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THE 'NAUHEIM' TREATMENT OF DISEASES OF THE HEART AND CIRCULATION

LESLIE THORNE THORNE

FOURTH EDITION

BALTIMORE, MICHIGAN, 1907

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THE
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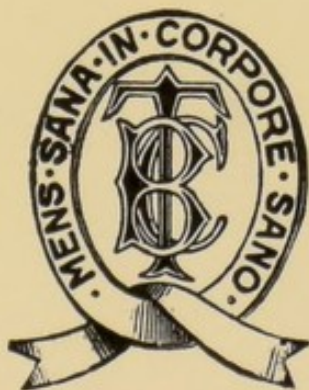
SCHOOL OF MEDICINE
UNIVERSITY OF LEEDS.
THE 'NAUHEIM' TREATMENT OF
DISEASES OF THE HEART
AND CIRCULATION

BY

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LATE MEDICAL EXAMINER, LONDON COUNTY COUNCIL TECHNICAL EDUCATION BOARD

FOURTH EDITION



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1913

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PREFACE TO THE FOURTH EDITION

THE present edition has been revised and amplified, the records of old cases have been brought up to date, to fully illustrate the result of the treatment over a long period of years, and several new cases have been added.

I wish to express my thanks to Dr. Thomas Lewis for his kind assistance in the electro-cardiographic work, and to the editors of the *Lancet* and *Practitioner*, through whose courtesy I am enabled to include subject-matter which has appeared in these journals.

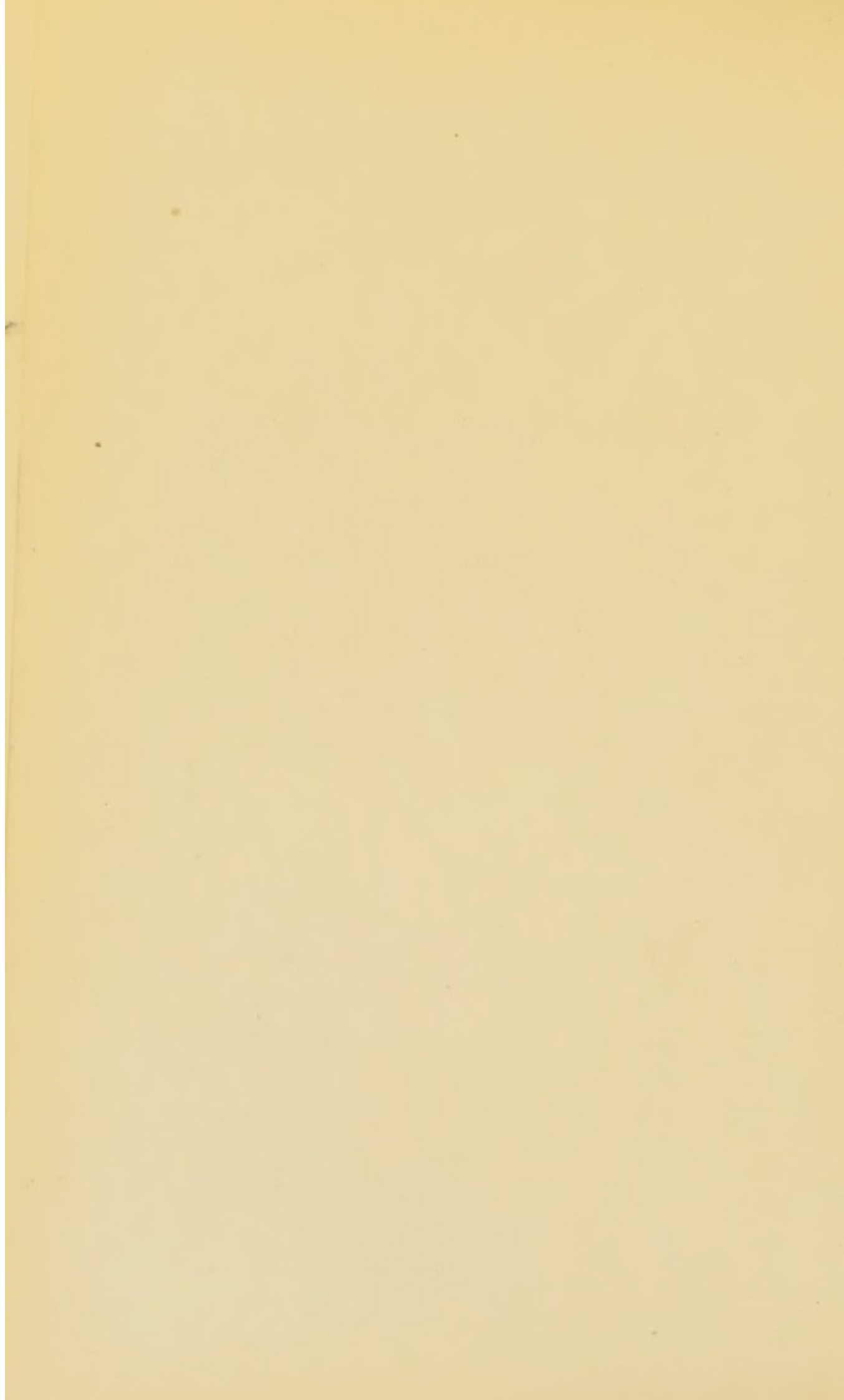
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THE
'NAUHEIM' TREATMENT OF DISEASES
OF THE HEART AND CIRCULATION

INTRODUCTION

I HAVE endeavoured in the following pages to give a description of the methods of administering the 'Nauheim' treatment in England, in such detail that medical men who have had no previous practical knowledge of it may, by carefully following the directions given, avail themselves of this valuable therapeutic agent for the treatment of affections of the heart and circulation.

It is not my intention to enter into a lengthy discussion of the theories of the treatment, or to give a description of Nauheim and its baths, as these subjects have been ably dealt with elsewhere,* and do not come within the scope of a practical handbook; but as I have not found any sufficiently detailed description of the treatment in medical literature, I have endeavoured to give one in the

* 'Spas and Mineral Waters of Europe' (Sir Herman Webber and F. Parkes Webber).

following pages, trusting that it may be of value to those who are anxious to use the treatment, but have not the time to study its application at Nauheim. It is now many years since the 'Nauheim' treatment was first practised in England, and those who have devoted special attention to it have had ample time and opportunity to realize its unique value in the treatment of diseases of the heart and circulation, and so to regulate its application as to produce results in no way less satisfactory than those obtained at Nauheim. There are still, however, a large number of medical men who do not give it that place of importance as a therapeutic agent which it rightly deserves. The reasons for this are, I believe, twofold: Firstly, many are not aware of the fact that the treatment can be administered in England with results as beneficial as those obtained at Nauheim; and, secondly, there is still much misconception as to what really constitutes a course of 'Nauheim' treatment, there being a widespread belief that it is equivalent to a course of carbonated effervescing baths. This belief is entirely erroneous. Many medical men, therefore, who have given the treatment what they believe to be a fair trial, have prescribed a course of baths which would only benefit a small minority of mild cases of heart disease, and would do definite harm to more serious ones.

I am convinced that many who have hitherto not used this treatment would be led to regard it as a most valuable agent in the treatment of diseases of the heart and circulation were they to adopt the methods of administration which I have practised in London for the last sixteen years, with highly satisfactory and successful results.

Exercises invented and perfected by the late Dr. Augustus Schott and his brother, Professor Theodore Schott, are of great use as an adjunct to the baths, and may sometimes be very beneficial in cases where, for various reasons, it is not possible to give the baths.

The season at Nauheim lasts from April 16 to October 15, whereas the treatment can be given in England at any time of the year.

CHAPTER I

THE ACTION AND ADMINISTRATION OF THE BATHS

As the result of immersion in a 'Nauheim' bath, the entire cutaneous capillary circulation is stimulated, the vessels are dilated, and any condition of spasmodic contraction that is present is relieved; the resistance that has to be overcome in pumping the blood through the circulatory system is lessened, and the blood-pressure falls. The decrease of strain thus produced enables the heart to contract more satisfactorily and less rapidly, with the result that the pulse becomes slower and of greater volume.

This improved condition of the circulation continues for some hours after the bath, giving the heart a comparative rest, and enabling its muscular walls to regain some of that tone which a long period of dilatation has impaired. The beneficial effect of the bath remains for a longer period after each successive immersion, and hypertension, if present, gradually decreases, so that the heart has a diminish-

ing amount of resistance to withstand, is progressively more able to reap full benefit from the comparative rest, and more able to overcome any



FIG. 1.—SPHYGMOGRAPHIC TRACING TAKEN BEFORE BATH.
PULSE-RATE 76.

dilatation that may have been present at the commencement of the treatment.

The improved cutaneous circulation and strengthened heart's action indirectly affect all the functions of the body, and produce a healthier condition of all

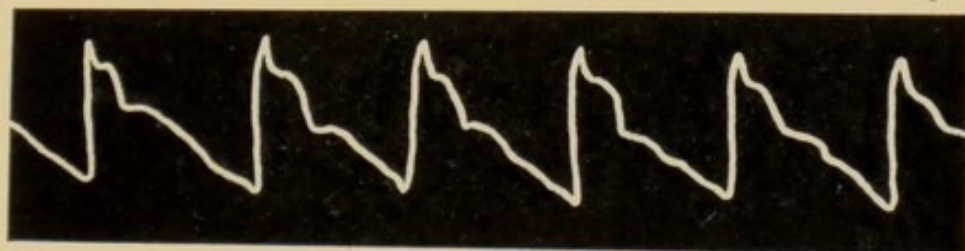


FIG. 2.—SPHYGMOGRAPHIC TRACING TAKEN AFTER BATH.
PULSE-RATE 64.

the organs and a more normal state of excretion and secretion.

It is most satisfactory to note that, when the treatment is given to a patient having a bad and inefficient circulation, with organs in a chronically congested, unhealthy, and probably degenerate con-

dition, the improvement in the general health will continue for several months after the course is finished. This steady improvement, which I continually see most markedly illustrated in my patients, is, I have no doubt, brought about by the comparatively slow and gradual process of repair taking place in degenerate organs, provided for the first time for some years with a more healthy and less abnormal circulation.

This occurrence is so constant a feature of the treatment that one is able confidently to tell one's patients that they will continue to improve in health for some months after the baths have been given, and to assure those few who do not feel much immediate benefit that they will do so in the course of a few weeks ; and this assurance can be given with practical certainty that one's prognosis will prove correct. The characteristic effects of immersion upon the rate and volume of the pulse are well shown by the sphygmographic tracings (Figs. 1 and 2).

Investigations carried out in order to ascertain the effect of any therapeutic agent upon cardiac systole and arterial tension must, to be of any practical value, embrace a large number of observations, and those observations must be constantly repeated upon each individual patient, until the necessary details of manipulation required have become a matter of

ordinary and commonplace procedure to the subject, so that the emotions of excitement or timidity may play no part in the alteration of blood-pressure to be observed. I have carried out several hundred observations under these conditions, taking a record of the maximum and minimum blood-pressure, and the rate and volume of the pulse, before and during every type of bath that is given in a 'Nauheim' course. My observations included experiments lately carried out at Nauheim, with the aid of my brother, Dr. Richard Thorne Thorne. As a result of these observations, I can unhesitatingly say that I have never met a case in which hypertension was not materially lowered during the bath. I emphasize this fact because it has been often stated that some forms of 'Nauheim' baths cause a rise of the blood-pressure, but I have never seen definite figures to substantiate these statements. If in all cases of circulatory disease, irrespective of kind or degree, a carbonated bath was given at the *commencement* of the course, there would probably be some in which an already high arterial tension would be still further raised, but if the baths are properly administered this procedure would never be allowed.

In cases where the heart is dilated and the blood-pressure is *subnormal*, the arterial tension is usually somewhat raised by immersion in a 'Nauheim' bath; the heart-beat is slowed and strengthened,

and a more normal balance established between the driving power and the resistance to be overcome. These cases of subnormal tension in conjunction with a dilated heart are comparatively rare, as the heart does not, as a rule, dilate unless under the stress of an increased resistance to be overcome, but in patients who have passed through an acute illness, or in anæmic, thin, and debilitated subjects, the heart will sometimes give way, even when the blood-pressure is normal or below normal, and in these cases the 'Nauheim' baths do cause a rise in tension. This rise, however, is never a large one, and averages usually from 5-10 millimetres Hg.

The following tables of blood-pressure and pulse-rate, before and during the baths, are taken from cases which differ greatly from each other as regards the condition of the heart and circulation, the only point in common being that in all, with the exception of Case IV. and the record of my own blood-pressure, hypertension was a marked symptom.

CASE I.

	Blood-Pressure.	Pulse-Rate.
	Millimetres Hg.	
Before bath	210	96
1 minute after immersion	200	96
3 minutes	180	92
5	180	92
6	188	92
8	180	88

CASE II.

	Blood-Pressure.	Pulse-Rate.
	Millimetres Hg.	
Before bath	170	72
3 minutes after immersion	165	72
6 " "	145	76

CASE III.

	Blood-Pressure.	Pulse-Rate.
	Millimetres Hg.	
Before bath	180	76
2 minutes after immersion	160	76
4 " "	164	72
8 " "	160	72

CASE IV.

	Blood-Pressure.	Pulse-Rate.
	Millimetres Hg.	
Before bath	140	64
3 minutes after immersion	128	54
5 " "	120	54

CASE V.

MY OWN BLOOD-PRESSURE TAKEN IN A SPRUDELSTROM
BATH AT NAUHEIM.

	Blood-Pressure.	Pulse-Rate.
	Millimetres Hg.	
Before bath	130	68
2 minutes after immersion	120	68
4 " "	110	72
6 " "	100	72
8 " "	100	68
10 " "	100	70

In studying the above tables it will be noticed that the pulse is not always lowered in rate during the bath. This, I believe, is due to the fact that the material alteration in tension produced in a few minutes requires a more rapid cardiac action to fill the dilated vessels, and therefore the heart, though relieved from some of its work and able to contract more easily, does not always steady down to a much slower beat till a short time after the bath. If the pulse-rate is taken twenty minutes or half an hour after the bath, it will be found to have materially diminished in rate, whilst still maintaining its improved volume. I have not recorded the minimum pressures in these tables, as I find that the effect produced upon them is very similar to that produced upon the maximum pressures, though the variations are not usually so great.

High arterial tension, whether it be due to hypercontractility of the arteries and capillaries, or to a definite degeneration of the vessel walls, plays a very prominent and important part in a large percentage of diseases of the heart and circulation; it is to this fact that the 'Nauheim' treatment owes its unique success, for there is no other treatment which reduces high arterial tension so rapidly, so surely, or in a manner so natural and less likely to derange the body functions, as a course of these baths and exercises. Many other treatments have

been used with the object of reducing hypertension ; the administration of depressant drugs, purgation, or a strict and rigid dietary, have been tried, separately and combined, with the result that, in the large majority of cases, they have had little material effect upon the arterial tension, but have so lowered the vitality and depressed the cardiac action that the patient's condition has been rendered worse rather than better ; whereas the ' Nauheim ' treatment, whilst reducing hypertension, places the heart in a condition of comparative rest, and thereby enables it to recover tone and strength.

In a case where the blood-pressure is abnormally high before treatment, it will gradually drop to normal, or about normal, during the course, so that, given the improved circulation and more healthy heart's action that the baths induce, the patient can, with due care to diet, etc., keep this lowered blood-pressure for a long period, sometimes for a year or two, after the treatment. The length of time during which these satisfactory conditions will continue depends partly upon the care the patient takes to follow out rules of diet and living, but chiefly upon the condition of the vessel walls, for in those cases where the arterial and capillary degeneration is marked, a second course of treatment will be necessary sooner or later ; whereas in those where high tension and cardiac dilatation are due to spasm

of healthy vessel walls produced by the poison developed in some acute illness, such as influenza, the patient may never have a relapse, provided that neither the muscular walls of the heart nor the pace-maker are materially damaged. Even in cases where the cardiac muscle has been weakened by myocarditis, and the pace-maker more or less damaged by inflammation, leading to marked cardiac irregularity, constant extra systole, or partial heart-block, a course of baths will often so improve the nutrition of the cardiac muscle and nerve-supply that a normal and regular cardiac action will gradually replace these unsatisfactory and pathological conditions.

For the purposes of making observations on blood-pressure, I use a Martin's mercurial sphygmomanometer with an armlet for maximum reading in combination with Oliver's tampon and stethoscope for minimum readings. The mercurial sphygmomanometer is more accurate, and is less likely to get out of order than any other form of instrument, and I have not found an instrument, without an armlet, that gives reliable readings.

I have used the terms 'maximum' and 'minimum' blood-pressure in preference to 'systolic' and 'diastolic,' because I do not believe that the two readings obtained on the sphygmomanometer have any close relationship to the systole and

diastole of the heart. The maximum blood-pressure is indicated by the reading on the sphygmomanometer at the instant when the bruit heard on the stethoscope connected with the tampon ceases ; it coincides with the moment at which the lumen of the brachial artery is entirely closed by the pressure of the armlet. The minimum blood-pressure is indicated by the reading on the sphygmomanometer at the instant when a faint bruit is first heard on the stethoscope connected with the tampon ; it coincides with the moment when the pressure of the armlet *begins* to flatten the circumference of the brachial artery.

In the diagnosis and prognosis of certain forms of cardiac disease, especially those in which there is any affection of the cardiac pace-maker, the polygraph and the electrocardiograph are of great value, and with the aid of these instruments, combined with our knowledge obtained from auscultation, percussion, and the use of the sphygmomanometer, we are now able to observe the effect of treatment with an accuracy and certainty which was impossible only a few years ago.

The diminution in the cardiac dulness which is often noted after a bath is the natural result of the more efficient contraction of an ill-acting, flabby, and dilated organ. It is much more marked in some cases than in others, being more apparent in

those in which much dilatation of the heart, with only slight hypertrophy, is responsible for the increased cardiac dulness, and practically absent in those in which there is much hypertrophy with only slight dilatation; hence it follows that one may judge fairly well as to the suitability of a case for the treatment, by the effect a bath produces upon the cardiac dulness.

There has been much discussion as to whether this diminution of cardiac dulness is real, or whether it is only an apparent contraction caused by an expansion of the lungs, and a consequent overlapping and obliteration of some of the dull area. That the decreased dulness indicates a real contraction of the heart is, in my opinion, the only logical conclusion one can arrive at, to explain the undoubted improvement in the circulation which is usually noted after a single bath. What, however, is of far more import than the above, is the fact I have conclusively proved, not only by percussion, but by X-ray tracings, taken before and after treatment, that the result produced by a whole course of baths upon a suitable case of cardiac dilatation is a marked diminution, or, in many cases, an entire cure, of that unsatisfactory and dangerous condition.

The Administration of the Baths.—It is not possible to lay down a definite and universal rule applicable to the management of all patients, as the degree

and kind of disease, and personal idiosyncrasies, materially affect the regulation of details in this treatment as in all others, but the following directions for carrying out a course will enable any medical man who is willing to give time and trouble and careful personal attention to each case, to give the Nauheim baths with every certainty of obtaining satisfactory results.

Taking, for example, a case of dilated, irritable heart, a sequel of influenza, causing symptoms of vertigo, palpitation, dyspnœa, insomnia, cardiac pain, lassitude, and general invalidism, I begin by giving a three or four minutes' bath at a temperature of 96° or 97° F., containing 5-6 pounds of Droitwich salt,* and 6-7 ounces of calcium chloride. The pulse is carefully noted before, during, and after the bath, and the result aimed at, and usually obtained, is a diminution in frequency, an increase in volume, and a lowering of tension.

The patient goes to bed for one hour after the bath, and is not allowed to read, write, or talk during this time, the after-effect of the bath generally inducing a comfortable sleep. A bath of similar strength, temperature, and duration is given the following day, if the effect of the first one was satisfactory.

On the third day, the 'Schott' exercises are

* Droitwich salt is obtainable from any salt merchant. If this is not obtainable, common salt can be used.

usually given instead of a bath, the patient resting for a minute or so between each movement, and lying down for half an hour after them.

I make a practice of being present during the first bath for the purpose of taking the pulse, for I find that this is the surest way of being able to regulate the baths so that the patient may receive the fullest benefit from them; it would also enable one to order the patient out of the bath if any signs of faintness should appear. I have fortunately, however, never had to curtail a bath for this reason.

In an ordinary case I watch the effect of the bath in this manner twice a week, and am able thereby to regulate the course much more satisfactorily than if I had to depend for guidance entirely upon polygraphic tracings and diagrams of cardiac dulness.

When present at the bath of a female patient I have a sheet across the bath provided with four or five tape-loops to hang on to hooks fixed on the wall-side of the bath; this sheet the nurse adjusts after the patient is immersed.

It is not absolutely necessary to have a nurse to give the baths except in bad cases, or where there is no sensible relative to help; but it is always much more satisfactory, as one can be more sure of instructions being strictly and rightly carried out under a trained nurse, and I should always strongly

advise one in any case in which the patient can afford it.

A tightness and oppression of the chest is sometimes felt during the bath, and in some cases the pulse-rate does not fall till twenty minutes or half an hour after, but in all cases a definite diminution of pulse-rate is produced.

If the pulse increases in rapidity during and after the bath on two or three successive occasions, it is practically always due to one of the following reasons: either the patient is having baths the strength, temperature, frequency, or duration of which do not suit; or he is not a suitable case for the treatment; or he has had as long a course as his constitution can undergo with benefit. The first of these three causes is the one I generally find to be most often responsible for this undesirable symptom, which, however, rarely occurs from any cause.

Frequency of the Baths.—The baths are given on two consecutive days, and the exercises on the third day, for the first week or fortnight, according to the severity of the case, and the result produced upon the heart's action.

After the first week or fortnight baths are given for three days in succession, with an interval for exercises on the fourth day.

In my opinion it is a mistake to give baths for

more than three successive days in any case, though some may derive benefit by having the exercises daily for the last week or ten days of the course.

In cases where there is a great deal of debility and cardiac dilatation, baths given every other day during the first part of the course, with exercises on the intervening days, are often found to produce the best result, and are less likely to fatigue the patient.

The number of baths taken in a course varies from twenty to thirty, any greater number than the latter being likely to weaken the patient, and to decrease, rather than increase, the good that has been done.

The average length of a course is from four to six weeks, rarely seven. In the case of a male patient the course is shortened by a week, as the interval for the menstrual period does not have to be considered.

Strength of the Baths.—The first bath contains 5-6 pounds of Droitwich salt and 6-7 ounces of calcium chloride. The bath is so filled that the patient is immersed up to the neck, the quantity of water required for this purpose being about 45 gallons. If the bath is unusually large, and therefore requires more water than this to properly fill it, I add a little more salt and calcium chloride, in proportion to the extra quantity of water used.

With young, fairly robust patients, whose blood-vessels are not degenerate, and whose constitutions have not been weakened by long illness, I often begin the course with a bath of 6-7 pounds of salt and 7-8 ounces of calcium chloride; but with middle-aged, old, or debilitated patients, I find the weaker bath the best.

If the patient does well, and the circulatory system reacts well, the strength of the baths is increased by 1 pound of sodium chloride and 1 ounce of calcium chloride every second bath up to the tenth or twelfth.

To the tenth or twelfth bath I add one-half of a carbonated effervescing bath, at the same time reducing the sodium chloride by about 1 pound and the calcium chloride by about 1 ounce. If this change proves satisfactory, I again start raising the strength of the baths, as in the first instance, by 1 pound of sodium chloride, and 1 ounce of calcium chloride every second bath, increasing also the effervescence to three-quarters of a carbonated bath, at about the sixteenth, and an entire one at about the eighteenth or twentieth.

By the end of the course the patient is having a bath containing from 14-16 pounds of sodium chloride, from 15-17 ounces of calcium chloride, and the whole of an effervescing bath.

Duration of Immersion. — I begin by giving a

three or four minutes' bath, and, in an average case, I find the greatest benefit is obtained by lengthening the time by one minute every second bath, shortening it, however, by one or two minutes when the first effervescing bath is given.

In cases where the cardiac affection is not serious, and in which the circulatory reaction is not easily obtained, it is unnecessary to shorten or weaken the bath on addition of the effervescing ingredients.

Some patients, especially those who are taking a second course, can begin with baths of five to six or even seven minutes' duration and rise to sixteen or even twenty minutes towards the end of the treatment ; but I regard it as unwise to give such baths to any patient whom I have not treated before, and of whose powers of circulatory reaction I have not obtained a previous knowledge.

Temperature of the Baths.—The first bath is given at a temperature of 96° or 97° F., this temperature being lowered 1° F. every second bath down to 93° F., or even lower, in exceptional cases. In many cases a good reaction cannot be obtained if the temperature of the bath is below 96° F. ; under these circumstances I adhere to that temperature throughout the course.

As the water cools less rapidly in hot weather, the patient can with advantage take a bath of lower temperature then than when it is cold, and an

effervescing bath may be prescribed at a lower temperature than a still one, without the patient feeling cold and without interfering with the circulatory reaction.

Unless the weather is very warm, I always let the patient have a hot-water bottle in bed after the bath ; and under these circumstances, if he does not remain comfortably warm, I regard it as an indication for raising the temperature of the bath.

It is a noteworthy fact, and one that points to a much improved circulation, that a bath which would produce coldness and cyanosis of the extremities at the commencement of a course is usually productive of a sense of warmth and comfort, and a marked improvement of colour, towards the end of the treatment.

Some patients, especially those of a nervous temperament, suffer from marked rigors after the bath. These manifestations are rare, and when they do occur are not indicative of cold, as the extremities remain warm and of good colour. I have usually found them to indicate the fact that either the length or the strength of the bath given is not suitable, or that the patient has had as many baths as can be taken with advantage.

There are, however, some patients who experience these rigors from the first, but in these cases the rigors are usually slight, tend to decrease at each successive bath, and are not of any serious import.

CHAPTER II

THE DESCRIPTION AND ADMINISTRATION OF THE EXERCISES

THE 'Schott' exercises form a useful adjunct to the treatment in a large majority of cases, and there are some exceptional cases in which it is found that the baths, which have a much more powerful and rapid action than the exercises, cannot be tolerated at first ; in these, a set, or part of a set, of exercises, given once a day for a fortnight or three weeks before the baths are commenced, is of very great value, and will enable some patients, who could not otherwise have taken baths, to do so. Cases of this kind, however, are rare in my experience.

Several of the medical men at Nauheim substitute mechanical exercises for the 'Schott' system, but it seems to me a self-evident fact that exercises which can be regulated by an experienced person, who is taught to watch the pulse as a guide, are greatly superior to any which are regulated either by the patient himself or by a mechanical contrivance,

however perfect and ingenious that contrivance may be.

The 'Schott' exercises are administered by a nurse, male attendant, or by the medical man himself. They consist in a set of movements so planned as to exercise every muscle in the body consecutively, the force employed being a regulated resistance to the movements on the part of the administrator; it is therefore very necessary that this administrator should be an experienced individual, trained to watch the pulse and to regulate the resistance used by the effect produced.

These regulated exercises cause dilatation of the muscular capillaries, thus reducing the arterial tension, and thereby relieving the heart, a fact that is demonstrated by the pulse of increased volume, lowered tension, and lessened or unaltered rapidity, which is obtained when they are properly given.

To give the exercises without watching the pulse, and only to modify them when the patient shows signs of distress, such as perspiration, rapid breathing, or cyanosis, is to defeat one's object, for by the time any of these signs manifest themselves the arterial tension is probably higher and the pulse-rate more rapid than they were before the exercises.

The alterations produced upon the pulse are well shown in the following sphygmographic tracings



FIG. 3.—CASE A, BEFORE EXERCISES.

