

Electric Vibrator Therapy

home and professional applications

based on the readings of

Edgar Cayce

and other

Historical Sources



DISCLAIMER: The reader should view the material contained herein as a report on research done by the author into the psychic readings of Edgar Cayce and other historical sources. The author is not reporting clinical research, and makes no claims regarding the efficacy of the principles and techniques described in this material. The cooperation of a qualified health care professional is advised if one wishes to apply the principles and techniques discussed in this book.

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Electric Vibrator Therapy

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INTRODUCTION

Electric vibrator therapy has been used effectively by a variety of health practitioners for over one hundred years. In modern times, the therapeutic use of the electric vibrator has been eclipsed by its recreational potential, a fact that I am reminded of each time I give a public lecture on the topic. The silly grins and giggles that invariably escape from a portion of the audience testify to the common use of the vibrator for pleasurable pursuits. Trying to find a vibrator for health applications on the Internet is even worse! Hedonistic activities notwithstanding, it is unfortunate that the medicinal application of the electric vibrator has greatly diminished over time.

This book documents the diverse applications of electric vibrator therapy with special emphasis on the recommendations for this treatment given by the intuitive diagnostician Edgar Cayce and some of the physicians of his era. Cayce recommended the electrically-driven vibrator in over 250 of his psychic readings, making it an important tool among the various healing modalities suggested in this remarkable body of information. Cayce commonly recommended the vibrator to help the body relax, especially just before retiring at night to improve sleep. The vibrator was frequently used in conjunction with other modalities such as massage and electrotherapy. In one instance, Cayce stated that vibrator therapy would bring about “rejuvenation of the nerve centers in such a way as to supply new life, as it were, to the organs of the body.” (3721-1)

As additional resources, I have included a complete text on vibrator therapy in addition to two extended excerpts from other medical manuals written by physicians who advocated electric vibrator therapy for health maintenance and healing (Appendices A-C). These historical texts provide a revealing glimpse into this treatment modality that tends to balance and extend the Cayce perspective.

In several instances, Edgar Cayce told individuals that if they could not obtain osteopathic treatment where they lived, use of the electrically-driven vibrator would produce similar results. He said that the vibrator would help to produce coordination in

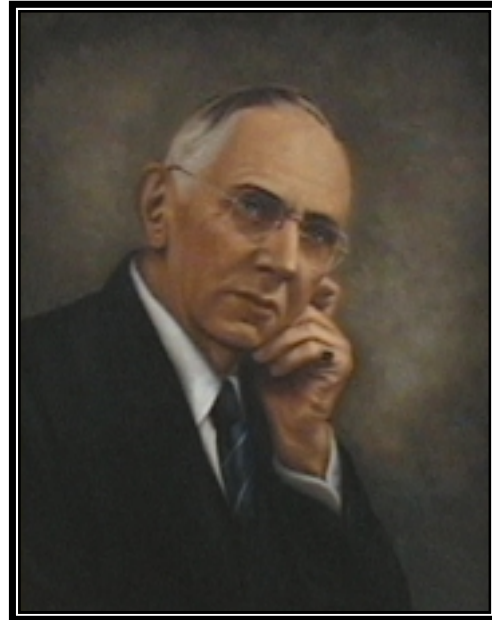


Figure 1: Edgar Cayce

“(Q) Should osteopathic treatments be continued? If so, how often?

(A) With the adjustments that have been made (which are fairly well aligned), the electrically driven vibrations - if applied in any reasonable manner - would be as effective. Then once a month, or once in two months, or three months, have a general treatment osteopathically. Save money and save yourself too!” (Edgar Cayce reading 1048-3)

the nervous systems and the circulatory systems, which were important effects of properly given osteopathic treatment. Given the difficulty in obtaining osteopathic manipulative therapy as compared to when Cayce was giving his readings, any contribution that electric vibrator therapy can make in this area is welcome.

