Electro-physiology and electro-therapeutics : [prospectus] showing the best methods for the medical uses of electricity / by Alfred C. Garratt.

Garratt (A. C.)

ELECTRO-PHYSIOLOGY

AND

ELECTRO-THERAPEUTICS;

SHOWING THE

BEST METHODS

FOR THE

Medical Uses of Electricity.

BY

ALFRED C. GARRATT, M. D.,

FELLOW OF THE MASSACHUSETTS MEDICAL SOCIETY.

"STUDY, — AND SEARCH OUT THE SECRETS OF NATURE."

Harvey.

Second Edition, with Additions.

BOSTON:

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M DCCC LX.

ELECTROTYPED AT THE
BOSTON STEREOTYPE FOUNDRY.

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TO

JOHN HOMANS, M. D.,

PRESIDENT OF THE MASSACHUSETTS MEDICAL SOCIETY, MEMBER OF THE SOCIETY FOR MEDICAL IMPROVEMENT, &C.,

TO WHOM, DURING THESE YEARS OF MY PROFESSIONAL SPECIAL PRACTICE, IT HAS BEEN MY HAPPINESS TO LOOK AS A REVERED FELLOW OF OUR NOBLE ART,

MY COUNSELLOR AND FRIEND:

TO HIM, WITH FEELINGS OF ADMIRATION FOR HIS LIBERAL PRINCIPLES, PROFESSIONAL INTEGRITY AND FORECAST, AND WITH NO LESS GRATITUDE FOR HIS EXERTIONS IN THE GENERAL CAUSE OF

Medical Science,

THIS HUMBLE THOUGH ARDUOUS WORK

IS GRATEFULLY DEDICATED.

PREFACE.

MEDICAL STUDENTS: For you have I prepared this work on Electro-therapeutics, including Electro-physiology, Electro-pathology, and Electro-diagnosis. It is aimed to be a plain, practical, and systematic work. *Electricity* and *Vitality* are now known to be intimately related. It is an acknowledged fact, that medical men, at least, are not as familiar with the links of that relationship as they might be, and should be. Electricity, in its different forms and manifestations, is as absolutely and minutely concerned, according to their respective "laws of action," in every life, with health, growth, disease, and struggle for the recovery from disease, and in death, as in the grand chemistry of inanimate nature, or in the greater and mightier forces of gravitation and planetary revolution.

Vitality is more than Electricity. Life is electro-chemistry *vitalized*. This greatest force of nature, viz., Electricity, which also holds such varied and powerful influences over life, health, and disease, does assuredly command our more attentive study, in connection with other rational medicine.

The *progress* of medical science, during the past half century, has brought us into new and closer relations with almost all other departments of *physical science*; but with none, however, in so intimate and indissoluble a manner as with this of Electricity. Hence it has come to pass, says De la Rive, that the study of Electricity, as it relates particularly to medical knowledge, and *practice*, has become an absolutely indispensable study for every one who practises, teaches, or in any way cultivates science, and wishes to be *booked up* to the age and day. So also of the trades, arts, and sciences; — to the pharmaceutist and chemist, as well as the natural philosopher; to the dentist and physiologist, as well as to the geologist; as much to the engineer and artisan as to the physician; — all, all have electric forces and phenomena to deal with, and consequently each has need of becoming familiar with them; at least so far as they relate to the given trade or practice, he should be enabled to interpret them, to meet them, and to turn them to good account.

The subject matter of this work, therefore, embraces more aspects than one. It presents you not only with a reliable and potent class of remedies, (together with the best *methods* for using them,) and fairly opens a field of improved treatment for many nervous derangements and diseases, but it also affords an instructive *phase* of nature in growth, waste, and repair; in cause and cure, or disease and remedy, and of *nervous phenomena in particular*; thus throwing peculiar light on the whole range of the healing art. Indeed, it appears to me, that those who love, teach, or have to do with the natural sciences, or