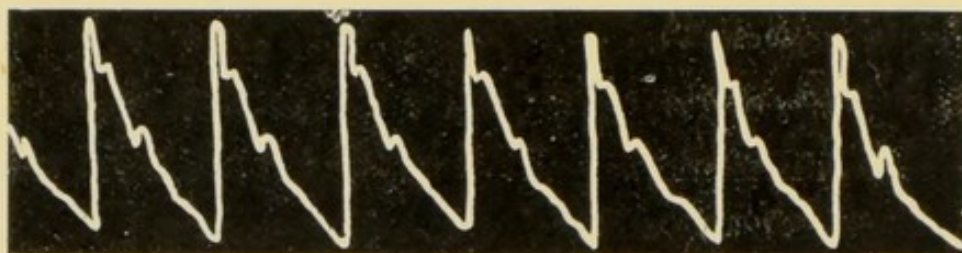


FIG. 4.—CASE A, AFTER EXERCISES.

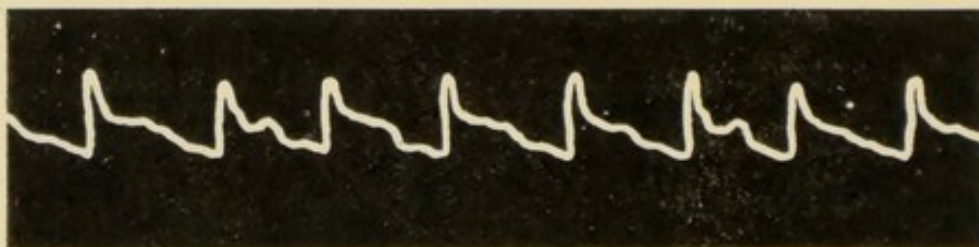


FIG. 5.—CASE B, BEFORE EXERCISES.



FIG. 6.—CASE B, AFTER EXERCISES.

(Figs 3, 4, 5, and 6), which I took myself, before and after personally administering the exercises.

As a rule, the exercises are given only on the days when no bath is taken, and I believe this to be the wisest plan to pursue all through the course, with most cases. It is sometimes advisable to give only a few exercises at first, and to gradually increase the number given until the patient is having all the exercises at each 'sitting'; but this is entirely dependent upon the condition of the patient, and the effect produced, and must be decided for each individual case. I make it a rule to give the exercises myself on the first occasion, having the nurse present to receive any special instructions.

The exercises should not be given till at least one hour after a meal; the patient, if a man, should have removed his coat, waistcoat, and braces; if a woman, she should have removed her corsets, and wear a dressing-jacket and a short light skirt. The patient should sit down for a few minutes between each exercise, and should lie down quietly for at least half an hour after they are concluded.

If the exercises tend to produce an increased pulse-rate, a raised arterial tension, or a decreased volume of the pulse, they should be given with less resistance and in fewer number. The administrator should be careful to see that regular breathing is maintained all through the exercises, as patients are

often inclined to hold the breath, unless they are instructed not to, and even then they may do so involuntarily.

The exercises should be given slowly and quite steadily, with a uniform resistance, and the avoidance of any jerky movements. The position of the administrator's hands is so planned that he can offer resistance to the patient's movements during the entirety of each exercise; I shall, therefore, not repeat in the description of each exercise the fact that the administrator is to give resistance, but shall take this to be understood.

DESCRIPTION OF THE EXERCISES.

[N.B. In the plates illustrative of the exercises the administrator is the clean-shaven man.]

ARM EXERCISES.

Movement I.

The administrator and the patient stand in the respective positions shown in Fig. 7; the patient then opens his arms, against the resistance of the administrator, till they are in the position shown in Fig. 8. The administrator now changes the position of his hands to that shown in Fig. 8, and the patient then brings his arms back to the position shown in Fig. 7.



FIG. 7.

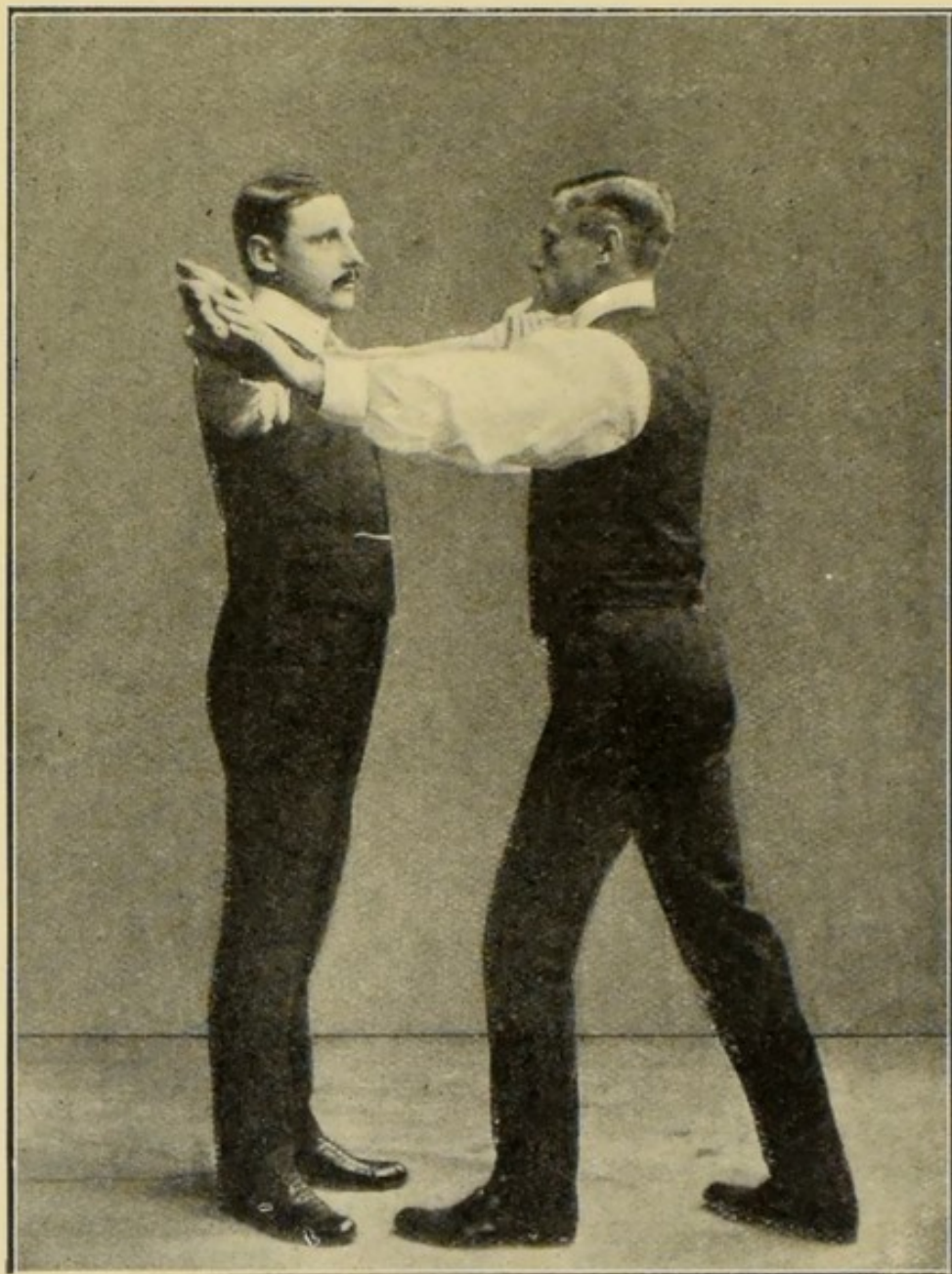


FIG. 8.

Movement II.

The administrator and the patient stand in the

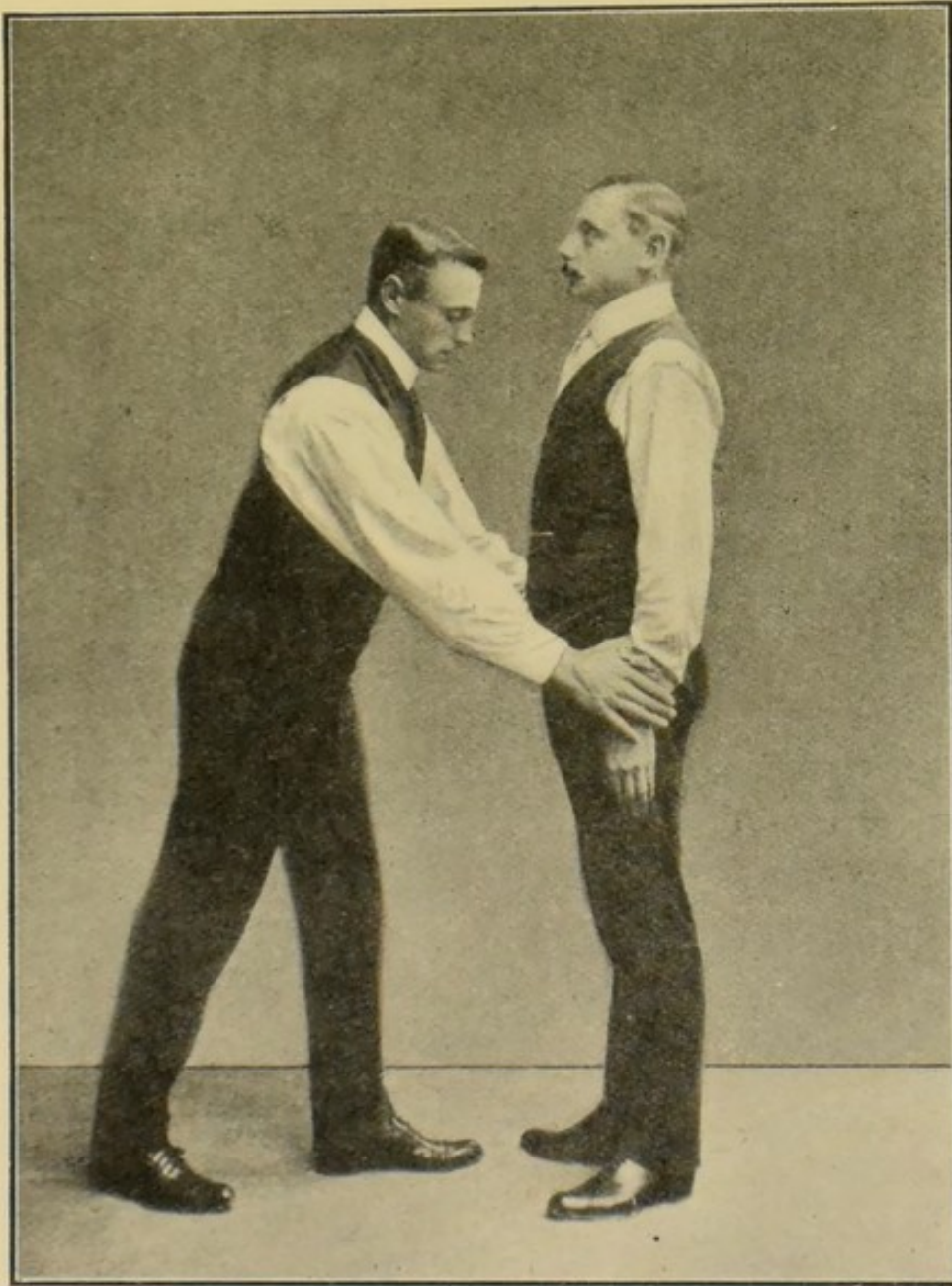


FIG. 9.

respective positions shown in Fig. 9; the patient then raises his arms directly outwards and upwards

to the position shown in Fig. 10. The administrator now changes the position of his hands to that shown

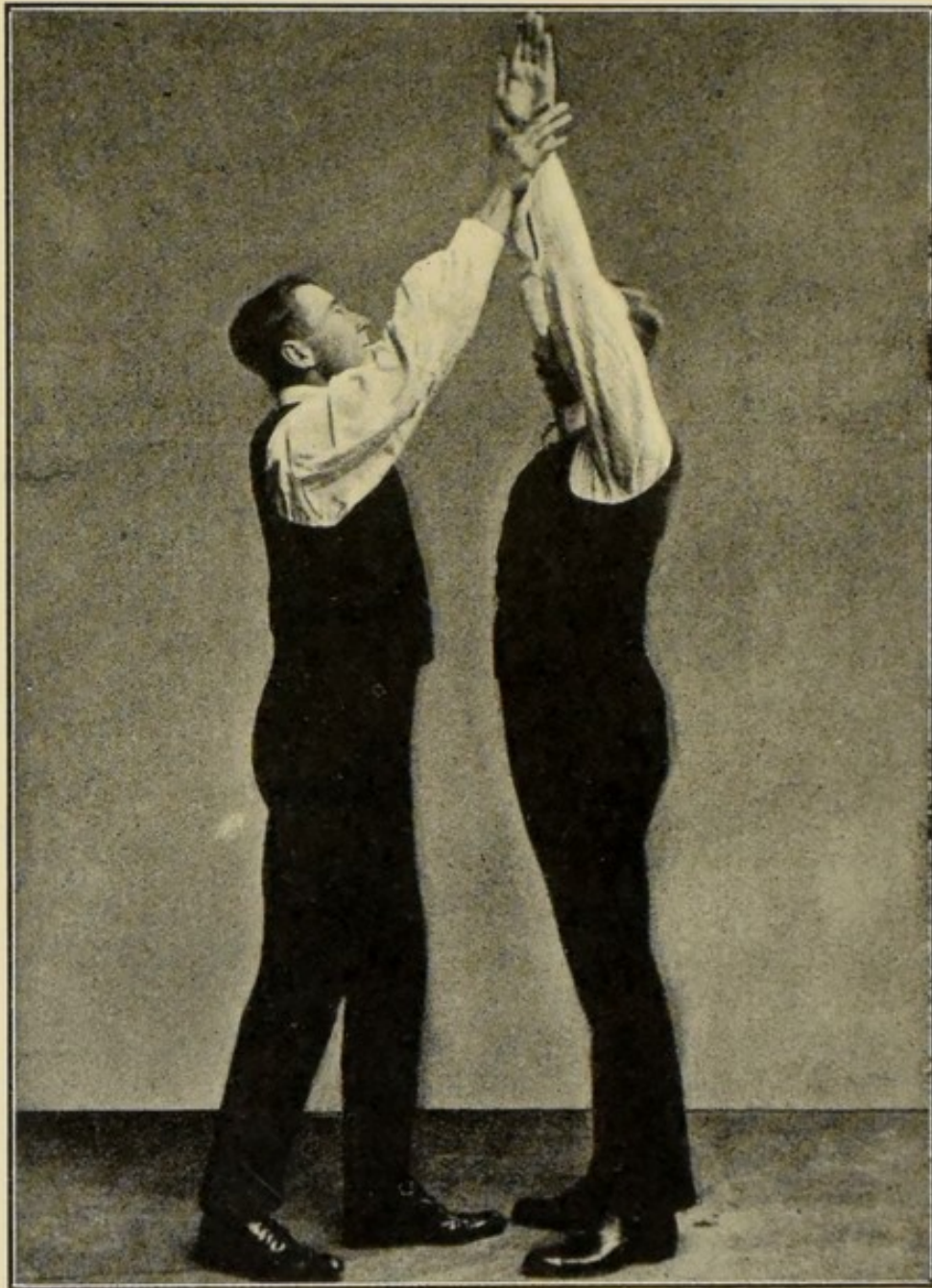


FIG. 10.

in Fig. 10, and the patient then brings his arms back to the position shown in Fig. 9.

Movement III.

The administrator and the patient stand in the respective positions shown in Fig. 11; the patient then raises his arms directly forwards and upwards to the position shown in Fig. 12, the administrator letting his hands gradually slip round to the dorsal surface of the patient's wrists till his hands are in the position shown in Fig. 12. The patient now brings his arms directly forwards and downwards, back to the position shown in Fig. 11, but when they have reached the position shown in Fig. 13, the administrator lets the palms of his hands slip under the patient's wrists to their ulnar surfaces, and brings his thumbs against their dorsal surfaces; in this position he can offer the required resistance during the completion of the movement. (The change of position of the administrator's hands, to be carried out in the middle of this exercise, is illustrated in Fig. 13, and is executed without stopping the movement.)

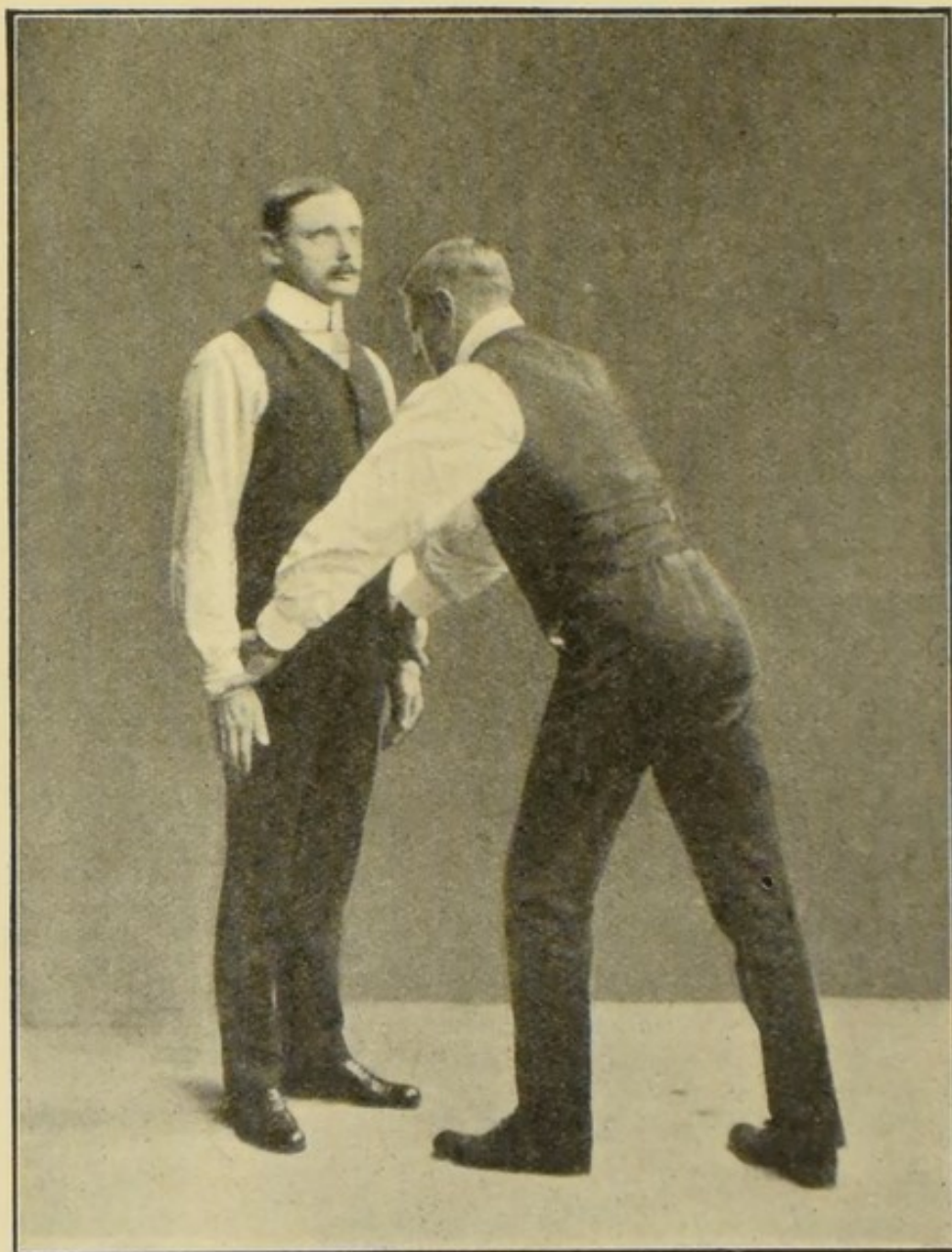


FIG. II.

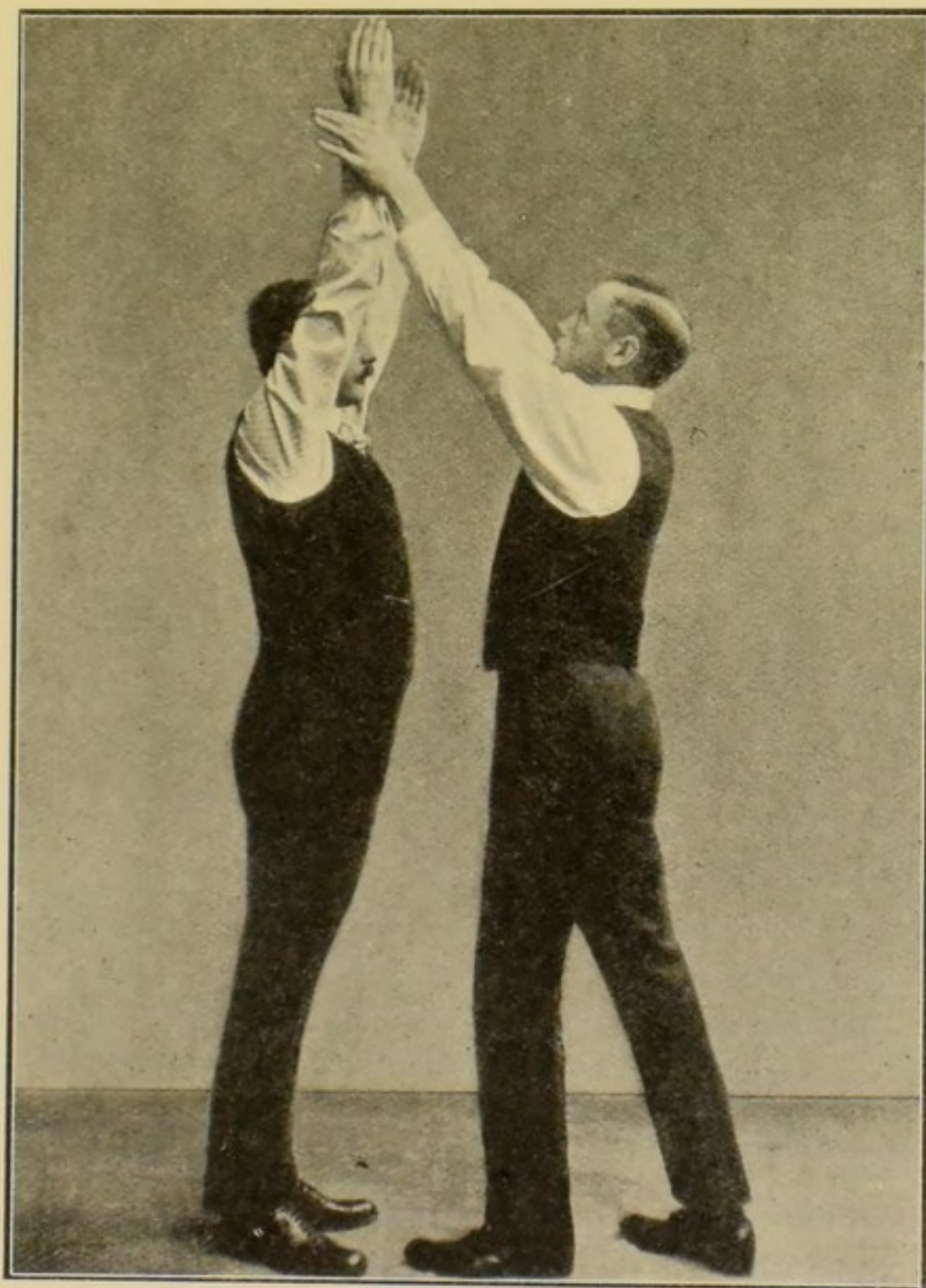


FIG. 12.

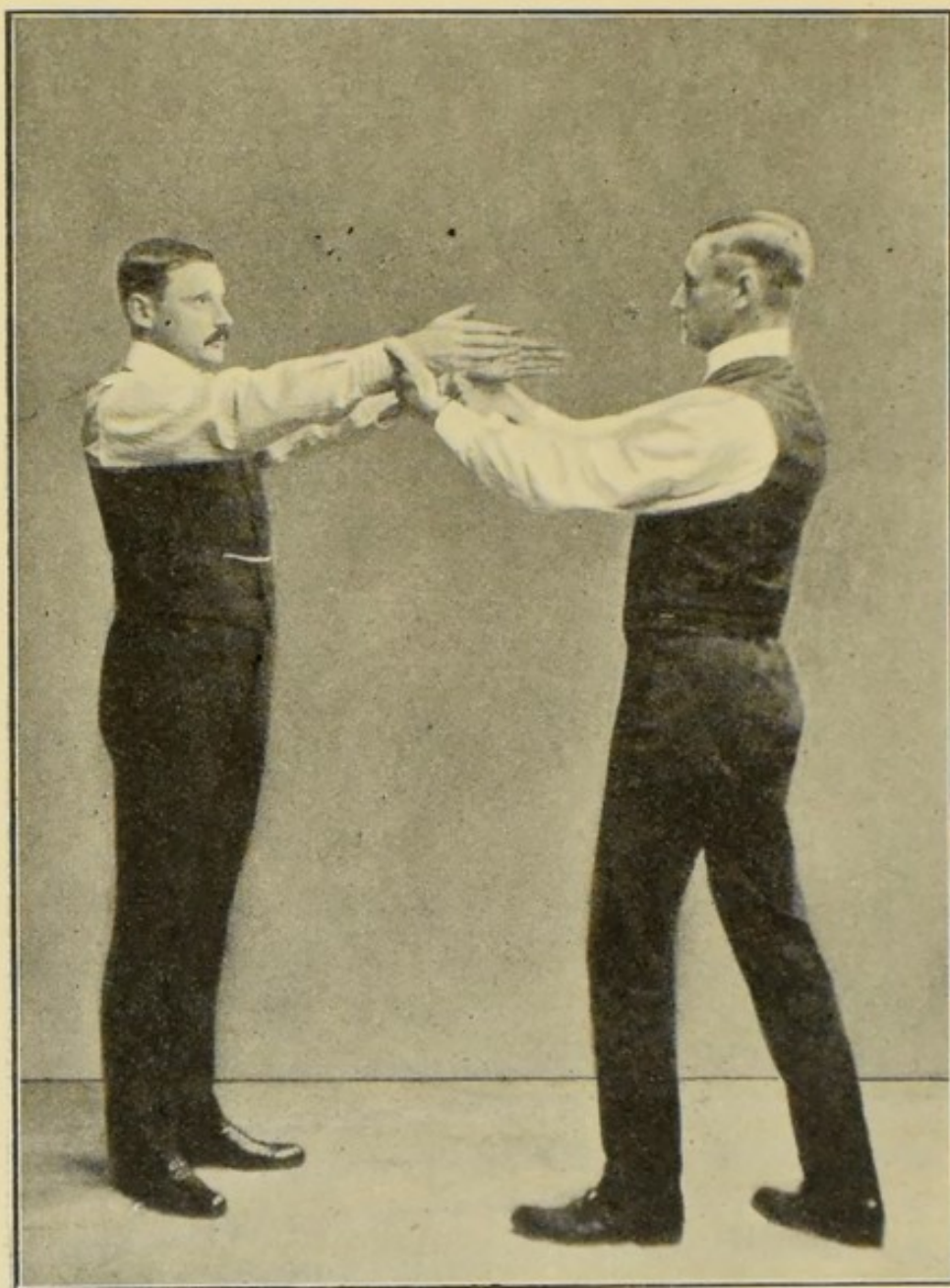


FIG. 13.

Movement IV.

