

**A MANUAL ON THE  
TREATMENT OF DISEASES BY  
ELECTRICITY EMPLOYING  
THE FARADIC CURRENT**

Published @ 2017 Trieste Publishing Pty Ltd

ISBN 9780649303243

A Manual on the treatment of diseases by electricity employing the Faradic current by Josef Zervas

Except for use in any review, the reproduction or utilisation of this work in whole or in part in any form by any electronic, mechanical or other means, now known or hereafter invented, including xerography, photocopying and recording, or in any information storage or retrieval system, is forbidden without the permission of the publisher, Trieste Publishing Pty Ltd, PO Box 1576 Collingwood, Victoria 3066 Australia.

All rights reserved.

Edited by Trieste Publishing Pty Ltd.  
Cover @ 2017

This book is sold subject to the condition that it shall not, by way of trade or otherwise, be lent, re-sold, hired out, or otherwise circulated without the publisher's prior consent in any form or binding or cover other than that in which it is published and without a similar condition including this condition being imposed on the subsequent purchaser.

[www.triestepublishing.com](http://www.triestepublishing.com)

**JOSEF ZERVAS**

**A MANUAL ON THE  
TREATMENT OF DISEASES BY  
ELECTRICITY EMPLOYING  
THE FARADIC CURRENT**



41871  
258  
1888

*J. Underwood Hall, M.D.*

*Compa*

*F. E. Spencer*

## HISTORICAL.

The use of electricity as a therapeutic agent has been known but a comparatively short time, dating back only one generation. Although since the invention of the electric apparatus, experiments were made to employ the newly discovered force as a therapeutical agent in the treatment of diseases, it was impossible to design and construct an apparatus, fit for medical purposes, until after Faraday's discovery of the electric irritation through the action of magnetic power (1831). The time, when electricity was employed in a scientific manner in the treatment of diseases does not begin until the year 1855, when the work "L'electrisation localisée" was published by the French physician Duchenne. He proved that it was possible to locate the electric current upon certain points beneath the skin, so that every muscle and nerve could be acted upon on any desirable spot.

Since that period, in conjunction with an improved apparatus, a great advance has been made in the use of electricity. Although even at the present time no absolutely clear physical idea exists, what kind of change takes place in the human body, if an organ is affected by the electric current in one way or another, still its actions have been recognized, and it is now well understood, how electricity is to be applied in order to obtain a certain effect.

While at first electric treatment was employed only in affections of the nerves and muscles, paralysis, convulsions, neuralgia, etc., there is, at the present time, hardly any affection, which has not been successfully treated with the electric current. This treatment is denominated: Electro-therapeutic.

The employment of the electric current, as a therapeutical agent, is at the present time confined almost exclusively to physicians and specialists. And it must be admitted, that certain forms of disease on account of the importance of the

organs involved, should be treated exclusively by capable specialists, who not only know the importance of the organs affected for the maintenance of life, but are also well versed in the anatomical and pathological branches of the medical science.

In some cases complicated instruments requiring special experience in their application and involving great expense are required, which cannot be successfully employed unless a practical knowledge in handling them has also been gained. However a large number of diseases and especially those occurring most frequently, in the treatment of which electricity is applied, can be successfully treated by any body, who has received proper instruction in the application of the electric current.

Principally three different kinds of electric applications are employed in electro-therapeutics at the present time.

1. The static kind, also called friction electricity or "Franklinism," is generated in the well known manner by means of rotating glass disks and cushions which thus produce the momentary or spark current. This method, however, has been almost entirely abandoned for some time.

2. The "contact electricity" or "Galvanism" is employed in the shape of the constant current. It is generated by certain heterogeneous materials, principally metals, coming in contact with each other, especially if the chemical action of a suitable liquid is brought to bear upon these metals. This apparatus, by means of which this electric current is generated, is generally known under the name of "galvanic battery."

3. Electricity by induction, or Faradism, also known as "Electro-magnétism," has a current, interrupted periodically and at short intervals. It is generated by means of a Rotation apparatus, or, in the same manner of a galvanic current, which latter, however, is systematically divided in single shocks, following each other rapidly. The average price of the cheapest "Rotation apparatus" being as much as the best "Volta Induction Apparatus," because the latter acts automatically, while both the variation of the interrupted current and the regulation of the strength of the current may be extended to

the utmost limits, the latter is without doubt preferable to the "Rotation apparatus," especially as it can be constructed, suitable for transportation in every shape and manner.