who wish "to know themselves," or the philosophy of our being, particularly if medical men, — I say, no such person can possibly study this subject without the profoundest interest and substantial improvement. Physicians, of all men, should be frank towards each other. More than other men, we are dependent upon each other for facts, from which, when sufficiently numerous, we must reason up to generalization, and thus slowly discover and establish the laws of nature, as the rules of our ethics, to *comprehend* life, disease, and death. Isolated phenomena or experiments, nay, even a life-long experience in medicine, is worse than unavailing, so far as it affects knowledge and *improvement*, if it is pursued only by a dogmatic routine, or in support of a foregone conclusion. Only the one thing in that case is clearly seen; and that is, just what had always been expected, "*according to the creed.*" The reasonable means, or the successive steps to the end obtained, are entirely overlooked. Let this, therefore, be our caution. We must hold, that the uncompromising lessons of careful and practical induction should attend our every step, as *special students* in this interesting but *intricate* department of science and medicine; for no conclusion has ever stood the test of time, and gained general consent with the intelligent, that is not strictly in harmony with the laws of nature, and with the moral laws of God.

The author, being profoundly convinced of the efficacy of electric currents *as a remedy*, capable of producing, often, a *radical cure*, especially in nervous affections, bespeaks a generous and impartial reception by our American medical world, of what is already achieved for and in electro-physiology and electro-therapeutics; i. e., as to what relates, in a scientific sense, to the *medical uses* of Electricity.

When Physiology is usually treated of as a science, and presented as a part of the foundation of a thorough medical education, then, of course, it embraces the whole organic nature. All classes of organized beings and organisms have there an appropriate chapter, according to the mode of development, &c. But here we give place to one grand *phase* of physiology and pathology, as a somewhat new, but soon to be realized, *indispensable help-science* to the healing art. All medical practitioners may not wish to give their time and attention, personally, to the employment of any electric apparatus; and but few may wish to make those diseases called "*Neuralgies*" and "*Palsies*" their exclusive practice; but still, no one member of an educated medical profession can nowadays be uninformed in normal and abnormal nervo-electric phenomena (that is, in electro-physiology and electro-pathology) without discredit to himself and injustice to his patient.

Pathology, young as it is, has been already admitted as an accredited witness of very peculiar importance. But a few years since, and we know that there was no professor's chair for it in any of our medical schools. Now, who does not know that it is a very "law and testimony"? Yet post-mortem and ocular pathology gives us but comparatively little insight into the deviations and lesions of the human nervous system. But, at this very weakest

point in all medical science, important yet delicate, elaborate and yet intricate as it is, Electricity comes to our aid and elicits, — *has* elicited, certain uniform phenomena, — already a "law and testimony," so far as ascertained, that can be derived from no other source. Significant facts like these do certainly demand of medical men a careful attention. Because we do not know more, or all, is certainly no good reason why we should not avail ourselves of what is already positively discovered. Much in this department of medical research will yet, ay, will *soon*, be accomplished; and brilliant will be the achievements.

The very abridged manner and immethodical style of the few works that have appeared in this country, or even in the English language, on the medical employment of Electricity, have never yet enabled the medical profession generally, particularly that of this country, to seize upon these telling facts understandingly, so as to bring them to bear upon clinical practice. On the other hand, the more complete treatises on physics enter too much into detail on Electricity, in its own wide realm, as a force of nature, or as a physical force, or in speculations upon these, for persons who do not desire to make this their particular object of labor and pursuit.

A systematic work on the medical and surgical uses of Electricity, containing clear and practical directions as to *where*, *when*, and "*how*," to employ Electricity as a remedy, (embracing at the same time the condensed scope of those natural, accidental, as well as artificial electric influences that affect life and health,) has long been greatly needed; and of late flatteringly *requested of the author*, by many distinguished members of the most venerable medical association in America, to fill, in some degree, this deficiency in our medical literature. True, we have had published in this country some small, yet valued treatises on this subject — one by Dr. Golding Bird; another by Dr. W. F. Channing. But these pioneer works were rather "evidence and argument," to exhibit and convince of what has, might, and would be accomplished by the medical uses of Electricity, rather than giving any philosophic and rational *exposé* of the *methods of doing it*. Therefore what has been done by the agency of Electricity, in the way of *remarkable cures*, empirically or otherwise, if the *modus operandi* is not also clearly given, is purposely excluded from this work. The author has aimed to confine himself to gleaning from the highest practical authorities, and the comparing of these with his own clinical experiences, then classifying and arranging the subject matter, so as to present the whole range of electro-therapeutics on a more systematic and scientific basis.