The administrator and the patient stand in the

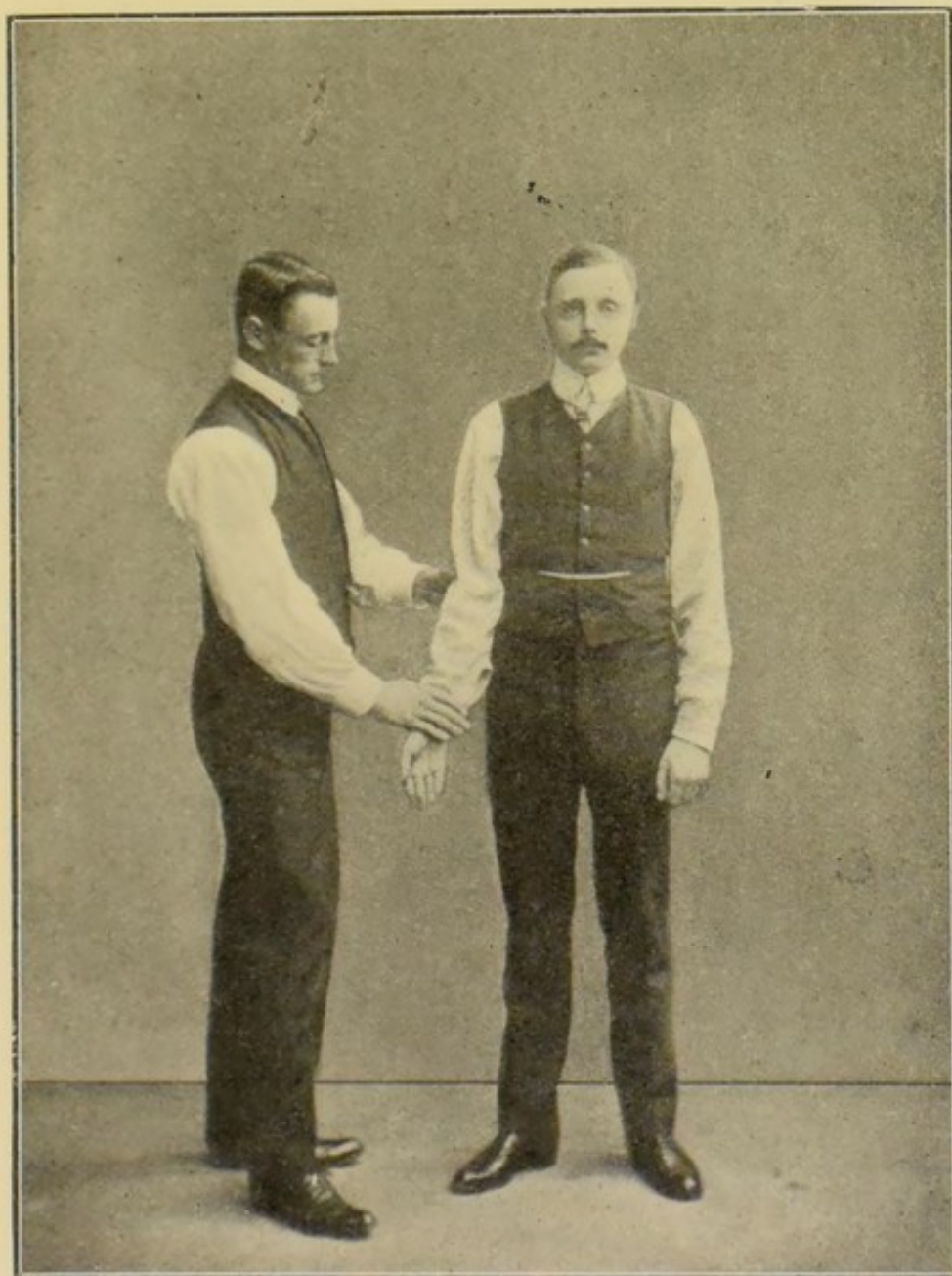


FIG. 14.

respective positions shown in Fig. 14 ; the patient then flexes his forearm till it is in the position

shown in Fig. 15. The administrator now changes the position of his hands to that shown in Fig. 15,

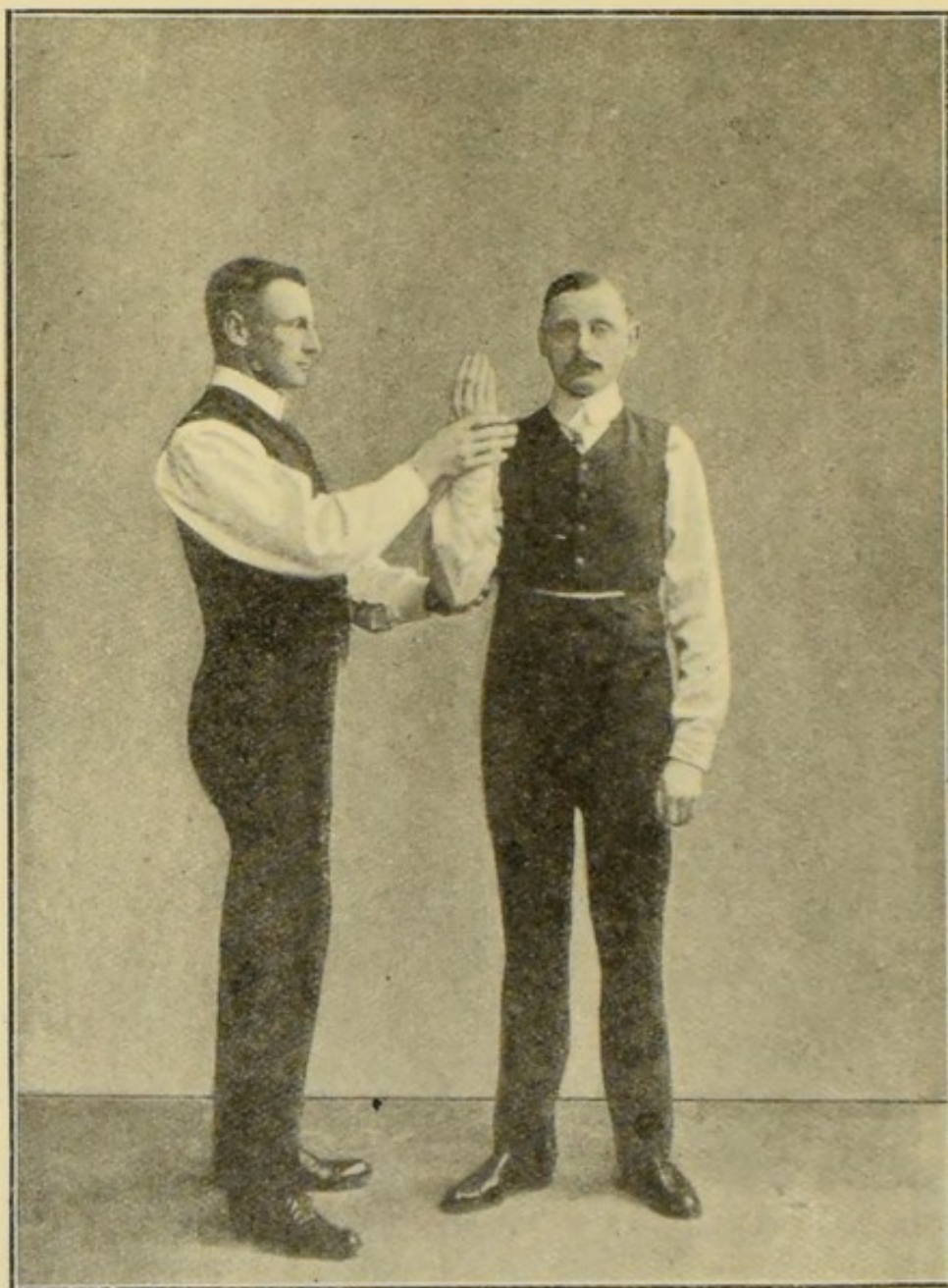


FIG. 15.

and the patient then extends his forearm back to the position shown in Fig. 14. The same movement is then gone through with the other arm.

Movement V.

The administrator and the patient stand in the



FIG. 16.

respective positions shown in Fig. 16 ; the patient then raises his arms in their flexed position, keeping

them as close as possible to the body and face, to the position shown in Fig. 17. The administrator

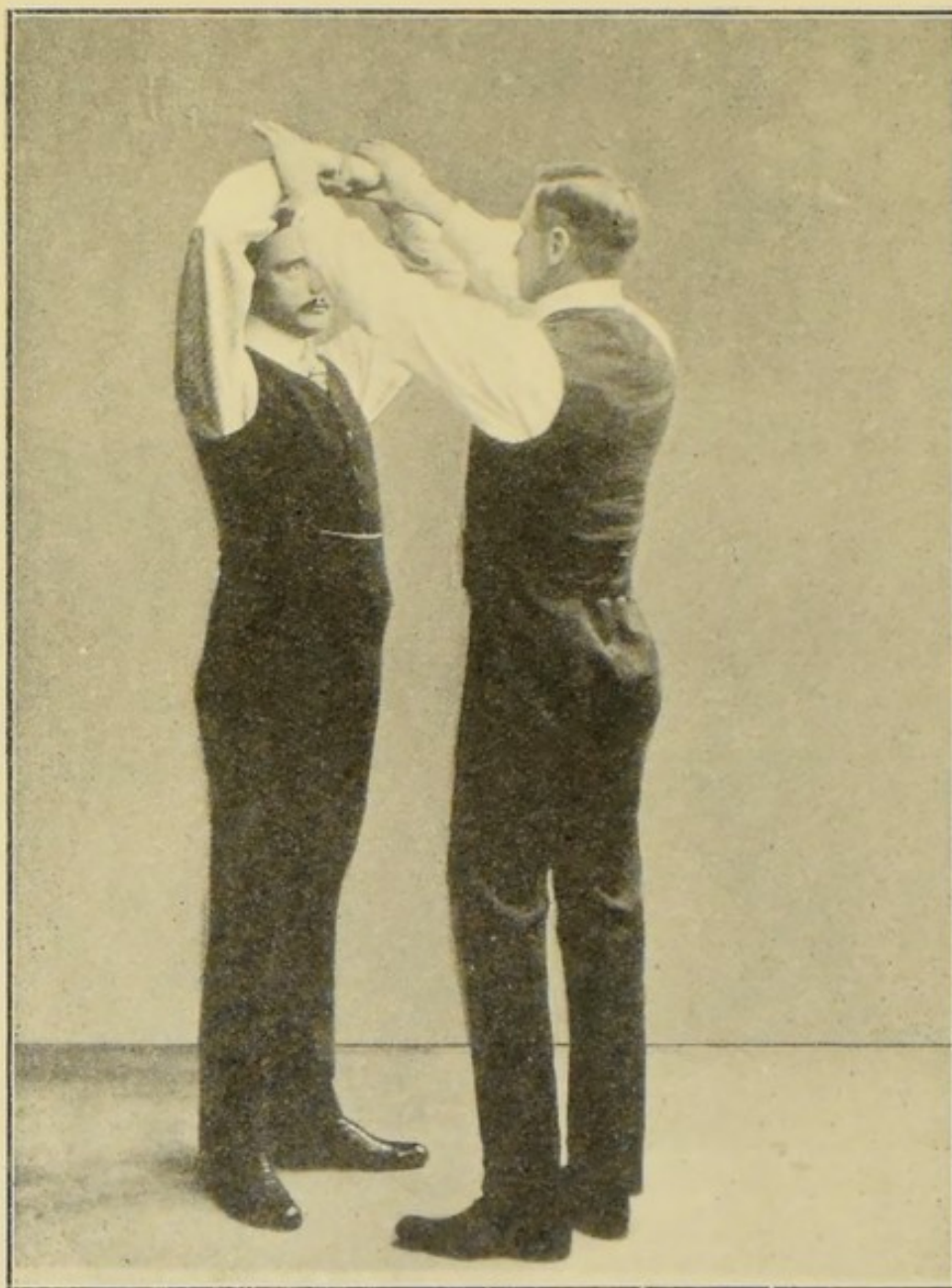


FIG. 17.

now changes the position of his hands to that shown in Fig. 17, and the patient then brings his arms back to the position shown in Fig. 16.

Movement VI.

The administrator and the patient stand in the



FIG. 18.

respective positions shown in Fig. 18; the patient then raises his arms directly backwards and upwards

to the position shown in Fig. 19. The administrator now changes the position of his hands to that

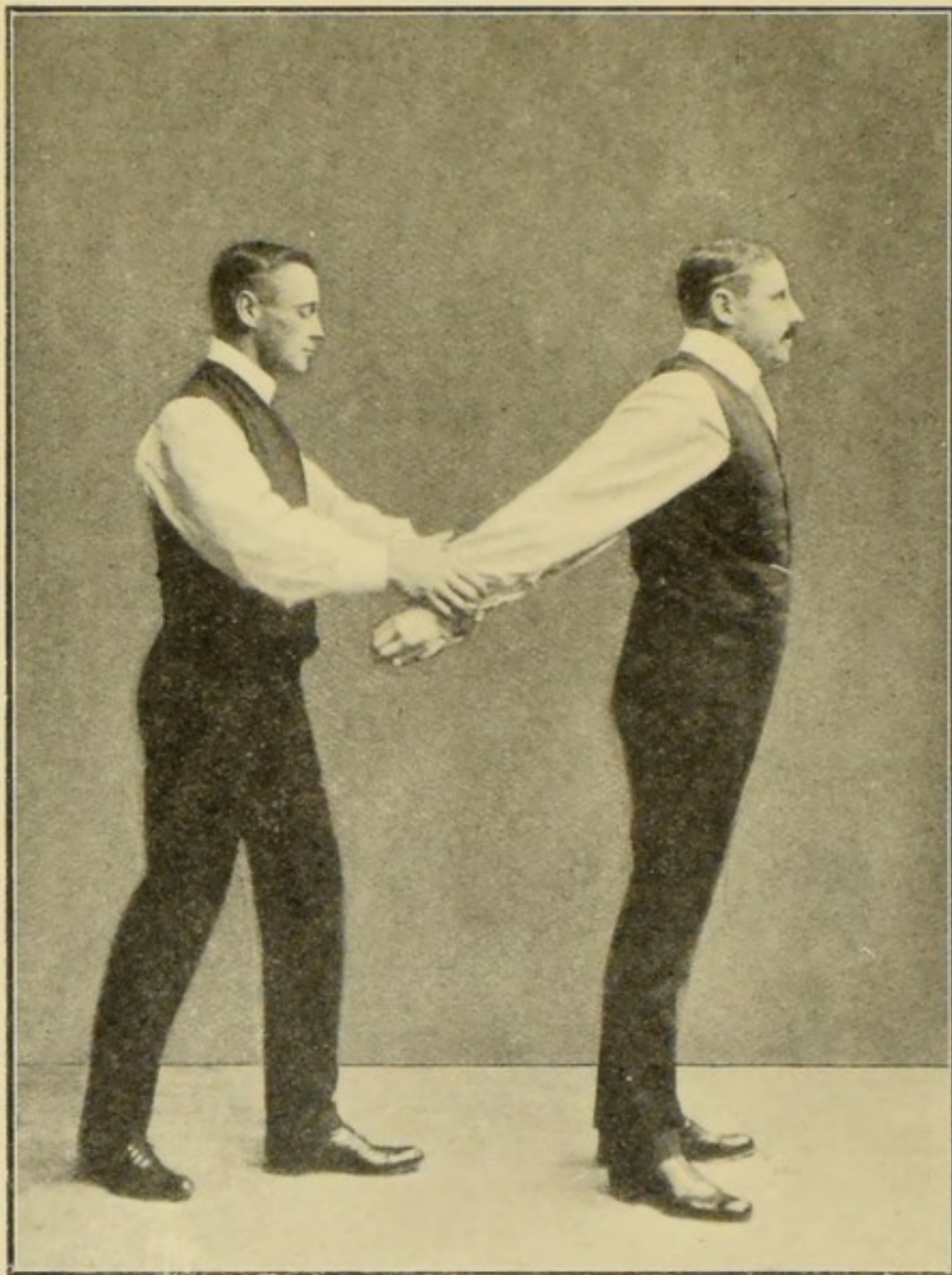


FIG. 19.

shown in Fig. 19, and the patient then brings his arms back to the position shown in Fig. 18.

LEG EXERCISES.

In all these exercises the patient steadies himself by placing his hand on the back of a chair as shown in the illustrations.

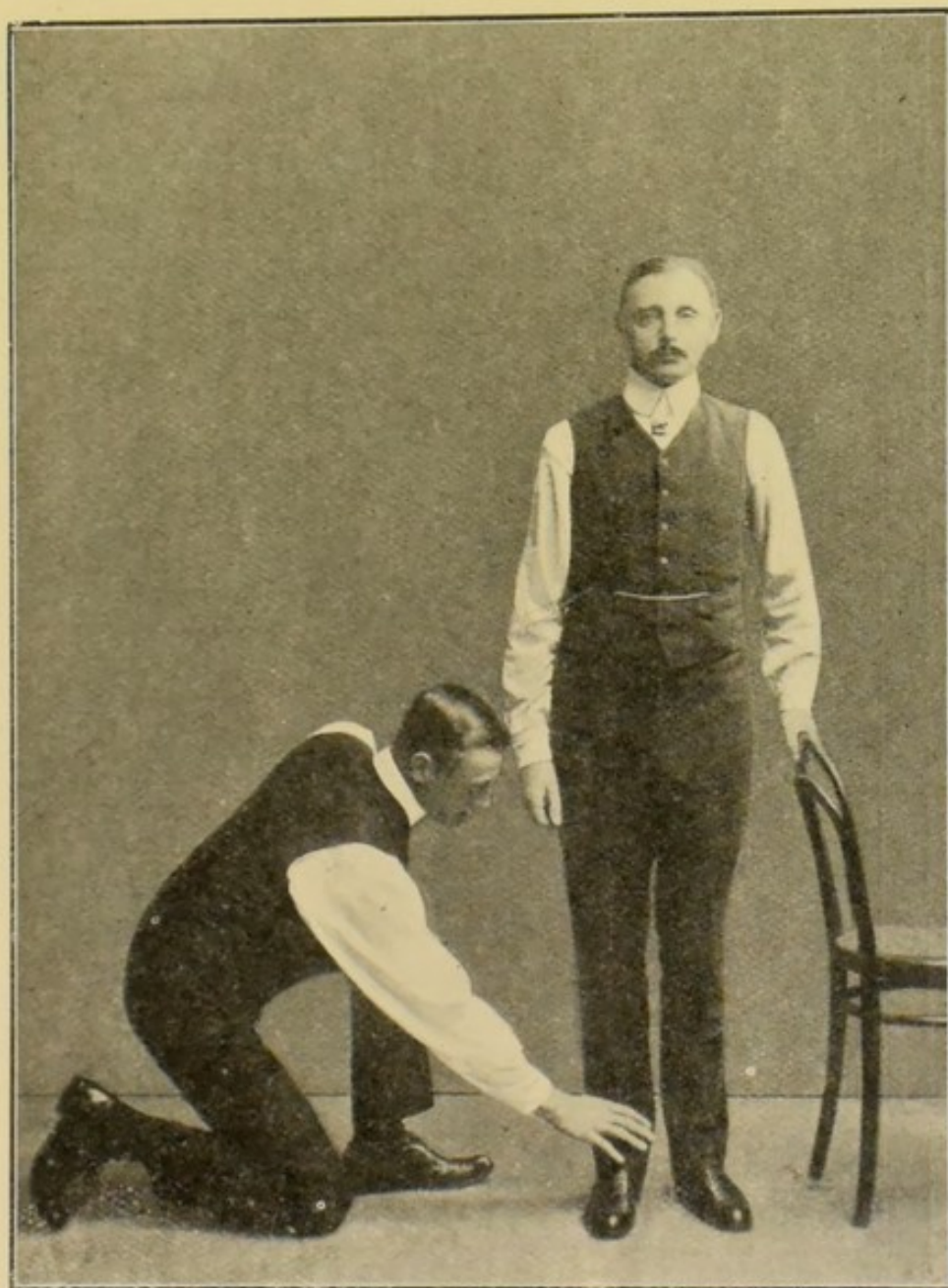


FIG. 20.

Movement I.

The administrator and the patient assume the respective positions shown in Fig. 20 ; the patient

then raises the leg, slowly flexing it at the hip, directly forwards and upwards to the position shown in Fig. 21. The administrator now places his other hand in the position shown in Fig. 21, and the

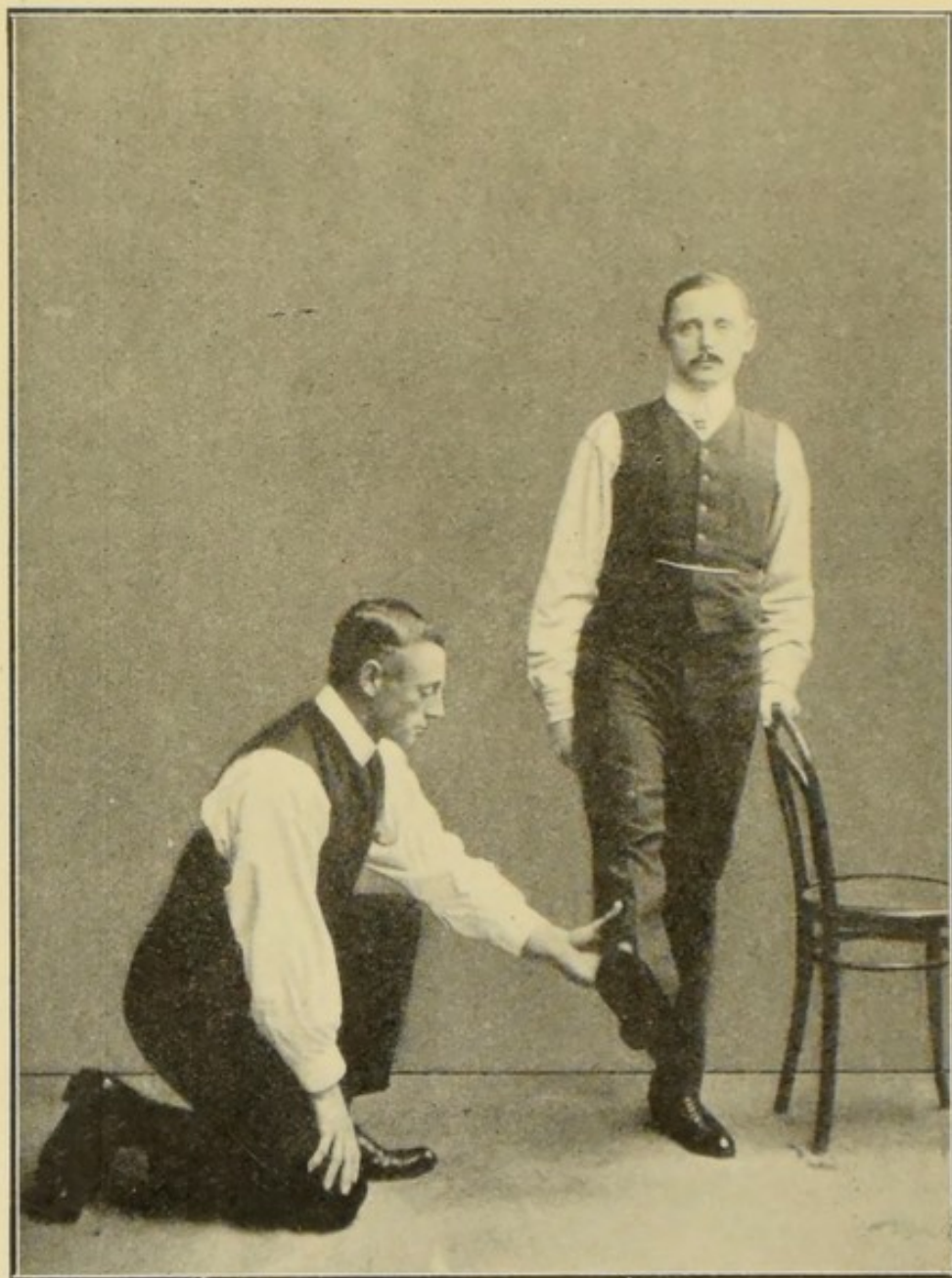


FIG. 21.

patient then brings his leg back to the position shown in Fig. 20. The same movement is then gone through with the other leg.

Movement II.

The administrator and the patient assume the

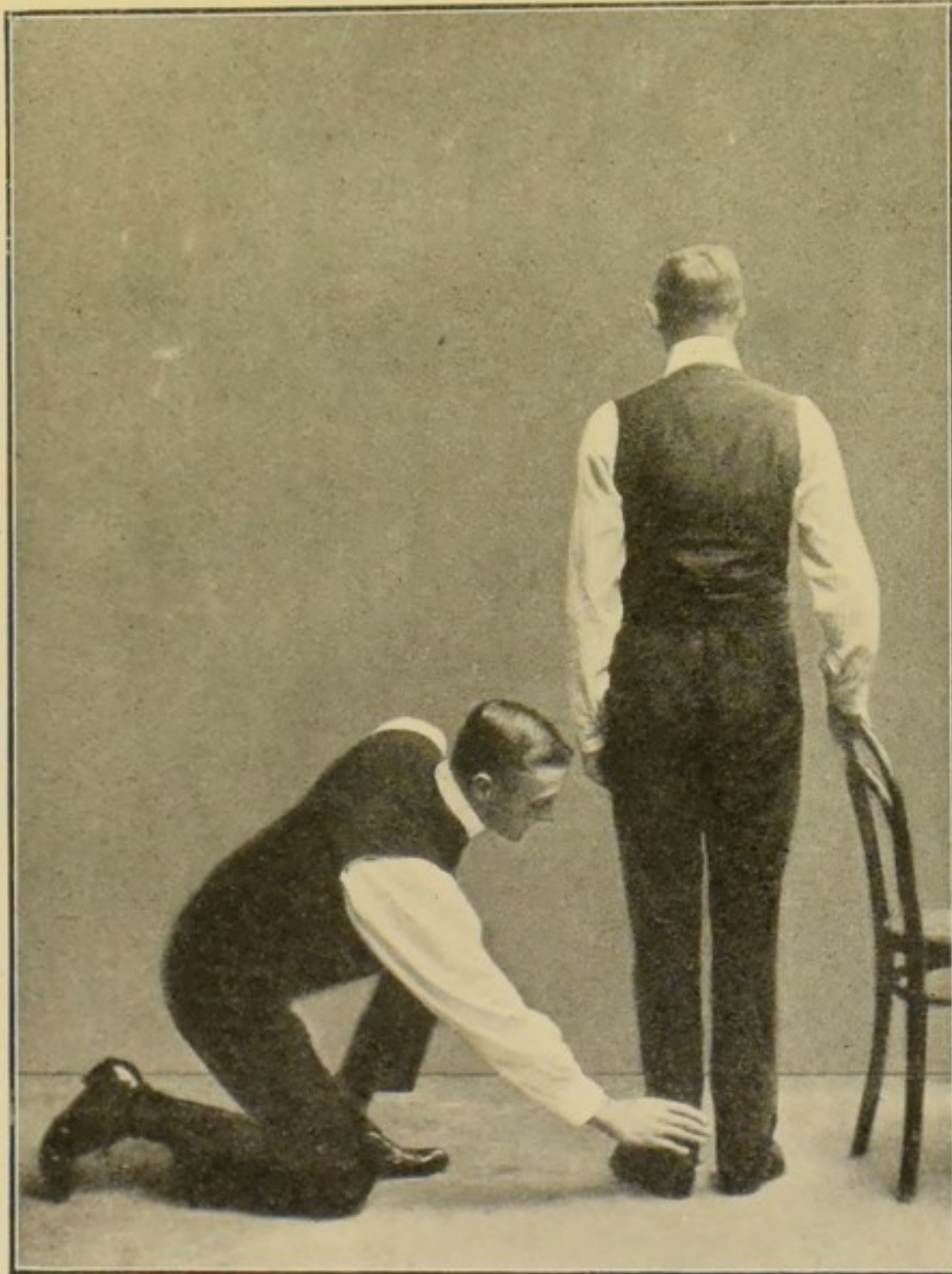


FIG. 22.

respective positions shown in Fig. 22 ; the patient then raises the leg, slowly extending it at the hip, directly backwards and upwards to the position

shown in Fig. 23. The administrator now places his other hand in the position shown in Fig. 23, and

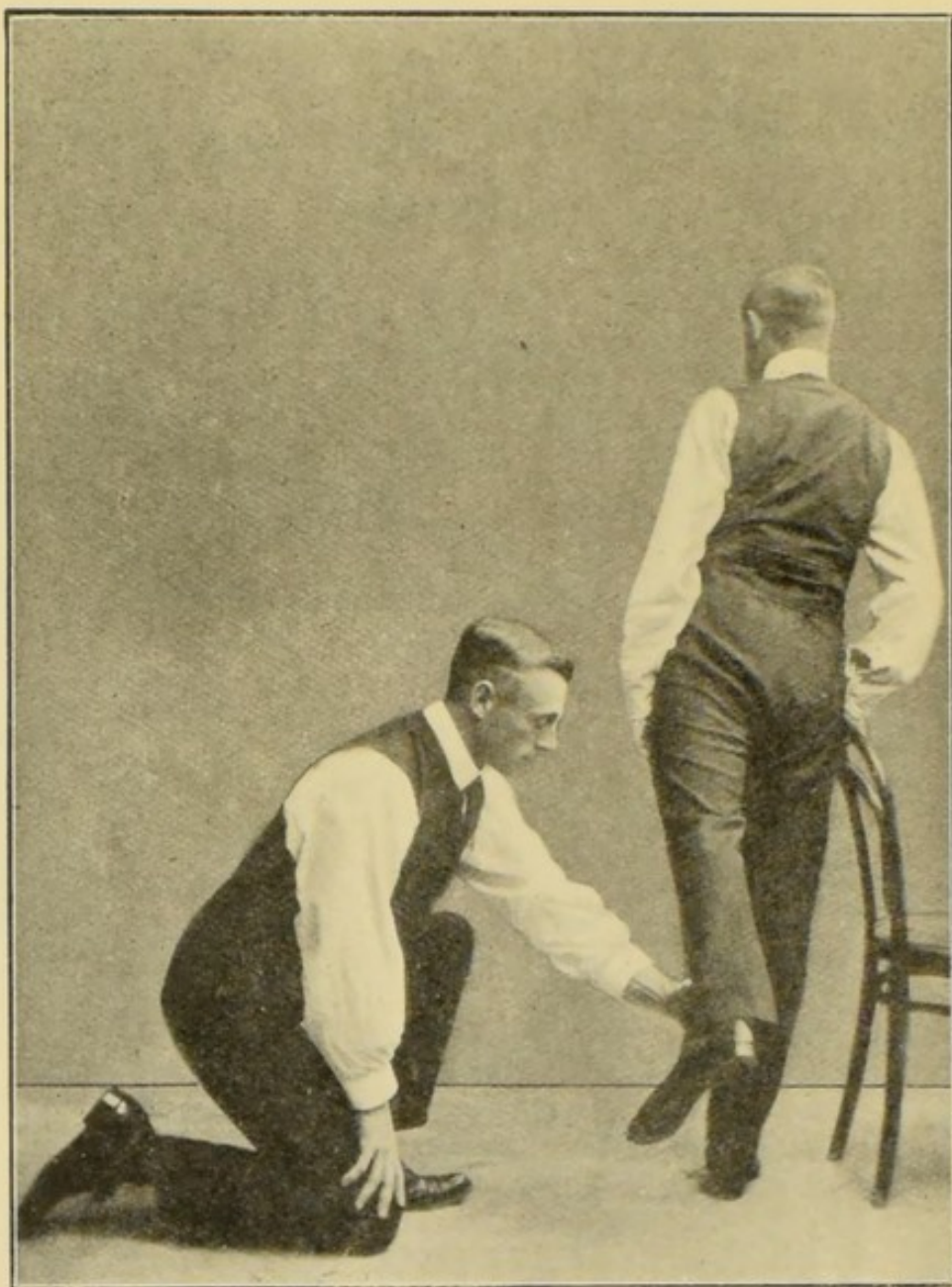


FIG. 23.

the patient then brings his leg back to the position shown in Fig. 22. The same movement is then gone through with the other leg.