Understanding certain osteopathic concepts is helpful (and probably essential) to a full appreciation of why Edgar Cayce prescribed electric vibrator therapy. Thus, Part II begins with a fairly thorough discussion of specific osteopathic concepts that were also emphasized by Cayce. The important point to keep in mind is that these concepts can be translated almost directly into vibrator therapy. Instead of using the hands to simulate and inhibit nerve centers,

coordinate the nervous systems, and set up drainage, electric vibrator therapy attempts to achieve the same results mechanically. So although it may seem strange to include such an extensive discussion of traditional osteopathy in this manual, please take the time to study these concepts. With this background and overview, Cayce's recommendations for vibrator therapy will make sense.

Edgar Cayce also specifically recommended the electrically-driven vibrator as an adjunct to chiropractic. Unlike the osteopaths of that era, the chiropractors did not typically use general or coordinating treatments. Hence, electric vibrator therapy may also make a contribution to the treatments provided by modern chiropractors who, as a rule, are much more accessible than osteopathic physicians.

The book is arranged in sections with a bias toward application over theory. Thus, Part I focuses primarily on the "how" of electric vibrator therapy and Part II is more about "why." I have attempted to make this manual as user-friendly as possible while offering references and citations to more substantial works for readers interested in the deeper issues raised herein.

Part III consists entirely of selections written by medical doctors. While the osteopaths and chiropractors were primarily focused on the use of the hands to make adjustments and regulate physiology, the medical doctors of the late 19th and early 20th centuries were using *mechanical* devices, especially electric vibrators, to achieve these therapeutic effects – hence the term *mechano-therapy*. Part III blends theory and practice with the work of Dr. Brown being especially pertinent to the Cayce perspective.

It is important to keep in mind the limitations of electric vibrator therapy. It is not a therapeutic panacea that can replace regular medical treatment. Furthermore, in treating systemic illness, the electric vibrator was typically recommended by Edgar Cayce as one component in a comprehensive treatment plan including other modalities such as diet, hydrotherapy, electrotherapy, etc. If you are considering using the vibrator for a medical condition, be sure to obtain the cooperation of a qualified health professional.



Figure 2: "Application of Pneumo-Massage" from *Mechanical Vibration* by Arnold Snow, M.D. (1912).

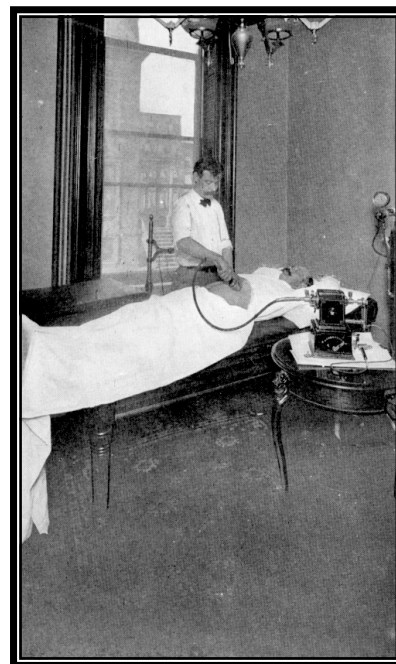


Figure 3: "Application of Abdominal Massage" from *Mechanical Vibration* by Arnold Snow, M.D. (1912).

PART I: APPLICATION
EQUIPMENT

The electric vibrator has been available in many different models for over a hundred years. Generally speaking, vibrators fall into two broad classifications: (1) the portable, hand-held version most often recommended by Edgar Cayce for home use, and (2) the commercial, stationary model that is sometimes used in a physician's office. Various applicators (attachments) are also included with many vibrators as will be reviewed in this chapter.