Perhaps it is scarcely necessary to add here, (except to forestall unnecessary and detracting criticism,) that the author has unavoidably employed the ideas often, as also the language, of others. In a work like this, based as it is *in natural science*, with a limited special literature, every one must know is but the embodying of the best of all high authority, while but a portion of the whole is truly original. Our freshest knowledge has its origin in the teachings and well-known writings of the world's best philosophers; which, after being

applied in this department of medical *practice*, becomes, in part, but a modified transcript of the originals; but in another sense or part, and that the more practical, there is conceived to be a large share of *originality pervading this whole work*, if the selecting, classifying, and *adapting* the information so variously obtained to the very purposes for which it was intended, so as to be more *practical* and *useful*, can be construed as originality. Is not this, *in fact*, (when we except accidental discovery,) the true basis of all scientific discovery and originality? In fine, the author has perseveringly labored to gather whatever is known on this subject, found in any language, *that is practical;* and that from the highest sources, and from first hands. Here he has been greatly favored by the kindness of Professor Scherb and Mr. Frederick Penard, in their readings and translations out of the Italian and German. The best of authorities have been consulted, and each has given his testimony on this part or that. From the writings of Galvani, Volta, Humboldt, Nobili, Marianini, Matteucci, Magendie, Becquerel, Marshall Hall, and Faraday; from De la Rive, Duchenne, Middeldorpff, Remak, Todd, Alfred Smee, and Brown-Sequard; from these and others have we recorded individual researches of the most intrinsic significance, as well as their individual opinions. But where quotations are made, they are duly acknowledged. Thus we find a rich field of facts for us, which have been accumulating in variety, and maturing by corroboration for the past half century. But the right or wrong interpretation of these facts, or their apparent conflicts, &c., we must leave for others to discuss. *Success in practice*, not theory, is our aim.

A work of merit, I feel satisfied, is not in the end injured by criticism, if fairly done; but this is too much to be expected every where. The author, however, cannot be surprised. No one sees so well as himself how little he feels that he knows of the length and breadth of this intricate and extensive subject; although he may be permitted to add, that he has had the honor and the advantages of the personal instructions, conversations, correspondence, and encouragements of some of the most renowned philosophers and truly experienced "medical electricians" in Europe; to which has also succeeded a ceaseless tide of bedside experiences, exclusively in this special practice; and that also during the unavoidably protracted time occupied in the preparation of this work for the press.

But to the subject directly: Careful and repeated observations of Electro-physiologic, pathologic, and therapeutic *phenomena* very soon leads us to discover *two* prominent and distinct points of view. One of these comprehends the General Laws of Electricity, in this respect; the other view comprehends the *results* arising from the manifestation of "animal electricity" in living bodies, and the action of the various forms, and methods of application of electricity, upon these bodies, and their native currents. The facts and deductions of the one require to be studied, to understand those of the other. Anatomy and physiology, also, need to be viewed through this medium, as well as from other stand-points, in order to get a true stereoscopic view of the philosophy of life, the laws of disease, and the catastrophe of death.

Under the *first division*, then, we must become familiar with the different kinds of Electricity, as Natural Electricity; also Electricity as manifested by the disturbances of nature; also with Static and Dynamic electricity, so far as they relate to our subject. Hence both the natural and artificial sources of electricity, together with the general and specific laws that regulate the given transmission of this subtile agent through the different *living* tissues, in *health*, and in *disease*, must be successively passed in review. Next comes the early history of the medical and surgical uses of electricity, Atmospheric and Terrestrial electricity, with Magnetism, Frictional Electricity, Galvanic and Electro-magnetic Currents, together with a description of all the apparatus for conveniently producing and regulating the *quantity* or the *intensity* of currents; all of which must be clearly exhibited to be easily understood. This, therefore, will compose the first three Chapters of this work.