Movement III.

The administrator and the patient assume the

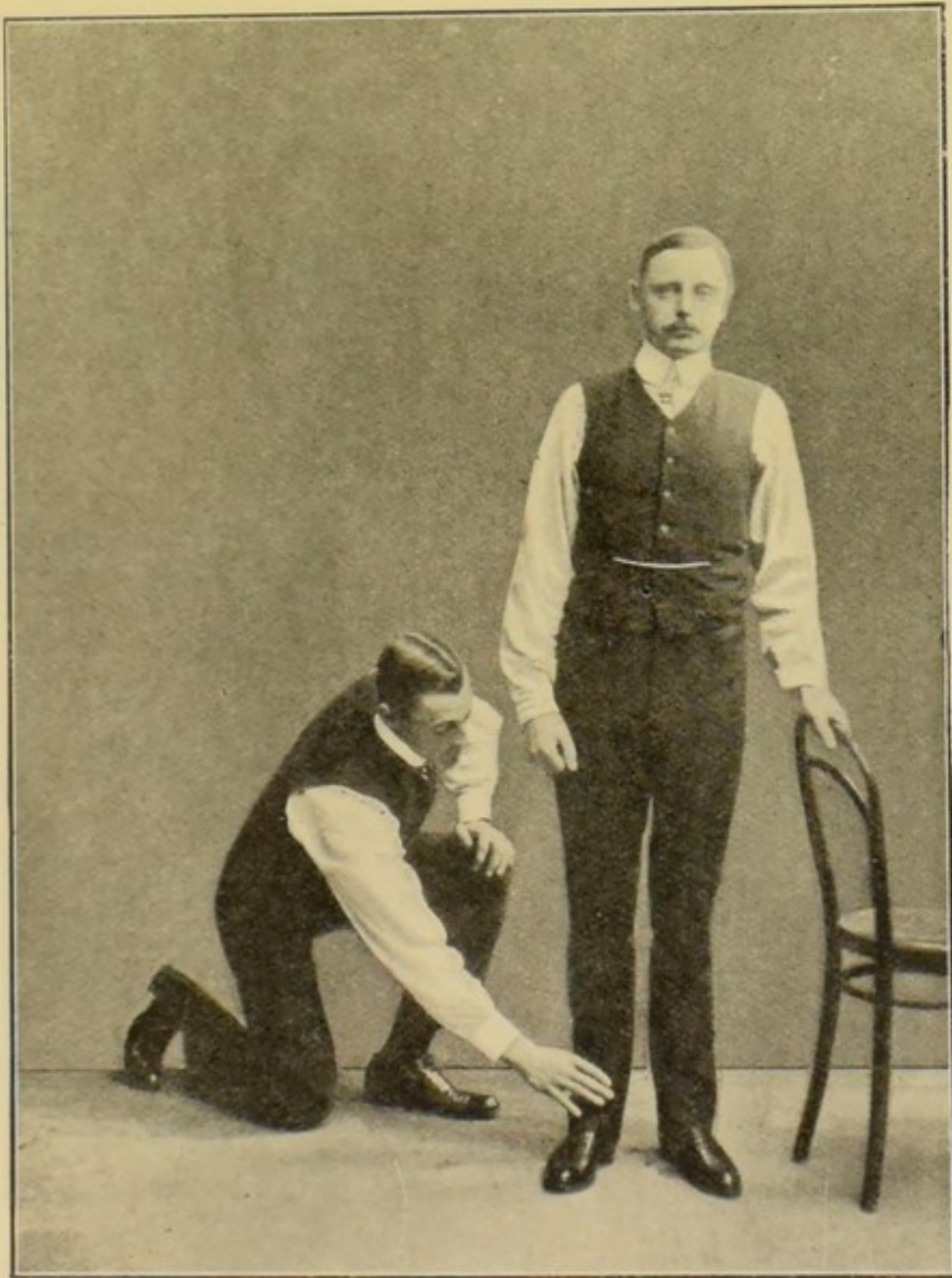


FIG. 24.

respective positions shown in Fig. 24; the patient then slowly abducts the leg to the position shown

in Fig. 25. The administrator now places his other hand in the position shown in Fig. 25, and the

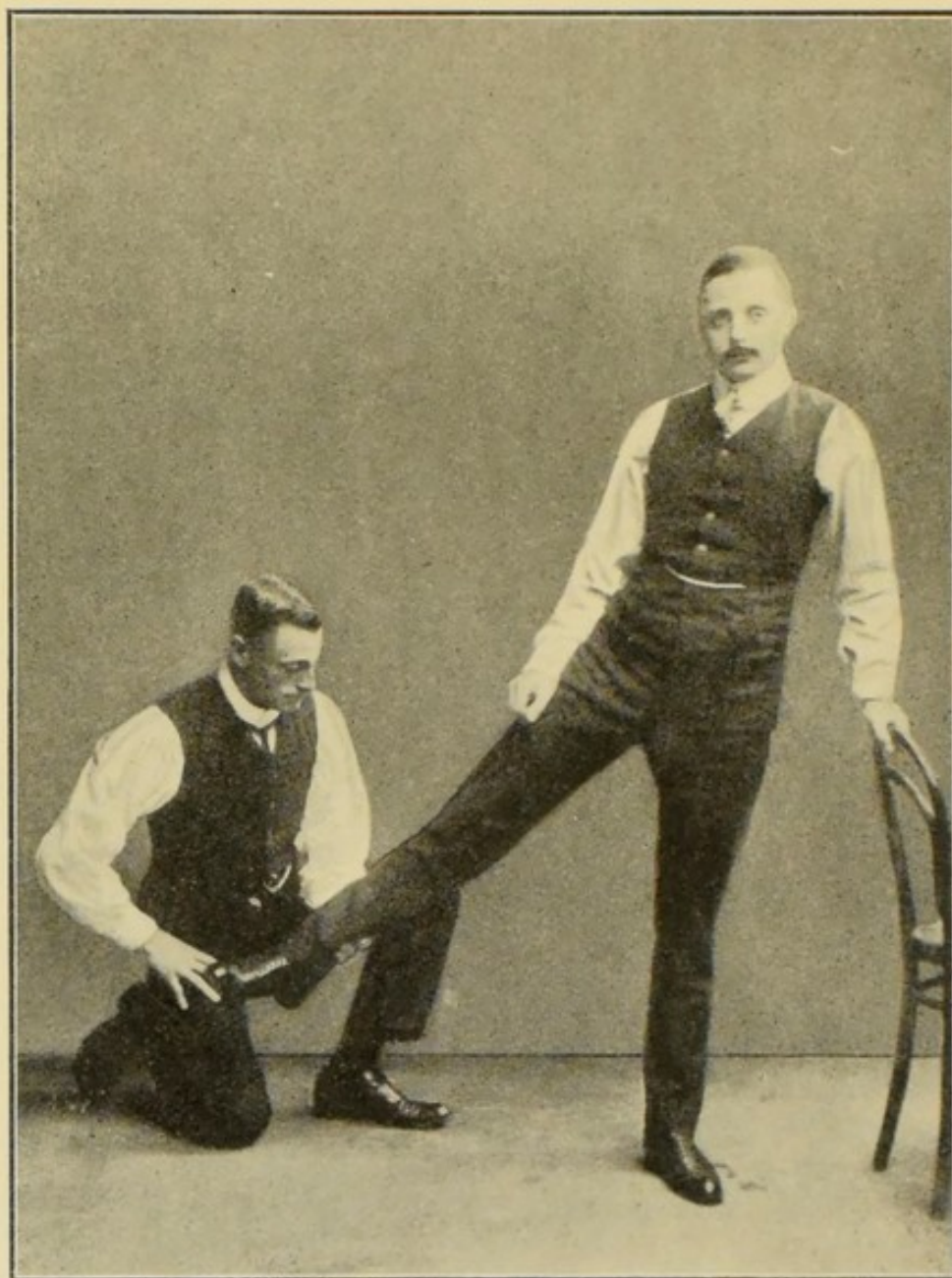


FIG. 25.

patient then brings his leg back to the position shown in Fig. 24. The same movement is then gone through with the other leg.

Movement IV.

The administrator and the patient assume the

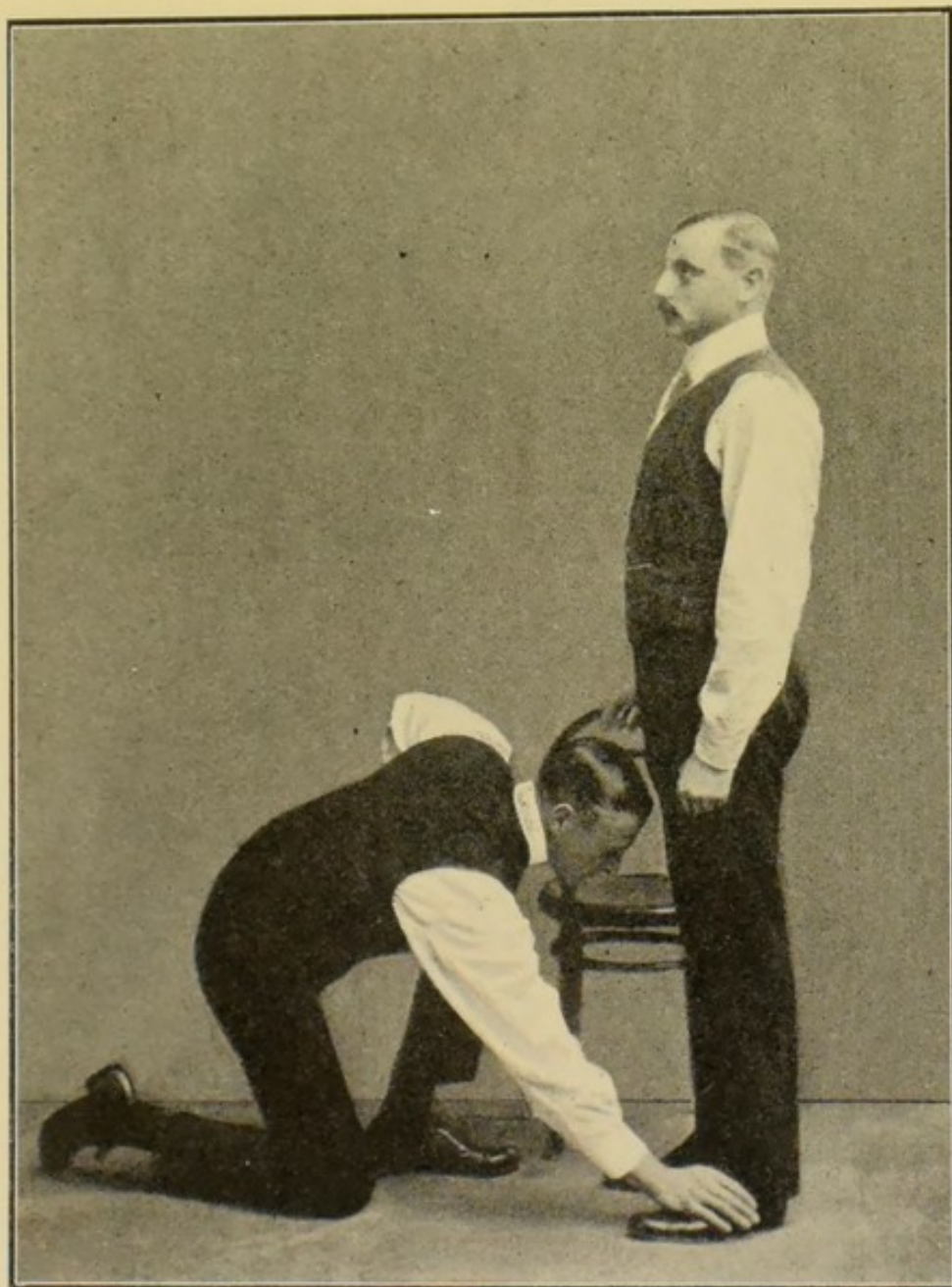


FIG. 26.

respective positions shown in Fig. 26 ; the patient then raises the leg, slowly flexing it at the knee and the hip, to the position shown in Fig. 27. The

administrator now changes the position of his hand to that shown in Fig. 27, and the patient then brings

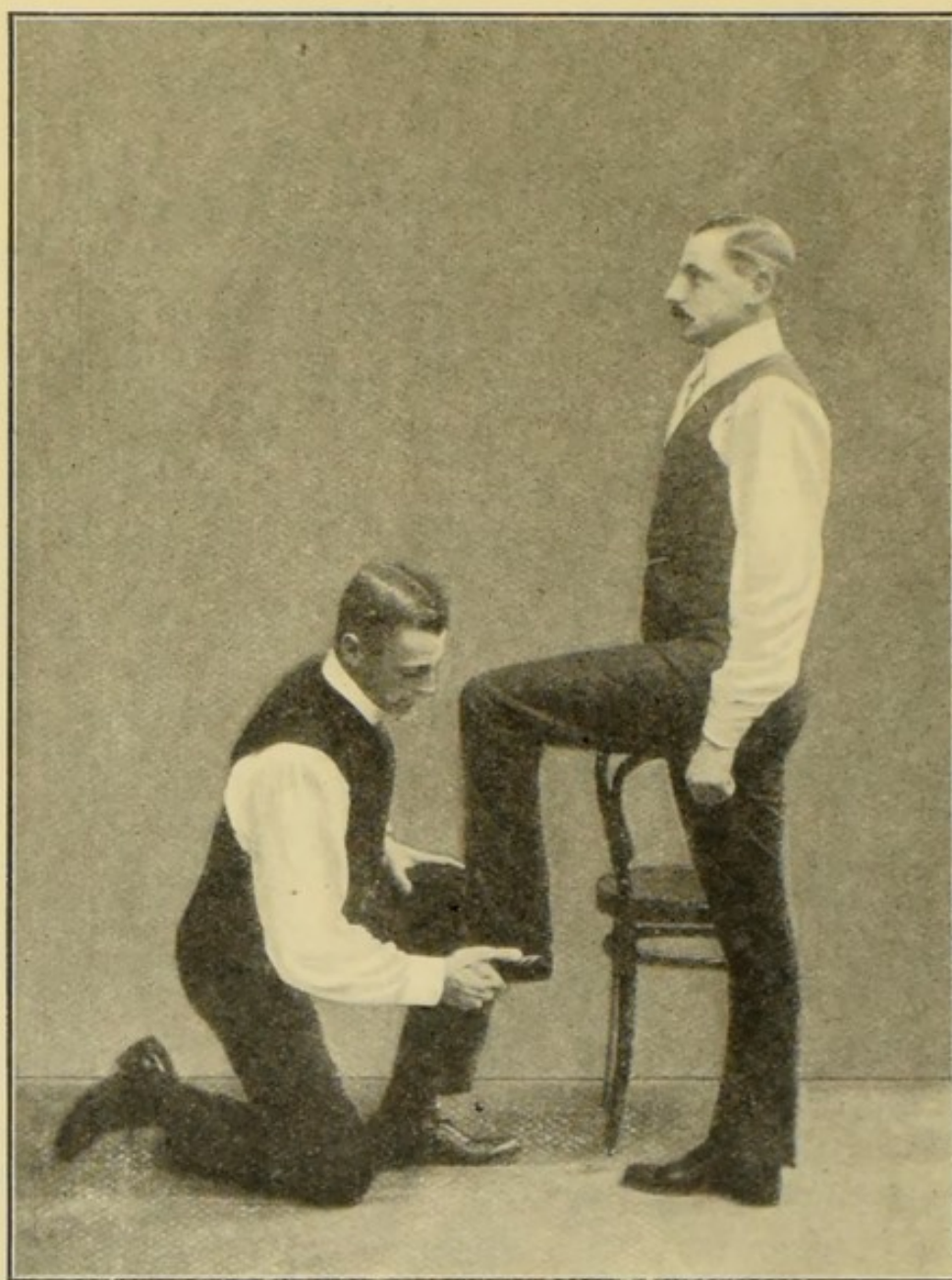


FIG. 27.

his leg back to the position shown in Fig. 26. The same movement is then gone through with the other leg.

Movement V.

The administrator and the patient assume the respective positions shown in Fig. 28; the patient

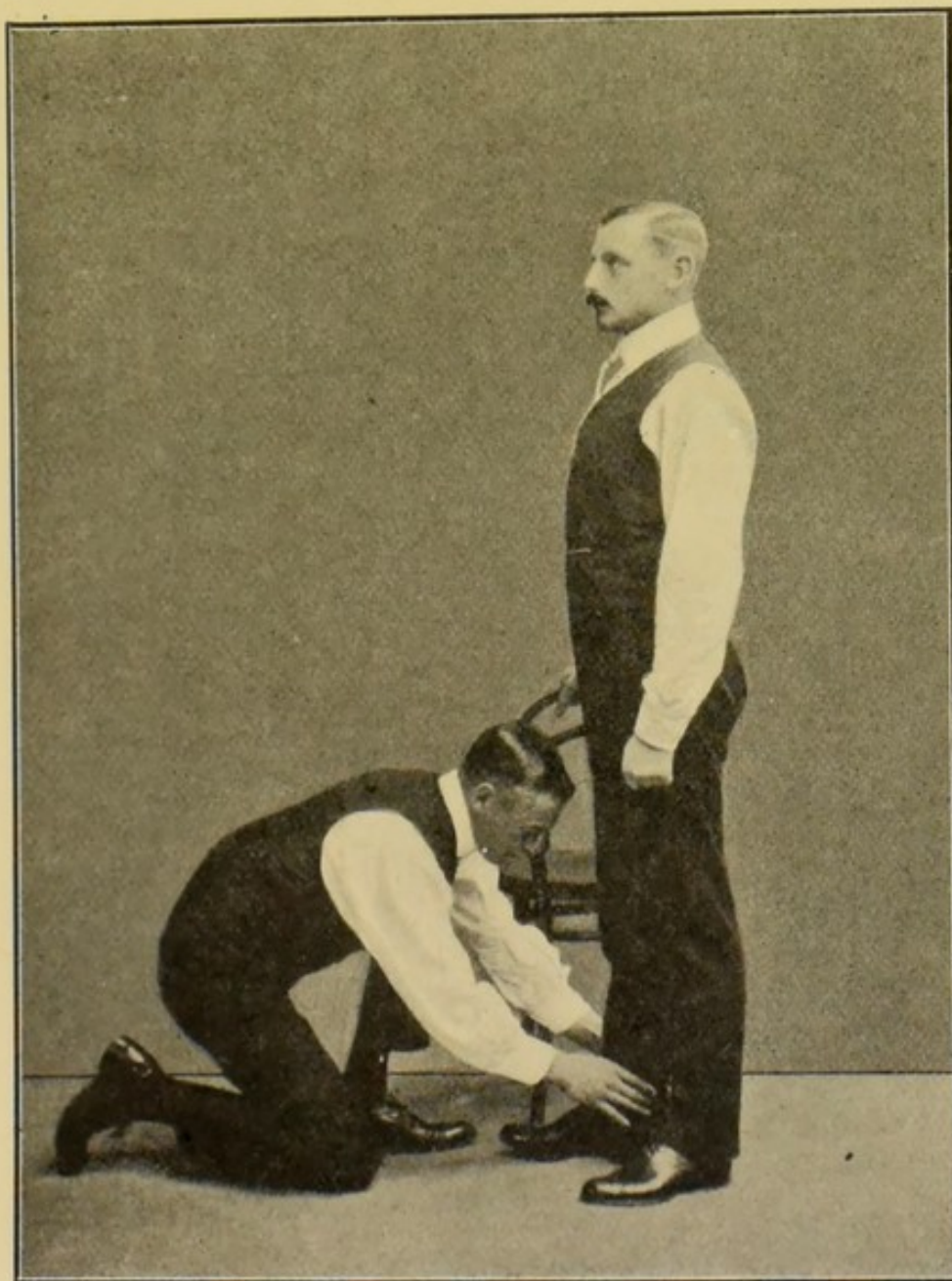


FIG. 28.

then brings his right foot forward, and across the front of the left foot, describing a small semicircle round the left foot, to the position shown in Fig. 29 ;

he then brings the right foot back, through the same semicircle, to the position shown in Fig. 28. The administrator resists the forward movements with

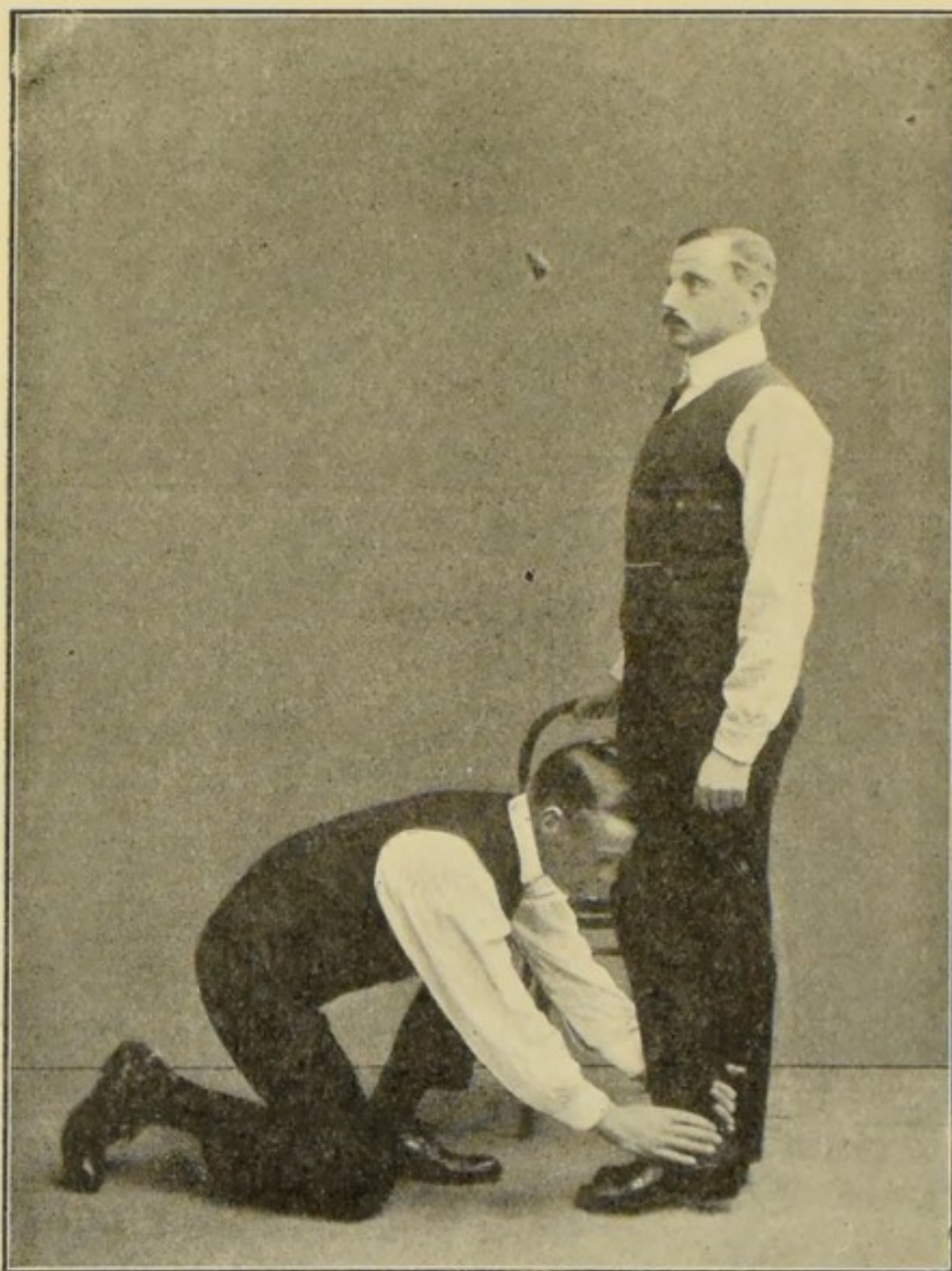


FIG. 29.

the right hand, and the backward movements with the left. The same movement is then gone through with the left leg.

THE BODY MOVEMENTS.