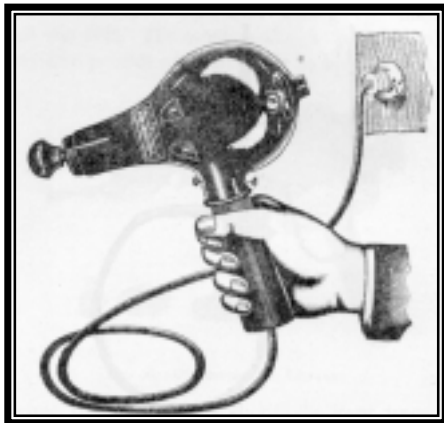


Figure 4: "Type of Portable Vibrator" from *Mechanical Vibration* by Arnold Snow, M.D. (1912). Note ball applicator.

Types of Vibrators

The portable, hand-held vibrator is the most common and least expensive variety. Historically, the portable vibrator is well represented (Figures 4-6). This is the type most often recommended in the Edgar Cayce readings. When asked what make of electric vibrator should be used, Cayce responded that the general brands that were commonly available were suitable (Westinghouse, General Electric or Hamilton), so long as they were "sufficiently heavy ... that the deep manipulations may be given." (379-2) Most modern commercial vibrators fit this description (Figures 8-10).

Stationary vibrators (Figures x – x) are much less available today and are usually seen in a professional setting such as a therapy department or physician's office. These devices are sturdier and can provide more power than the portable, hand-held models.

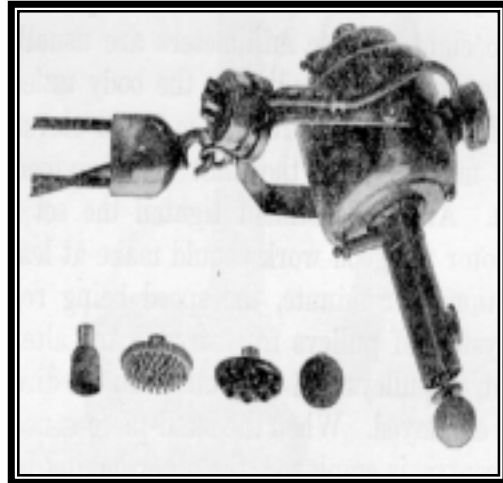


Figure 5: "Counter-Weight Vibrator" from *Mechanical Vibration* by Arnold Snow, M.D. (1912). Note various attachments.

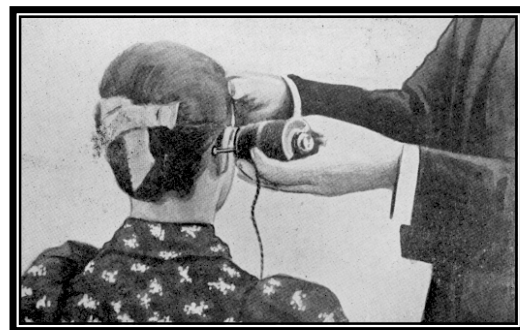


Figure 6: "Nerve Percuter" from *The Art of Massage* by J. H. Kellogg, M.D. (1895).

Applicators (Attachments)

Some electric vibrators come with several attachments for different applications and areas of the body. Figure 2 portrays a vibrator and several attachments that were in use during the early twentieth century. Here are the most common applicators recommended by Edgar Cayce.

The *ball applicator* was suggested for deeper

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manipulations, usually along each side of the spine (see Figures 9 and 10).

The *cup applicator* (Figures 9 and 12) was recommended to increase circulation.

The *sponge applicator* was recommended by Cayce for gentle, soothing treatments, especially on the front of body (i.e., face, neck etc.).

The *flat applicator* (Figures 9 and 11) was mentioned in one reading with the indication that it is best used for gentle treatments.