Under the *second division*, as we may call it, we need to become no less familiar with the phenomena of Electro-physiology, in all its wonderful teachings, even from *cell-life*, electro-biology, — the nervo-electric batteries of human life, the effects of Atmospheric Electricity, — up to Animal Electricity, and the action of artificial currents, when directed for diagnosis, surgical and other remedial purposes. Diagnosis of diseases, and the Fundamental RULES for the rational employment of electricity in practice, must be seen in panoramic review. Then we examine the broad range of nervous affections, which are classed *here* under Hyperæsthesia, as, exalted nervous action, and painful affections. And another large class, under Anæsthesia, as, diminished nervous action, and all paralytic affections. Next in order will appear the Spasmodic affections, Midwifery, Surgery, Dentistry; and then the *special* cases, as suspended animation, anomalous nervous derangements, in which some given form of electricity, or particular method of applying it, has been found most beneficial and successful. Such, and more, will occupy the seven other chapters of this work, which, as a whole, I designate as Electro-therapeutics, — all of which will be found illustrated with ample *Cuts of Apparatus*, on the one part, and fine *Anatomical Cuts* of the Nerves and Muscles, &c., on the other; so as to be to the medical student as complete a work on this whole subject of which it treats as possible with our present knowledge, or as can be found in any language. Should life and opportunity be granted, the author proposes to prepare, at no distant year, a second volume, that shall be a counterpart to this — a sequel, embracing his clinical experiences, showing not only the results of purely electric treatments, but also showing the efficacy of the electric *séance*, in given cases, *when combined*; that is, simultaneously employed with the ordinary prescriptions of medicines.

When I first directed my entire professional labors to this difficult department of *special* medical practice, (after having been engaged in the general practice of medicine for nearly twenty years,) to speak mainly in the words of another, — I did so with the fullest sense of their importance, in two relations:

first, as they related to my own future career and reputation; second, as they related to the advancement of the healing art, and the immediate relief of a no small class of otherwise unreached, afflicted, and suffering persons. I was fully aware that my position, my views, and aims might excite misapprehension, because the hitherto very general association of the empirical uses of electricity, with quackery, throughout the length and breadth of our country, would naturally lead to some erroneous verdict, at least until my true position might be directly and definitely defined. For these reasons, I am all the more happy to speak for myself this day, as regards the legitimate practice of electro-therapeutics. So that, on the one hand, in regular practice, no surgeon, no oculist, no spinal, or uterine, or urinary doctor, no orthopedist, or general practitioner shall imagine that I wish to interfere with their respective positions, for which they have especially studied, and in which they are devoting their lives. On the other hand, let no wandering Arab of a boasting and quackish "Electro-pathist," Electro-physiologist, or travelling "*galvanizer*," attempt to screen himself, by using my name and address, under any connivance or sympathy, *in any of the states*, as has been done heretofore. But, on the contrary, the author feels assured that he is bringing to those same honorable men, who are engaged in special practice, through this department of medical literature, and hence to the medical profession at large, in an available form, a *tangible class of remedies;* which are also of great importance in very many respects, (besides the general principles and definite rules here laid down for specific purposes,) that every logical mind will not fail to deduce therefrom.

But one word further. Our art is *one* art. Each branch is but a part of the whole, and simply, "*e pluribus unum.*" It is too late to be sticklers for creeds or isms, for pathies or systems; only let each be honest and in earnest in his professional sphere. The author is desirous that this should no longer be termed a "*System*" of practice, but merely *the electric remedies*, &c., and that we take special pains to eradicate those false notions from the minds of the people.

I wish here to call particular attention to the fact, that almost no allusion is made in this work to the simultaneous employment of medicines with electric treatments. This is *purposely* omitted; but it must not necessarily follow that it is to be omitted in practice, if we wish to gain the greatest possible amount of improvement for the patient in the least possible time. Indeed, it will often be noticed that a skilful use of electric currents will *quicken* the action, and *heighten* the effects of internal medicines. Often, cases will be presented that promise success only in this way.