Movement I.

The administrator and the patient stand in the

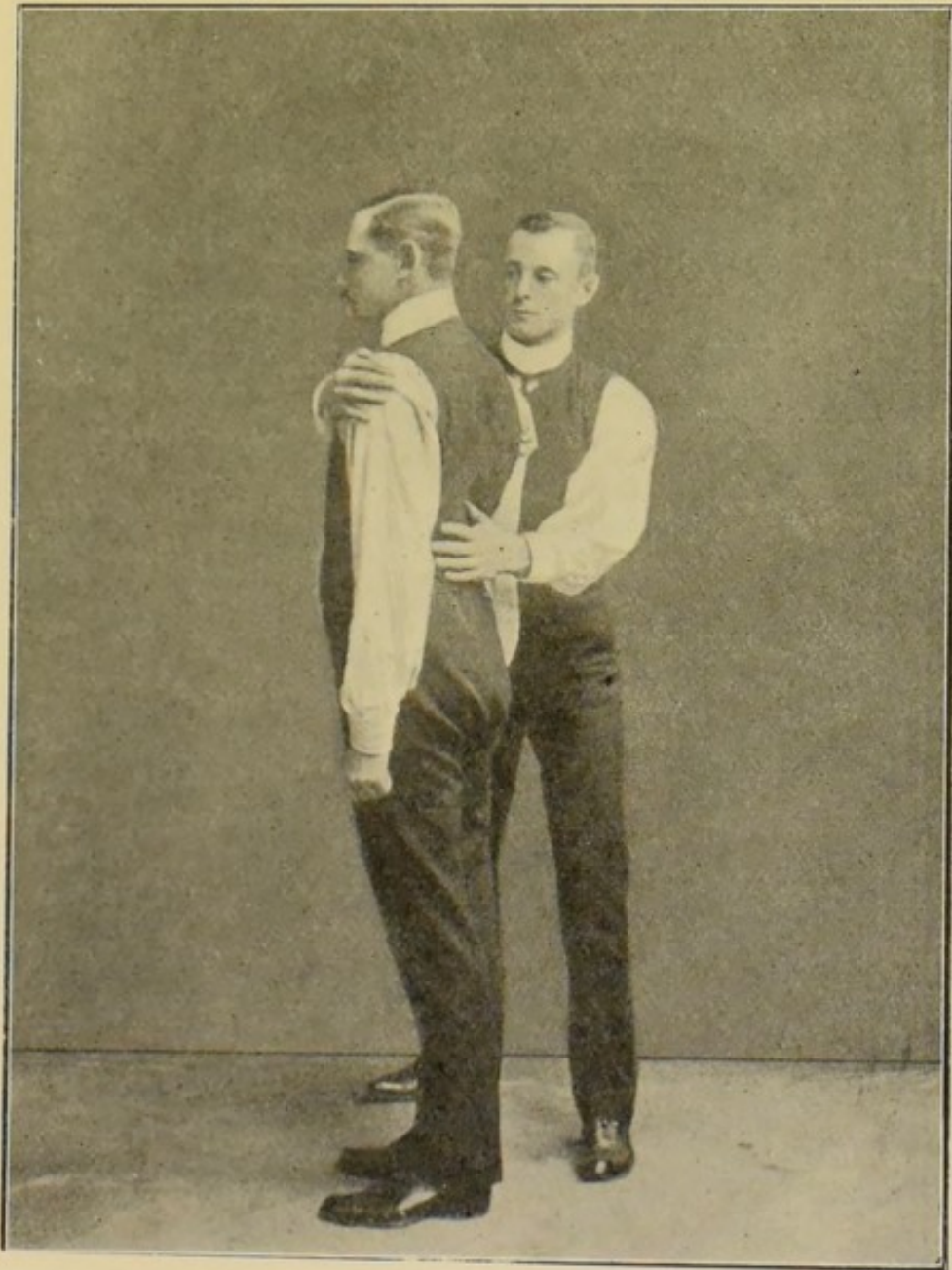


FIG. 30.

respective positions shown in Fig. 30 ; the patient then slowly flexes his body at the hips, bending

directly forwards and downwards, into the position shown in Fig. 31. The administrator now changes

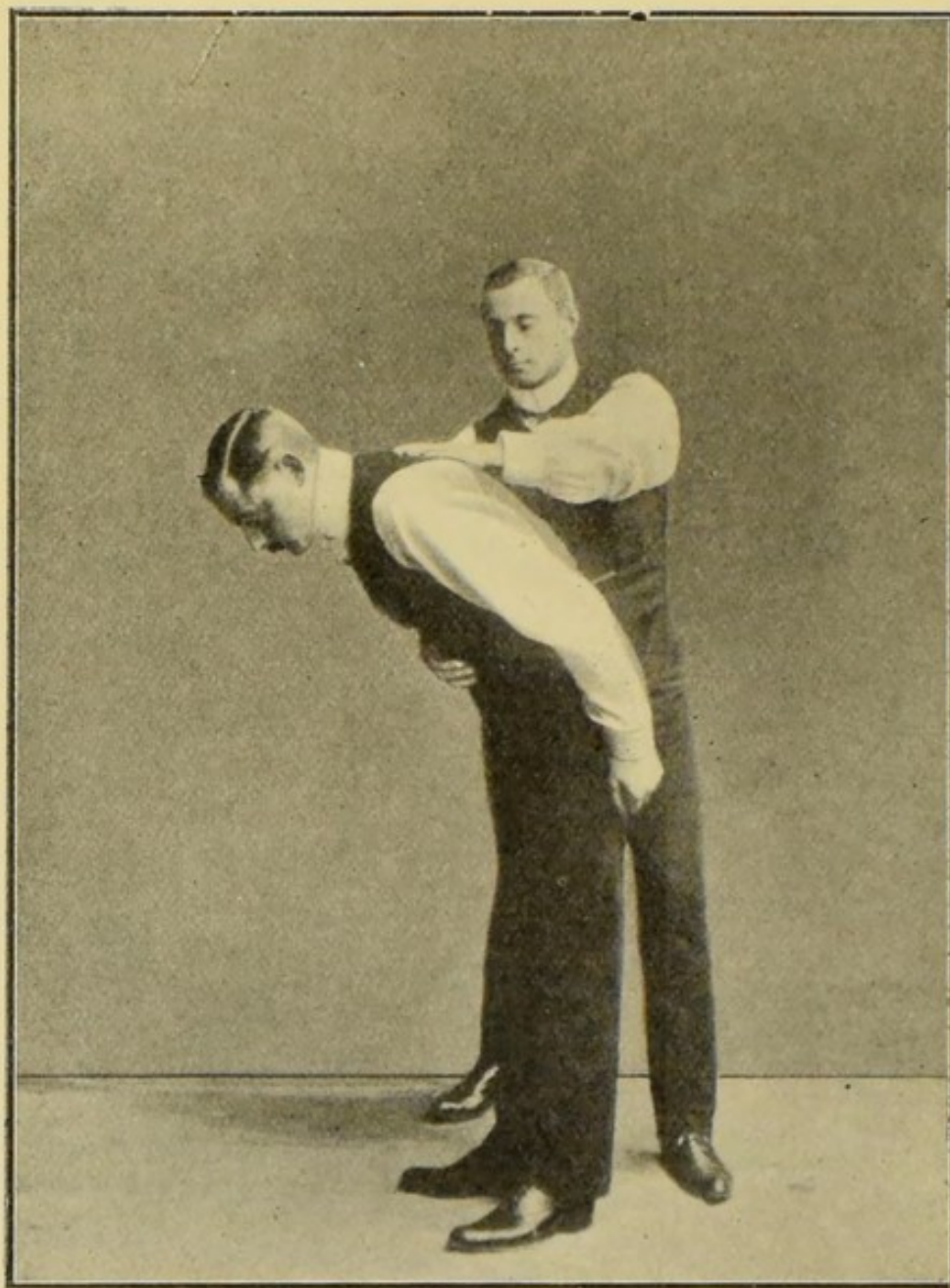


FIG. 31.

the position of his hands to that shown in Fig. 31, and the patient then brings his body back to the position shown in Fig. 30.

Movement II.

The administrator and the patient stand in the respective positions shown in Fig. 32 ; the patient

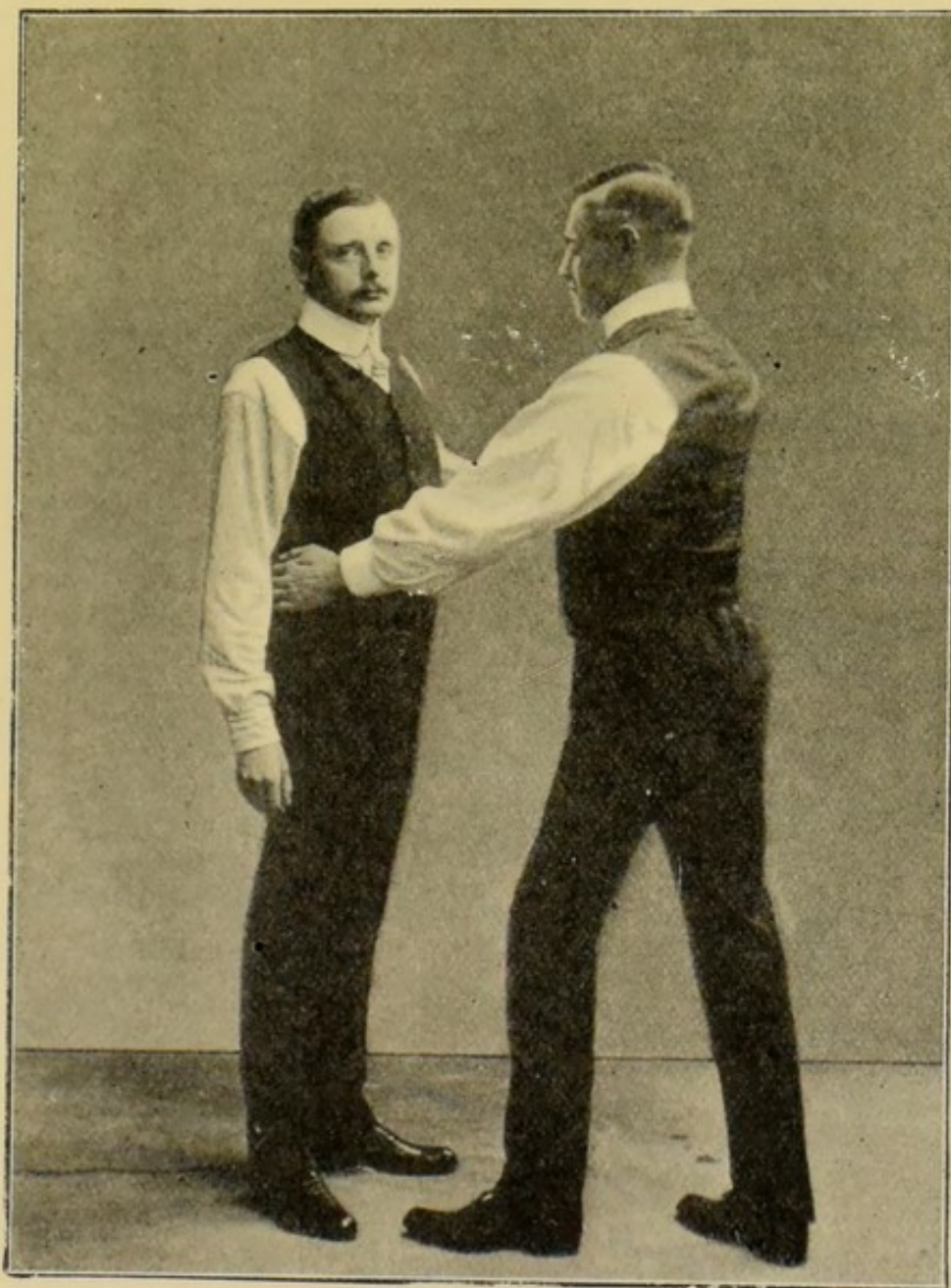


FIG. 32.

then flexes his body at the hips, bending directly sideways to the left, into the position shown in Fig. 33. The administrator now changes the position

of his hands to that shown in Fig. 33, the patient then brings his body back into the position shown in Fig. 32, and then flexes it directly sideways to

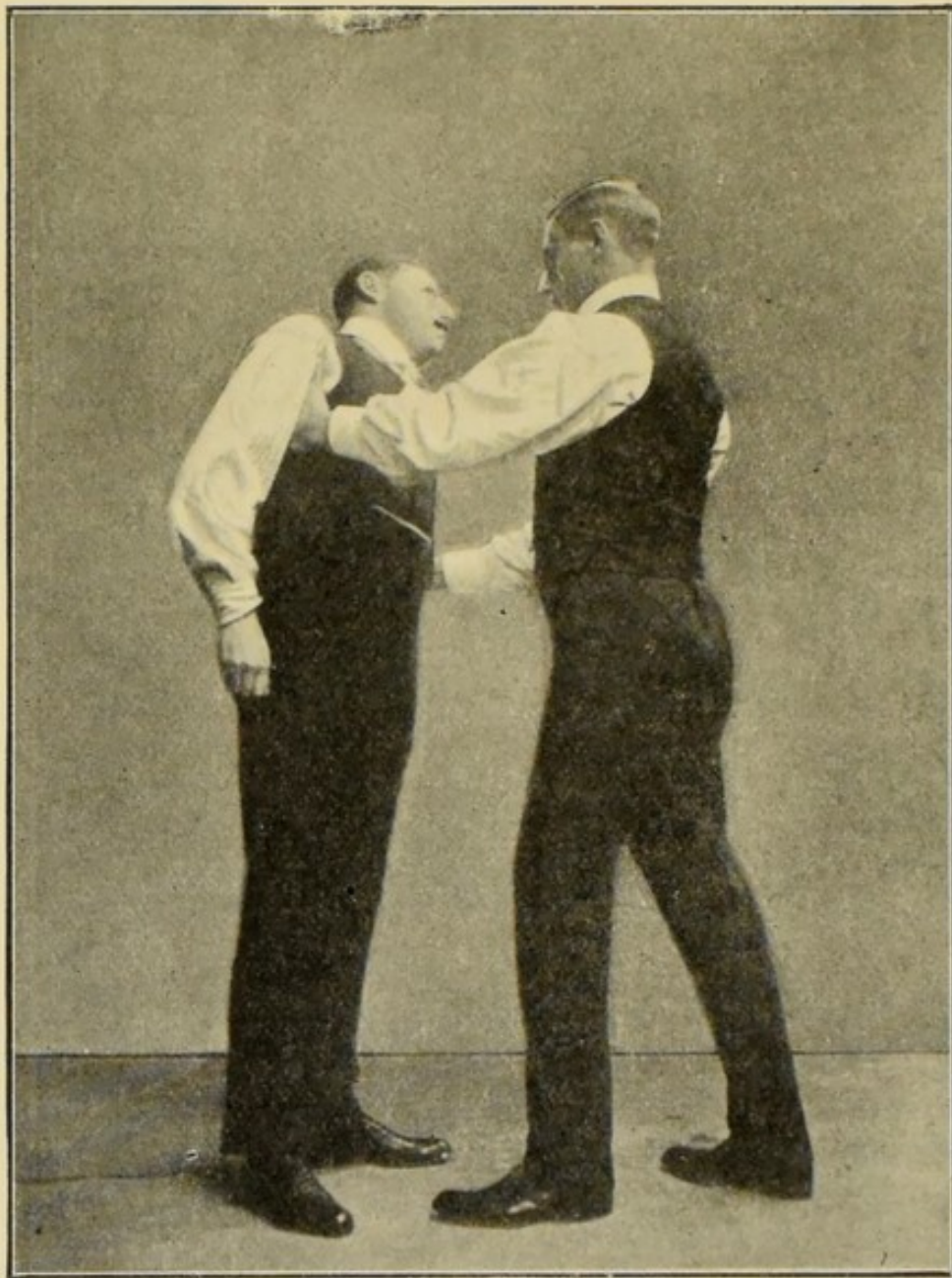


FIG. 33.

the right, as far as possible ; the administrator now changes the position of his hands back to that shown in Fig. 32, and the patient then brings his

body back to the original position, shown in Fig. 32. The administrator gives resistance, first with the right hand, then with the left, and finally with the right again.

Movement III.

The administrator and the patient stand in the respective positions shown in Fig. 34, the patient then rotates his body, on his hips, bringing the left shoulder as far forward as possible; the administrator now changes the position of his hands, placing his right hand over and behind the patient's left shoulder, and his left hand in front of the patient's right shoulder, the patient then rotates his right shoulder as far forward as possible; the administrator now changes his hands back to the position shown in Fig. 34, and the patient then rotates his body back to the original position shown in Fig. 34. The administrator offers resistance with both hands throughout this movement.

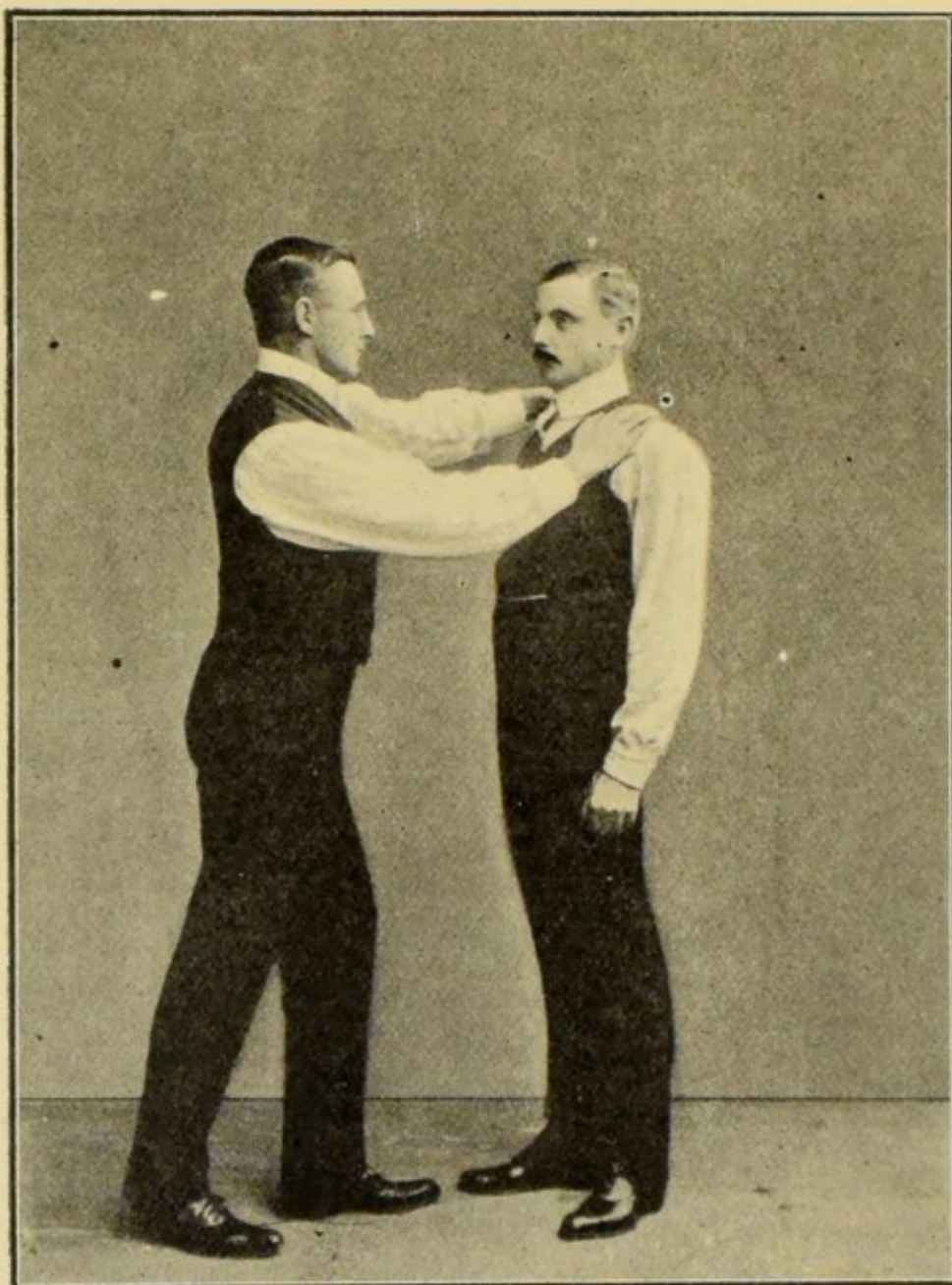


FIG. 34.

CHAPTER III

SELECTION OF CASES SUITABLE FOR TREATMENT

THE selection of cases suitable for treatment by the 'Nauheim' methods is of vital importance, as there is no doubt that to treat thus every sufferer from disease of the heart or circulation, irrespective of degree or kind, is most unwise. That the baths have a wide field of usefulness makes it all the more likely that unsuitable cases should sometimes be treated, especially by those who have not had a large experience of the treatment. For this reason I propose to give, as briefly as possible, my experience of the kind of cases that derive benefit from these baths, and of those that do not.

It is not easy to draw a definite line between these two classes, as the question of suitability for the 'Nauheim' treatment is in most cases, though not in all, one of degree rather than of kind. One is able, however, for the purposes of classification, to divide cases of diseases of the heart or circulation into three groups :

1. Those cases which can be permanently cured or restored to health for a long period.
2. Those cases in which it is uncertain whether marked benefit of any kind or duration will result.
3. Cases unsuitable for the treatment.

I. THOSE CASES WHICH CAN BE PERMANENTLY CURED OR RESTORED TO HEALTH FOR A LONG PERIOD.

The Influenzal Heart.—Of the above group, the dilated, enfeebled, irritable, and often irregularly acting heart with a damaged pace-maker—a sequela of influenza—is among the most promising, and is also one that in many instances resists treatment by rest, drugs, or change of air, so that the unfortunate sufferer often becomes a chronic invalid, with nothing but a broken and useless life to look forward to. I have seen many of these cases restored to perfect health by the 'Nauheim' treatment, after months of change of air and rest in bed or on the sofa had done little or no good.

It is no exaggeration to say that the 'Nauheim' treatment often gives a new lease of life in cases of this kind, though, if they are of a severe type, they may require two courses, with an interval of a year or eighteen months, to restore them to health. Cases II., III., and IV. (Chapter IV.) illustrate the

benefit that is derived from a course of 'Nauheim' baths by patients of this class.

All Cases of Cardiac Toxæmia, or Enfeeblement, from Excessive Smoking, or Prolonged Illness, such as typhoid fever, pneumonia, or malaria, belong to this group, and constitute a class in which the baths are a most valuable aid to such methods of cure as rest, tonics, and change of air, a much more rapid return to health being obtained in this manner than could otherwise be expected.

Cases of Anæmia with Dilated Hearts that have derived little or no benefit from iron, arsenic, or other tonics, are often entirely cured by a course of 'Nauheim' baths, such symptoms as headache, vertigo, palpitation, dyspnœa, and debility clearing up during the treatment, as the dilatation decreases and the circulation improves.

Cases of High Arterial Tension.—To this class belong that very large group of dilated and enfeebled hearts produced by the raised arterial tension present in the circulation of patients suffering from a rheumatic or gouty diathesis. The slowly but continuously increasing blood-pressure caused by rheumatic or gouty toxins in the blood produces in time an overloaded and overworked heart, and thereby an increasingly impure blood-supply and a progressive weakening of the cardiac systole. The commonest example of this form of circulatory

trouble occurs in individuals approaching or past middle life, who begin to put on flesh, to experience dyspnœa on any exertion, to sleep badly, and to suffer from palpitation, dyspepsia, and headaches. If it is found on examining a patient of this class that the blood-pressure is abnormally high and that the cardiac dulness on the right side extends beyond the right border of the sternum, a course of 'Nauheim' baths will cure these symptoms, reduce the weight, and cause the patient both to feel and look several years younger than before the treatment. From my own experience with a large number of this class of patient I am convinced that no other treatment will produce such highly satisfactory results.

There is no treatment which will cure these patients absolutely and permanently. The very fact that the vessels' walls are generally somewhat degenerated, and that the waste products of faulty metabolism are manufactured in the system and can only be kept in abeyance by a most careful diet and well-regulated life, often leads to recurrence of the heart symptoms in time, and makes it a necessity that the patient should undergo a course of treatment regularly every twelve months for two or three years, and then perhaps every second or third year. This no doubt sounds an arduous task, but when it is remembered that it converts

this class of case from permanent and increasing invalidism to a condition of good health, and often adds many years to their lives, it cannot be so regarded; and it is my experience that the second course generally produces a more lasting effect than the first, and the third a still more satisfactory result.

Patients not over middle age, suffering from mild forms of rheumatic or gouty hypertension, will often remain in good health for several years after a single course of baths, especially if a careful dietary and habit of life are adhered to.

Cases of Rheumatic, Gouty, or Influenzal Origin in which the Valves have been permanently injured, and signs of commencing cardiac failure, such as headache, shortness of breath, palpitation, cyanoses, and pain, are present, are very greatly benefited by a course of 'Nauheim' baths, which usually produce a more lasting and satisfactory improvement than could be obtained by any other treatment. Case I. (Chapter IV.) illustrates the highly satisfactory result obtained in the case of a woman who suffered from a gouty heart with mitral incompetence, aortic stenosis, and cardiac dilatation; and Case X. the improvement obtained in a case of rheumatic heart with serious valvular disease.

Cases of Angina Pectoris often derive great benefit from a course of baths, getting relief from pain for

a long period, even if the attacks are severe and frequent and the patient is past middle age. I have on several occasions given baths to patients of about seventy years of age to relieve anginal attacks and cardiac asthma, and the result has always been very satisfactory.

In old people the effect is not so lasting as in the comparatively young or middle-aged, but the relief from distressing symptoms generally lasts for nine months or a year, and a second course will often give a result as good, and sometimes better, than the first.

Nephritis.—In cases of chronic nephritis, with high blood-pressure and cardiac dilatation, very great relief can be given and life materially prolonged by a course of 'Nauheim' baths; painful, dangerous symptoms such as dyspnœa, angina, and palpitation can be cured for a long period, and the life of the patient can be rendered not only comfortable but enjoyable. Case VI. (Chapter IV.) is a good example of the relief and prolongation of life that the 'Nauheim' treatment often gives in these cases.

Obesity.—One of the most common forms of degeneration, the result of high blood-pressure and cardiac dilatation, is a fatty degeneration and infiltration of the tissues of the body. I do not attempt to draw hard and fast lines between fatty degeneration and fatty infiltration, as the two

conditions may each be caused by a deoxygenated blood-supply, and are so intimately connected that it is often not possible to separate them in clinical investigations. My object is to draw attention to that class of case in which the presence of high blood-pressure leads, firstly to cardiac dilatation, and secondly to the superabundant development of fat instead of healthy tissues. This fat envelops the heart in a thick layer and infiltrates its muscular walls, thereby aggravating the symptoms of an already defective circulation. The stouter the individual grows, the less is he inclined to take exercise, on account of the discomfort and dyspnœa it causes ; hence a vicious circle is formed in which any attempt to get rid of the superabundant fat is abandoned, because it distresses the patient.

Treatment by very strict diet, exercise, or massage, is often unsuccessful, or only produces temporary relief, as it does not touch the cause of the condition. These cases will often lose two or three stone in weight in a few months' time if the circulation is improved and a more healthy blood-supply established, and this loss of flesh is always accompanied by a great improvement in the general health. In my experience the obese person always suffers from a raised blood-pressure, a hampered heart's action, and a defective circulation, and until these conditions are relieved no treatment will do

much good. Case XI. (Chapter IV.) illustrates typically the effect of the 'Nauheim' treatment upon an obese patient, this patient's weight being eighteen stone before treatment, fell steadily to fifteen stone seven pounds a few months after the completion of a course of baths.