Electricity is still employed as a therapeutical agent under different names and in different combinations, yet they must always be reduced to the above mentioned forms, and need, therefore no special mention in this brief essay.

This essay is especially written for the purpose of instructing those who, for some reason or other, are unable or unwilling to avail themselves of the advice of an expert, but are able to keep an electric apparatus of their own. We also believe that even physicians will find some valuable hints in this brief essay, which may induce them to employ electricity more frequently in their private practice. In consequence of this tendency prevailing at the present time, the induction apparatuses are now manufactured more extensively, and comparatively better. They are also cheaper and more practical, than the galvanic batteries with their indispensable additional contrivances. For these reasons it is perfectly proper to treat, with the Faradic current in this essay only.

---

## GENERAL REMARKS.

Of all irritations capable of affecting a nerve, the exciting action of the electric current may be graded with the utmost precision, so that certain well defined symptoms of irritation occur always under similar circumstances and with the utmost regularity. Du Bois Raymond says: the electrical irritation acts on a nerve chiefly at the moment of its beginning and disappearance, also at the moment of its force being suddenly increased or decreased, and, in consequence thereof, principally through the fluctuation of the current, and not through the absolute value of the intensity of the current used at that time, because, the more intensely the nerve is excited, the more suddenly the density of the current increases or decreases on its passing through the nerve. Von

Betzold, Benedict and Wundt add, as a supplement: not only the closing and opening of the current acts in an exciting manner on nerves of motion and sensation, but partially, the constantly acting current too.

Currents of too great strength hinder the conducting capacity through a reduction of the excitability. The electrical stimulation is most effective in longitudinal currents, it becomes ineffective if applied vertically to the nerve axis. The muscle twitches soonest, if the current passes in a transverse direction. (Sacha.) If the current is passed in a longitudinal direction, the exciting action increases, if the current remains the same in strength, in proportion to the length of the tract through which the current passes, and, the farther remote from the muscle the positive pole and, the nearer to it, the negative pole is applied, the stronger is the effect obtained with the same strength of the currents. (Hermann, Willy.) The excitability of the nerves of motion is greater than that of the muscular tissue if deprived of their nerves of sensation. The nerves of the flexor muscles are easier excited than those of the extensor muscles. The same rule applies to the flexor and extensor muscles.

The normal excitability of the nerves is proportionate to their normal nutrition. If the latter is wanting, a higher excitability of the nerves is first observed, but after the nerve is materially injured, diminution occurs. Hence the increase of excitability means a reduction of nerve power (give energy). Continued excitement of the nerves and also exertion of the muscles, without any intermediate rest, cause at first fatigue and exhaustion, and finally excitability decreases sufficiently, until lost completely. A continued inaction is also followed by the same results as overexertion. (Dr. R. Lewandowski.) Recovery takes place sooner in the nerves, than in the muscles.

---

### SPECIAL.

The sanative actions of inducted currents are, like in galvanism, of an (a) exciting, (b) modifying and (c) catalytic nature.



Dry metallic electrodes are used for the purpose of acting upon the skin, while electrodes, having a wet sponge or cover attached, are used for influencing the subcutaneous tissues.

*a.* In order to obtain an exciting effect upon the surface of the body, the brush electrode is employed, (the other electrode may be of any available kind, provided the electrode has a wet sponge or cover attached to it, when held steadily). The brush is then either moved over the skin, or it is applied to it and then taken off, or, it is kept closely to the skin without touching it, when sparks are seen to leap over to the skin.

The nerves may be best excited, if isolated, by an application to their motor points. The muscles may be excited either directly, or indirectly, by exciting the motor nerve, whereby clonic as well as tetanic contractions are obtained. It is possible to affect through reflex action, even more deeply situated tissues, by applying the brush to the skin.

If it is intended to directly affect the natural cavities of the body (pharynx, stomach, intestines, urethra, bladder, uterus), lined by mucous membranes and easy of access, the Faradic will be found more appropriate than the galvanic current, because the latter may, through electrolysis (chemical decomposition) cauterize the mucous membrane wherever it is applied.