Again: like many other potent remedies now, as heretofore, employed in the treatment of diseases, electricity is greatly valued for its given effects, in certain cases, by a small portion of the profession who have thoroughly investigated it, among whom are some of the most distinguished names; while another portion of the profession, equally respectable, think but little of it; and others there are who discard it altogether. But when it is shown that the

nerves, muscles, and many of the secretions can be more surely and more uniformly called into their natural action by means of electricity than by any other known agent, and that the *degree* and *kind* of that effect is *widely different*, according to the form, quantity, or intensity of the electricity employed, and that again modified *as widely*, according to the *methods* of administering the dose at each *séance*, it is to be expected that the existing differences of opinions as to the healing power, or the manageable and remedial value of electricity, will be more nearly harmonized, and that on an intelligent basis.

It must not be thought certain that the electric current exercises an in-working influence only on or through the nerves and muscles. It is, on the contrary, my intention to aid medical men to become familiar with the idea, that all textures of the living animal body, being saturated, as they are, with the saline solutions of the blood and other secretions of the animal economy, are peculiarly accessible to the chemical and mechanical workings of the static, galvanic, and electro-magnetic currents; that these workings, as demonstrated by Dr. Robert Remak, do appear in the living human body, *within certain limits* — not simply as dissolving or chemically decomposing, (*lytic*,) so much as changing, (*catalysis*;) thus, in a degree, causing the nerves and muscles to be so largely influenced, because of their plumping up with more saline moisture, which, doubtless, enables the *ultimate structure* of all the organism to exercise more mobility in the fine molecules of their respective tissues for performing functional action. But after all, to my own mind, it is only by the most minute and slowly maturing experiences in the analogous workings of these currents in different living tissues, that insight and confidence can be obtained, which are so necessary for the rational application of electric currents for curing diseases. I trust this work will present a phalanx of facts, as well as many original, practical directions for obtaining physiological and therapeutical results, that will be found worthy of a candid attention, and lead on to fresh researches in this inviting department of medical science.

Finally, the author of this work has aimed by directness, thoroughness, and extent of practical research, thus presented by himself or by accredited authorities; by ample plates of apparatus, and of anatomy; by great simplicity in style, and freedom from technicalities as far as possible, (also by *term* Explanations,) to present this whole subject of *Medical Electricity* in so clear and simple a manner as to be readily understood by any one of ordinary intelligence; hoping it may invite into this hitherto neglected, but intensely interesting and profitable study of Electricity, as it relates to human life and health, *to the cause and cure of disease*, all ranks of the medical profession, as well as help to initiate the younger candidates for its labors and its honors, in years to come, to a still more *rational view* of diseases and their remedies; — to all of whom, or whosoever reads, it may prove an exposition of this subject at once elementary, practical, and substantial.

PREFACE TO THE SECOND EDITION.

HERE, the author must acknowledge to "an agreeable surprise." When this work was about to be put forth to the medical world, the publishers, judging from past experience of the sale of books on this and other *special departments* of medicine, expected only a limited sale. Hence the price per volume was to cover the expenses. But a few months have elapsed, however, and the whole edition of this large and expensive work is disposed of. From this time, therefore, the price will be reduced twenty-five per cent., that the entire medical profession in America may be induced to investigate, more fully, *this view* of physiology and pathology, of diseases and remedies, and to avail themselves practically of its great power for good in the healing art. It certainly does afford a *new stand-point*, that is exceedingly instructive, to view the same old and familiar objects, to which all truly professional eyes are ever turned, and always love to look — viz., *Life in health*, and *Life in disease;* besides showing other accessible points to the seats of some diseases, the nature of the work to be done, and affording the very means that can do it. Moreover, the Appendix "*Notes*" *now added*, being a very plain key for the application of electricity in a variety of cases, must prove of value to the practitioner.

Pardon the author if he here reiterates, that Electricity, modified as it can be, when produced by the different kinds of scientific and philosophical apparatus, can assuredly be introduced into the domain of therapeutics with peculiar confidence, *not as a specific*, applicable in all cases to which we are called, and without distinction, but for certain cases, and in given conditions, as a reliable and powerful "*means to a definite end*," the effects of which can be foreseen, calculated, modified, directed, and controlled with as much precision, and even more prevision, than can most of our frequently-resorted-to remedies.