Baar Products, Inc.
P.O. Box 60
Downington, PA 19335
1-800-269-2502

The Heritage Store
Dept. Y, P.O. Box 444
Virginia Beach, VA 23458
1-800-862-2923

Obtaining a Vibrator

Electric vibrators can be purchased over the Internet and in many drug and department stores. Suppliers of Cayce health products sell the portable models with attachments. Two of the largest Cayce health suppliers that offer the vibrator by mail order are:

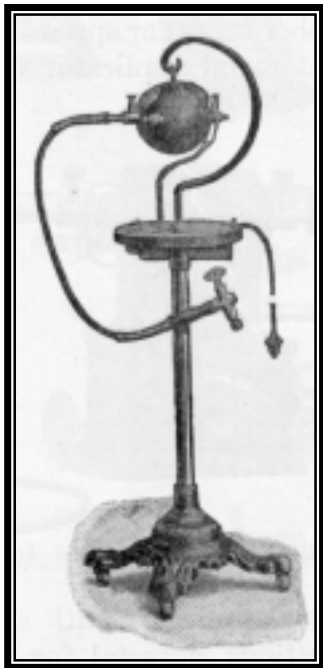


Figure 8: "A Flexible Shaft Machine" from *Mechanical Vibration* by Arnold Snow, M.D. (1912).



Figure 7: "Vibratodes" from *Mechanical Vibration* by Arnold Snow, M.D. (1912).

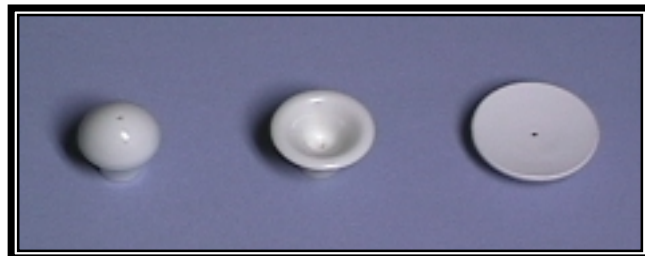


Figure 9: (from left) Ball, cup and flat applicator.

TECHNIQUES

Applicator Techniques

The type of vibrator most often recommended in the Cayce readings was hand-held with a knob that accommodates different applicators or attachments. Here are the most common applicator techniques recommended by Edgar Cayce.

The *ball applicator* was suggested for deeper manipulations, usually along each side of the spine (Figure 10). One reading encouraged the therapist to “hunt out each center” (5556-2) along the spine. Essentially, this technique involved moving the ball applicator from one segment (vertebrae) to the next, pausing at each center. Part II of this text contains a section on osteopathic centers that discusses the theory behind this type of treatment. A brief quote from Brown’s *Vibratory Technique* (Appendix A) provides an excellent description of the technique when using an electric vibrator:

With the ball attachment, medium stroke, from the first cervical to the fourth or fifth dorsal, going on either side of the spine and placing the attachment between the transverse, processes of the vertebrae, leaving it at each point twenty-five to thirty seconds. (Brown, *Vibratory Technique*, 1914)

The *cup applicator* (Figure 12) can be used in two ways. The cup can slide along the surface of the skin to provide a gentle stimulation to the circulation. A second technique involves pressing, holding, and then lifting to create a suction effect to increase superficial circulation.

The *sponge applicator* was recommended by Cayce for gentle, soothing treatments, especially on the front of body (i.e., face, neck etc.). Most modern vibrator kits do not contain this type of attachment. Perhaps the hygiene problems that could result from frequent use and difficulty in cleaning is a factor in the absence of the sponge applicator today. A relatively soft, flat applicator (Figure 11) is currently included with vibrators that have accessories. Used sensibly, the

flat applicator is probably a reasonable substitute for the sponge attachment recommended in the Cayce readings.

Strength of Treatment

Electric vibrators are capable of producing treatment with various levels of strength depending upon the type of vibrator and attachment, amount of pressure used, and the duration of the session. Although Edgar Cayce typically prescribed gentle, soothing vibrator treatments, some readings called for “deep” or “stiff” manipulations. One unusual reading said to give a strong treatment “until it almost jars the teeth with the vibrations.” (243-11) Many modern vibrators can operate at two or more levels of strength providing a range of treatment when combined with the previously mentioned factors.