The production of clonic muscular contractions improves nutrition by stimulating the flow of the secretions, it also induces, as it were, a sort of gymnastic exercise, whereby the inactive muscles may be preserved against secondary degeneration. Debilitated, antagonizing muscles are also strengthened wherever there is an affection of the muscles, sinews and joints, for instance in stiffness from inactivity and paralysis (paresis) following fractures, dislocations, resections, ligatures applied for a long period, also in inflammation of the sheaths of tendons and pseudarthrosis (false joints). Organs in which the smooth muscular fibre prevails, are also stimulated to normal action (stomach, intestines, reduction of incarcerated hernia, bladder, uterus). Glandular organs are also made to contract and evacuate their contents, their volume is also diminished in a lasting manner, even if Faradisation has been suspended (as in paralysis of the bladder, enuresis—sive

incontinence of urine, nocturnal spermatorrhoe—sive flow of semen, increased labor pains, as a styptic, the removal of amenorrhoe and dysmenorrhoe, abnormal position of the uterus and contraction of the spleen).

Tonic muscular contractions of the diaphragm, through Faradic stimulation of the phrenic nerves are used for the induction of artificial respiration, in asphyxia, caused by the inhalation of carbonic acid, gas, etc., excessive use of opium or alcohol, diphtheria. The stimulation of the phrenic is caused by applying both poles, thoroughly wet, simultaneously to both phrenic nerves, or by placing one pole upon the phrenic nerve and the other on the pit of the stomach. The current is interrupted every two to three seconds, for an equal period, in order to excite rhythmic respiration. Singultus is treated in a similar way, yet without interruption of the current.

b. The modifying actions of the Faradic current do not depend upon the actions of the poles, as in the galvanic current, for they also are merely stimulating. They resemble, however, in their effect the modifying actions of the galvanic current. The application of the Faradic brush produces, both a continued increase of the sensitiveness of the skin, and also a reduction of the sense of pain in the skin. For this reason the application of the Faradic brush for removing anaesthesia (insensibility), as an actual stimulus to the skin, is better than any other remedy, while the application of the moistened electrode removes all pain. This kind of application has been successful in temporary relaxation of paralytic contraction and hemiplegia (one sided paralysis and curvature), while Duchenne attempted to stretch contracted muscles through Faradisation of the antagonizing (counter) muscle. Weak Faradic currents animate the excitability of the nerves, strong currents, however, reduce excitability. The application of the brush to the skin, chest, arms and back, with a current of medium strength of five to six minutes duration, produces a contraction of the cerebral vessels and also cerebral anaemia. A weak peripheral application hastens the circulation of the blood, together with an increased action of the heart and contracts the caliber of the blood vessels. Strong currents pro-

duce the opposite effect. An energetic Faradic brushing of the skin diminishes the flow of blood towards the deeply situated organs, by causing hyperaemia of the skin. It thus becomes, both a powerful derivative and revulsive means (derivation and distribution of the liquids contained in the human body). The treatment of tubercular as well as other chronic affections of the spinal marrow turns upon those facts.

c. The catalytic (dissolving) action of the Faradic current has been established through the numerous practical results obtained therefrom. They are produced both by the application of the brush as well as through the employment of moist electrodes. To this category belong, also, the resorbing actions of the Faradic current in lumbago, inflammatory rheumatism of the joints, dropsy, enlargement of the lymphatic glands, etc.

Before proceeding to consider the single pathological symptoms, we cannot but quote from the writing of Dr. Carl Neumann, the most important parts as given by him briefly and in a superior manner.

I. The irritation of a muscles, which is evidently necessary for curing paralytic conditions, may be accomplished *directly*, by placing the thoroughly moistened electrodes, close to each other upon the paralytic muscle.

II. The irritation of the muscle happens in an *indirect* manner, if the nerve, belonging to the muscle is irritated.

III. The irritation of the muscle may be divided by applying one electrode to the muscle, and the other to the nerve belonging to the muscle.

IV. The direct irritation of the muscle implies the use of a stronger current, than the indirect irritation.

V. The indirect irritation of a muscle is not possible to such an extent as, direct irritation, sometimes it is even inert, if the nerve belonging to the muscle enters the deep portion.

VI. Faradisation of a muscle stimulates this muscle in an artificial manner, into increased activity and, consequently promotes the circulation of the blood, and the excretion of effective matter, and regulates the condition of the temperature.

VII. A succession of feeble Faradisations, not strong enough to cause muscular twitchings, increases the irritability