Irritable Heart.—Patients with irritable hearts, prone to palpitation, but with no sign of any cardiac dilatation, are sometimes greatly benefited by a course of 'Nauheim' baths. These cases are often a sequela of influenza or some other form of febrile attack, and exhibit a constantly over-rapid pulse which is greatly accelerated by any slight exertion or excitement, and a forcible cardiac action which often keeps the patient awake at night by its strength and rapidity. This condition is probably due to over-stimulation or increased sensibility, caused by some toxic material in the circulation; and a course of baths, by setting up a better metabolism, will promote the elimination of the poison, and in this way accelerate the cure and assist other forms of treatment such as rest and quiet. Digitalis and other cardiac tonics are of little good in these cases.

Graves' Disease.—A course of 'Nauheim' baths in these cases will often give relief to troublesome symptoms, and is of decided value in conjunction with other forms of treatment.

Irregularities of the Heart's Action.—Diseased conditions of the sino-auricular node, the bundle, or its branches, are practically always associated with, or sequelæ of, other pathological conditions of the heart, such as myocarditis, muscular degeneration, and valvular disease. The knowledge we have obtained from the electro-cardiograph and the polygraph enables us to classify these various irregularities and to differentiate those of grave import from the less serious ones. Some forms of cardiac irregularity may continue over a period of many years unknown to the patient, and causing no symptoms; whereas others not only materially shorten life, but are productive of much suffering and illness; but among patients exhibiting what appear to be the *same* forms of cardiac irregularity, some will enjoy good health, whilst others will experience distressing symptoms. Therefore, when we are considering the condition of a heart which exhibits irregular action, we must take advantage of the knowledge we derive from percussion, auscultation, the estimate of the blood-pressure, and the condition of the vessels, if we wish to arrive at an accurate estimation of the general cardiac condition, and to be in a position to treat the patient to the greatest advantage. Many patients who experience distressing symptoms from cardiac irregularity are also sufferers from cardiac

dilatation and hypertension, and if this dilatation and hypertension are successfully treated, the irregularity will either cease or greatly decrease, and the general condition of the patient be very materially improved. A course of 'Nauheim' baths will often produce these results, especially in cases where the irregularity present is produced by extra systoles of ventricular origin. Cases Nos. IV. and X. (Chapter IV.) are both examples of the treatment of hearts exhibiting this form of irregularity, but otherwise differing greatly as regards their pathological conditions. Cases subject to attacks of tachycardia also derive benefit from a course of baths.

Heart-block, or the interference of the free passage of blood from the auricles to the ventricles, occurs in many cases of cardiac disease, in a more or less severe form, and there is undoubted proof that in a large number of cases in which this condition is present a course of 'Nauheim' baths has been found to improve the patient's general health and alleviate the obstruction. In case No. X. (Chapter IV.) signs of partial heart-block were present before treatment, but had disappeared at the end of the course.

2. THOSE CASES IN WHICH IT IS DOUBTFUL WHETHER
MARKED BENEFIT OF ANY KIND OR DURATION
WILL RESULT.

Amongst these should be classed a large number of the more advanced forms of valvular affection, whether the result of gout, rheumatism, or other disease, in which the recuperative powers have been undermined by climatic effect, habits of intemperance, or prolonged illness, and the patient is losing ground. The result of the treatment is also very uncertain in cases which exhibit symptoms indicating serious defects in the sino-auricular node, the bundle, or its branches, because these defects are probably only part of a general cardiac degeneration.

That the treatment should be tried in many of these cases is only fair to the patient; but there is no doubt that many cases get beyond the help of a course of 'Nauheim' baths because they are left as a last resource, whereas if they had been used earlier they would have been of very great benefit.

It is of very great importance in this class of case that the treatment should be administered by one who is thoroughly conversant with it, because the smallest details, such as one or two minutes too long in the bath, a degree or so variation in the bath temperature, or a small alteration in the strength

of the ingredients, may make all the difference between success and failure in benefiting a case.

In this treatment, as in all others, even the most careful physician will have unsatisfactory cases in which no marked improvement is produced; but judicious selection, and careful attention to detail, will reduce these to a very small percentage of those treated. It is, in my opinion, decidedly dangerous for any individual, however skilled and fully trained, except a qualified medical practitioner, to undertake the administration of the treatment.

3. CASES UNSUITABLE FOR THE TREATMENT.

My experience of the treatment leads me to believe that the following are unsuitable :

Patients who are, and have been, habitually heavy drinkers, those suffering from syphilitic affections of the heart, those suffering from advanced degeneration of the vessel walls, and very old people.

The chronic heart case usually met with in hospitals, broken down by a long struggle to work when unfit, and accustomed to bad and often insufficient food, is also one of the most unsatisfactory for the 'Nauheim' treatment.

The general care of a case during treatment is of great importance. No definite rules can be laid down that would be suitable to all, but it is essential that

the patient should absolutely give up business and social engagements, and should, if well enough, take a prescribed amount of walking exercise both morning and afternoon, and have the digestion and bowels well attended to.

That these general directions, carefully carried out, help to a satisfactory result is manifest, but that they are not in themselves enough to produce that result I have often proved, as I have given patients general treatment for some time before using the 'Nauheim' baths, and have failed to obtain improvement as rapid, satisfactory, or lasting as that resulting from a course of baths and exercises.

A fortnight or three weeks' change of air after a course of baths materially increases the benefit obtained, but it is not possible to lay down any universal rule as to the place best suited to the patient; age, extent, and kind of the disease, personal idiosyncrasies, and the season of the year, must guide one greatly in the choice of a locality.

CHAPTER IV

EXAMPLES OF CASES

CASE I.—The patient, an unmarried woman, aged fifty-one years, of medium height, stout build, and weight 13 stone 7 pounds, had been suffering for some months from increasing stoutness, a troublesome cough, fairly constant pain over the region of the heart, marked shortness of breath, which increased on exertion, and swelling of the feet. When I first saw her, in February, 1904, she was noticeably short of breath, her lips were somewhat cyanosed, she had some chronic bronchitis, her heart was much dilated (Fig. 38, *AA*), and the sounds were very feeble. A definite murmur of systolic rhythm was heard all over the cardiac area, being loudest at the apex and the aortic base. Her pulse was small, regular in time and volume, 84 per minute; her blood-pressure was 100 to 165 millimetres Hg.; and her legs and feet were markedly œdematous. The urine was of low specific gravity, but did not contain any albumin or sugar.

I diagnosed a fatty, dilated, gouty heart, with some mitral incompetence, and possibly some slight aortic stenosis.

As is my usual practice in such cases, I tried the effect of drugs and dieting first, ordering bismuth,

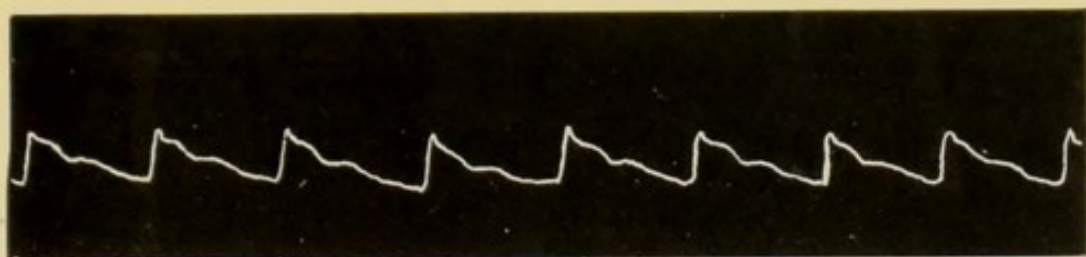


FIG. 35.—BEFORE TREATMENT.

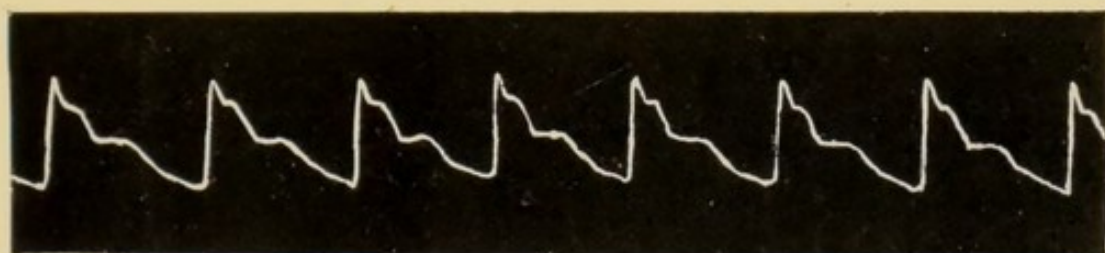


FIG. 36.—AFTER TREATMENT.

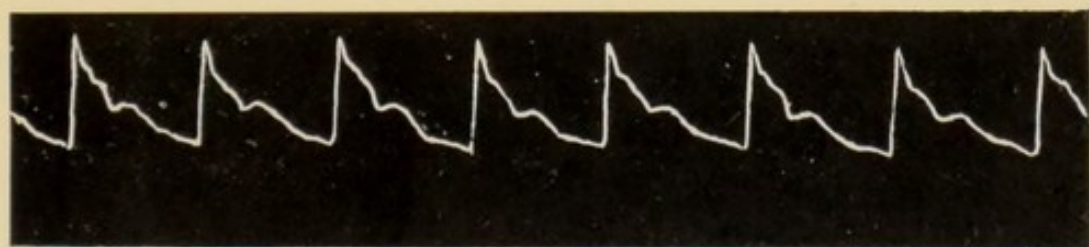


FIG. 37.—EIGHTEEN MONTHS AFTER TREATMENT.

digitalis, and nux vomica, with occasional doses of calomel, and a regulated diet, for a period of about seven weeks. By this treatment the weight was reduced $4\frac{1}{2}$ pounds, and the bronchitis disappeared,

but the pain, shortness of breath, and œdema were still present, and the cardiac condition was practically unaltered.

I then stopped all medicine, and ordered a course of 'Nauheim' baths and 'Schott' exercises, which the patient took in her own house in London. After a course of twenty-five baths, extending from April 11 till May 21, the patient looked and felt in good health. The weight was 12 stone 12 pounds, she was able to walk long distances, and climb hills with comfort. There was no œdema of the legs, the heart-sounds were strong and quite clear, except for a very faint and very localized systolic murmur heard over the aortic base, and the cardiac dilatation had very greatly decreased (Fig. 38, *BB*). The systolic murmur which I heard over the apex when I first saw the patient had no doubt been due to the cardiac dilatation and consequent mitral incompetence; the localized systolic murmur heard over the aortic base was undoubtedly due to slight aortic stenosis. These murmurs could not be differentiated when the patient was first seen.

I examined this patient again on October 25, 1905, one year and six months after she had had the treatment. She was still enjoying good health, had had no return of the shortness of breath, cardiac pain, or œdema, and could take long walks with pleasure. Her heart-sounds were strong and clear,

except for the slight aortic systolic murmur, the cardiac dulness (Fig. 38, *CC*) was only very slightly larger than it had been directly after the treatment, and her weight was 11 stone 7 pounds. Figs. Nos. 35, 36, and 37, are respectively the sphygmo-

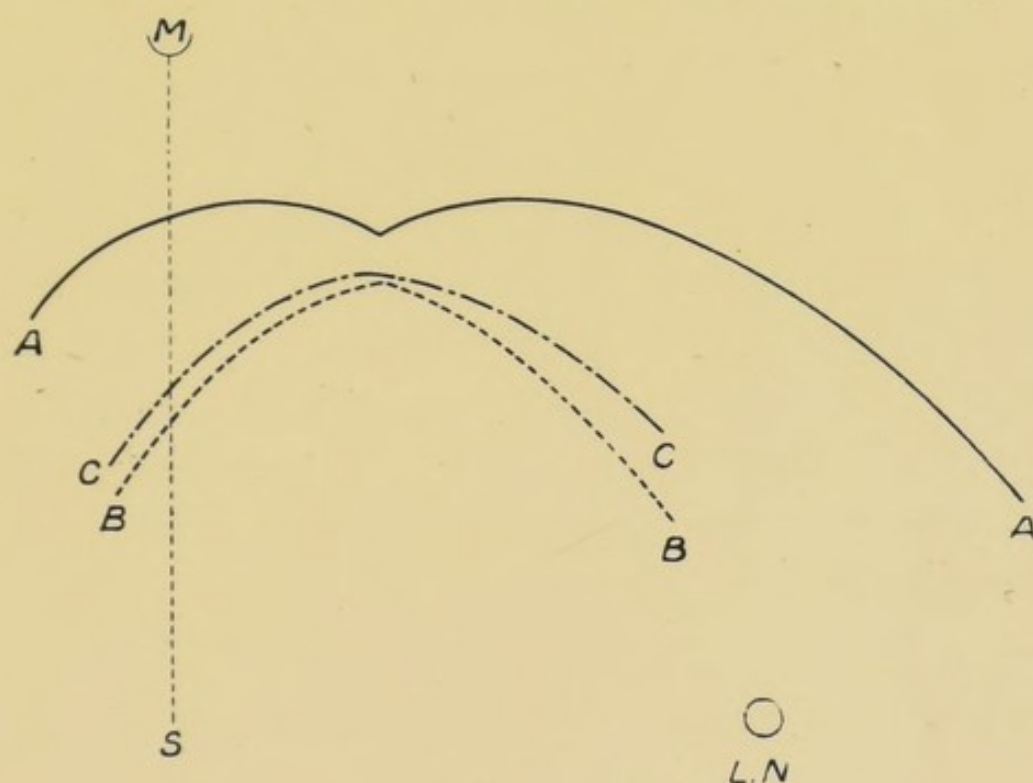


FIG. 38.

AA, cardiac dulness before treatment ; *BB*, cardiac dulness after treatment ; *CC*, cardiac dulness eighteen months after treatment ; *MS*, mid-sternal line ; *LN*, left nipple.

graphic tracings of her pulse, before, directly after, and eighteen months after treatment.

December, 1908.—This patient is still in good health, and leading a very active life.

In the winter of 1910 the patient had a severe attack of influenza, followed by bronchitis, which laid her up for about six weeks. The toxic poison

of the influenza, in conjunction with the great strain of constant coughing, caused her heart to again become dilated, and she suffered from cyanosis, dyspnœa, œdema of the feet, and increasing stoutness. Her blood-pressure was 100-165 millimetres Hg., and her weight was 13 stone 3 pounds. On account of these symptoms I gave her another course of baths in May, 1911. At the end of the course—June 16, 1911—she had quite lost the dyspnœa and œdema, her weight was 12 stone 11 pounds, her cardiac dulness was practically normal, her blood-pressure had fallen to 80-128 millimetres Hg., and she felt quite well and was able to take long walks with enjoyment.

January, 1912.—I heard from this patient that she was still quite well.

CASE II.—The patient, a married woman, aged forty-two, had had influenza several times, and had for some years suffered from palpitation, shortness of breath, cardiac pain, and insomnia.

About six months before I saw her all the symptoms had become more marked, and she had been treated with rest and cardiac tonics for that period, with practically no relief.

When I first saw her, in September, 1902, she was looking ill, was puffy under the eyes, anæmic, and somewhat cyanosed, and could only walk a few steps on account of dyspnœa. She had to lead the

life of an invalid, passing her time in bed, or upon the sofa. Her heart was much dilated (Fig. 39, *AA*), the cardiac sounds were very feeble at the apex, and

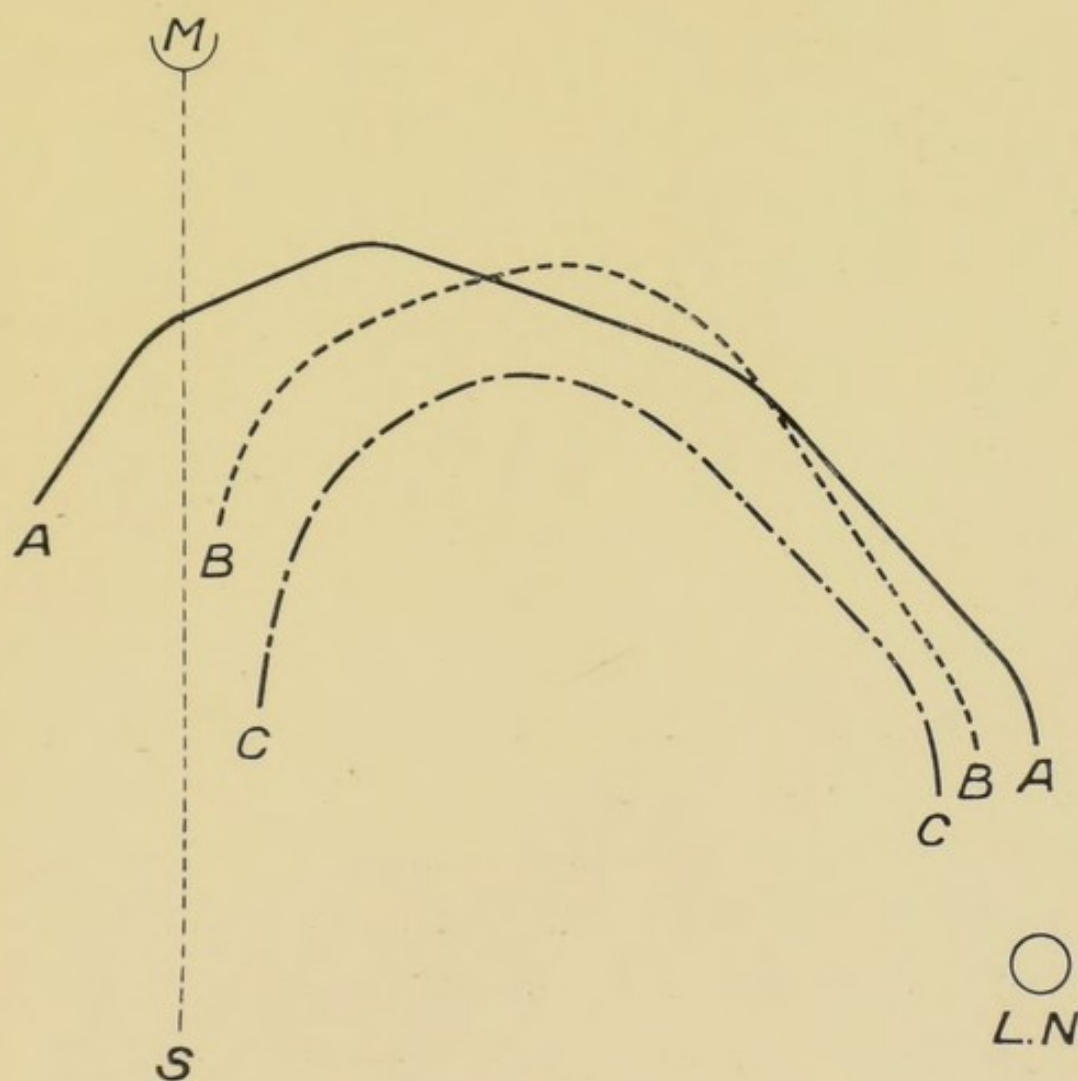


FIG. 39.

AA, cardiac dulness before treatment; *BB*, cardiac dulness after treatment; *CC*, cardiac dulness a fortnight after treatment; *MS*, mid-sternal line; *LN*, left nipple.

inaudible over the base. Her pulse was of small volume, regular in time, 92 per minute. The lungs were natural, the abdomen large and flabby, and

the legs were markedly œdematous. The urine contained no albumin or sugar. She had to be propped up at night in a sitting position on account of the dyspnœa, and even then had very little sleep. I stopped all cardiac tonics, and started a course of 'Nauheim' baths and 'Schott' exercises in her own house on September 26.

October 3, 1902.—She felt better, was sleeping much better, and the œdema of the legs was markedly less.

October 17, 1902.—She slept well in the recumbent position, and could take short walks out of doors.

November 3, 1902.—She was sleeping and eating well, had no dyspnœa, and had walked two miles with comfort. There was no œdema of the legs, the cardiac sounds were well heard over both apex and base, the dilatation had almost disappeared (Fig. 39, *BB*), and the pulse was 80 per minute, regular, and of good volume and normal tension.

She stopped the treatment on November 3, having had twenty-three baths in all.

November 17, 1902 (a fortnight after treatment).—She looked well, slept and ate well, could walk any ordinary distance, had no cardiac dilatation (Fig. 39, *CC*), and no dyspnœa. It will be noticed that the cardiac dulness *CC*, taken a fortnight after treatment, is less than *BB*, taken immediately after.

This continuing improvement after treatment is very constant.

April 30, 1903 (five and a half months after treatment).—The patient felt quite well, and was able to lead an ordinary fairly busy social life. The condition of the heart was quite satisfactory, the sounds were clear and strong, and the pulse was of good volume and normal tension, regular, 74 per minute.

February 23, 1907 (four years and three months after treatment).—I have just heard from the patient that she has been quite well ever since the treatment, that there has been no return of dyspnœa or œdema, and that she is able to live an ordinary country life, and take long country walks.

December, 1908.—The patient is still well, and leading an active life.

January, 1912.—I hear from the patient that she is still quite well, and has never had any return of the symptoms.

CASE III.—The patient, a man aged thirty-one years, consulted me in April, 1912. In the winter of 1909 he had severe influenza, and soon after he got about he was attacked with faintness and vomiting, which laid him up again. When he was able to travel, he spent four weeks at Harrogate. This rest somewhat improved his health, but he found he was quite unable to take active exercise,

and had to give up shooting, fishing, and superintending farm work on account of palpitation,

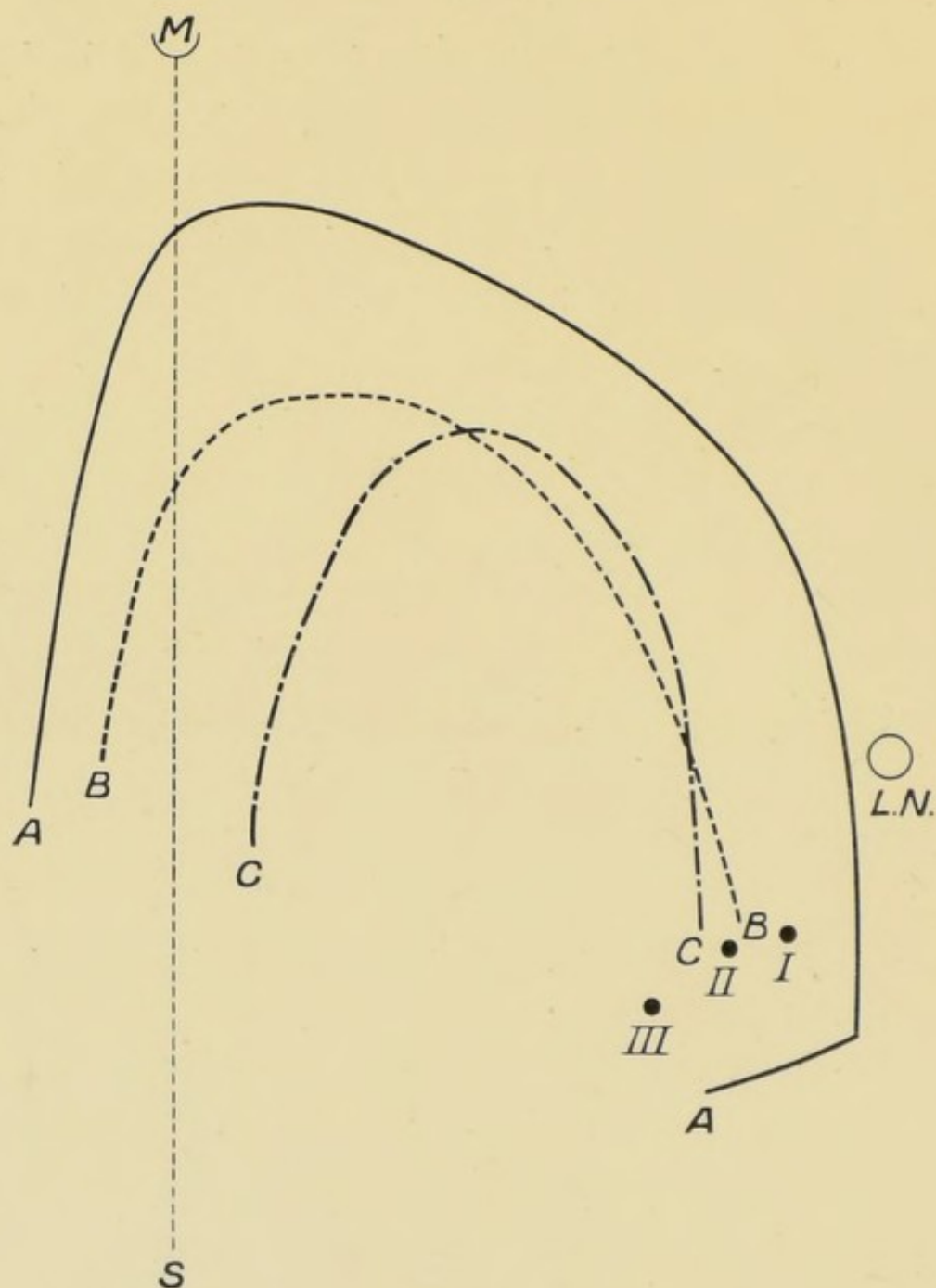


FIG. 40.

AA, cardiac dulness before treatment; *I*, apex beat;
BB, cardiac dulness after treatment; *II*, apex beat;
CC, cardiac dulness four months after treatment;
III, apex beat; *MS*, mid-sternum; *LN*, left nipple.

shortness of breath, attacks of vertigo, œdema of the legs, acute dyspepsia, and insomnia. He continued to lead a more or less invalid life, taking various cardiac tonics and periods of rest, but breaking down every time he tried to do any work or take exercise up to the time he consulted me. When I saw him, in April, 1912, he was fairly well nourished, his lips and finger-nails were cyanosed, he had marked dyspnœa, and his legs were œdema-

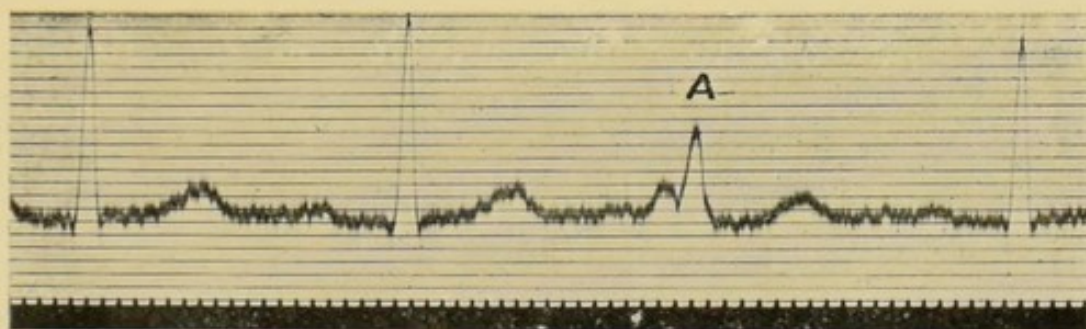


FIG. 41.—ELECTROCARDIOGRAM OF CASE III.

Extra systole shown at *A*.

tous. His pulse was 100 per minute, with extra systoles, sometimes as frequent as every second or third beat; his chest was markedly rachitic; his heart decidedly dilated, with some left-sided hypertrophy (Fig. 40, *AA*); the heart sounds were very weak, being only just audible over the base; the blood-pressure was 120 millimetres Hg.; there were some râles at the bases of the lungs; the urine was normal. The electrocardiogram (Fig. 41) shows the tendency to hypertrophy of the left side of

the heart, and one extra systole arising in the ventricles.

He started a course of 'Nauheim' baths, which lasted from April 12 to May 13; his condition steadily improved, he lost the palpitation, œdema, cyanosis, and dyspnœa, was able to sleep well, enjoy his meals, and take a fair amount of exercise. His cardiac dulness was reduced almost to normal (Fig. 40, *BB*), the heart sounds were much stronger, and the extra systole had almost disappeared. He went home to Shropshire, and then on to Scotland, and saw me again on September 18, when he told me that his condition had steadily improved, he was able to shoot and fish, and to do a long day superintending farm work (from 8 a.m. to 8 p.m.), his cardiac dulness was quite normal (Fig. 40 *CC*), and his general condition excellent.