Professional Brethren: It will be received as a favor by the author, if you will, at some time, forward to him *your own experience*, whether successful or otherwise, in the fair employment of any form of electricity. Please state your *cases* clearly and concisely as possible; give the form of electricity employed, whether sparks, shocks, aura, or current; the kind of current, whether primary or secondary; if primary, how many elements; the method; the electrodes used; the direction of the current; whether continuous, intermitted, or reversed; how often, and how many times; how long applied; how often the *seance* is repeated, as well as the whole number of sittings, and the length of time in the treatment; the amount of improvement, or cure, and how long confirmed; also, if I am at liberty to quote you in some future revision of this work.

ALFRED C. GARRATT.

No. 7 HAMILTON PLACE, BOSTON, MASS.

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OPINIONS OF THE WORK.

From JOHN HOMANS, M. D.

129 TREMONT STREET, BOSTON, Nov. 5, 1859.

DR. GARRATT. Dear Sir: I am happy to learn your intention to publish a treatise on *Electro-Therapeutics*, or the medical and surgical uses of Electricity.

Such a work, by an educated physician who has bestowed much time and labor on the subject, both in study and practice, setting forth the value of this often neglected and sometimes misapplied agent in the treatment of a large class of diseases, will supply a want long felt by intelligent medical men, and cannot fail to be well received.

The division of the subject into the different chapters, as indicated by you, appears judicious. I am very truly yours,

JOHN HOMANS.

From WALTER CHANNING, M. D.

"This large octavo volume is illustrated abundantly by descriptions, and drawings of instruments, both original and selected; by anatomical sketches, and by cases in which electricity has been employed, together with the limitation of its uses. What has particularly struck and pleased us in our examination of Dr. G.'s work, is the patient minuteness which every where marks his treatment of his subject. Nothing seems to have been overlooked. It is a very valuable work."

From EDWARD H. CLARKE, M. D., Professor of Harvard University.

BOSTON, June 5, 1860.

ALFRED C. GARRATT, M. D. Dear Sir: It gives me great pleasure to acknowledge the receipt of your work on *Electro-Physiology* and *Electro-Therapeutics*. I shall read it at my earliest leisure, and hope to derive equal pleasure and profit from its perusal. The subject of *the Medical Uses of Electricity* is one of great importance, and but little understood. I hope your labors may be the means, not only of enlightening medical men with regard to it, but of awakening the attention of other observers. Please accept my best thanks for your book, and may you long be enabled to pursue the path you have entered on. . . . .

Very truly yours, EDWARD H. CLARKE.

From J. V. C. SMITH, M. D.

BOSTON, June 15, 1860.

Dear Sir: Your industry and profound attainments in the domain of that special branch of the medical profession to which your powers have been directed, as exhibited in the beautiful volume presented to me, must result most favorably for your scientific and literary reputation. It is a monument which your descendants, in after times, will contemplate with proud satisfaction.

Very truly, I have the honor to be your obliged friend and servant,

A. C. GARRATT, M. D. J. V. C. SMITH.

From the Boston Medical and Surgical Journal.

"This volume, dedicated to our friend *John Homans, M. D.*, President of the Massachusetts Medical Society, is a very full and elaborate contribution to the *medicinal powers and uses of Electricity*. Dr. Garratt has sought, in the best authorities at home and abroad, and in their original sources, the whole literary history of this important subject, and has

presented it after a manner which deserves, and we believe *will receive*, the careful study of the profession. It is in works like this, which come directly out of the deep interest of the authors in their subjects, and *from abundant experience concerning them*, that a profession gains useful and important light, which enables it to put them to the full test of practical uses. We close with quoting the last paragraph of this very interesting and valuable work: —

"'Medical Students: Our investigations in this intensely interesting field of medical lore must here draw to a close. Let us now congratulate ourselves and thank God for this day and opportunity of seeing *understandingly* so much of this *new phase* of our noble art. I said to you in the Preface, that we were rich in the materials for a systematic work of this kind, and now say again, that we feel still burdened with the untold matter that so interests ourselves, and which we desire you to know. But the original bounds of this work are already far exceeded; I therefore only will remind you, with a parting emphasis, of the beautiful aphorism of Dr. Altheus, (who, by the way, has written well on this subject,) that "it is not electricity that cures diseases, but the *physician* who may cure disease *by the means* of electricity." In a word, it is the *method and skill* directing this agent that gives the success.'"