Figure 10: Modern vibrator with ball applicator.

Patterns of Therapy

Although patterns of treatment varied considerably from one individual to the next, the Cayce readings tended to follow these patterns of therapy:

- for sensory system problems, treat the upper thoracic and cervical areas with treatment proceeding toward the head.
- for problems with the extremities, treat the “locomotary” centers (lumbar for legs; brachial plexus in the upper thoracic for the arms) moving

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from the spinal centers toward the hands or feet.

- for respiratory system problems, treat the upper thoracic and cervical areas.

A general treatment was recommended in several readings to assist with relaxation, systemic drainages, and nervous system coordination. Cayce often prescribed general osteopathic treatments to achieve these physiological states (see Part II). Thus, the electric vibrator version of this procedure can be regarded as an extension of the osteopathic general treatment. Here is a general treatment format based on readings 263-11, 1572-1 and 1779-1:

- Use the sponge applicator around the head and neck.
- Use the suction applicator downward from the head along the back on each side of spine.
- Cross over laterally at the 9th thoracic and 4th lumbar centers.
- Use the sponge applicator on the abdomen over the liver on the right side.
- Use the sponge to follow the colon ascending, transverse and descending portions of the colon.

If you don't have a sponge applicator, any soft attachment (such as a flat applicator) can probably be substituted. See Figure 12 for illustrations of the general treatment pattern.

Frequency and Duration of Sessions

The frequency and duration of each session will naturally vary depending upon the individual case. For rest, relaxation and improved sleep, daily sessions each evening at bedtime for fifteen to twenty minutes were commonly recommended by Cayce.

One of the challenges of doing electric vibrator therapy is the time and effort required for effective treatment. It seems that human nature would have us rush through the session just to get it done. Or, perhaps our subjective sense of time becomes distorted resulting in a shorter session than is optimal. Edgar Cayce often emphasized that the sessions be done with

purpose and commitment, investing the allotted time – even if the session had to be done by the clock to insure adequate duration. In several readings when asked how long the session should be each time, Cayce replied, “Until the body is thoroughly relaxed.”

The next section dealing with various medical conditions will provide guidelines for frequency and duration of treatment for some common health problems.



Figure 11: Modern vibrator with flat applicator.

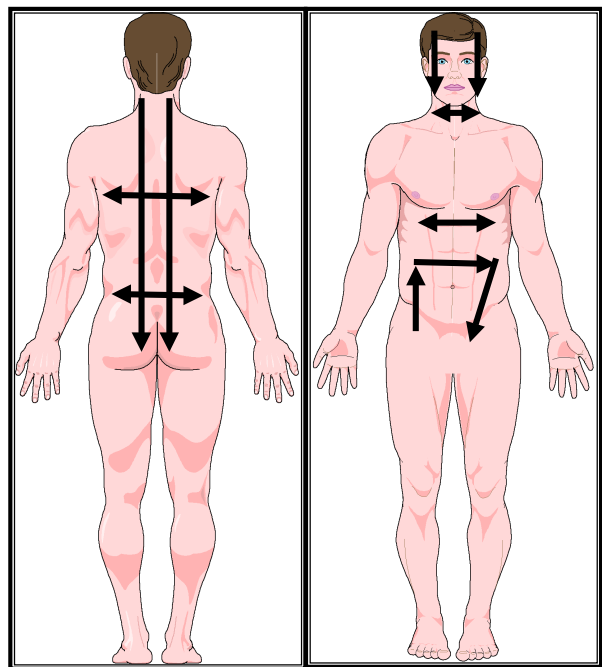


Figure 12: Pattern for general treatment.

