Calcis Hypophosphitis, gr. iij.
 Liquoris Calcis Saccharati, ℥x.
 Glycerini, ℥xx.
 Aquæ Camphoræ, fʒj.

To this at times a little compound tincture of camphor may be added when cough is very distressing. In diarrhœa the above formula will be found useful, and it appears certainly to have influence in checking excessive night-sweats. If it does not check this last-named symptom, I would recommend the practitioner to use 5 to 10 grains of Dover's powder, or 10 drops of tincture of belladonna, or $\frac{1}{50}$ of a grain of sulphate of atropia, and see which of the three pleases him and his patient best. Pure astringents, such as tannin and its congeners, I believe to be almost worse than useless.

Over that most distressing complication of pulmonary phthisis, inflammation of the larynx, with loss of voice and ultimate ulceration of tissue, the hypophosphites and the phosphorated cod-liver oil appear to exercise some control, and should by all means be tried.

Adopting the view of Virchow, who recommends the larynx as the most appropriate place for the study of true tubercle, I have watched anxiously the amount of curative action possessed by the hypophosphites over laryngeal phthisis. If the complaint be taken in its earlier degrees of anæmia and tumefaction, then it appears real good may be done by the administration of the hypophosphite of lime, coupled with the inhalation of Vapor Creasoti every evening. When actual ulceration has taken place, the hypophosphites may still be administered in water with glycerine and a

small dose of morphia, and so given are capable of affording relief to the symptoms.

Preparations of opium and morphia are absolutely necessary in many of these cases of laryngeal phthisis for the purpose of giving ease to the cough. I have tried conium, chloral hydrate, and solution of hydrobromic acid, but though these are all of some service, they are far inferior to the preparations of opium for purposes of soothing the cough.

The Vapor Coniæ, or inhalation of conia of the British Pharmacopœia, is one of the most useful sedative inhalations when there is tendency to ulceration of the larynx, and stimulating inhalants, such as Vapor Creasoti, are no longer suitable. All warm inhalations should be taken from a proper inhaler at bed-time, so as to avoid all risk of cold; and the right temperature for an inhalation should be 130° to 150° Fahr. The local application, by means of a laryngeal brush, of a weak solution of iodine in glycerine, in the proportion of 3 grains of iodine to 1 ounce of glycerine, has seemed to me often very beneficial in the early stages of laryngeal phthisis; and the chloride of zinc, 10 to 20 grains to 1 ounce of water, as advised by Mr. Lennox Browne, is also a very good application. Spray inhalations are grateful to but a small class of patients, the majority soon abandoning their use as being rather harassing and distressing than beneficial. The most useful spray inhalation seems to be a solution of chloride of sodium in the proportion of 50 grains to half a pint of distilled water, and even this will be found too irritating for many patients.

Lozenges of opium and morphia are very serviceable

in allaying laryngeal irritation and subduing cough. The opium lozenge of the British Pharmacopœia contains $\frac{1}{10}$ of a grain of extract of opium with tolu and liquorice; it dissolves slowly in the mouth, and is an admirable local sedative. If the patient be troubled with diarrhœa, an opium lozenge from time to time is a remedy very well worth trying. The morphia lozenge contains $\frac{1}{38}$ of a grain of hydrochlorate of morphia, and this small dose gradually imbibed will often prove more beneficial than four times the quantity swallowed in a cough-pill. Wyeth's compressed tablets of chlorate of potash dissolved in the mouth are of some service to clear away collection of tough mucus; and for the same purpose a claret glass of Vichy water (Celestins), taken alone or with some milk at bed-time, is a remedy, the utility of which I have often proved.

THE END.

WORKS BY THE SAME AUTHOR.