CASE IV.—The patient, a married woman, aged forty-six years, was sent to me by Dr. Toye of Bideford. She had been under his care for some time, resting and taking various heart tonics. Dr. Toye wrote to me saying that she had a very irregular heart's action, both as regards force and rhythm, that the cardiac dulness was markedly enlarged, that he regarded the case as one of degenerate myocardium with some affection of the pace-maker, and that her condition did not improve under treatment. She had been quite well and

*Kindly insert the errata slip below in your copy of Dr. L. Thorne Thorne's
" ' ' Nauheim " Treatment of Diseases of the Heart, ' Fourth Edition.*

ERRATA

From page 81, *for* ' milligrammes ' *read* ' millimetres. '

On page 83, line 5, *for* ' extra systolics ' *read* ' extra-systoles. '

active till July, 1911, when she had a severe attack of influenza, since when she had suffered from palpitation, dyspnœa, fainting attacks, exhaustion, and cardiac pain whenever she tried to take exercise; and since March, 1912, she had spent her time chiefly in bed or on the sofa; she slept very badly, sometimes being awake all night, and never getting a good night's rest without taking veronal.

When I saw her in July, 1912, she was cyanosed, and suffered from marked dyspnœa; her pulse was 76 per minute, exhibiting extra systoles about every second or third beat (Fig. 43); her heart was markedly dilated, especially on the right side (Fig. 42); the sounds were weak, but there was no murmur; her ankles were œdematous; an electrocardiogram indicated hypertrophy of the left ventricle (Fig. 45); her blood-pressure was 70-135 milligrammes Hg.

She started a course of baths on July 13, and on July 20 she informed me that she slept comfortably all night, lying on her left side, a position she had not been able to sleep in for a year. During her course of baths, which ended on August 8, she did not have a single heart attack, lost her dyspnœa and œdema, and was able to walk a good distance with comfort, and sleep soundly. Her cardiac dulness was nearly normal at the end of the course (Fig. 42, *BB*), and the pulse was almost always regular in

time and volume. I saw this patient again on September 16. She then told me that she felt quite well, and could garden and take long walks.

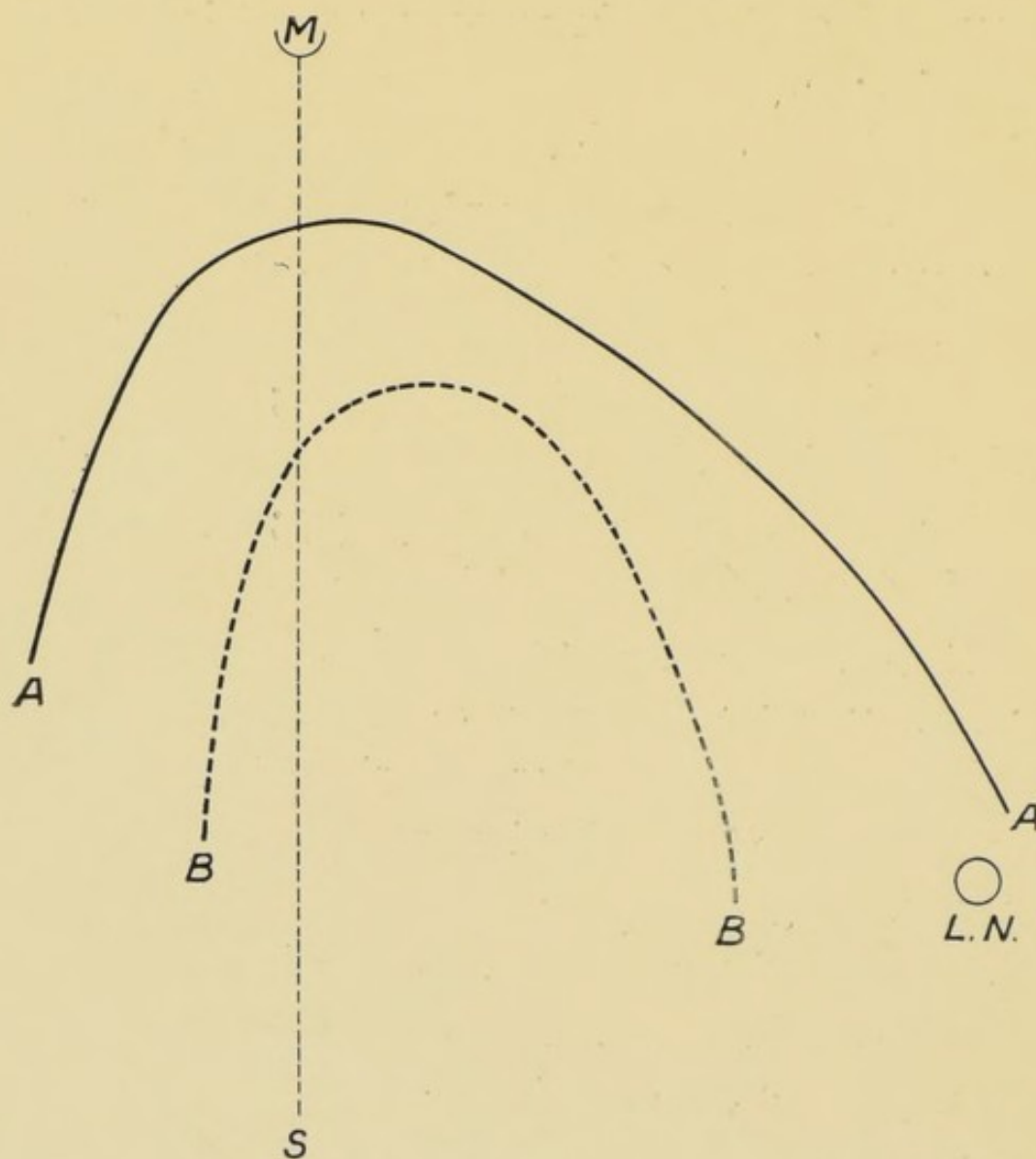


FIG. 42.

AA, area of cardiac dulness before treatment ; *BB*, area of cardiac dulness after treatment.

Her cardiac dulness was the same as it had been on August 8, and the pulse was of good volume, and regular both in volume and time (Fig. 44).

CASE V.—The patient, a man aged forty-nine years, was brought to me on November 6, 1911, by Dr. F. Rushworth, of Hampstead, who informed me

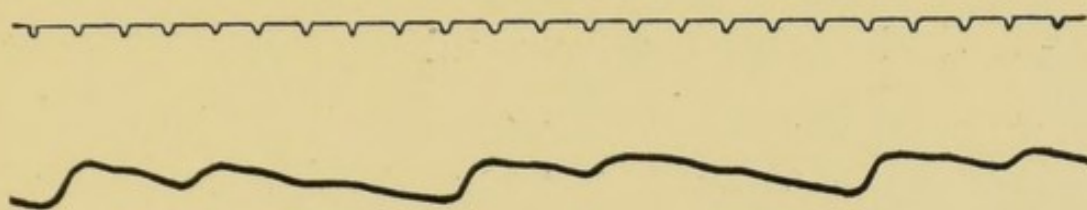


FIG. 43.—PULSE TRACING BEFORE TREATMENT, SHOWING EXTRA SYSTOLICS OF VENTRICULAR ORIGIN.

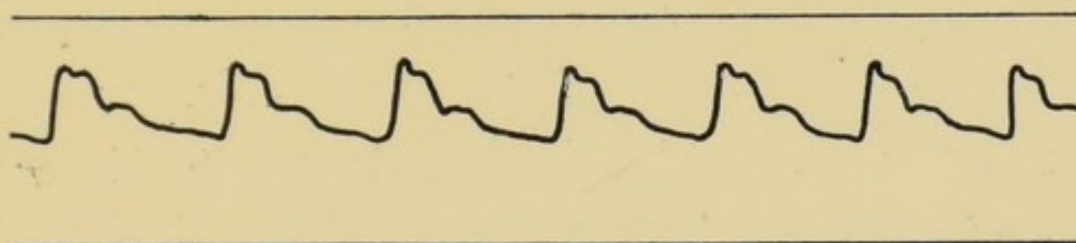


FIG. 44.—PULSE TRACING AFTER TREATMENT.

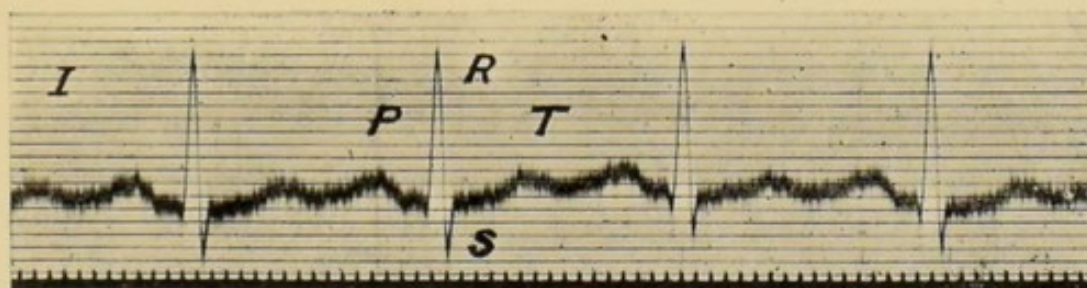


FIG. 45.—ELECTROCARDIOGRAM INDICATING HYPERTROPHY OF LEFT VENTRICLE.

that he (the patient) had been suffering from increasing stoutness and dyspnœa for some years, and had lately developed bronchial catarrh and œdema of the legs. About a week before I saw him he was

suddenly attacked by severe and alarming dyspnœa whilst he was out, which necessitated his having to be carried up the stairs to his flat. He then sent for Dr. Rushworth, who ordered him to bed and treated him with laxatives and digitalis. The rest and treatment so improved his condition that he was able to come to see me on November 6, at which time his condition was as follows: He was a stout man; height, 5 feet 9 inches; weight, 15 stone 13 pounds. He was decidedly cyanosed, and suffered from marked dyspnœa. His pulse was 120 per minute, regular in time but very small in volume, and his blood-pressure was 140-250 milligrammes Hg. His heart was very greatly dilated (Fig. 46, *AA*), the sounds were weak, there was a soft systolic murmur heard at the apex and over the upper part of the sternum, and the impulse could not be felt. The liver was somewhat enlarged, and the legs were markedly œdematous; the urine contained a cloud of albumin, but was otherwise normal. We decided that the case was a suitable one for a course of 'Nauheim' baths and 'Schott' exercises, and the patient began the course at his own flat on November 9. On November 17, after six baths, the pulse had dropped to 112 per minute and was decidedly larger in volume, the blood-pressure had fallen to 130-212 millimetres Hg., the area of cardiac dulness had decreased markedly

(Fig. 46, *BB*), there was less œdema of the legs and less dyspnœa, and the patient said he felt much more comfortable. The treatment was continued till December 9, by which time the area of cardiac dulness

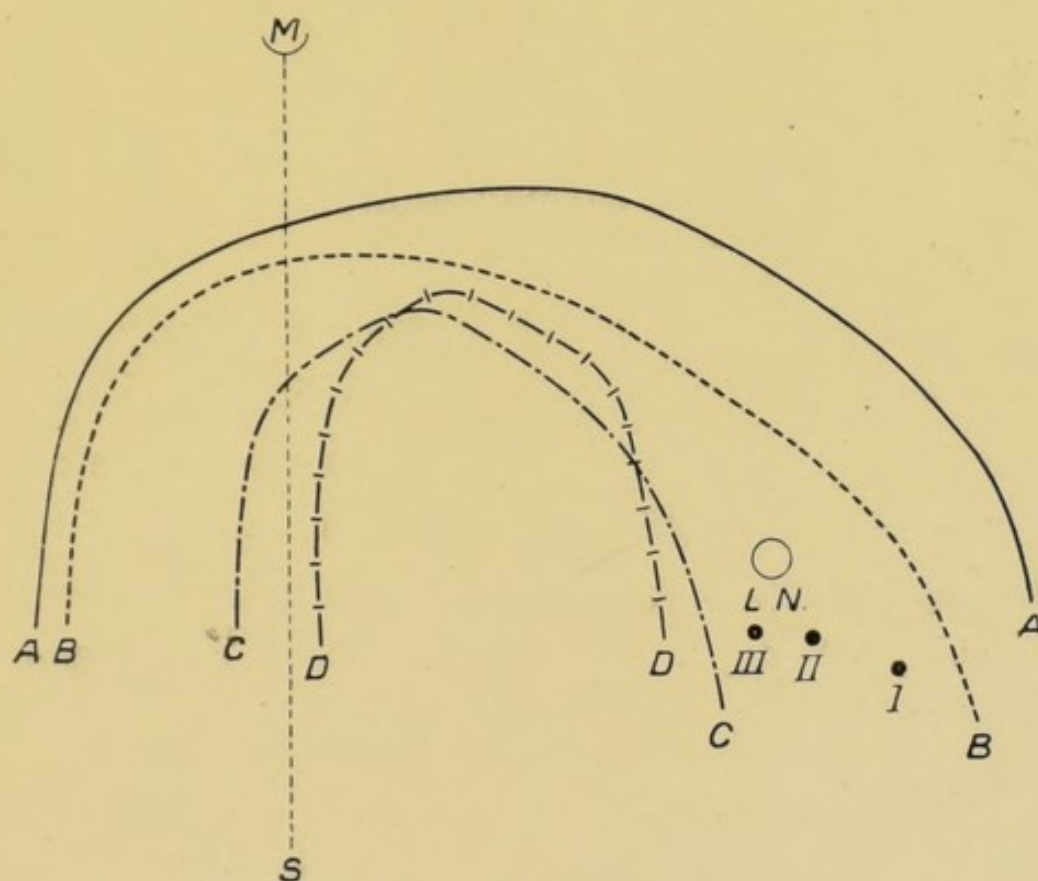


FIG. 46.

AA, cardiac dulness before treatment; *I*, apex beat; *BB*, cardiac dulness after six baths; *II*, apex beat; *CC*, cardiac dulness after course; *III*, apex beat; *DD*, cardiac dulness ten months after treatment.

was much smaller (Fig. 46, *CC*), the systole of the heart much stronger, the œdema, albuminuria, and dyspnœa had quite disappeared, and he was able to take walking exercise comfortably, and had lost one stone in weight. Dr. Rushworth kindly

assisted me in taking the tracing of cardiac dulness.

I saw this patient again in September, 1912. He told me that he felt well, slept and ate well, and could walk a good distance. His weight was 12 stone 2 pounds, his pulse 88 per minute, quite regular and strong, his blood-pressure was 140-210 milligrammes Hg., and his cardiac dulness was practically normal (Fig. 46, *DD*).

This patient has been able to attend regularly to his business in the City ever since the beginning of 1912. A marked feature in his case is the loss of 3 stone 11 pounds in weight following on the improved condition of his heart and circulation, his condition of obesity having arisen from a dilated, fat-clogged heart, leading to bad nutrition and an unhealthy formation of fat all over the body.

CASE VI.—The patient, a woman, aged sixty-three years, first experienced pain over the region of the heart and shortness of breath whilst walking up-hill at Mentone in 1902. As these symptoms continued, she consulted me in 1903. I found her to be suffering from chronic nephritis and a hypertrophied and somewhat dilated heart, and advised her to go to Nauheim for a course of baths; but as two other medical men she consulted deprecated this course, she did not follow my advice. In 1904 she had an acute attack of nephritis, and in 1905, whilst staying

at Territet, a severe attack of influenza and bronchitis. From 1906 onward she always experienced pain over the region of the heart and shortness of breath when walking or exerting herself in any way. In 1907, 1908, and 1909 she had bad attacks of bronchitis and acute nephritis. The attack in 1909 was so serious that at one time she was given oxygen and was thought to be dying; the urine contained blood, casts, and much albumin, and she was informed that her heart was greatly dilated. After her illness early in 1909 the anginal attacks increased in frequency and severity; she had constant bronchial catarrh, had to be propped up at night on account of dyspnœa, never had a good night's rest, and was unable to walk more than a few yards without pain. Early in 1910 she again consulted me. She was markedly cyanosed, and was suffering from dyspnœa and bronchitis. Her heart was greatly dilated (Fig. 47, *AA*); the sounds were clear, with the exception of a slight roughening of the first sound over the aortic area. The vessels were thickened and somewhat tortuous, the pulse was markedly intermittent, and irregular both in volume and time (80 per minute), and the blood-pressure was 200 milligrammes Hg. Moist râles were heard over the bases of both lungs, there was slight œdema of the legs, and the urine contained a heavy cloud of albumin

and some granular casts, its specific gravity being 1008.

I started a course of baths with this case on

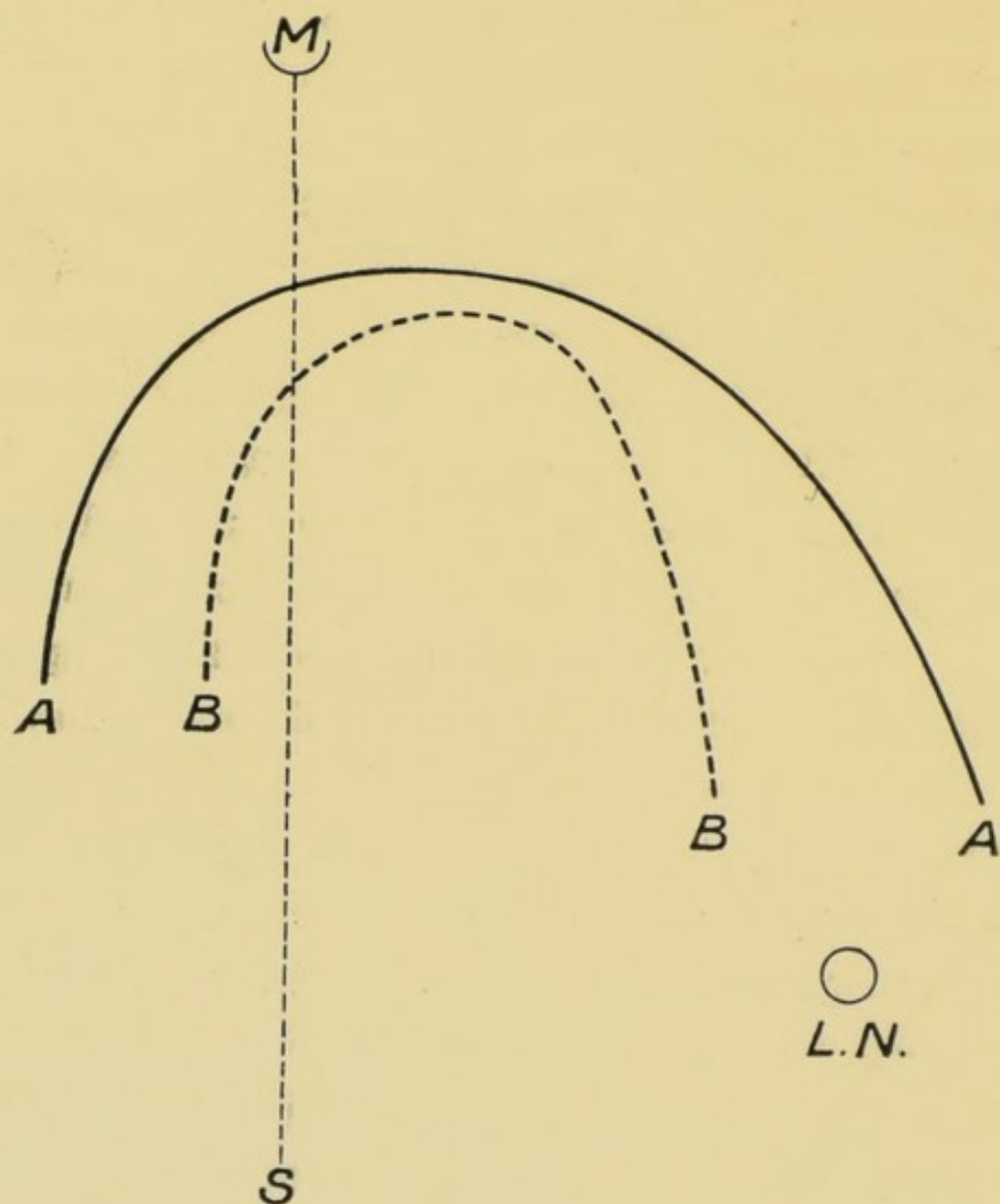


FIG. 47.

AA, area of cardiac dulness before treatment; *BB*, area of cardiac dulness after treatment.

March 9. These continued till April 15, and on April 21 my patient went to Folkestone for a change. After the first bath she slept better than she had done

for many months, and within a fortnight she had quite got rid of her cough and the cardiac pain, and could sleep comfortably in the recumbent position. Before the end of the treatment, which consisted of fifteen baths, she could take walks of half a mile with ease, and there was only a trace of albumin in the urine. The blood-pressure had fallen to 180 milligrammes Hg., and kept fairly constantly at that level, the pulse was quite regular both in time and volume, and the cardiac dulness was greatly reduced (Fig. 47, *BB*). The patient wrote to me from Folkestone to say she felt perfectly well, could take long walks, and had lost several pounds in weight. In September, 1910, she was still in good health, and on one occasion spent a whole day at the 'White City' without unduly tiring herself. In the spring of 1911 she had an attack of influenza, but rapidly recovered from it, and is still enjoying good health. Her blood-pressure rose again to 200 milligrammes Hg. soon after the end of the course of baths, but there has been no return of the distressing dyspnœa and anginal attacks.

In March, 1912, on account of a slight return of the symptoms, I gave the patient a short course of fifteen baths, after which she was able to take long walks and thoroughly enjoy her life in every way.

In October, 1912, she had an attack of influenza, followed by pneumonia, and although it was of a

severe character and there were signs of heart failure at the time, she recovered ; but as there was some cardiac dilatation, the result of her illness, in which she had many sleepless nights and constant violent paroxysms of coughing, I gave her a course of ten baths, which quite cured this condition. A polygraphic tracing taken after this short course of baths (Fig. 48) shows a regular pulse of good volume, the rate being 75 per minute. Considering that the patient is now seventy-four years of age, and has

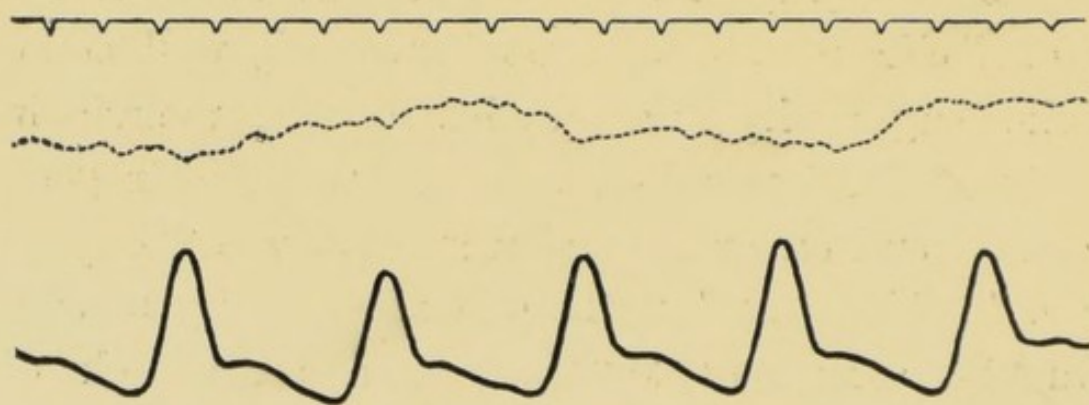


FIG. 48.—PULSE TRACING AFTER LAST COURSE OF BATHS.

had chronic nephritis with a very high blood-pressure for many years, I regard it as highly satisfactory that her heart was able to withstand the severe attack of pneumonia, and I am certain it would not have been able to do so unless she had had the short course of baths in 1912.

CASE VII.—A little girl, aged eight years, whom I saw with Dr. Nicholson of Blisworth, was quite well and healthy till early in August, 1911, when

she got wet through and contracted rheumatic fever and acute myo- and endo-carditis. For some weeks her life was in danger, and she developed a dilated, irritable heart and severe mitral regurgitation. A physician who was called in to see her at that time said that he did not think she would ever be able to walk again, as the slightest exertion, such as sitting up in bed, caused faintness and tachycardia. I saw the patient at the end of September, 1911. She was greatly emaciated, suffered from severe headaches, attacks of sickness, gastric pain, constipation, and insomnia, and, although she was kept lying on her back, her pulse was 120 per minute; her heart was markedly dilated, and a loud systolic murmur was heard at the apex and all over the cardiac area.

She was not fit for any active treatment at that time, so we decided to continue the treatment she was having—*i.e.*, rest, and small doses of digitalis when she could bear them, and a somewhat modified diet—till I saw her again.

I went down to see her again on November 19, 1911. I found that the heart was now somewhat hypertrophied as well as being dilated, her condition was slightly improved, and she could sit up in a chair for a short time daily. We decided that directly she was able to bear the journey she should come up to London and have a course of 'Nauheim'

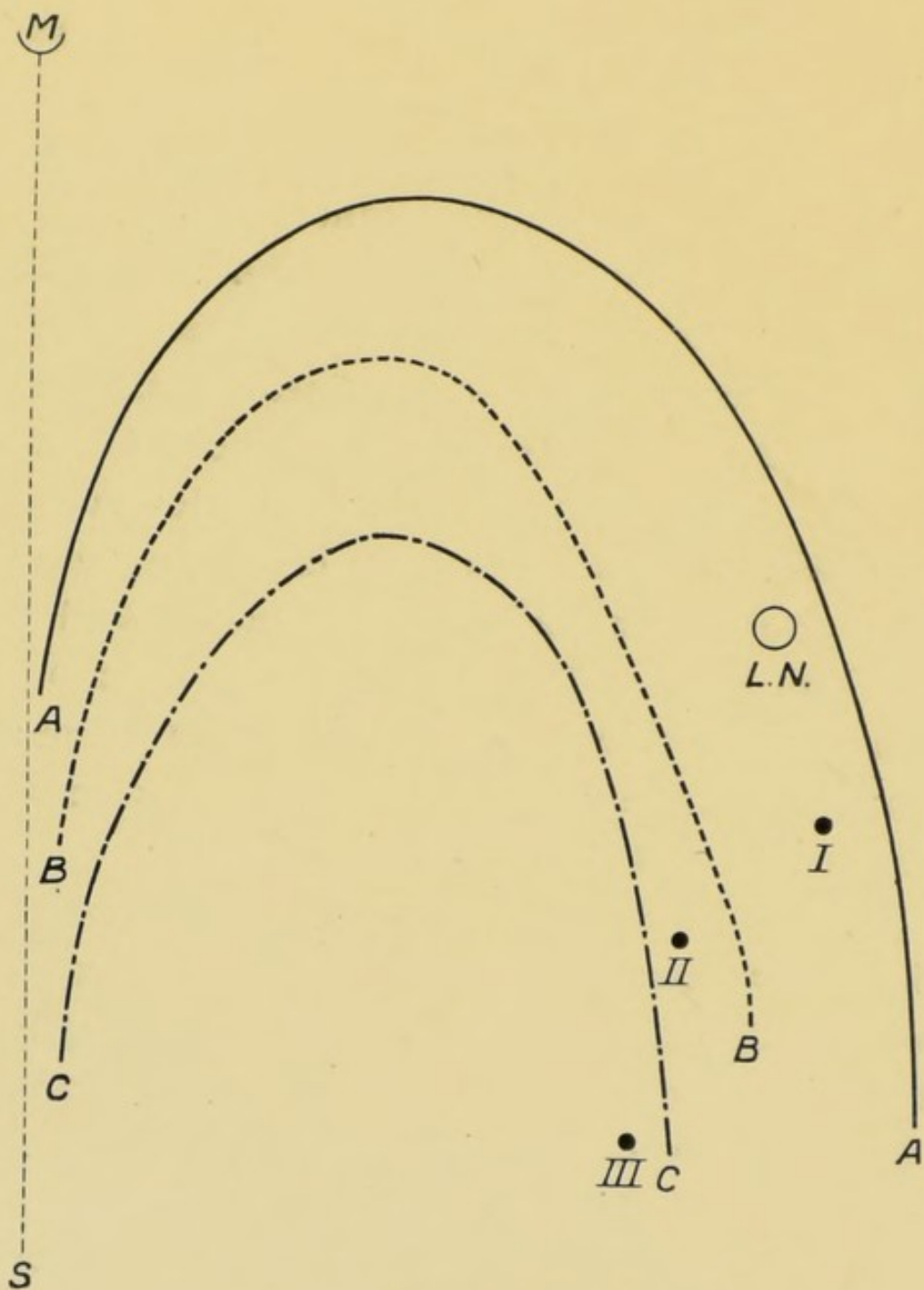


FIG. 49.