CONDITIONS

To provide some specific examples of the Cayce recommendations for electric vibrator therapy, this section will focus on several cases involving common medical conditions. Readers must be aware that Cayce's approach is not so much *disease-centered* as it is *person-centered*. The use of diagnostic labels is convenient and can facilitate the communication of some concepts, especially to persons comfortable with standard allopathic conventions. The following recommendations should be regarded as only suggestive of the type of applications found in the Cayce readings that are indexed as specific medical conditions. These cases have been selected because they tend to exemplify the common patterns associated with each condition.

The text by Brown (Appendix A) provides numerous treatment protocols for a wide range of conditions in which electric vibrator therapy may be helpful.



Figure 13: Modern vibrator with cup applicator.

Condition: ASTHMA

Reading Information: 595-1; Male; Adult; 6/24/34

Attachments: Cup applicator and ball applicator

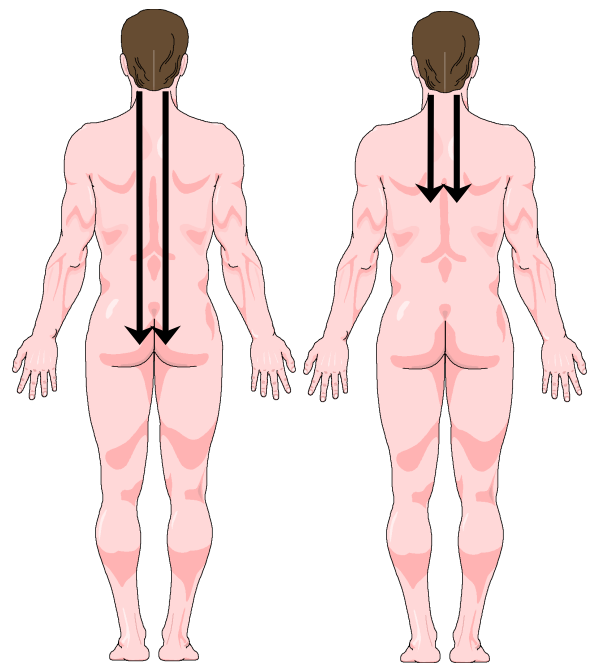
Technique:

1. Apply the cup applicator directly to skin over the whole of the cerebrospinal system.
2. Then use the ball applicator from base of the brain to the 9th thoracic vertebrae, first on one side of the spine and then on the other. Always move downward away from the head with the ball applicator, bearing down rather hard and making a deep vibration.

Other therapies:

1. Eucalyptol compound inhalant
2. Calcidin
3. Apple brandy
4. Chiropractic adjustments, especially to 3rd and 4th thoracic made from the right side with massage through cervical area
5. Specific diet

Comments: Physicians diagnosed this man's condition as bronchial asthma. Brown's treatment for asthma (Appendix A) is remarkably similar to the second portion of Cayce's recommendation: "Treatment – Ball, cervical region to ninth dorsal, medium stroke, 15-20 seconds each point."



Cup Applicator

Ball Applicator

Electric Vibrator Therapy

Condition: CATARACTS

Reading Information: 1861-6; Male; 34 years;