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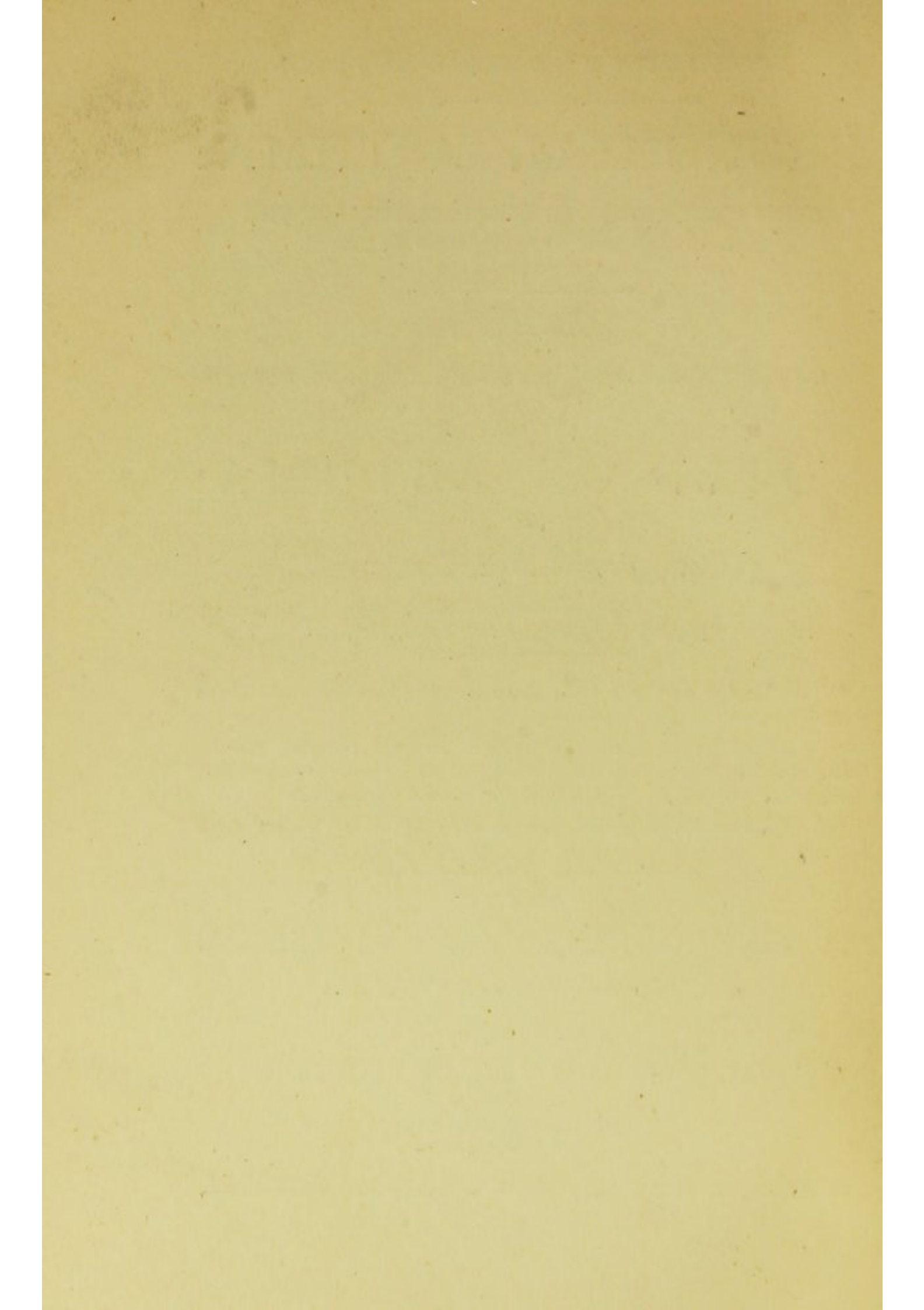