AA, cardiac dulness before treatment; I, apex beat;
 BB, cardiac dulness after treatment; II, apex beat;
 CC, cardiac dulness four months after treatment;
 III, apex beat; MS, mid-sternum; LN, left nipple.

baths. She was moved up to town on January 2, 1912, and started the baths on January 3. At this time her pulse was 100 per minute when she was lying down, her heart was dilated (Fig. 49, *AA*), and the systolic murmur was heard as before. After about a week's treatment she began to lose the headaches, her appetite improved, and by January 12 her pulse-rate had fallen to 88 per minute. She continued the treatment till January 27, by which time she was able to walk about her room, slept and ate well, and enjoyed some drives; her cardiac dulness was almost normal (Fig. 49, *BB*), and the systolic murmur was softer and localized to the region of the apex.

In May, 1912, I went down to see this patient again. She looked well, had put on several pounds in weight, her pulse-rate was 84 per minute, she had no headaches, constipation, or indigestion, and her parents had great difficulty in preventing her racing about the garden and climbing trees. Her cardiac dulness was normal (Fig. 49, *CC*), and the murmur could only just be distinguished.

January, 1913.—I hear now that she is in perfect health, and able to lead a normal child's life. This case is illustrative of the benefit that can be derived from the 'Nauheim' baths by children convalescent from acute rheumatic fever, who are suffering from valvular disease and a weakened myocardium, and

it also demonstrates the fact that, given the improved circulation and strengthened heart, the patient will continue to improve in health for a long period after treatment.

CASE VIII.—The patient, an Australian aged fifty-four years, had been in good health till January, 1911, when he began to lose weight and to suffer from indigestion, palpitation, dizziness, and insomnia. These symptoms became so troublesome that he had to give up his work of educational administration, and, after trying various treatments without improvement, was advised by his medical attendant to take a voyage to England. He improved somewhat on the voyage, but when he reached London and attempted to go about he broke down again, and he then consulted me. When I saw him on May 4, 1911, he looked harassed, was very thin, and complained that he had lost a stone in weight in three months ; he was a tall man, but only weighed 9 stone 10 pounds. His pulse was rather rapid (96 per minute), regular in time and volume, but very feeble, his blood-pressure was 80-140 milligrammes Hg., the right side of his heart was slightly dilated (Fig. 50, *AA*), the impulse could not be felt, and the sounds were very feeble.

I ordered him a carefully regulated diet, rest, and digestives, but as there was no very definite improvement in his condition by the end of May, he

began a course of baths, which lasted from May 30 till June 23. At the end of the course he had lost

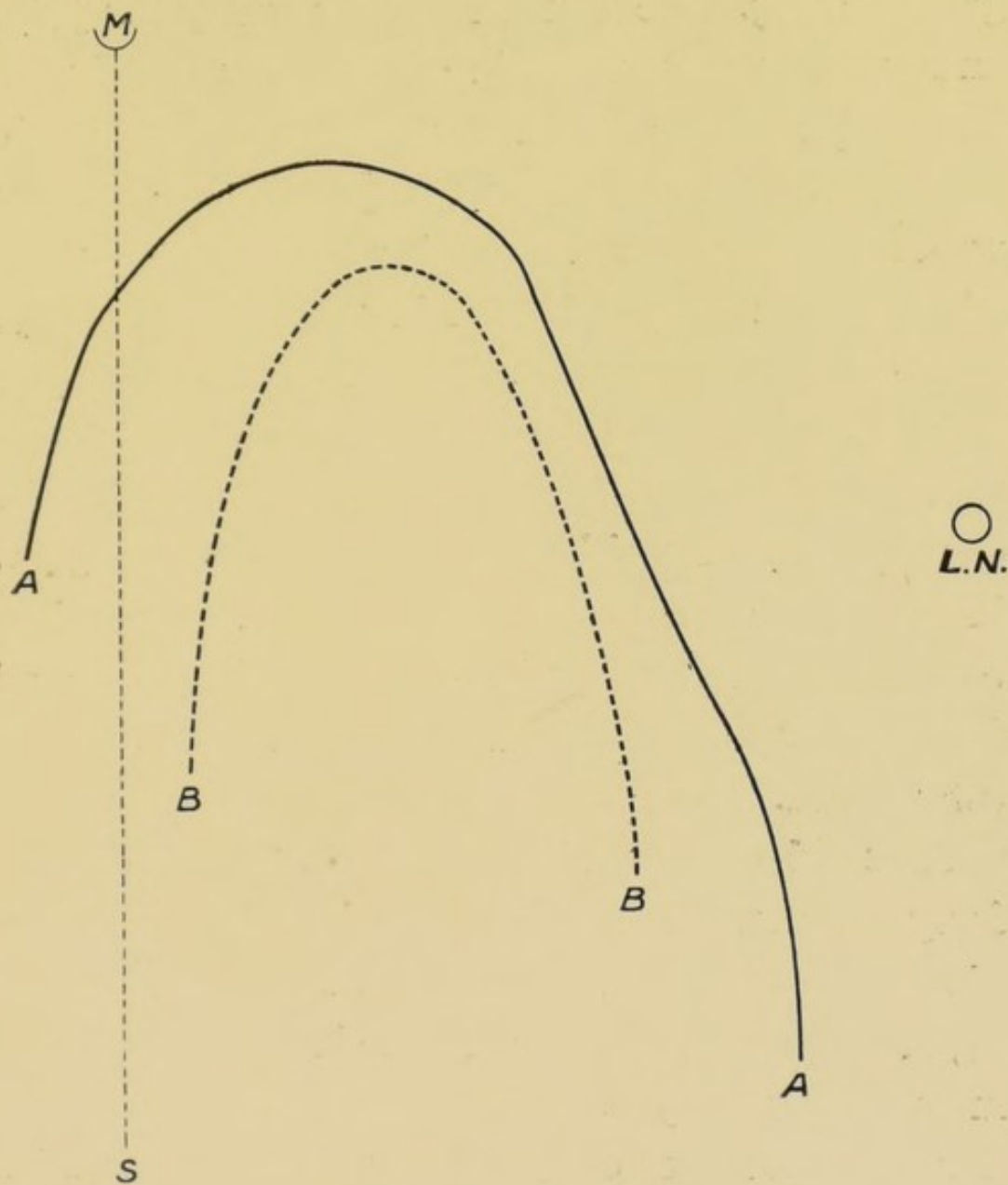


FIG. 50.

AA, area of cardiac dulness before treatment ; *BB*, area of cardiac dulness after treatment ; *MS*, mid-sternum ; *LN*, left nipple.

the palpitation and dizziness, gained 8 pounds in weight, and could sleep well. His cardiac dulness

was normal (Fig. 50, *BB*), the sounds were much stronger, and his blood-pressure was 85-125 milligrammes Hg. He went into the country for July, and when he saw me again on August 4 he told me he felt quite fit to return to Australia and his work.

I heard from this patient in January, 1913. He wrote that he had kept quite well, except for a slight attack of palpitation in the preceding July, which only lasted for a short time.

This case is illustrative of the fact that a comparatively small defect in the circulation and the consequent ill-nourishment of the various organs, in combination with hard mental work, is sufficient to bring about a general ill-health which resists all forms of treatment till an improved circulation is established.

CASE IX.—The patient, a married woman, aged forty-seven, was sent to me by Major Fuhr, R.A.M.C. He informed me that she had had a clot in her left leg in August, 1902, a second one in 1905, and again in February, 1911, after running upstairs, she developed another clot in the left leg, followed by one in the right leg, and a third in the right arm. From this time forward she was a chronic invalid, suffering from œdema of the legs, dizziness, dyspnœa, and extreme weakness, which prevented her from going anywhere or doing anything. Major Fuhr informed me that he had had the blood and urine

thoroughly examined, and also the pelvic organs, but that no pathological condition was found to account for her state of health, but that she was fat and flabby, and her heart was dilated, and at times a mitral bruit had been heard.

When I saw the patient in November, 1911, she was cyanosed, over fat, and suffered from dyspnœa ; her legs were markedly œdematous ; her pulse was 80 per minute, regular in time and volume ; her blood-pressure was 90-145 milligrammes Hg. ; and her heart was markedly dilated, especially on the right side (Fig. 51, *AA*). I started this patient on a course of ' Nauheim ' baths on December 2, 1911. She improved rapidly, losing the œdema, dizziness, and dyspnœa in about three weeks' time. By January 16, 1912, when she finished her course of baths, she declared herself to be quite well and strong. She had lost a good deal of weight and could walk any reasonable distance ; her cardiac dulness was practically normal (Fig. 51, *BB*), and her blood-pressure was 80-130 milligrammes Hg.

I heard from this patient in November, 1912, when she informed me that she was quite well, and could not realize that she had ever had a lengthy period of ill-health.

CASE X.—The patient, a man, aged forty-two years, had had rheumatic fever in 1901, and again in 1906. Since the latter attack he had been subject

to attacks of collapse, palpitation, vertigo, and headache. He had a very severe attack of this kind in 1908, and since that time had been unable

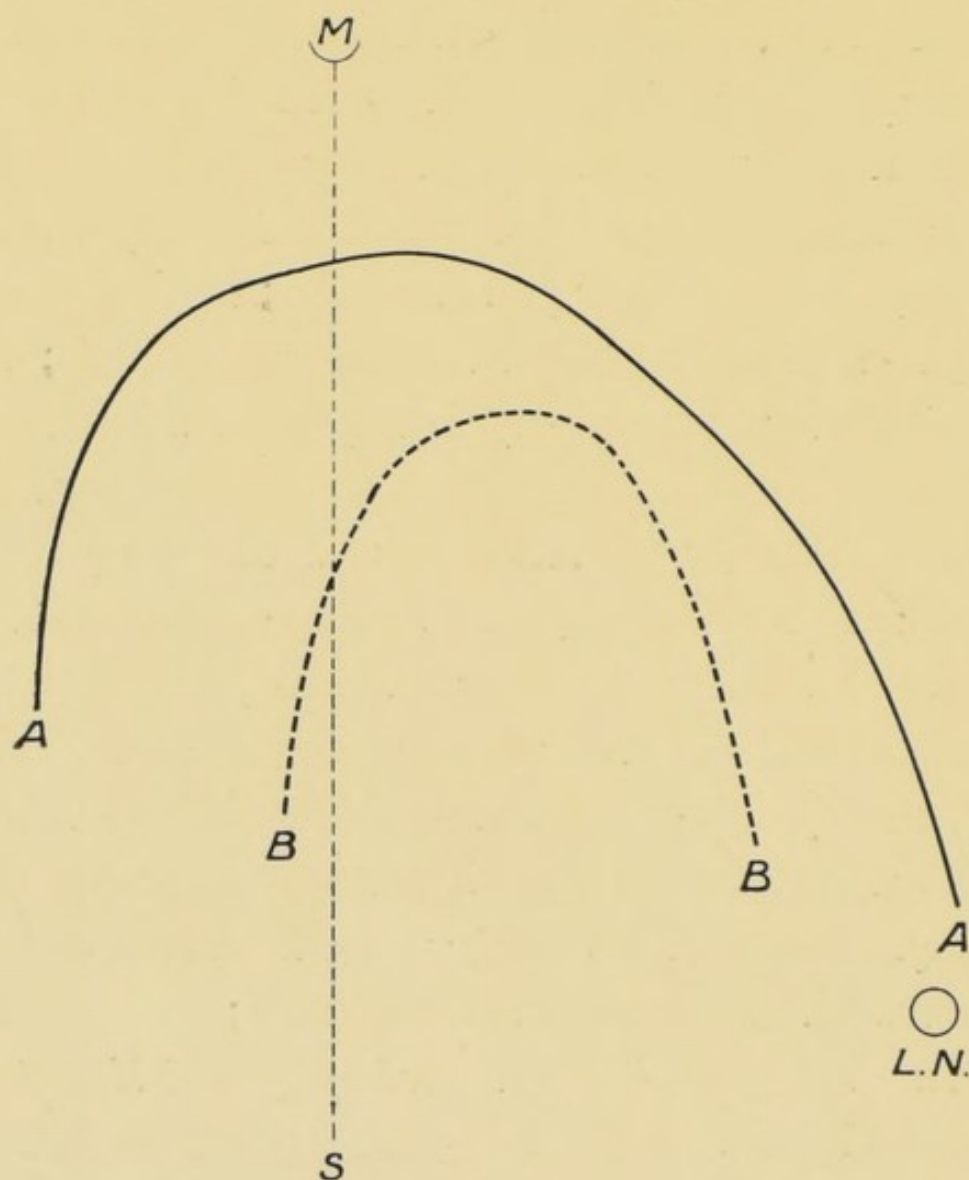


FIG. 51.

AA, area of cardiac dulness before treatment ; *BB*, area of cardiac dulness after treatment ; *MS*, mid-sternum ; *LN*, left nipple.

to do any work, and had had several similar attacks. When I first saw him, in September, 1912, he had marked dyspnœa, was very thin, and looked ill

and anxious ; he suffered from palpitation, and slept very badly. His pulse was about 80 to the minute, very intermittent and irregular in volume. A polygraphic tracing (Fig. 53) showed an example of ventricular extra systole, and a lengthening of the *A—C* interval, indicating partial heart-block. The impulse of the heart was seen all over the area of cardiac dulness, which was markedly increased, especially towards the left side (Fig. 52, *AA*). The apex-beat was about two inches to the left of the left nipple line, and the cardiac impulse was felt forcibly all over the front of the left side of the chest ; the vessels were seen strongly pulsating in the neck ; his blood-pressure was 50-160 milligrammes Hg. A loud diastolic murmur was heard all over the upper part of the cardiac area ; it was conveyed into the neck and down the sternum, and loud systolic and late diastolic murmurs could be heard at the apex, the systolic murmur being conveyed into the axilla ; the arteries were somewhat tortuous and thickened. There was evidently advanced disease of the aortic and mitral valves, aortic regurgitation, and double mitral disease. This patient started a course of baths on September 26, 1912, and began to improve in health almost at once, sleeping better, feeling stronger, losing the palpitation, and experiencing a marked reduction in the frequency of the extra systoles.

On October 7 the patient experienced sickness, vertigo, and partial deafness, probably an attack of

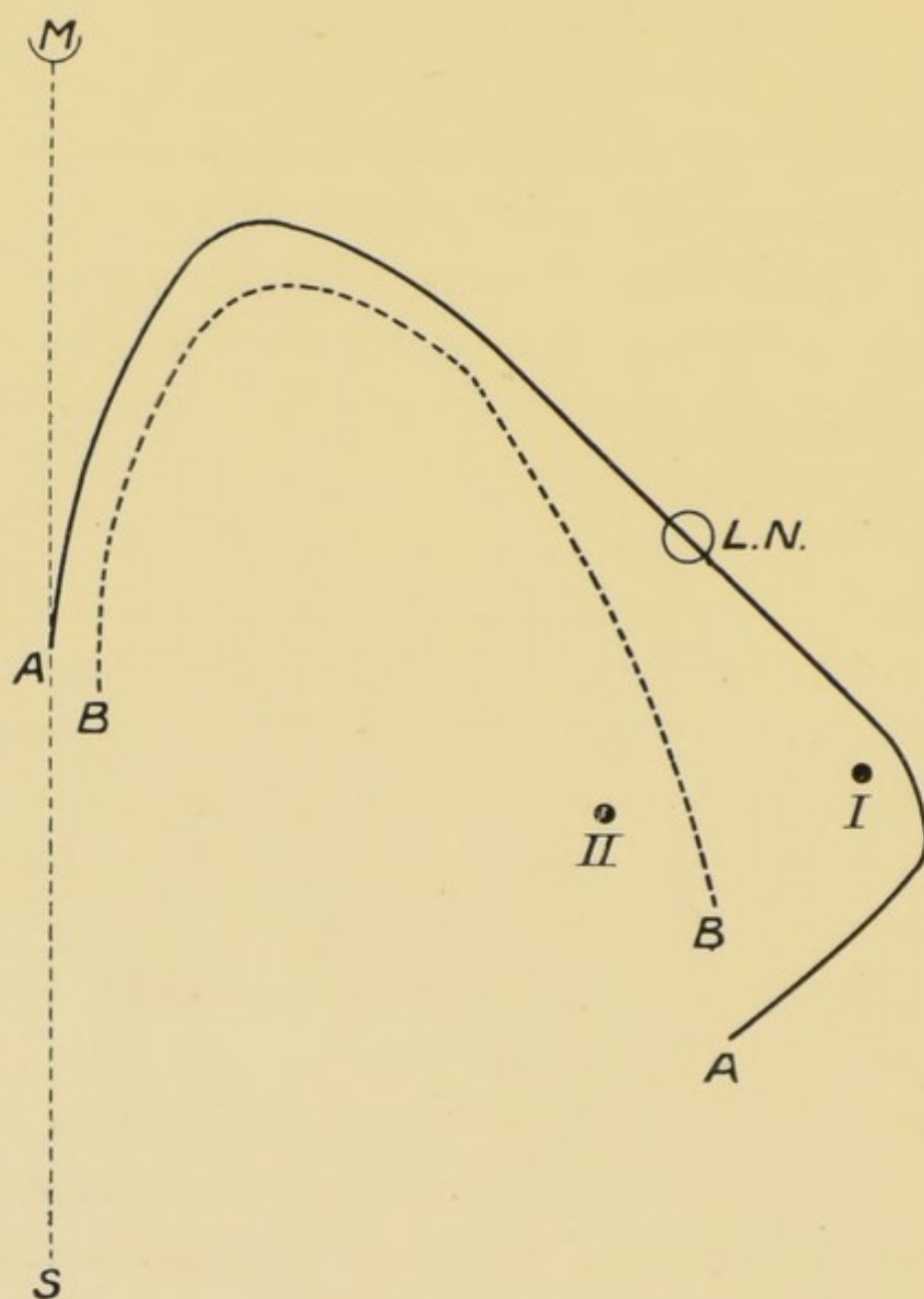


FIG. 52.

AA, area of cardiac dulness before treatment; *I*, apex beat; *BB*, area of cardiac dulness after treatment; *II*, apex beat; *MS*, mid-sternal line; *LN*, left nipple.

Ménière's disease, and had to stop the baths for a time. He started them again on November 11, and

finished the course on December 11, by which time he was in better health than he had been for years. The heart was practically always regular, extra systoles being of very rare occurrence (perhaps once a day); the blood-pressure had fallen to 50-128 milligrammes Hg.; the cardiac dulness was greatly reduced; and the cardiac impulse was markedly less violent, he himself stating that he had ceased to feel it. The apex-beat was almost $1\frac{1}{2}$ inches inside the left nipple line (Fig. 52, *II*, *BB*), the murmur over the aortic area was much softer and more limited in area, and only a very faint systolic murmur could be heard at the apex. His weight had increased $5\frac{1}{2}$ pounds, and he slept much better. A polygraphic tracing (Fig. 54) shows a normal action of the auricles and ventricles, a normal *A—C* interval, and a much stronger brachial pulse. I saw this patient in January, 1913, and he was in good health and fit to resume work.

CASE XI.—The patient, a woman, aged fifty-five years, consulted me in July, 1910, for shortness of breath, bronchial catarrh, and rapidly increasing stoutness. She had had a cough, which never entirely left her, for three years, and for over a year she had noticed that her legs became swollen during the day. She was so stout, weighing 18 stone, and so short of breath, that she had to drive everywhere, and could take no exercise. Her height was



FIG. 53.—POLYGRAPHIC TRACING SHOWING EXTRA SYSTOLE OF VENTRICULAR ORIGIN AND LENGTHENING OF A—C INTERVAL.

j, Venous pulse ; *b*, brachial pulse.

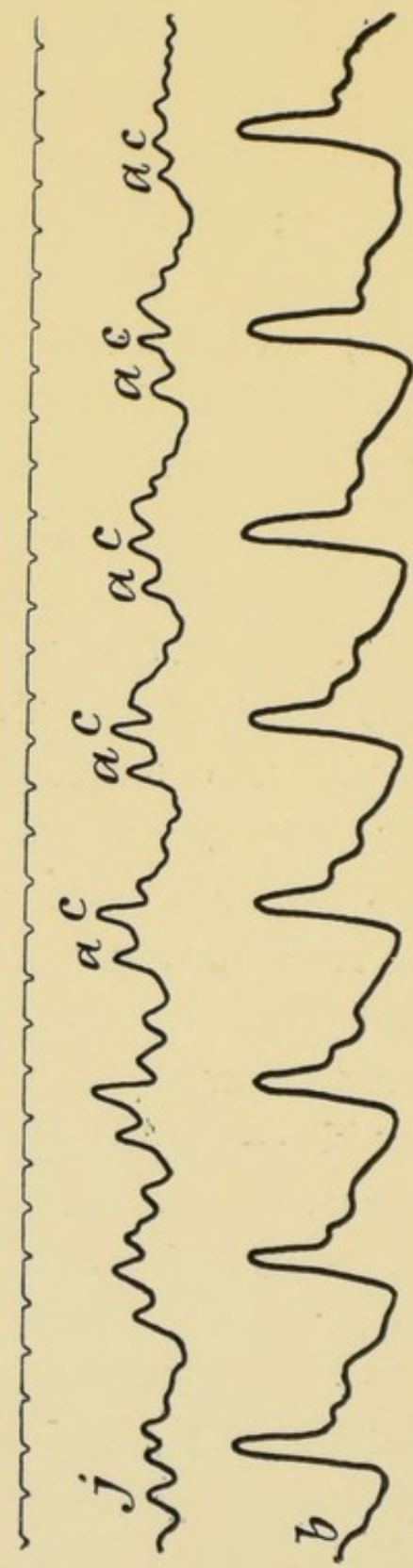


FIG. 54.—POLYGRAPHIC TRACING AFTER TREATMENT, SHOWING NORMAL ACTION OF AURICLES AND VENTRICLES, IMPROVEMENT OF RADIAL PULSE, AND NORMAL A—C INTERVAL.

j, Venous pulse ; *b*, brachial pulse.

5 feet 10 inches. When I first saw her she was cyanosed, suffered a great deal from dyspnœa, moist râles could be heard all over her back, she had marked œdema of the legs, her pulse was

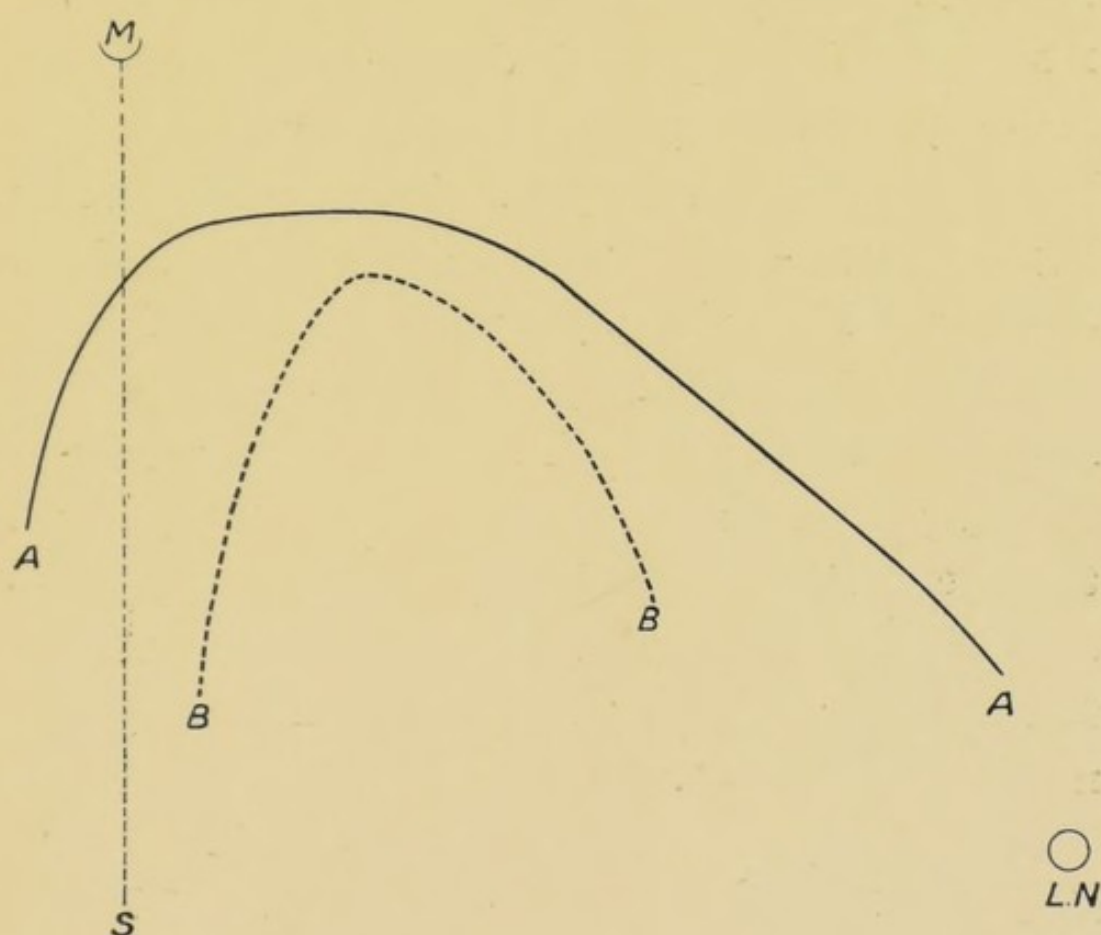


FIG. 55.

AA, cardiac dulness before treatment ; *BB*, cardiac dulness after treatment ; *MS*, mid-sternal line ; *LN*, left nipple.

small and rapid (100 per minute), her heart was markedly dilated (Fig. 55, *AA*), the heart-sounds were only just audible at the apex, and were not heard over the base of the heart. She had had no illness of any importance. Her blood-pressure

was 95-180 milligrammes Hg., and her urine was normal.

I gave her a course of 'Nauheim' baths, which lasted over a period of five weeks. At the end of the course she was 17 stone in weight, having lost 1 stone, could walk a fair distance, had quite lost the œdema of the legs, and had a good colour. Her blood-pressure had dropped to 145 milligrammes Hg., her heart-sounds were quite strong and clear, and her cardiac dulness was normal (Fig. 55, *BB*).

I saw this patient again in April, 1911, eight months after the treatment. She told me she could walk a good distance, had quite lost her cough, and that her weight had fallen to 15 stone 7 pounds. She continued in good health, and her weight further dropped to 15 stone 2 pounds, a loss of nearly 3 stone in all.

In May, 1912, as the heart was again showing signs of dilating, I gave a short course of baths, extending over three weeks, as a precautionary measure.

In November, 1912, the patient was in good health, her weight was keeping down (15 stone 3 pounds), her pulse was 74 per minute, her cardiac dulness normal, and her blood-pressure 145 milligrammes Hg.

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