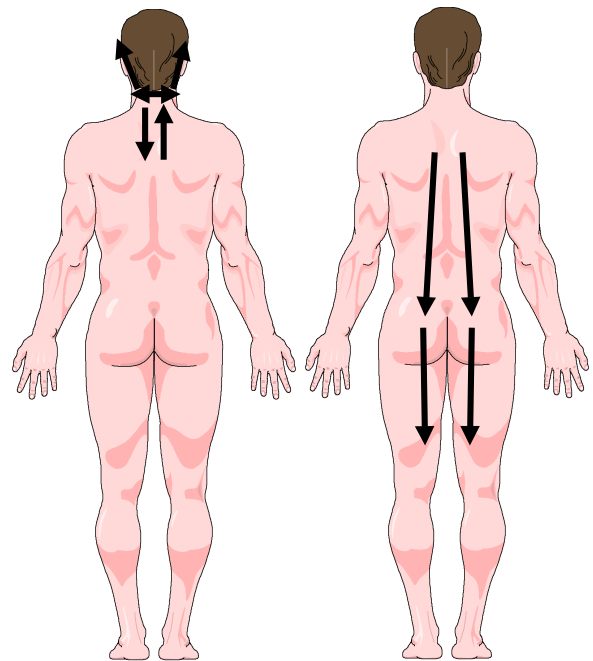
Attachments: Cup applicator

Technique: Each evening at bedtime for at least twenty minutes, begin at 4th thoracic and go up to base of brain on one side and then down the other side of the spine to the 4th thoracic. Go across the base of the skull, coming up behind the ear and around to the temple on each side of the head. At the next session alternate by going up first on the other side of the spine and then back down to the 4th thoracic center. Continue to alternate directions up and down the upper spine each session. Near the end of each session, use the vibrator down along each side of the spine and along the sciatic nerve of each leg.

Other therapies:

1. Violet ray appliance with double eye applicator
2. Meditation during vibration session using visualization of healing happening
3. Diet

Comments: This man received a series of nineteen readings including various therapies for his condition.



Cup Applicator

Near End Of Session

Condition: CONSTIPATION

Reading Information: 504-2; Female; 52 years; 2/1/34

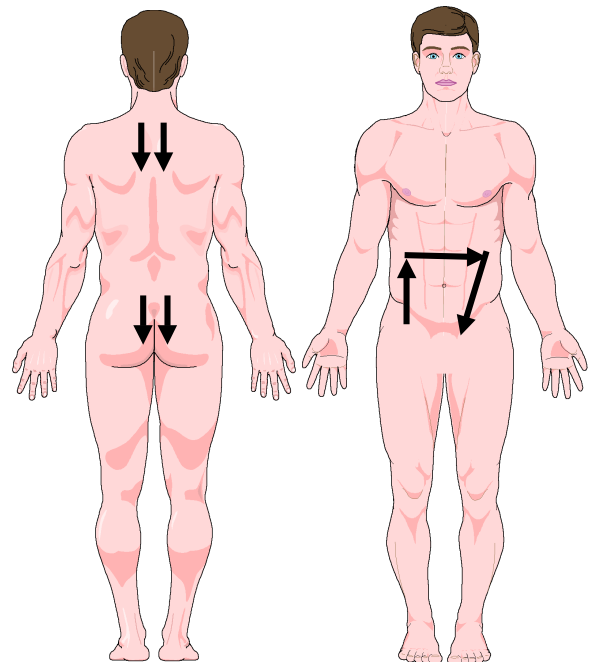
Attachments: Not specified

Technique: Use vibrator along 3rd to 6th thoracic and over the sacrum area (back). Then follow the course of the colon along the ascending, transverse and descending portions (abdomen).

Other therapies:

1. Diet

Comments: The vibration of the upper thoracic was to improve digestion and upper intestinal functioning which then in turn will improve lower bowel (colon) functioning. Brown's extensive discussion of how to treat for constipation (Appendix A) is much more thorough in providing options for the various patterns of causation that can lead to constipation.



Applicator Not Specified

Applicator Not Specified

Condition: DEAFNESS

Reading Information: 375-1; Female; Adult; 7/27/33

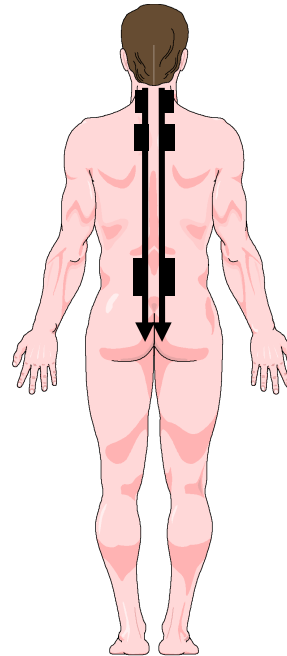
Attachments: Not specified

Technique: Use vibrator along whole spine with special attention to the 3rd and 4th thoracic area, 2nd, 3rd and 4th cervical area and lumbar area. The application should be preceded by wet heat at the specified centers and be given three times each week from five to fifteen minutes per session.