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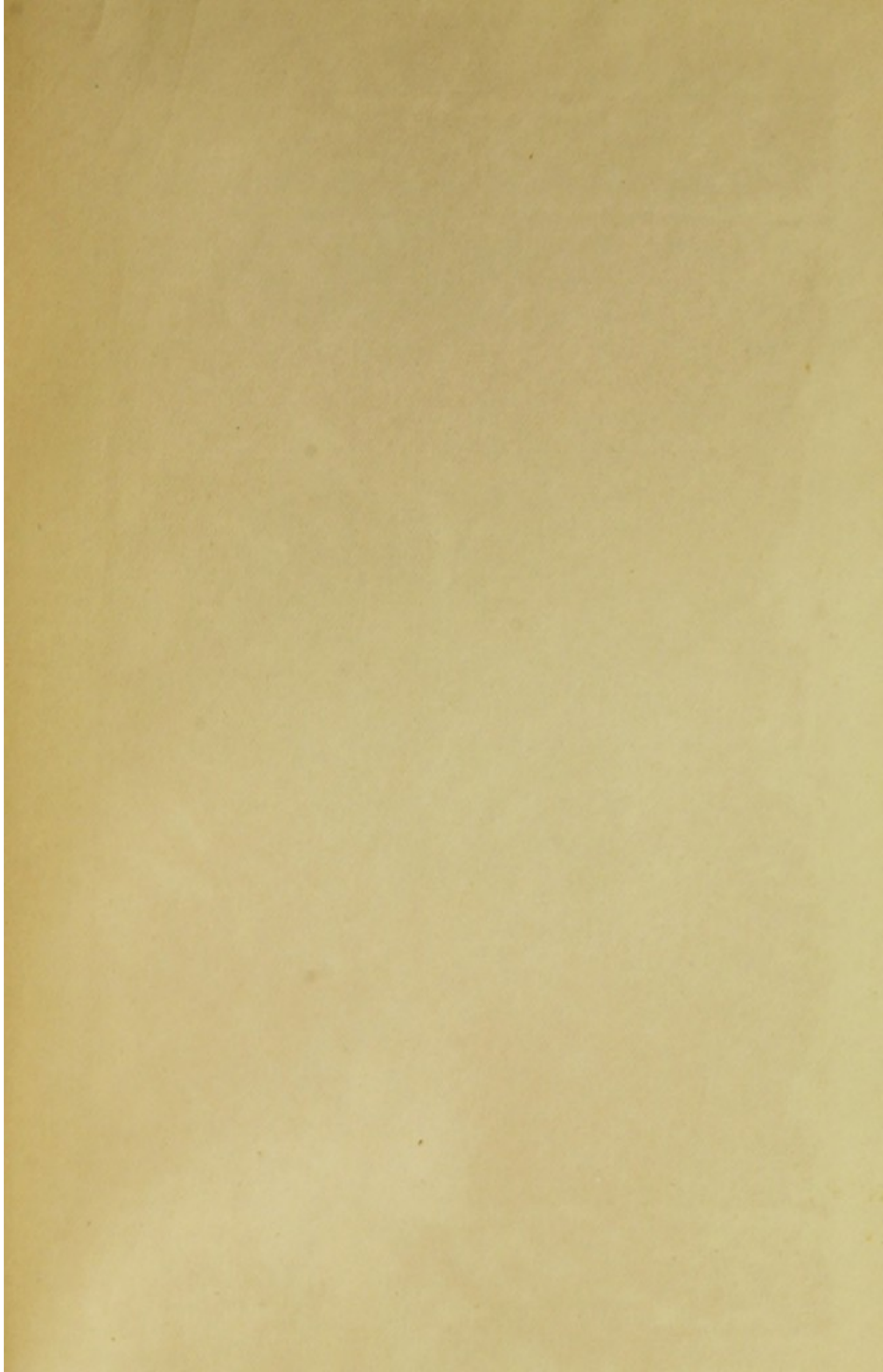
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