From the Louisville Medical Journal.

"There is no similar work in the English language; therefore this treatise by Dr. Garratt will supply an actual want heretofore felt by the profession."

From the Chicago Medical Examiner.

"From a careful examination of its contents, we are confident that the medical profession will be under lasting obligations to Dr. Garratt. The work is both *scientific and practical; a book which should be in the hands of every medical student;* and no medical library will be complete hereafter without it."

From the New York Tribune.

"The special subject to which this volume is devoted is the medical and surgical uses of Electricity. The author has given many years to the study of the subject, and in preparing this work at the suggestion of many eminent medical men in different parts of the United States, he has combined the results of his own clinical experience with those of the highest *practical* authorities. The volume abounds in statements of the greatest interest and value to the student of physiology, as well as to the medical practitioner, and is founded on a strictly scientific basis."

From the New York Independent.

"We can commend without hesitation, to professional men, a portly octavo (now lying before us) on the '*Medical Uses of Electricity*,' by Alfred C. Garratt, M. D. This thorough and learned work is designed for '*medical students*' — a phrase which designates a very large class, inasmuch as no *good physician* ceases to be a student in medicine till he retires from the practice of his learned and liberal profession. Dr. Garratt's book, if we mistake not, *is the most comprehensive and systematic work on this subject in the English language.*"

From the Philadelphia Enquirer.

"Beyond all question, there is no work, British or American, on this subject, which, for exhaustiveness and logical acuteness of reasoning, can be compared with this large and valuable treatise. All our observation of late leads us to the conclusion that there is much importance in the subject which Dr. Garratt so learnedly discusses in this treatise."

From the Cincinnati Journal of Rational Medicine.

"The past month has been somewhat prolific in the productions of publications of interest to the profession; and among the most novel and important books, no one is likely to command more attention than a work on *Electro-Physiology and Electro-Therapeutics*, by Alfred C. Garratt, M. D., of Boston. It is an elaborate and comprehensive pres-

entation of important scientific and therapeutic facts, too seldom even slightly understood by the profession. The publishers have done their part admirably, making this book a *model* one. The only objection that can be raised is, that they have made the book *too good*; and that its expensiveness may limit its sale. Price $4.00."

From the Louisville Medical News.

"It is doubtless true that the great majority of specialists are the most consummate quacks, and it is equally true that from the investigations of other honorable specialists the cause of truth has been most illuminated. It is the part of wisdom, therefore, to discriminate between these two classes. It is very easy to determine to which of these classes the author of the noble work before us belongs, (Garratt on the *Medical Uses of Electricity*,) and equally easy to perceive that he is a gentleman of learning, and a profound and practical thinker. A careful perusal of the work will convince any one, that judgment formed from the opinions or treatment of travelling or local *electropathists* may be very unjust, and that there is a veritable potency in the modification of electricity for the treatment of disease, which we may not safely ignore. The author's propositions, and the scientific bases claimed for them, are modestly suggested. The work is published by Ticknor & Fields, of Boston. It is beautifully executed and illustrated, and if the profession be true to its own interest, another edition will soon be demanded."

From the Georgia Medical and Surgical Encyclopedia.

The work before us (*Medical Uses of Electricity* by Garratt) is one which we can recommend to our friends with pleasure, for by its study they will obtain both knowledge and profit. He treats this subject calmly, deliberately, and scientifically,—an honor to himself, and a credit to his country. This work should be in the hands of every student of medicine, of every practitioner in the land. If the profession is true to themselves, their own interests, and the interests of their patients, several editions will have to be issued to supply the demand.

From the Medical and Surgical Journal, St. Joseph, Mo.

"The author (Dr. Garratt) has produced a very valuable work on the medical and surgical uses of *Electricity*; the first attempt at a complete and systematic work on this subject, we believe, ever made in America. How striking the coincidence, that Boston, the first home of Dr. Benjamin Franklin, should produce this work! We regard this book as a great boon to the profession, and as furnishing information that a majority of medical men now require, and cannot longer, with credit to themselves, fail to possess. Royal 8vo., 700 pages, 100 cuts. Price $3.00."

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