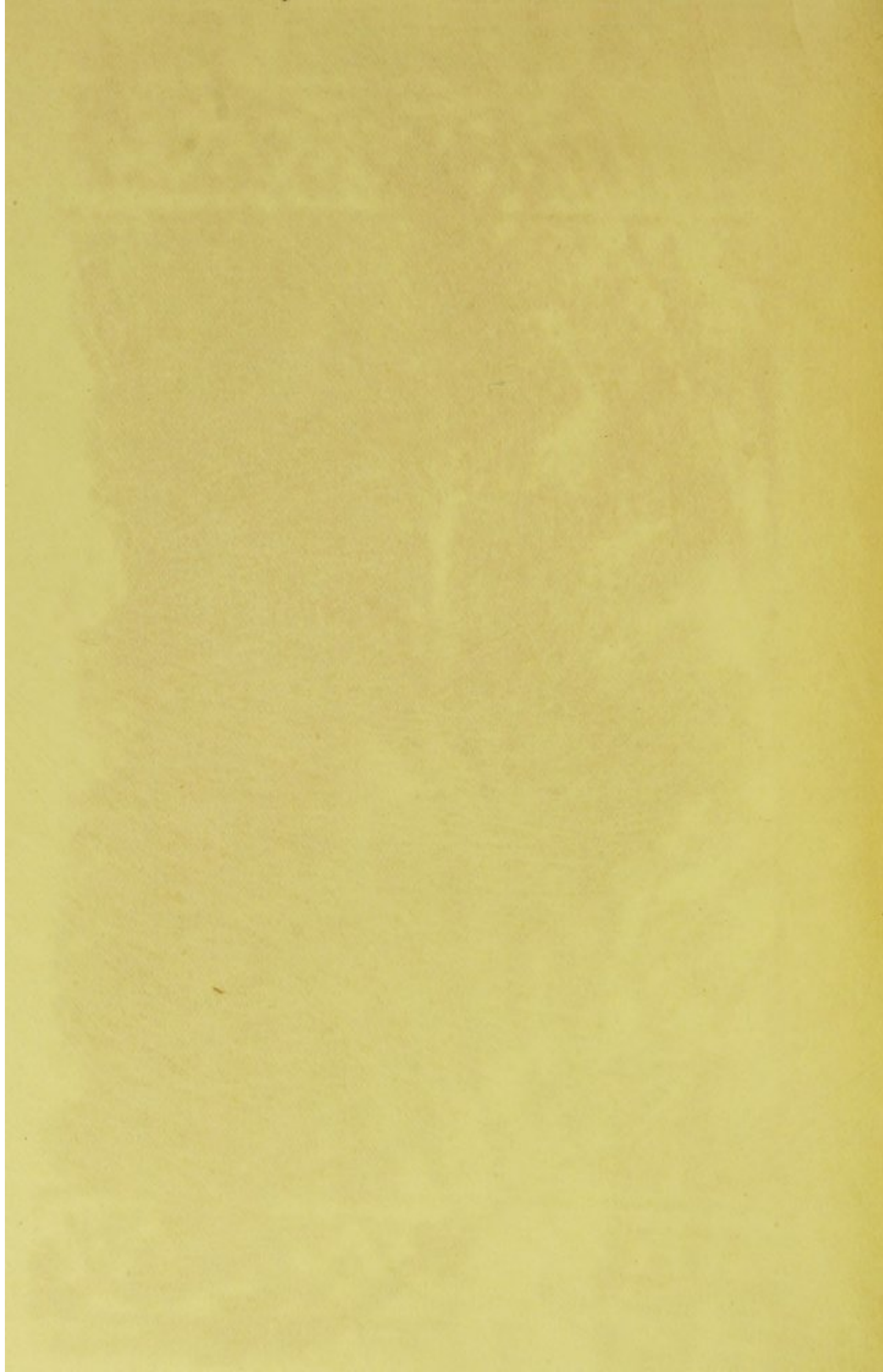
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