Other therapies:

1. Radial Appliance to be used on same days as vibrator
2. Balanced diet with tendency toward alkalinity
3. Black and White soap for skin problem

Comments: Note that the emphasis is on the upper thoracic and cervical centers associated with sensory system impulse.



Applicator Not Specified

Condition: HYPERTENSION

Reading Information: 2074-1; Female, 73 years; 1/8/40

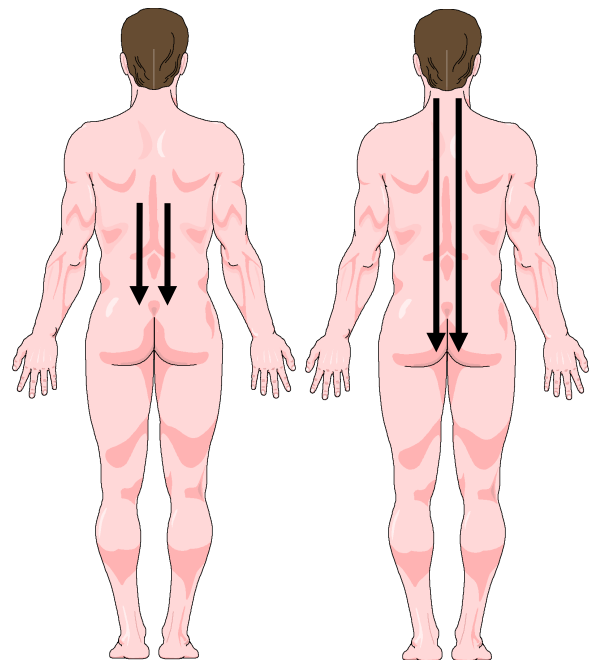
Attachments: Cup applicator

Technique: At least once each week have a thorough relaxing vibrator treatment from the lower thoracic to the sacral area of the spine for at least twenty to twenty-five minutes. Use the cup applicator to create suction during this portion of the session. Then for about a minute move the applicator along each side of the spine from the base of the brain to the end of the spine in a gentle but continuous stroke downward. All movements are always to be downward away from the head.

Other therapies:

1. Serutan laxative
2. Colonic irrigation
3. Watermelon seed tea
4. Light diet
5. Develop ideal attitude for healing

Comments: Note that the direction of all vibrator treatments were to be downward, away from the head. Edgar Cayce often cited constipation and toxic bowel as contributing to hypertension. The emphasis on vibrator treatment to the lower spine and improving eliminations is typical of the Cayce approach for high blood pressure.



Cup Applicator

At end of session

Electric Vibrator Therapy

Condition: INSOMNIA

Reading Information: 728-2; Female; 14 years; 1/4/35

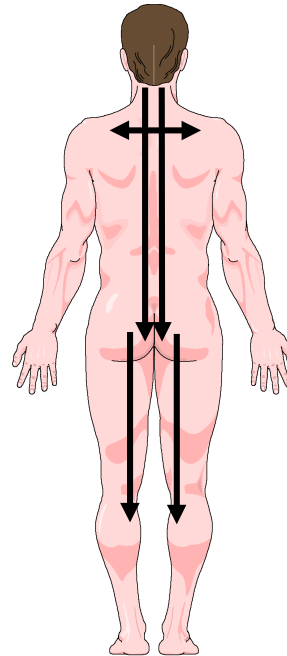
Attachments: Not specified

Technique: At bedtime each evening use vibrator along the spine, across the shoulders and down along each leg following the sciatic nerve. This should be a relaxing treatment.

Other therapies:

1. Abdominal castor oil packs
2. Beef juice
3. Castoria

Comments: This child was suffering from epilepsy and having trouble sleeping. Many readings were given for individuals having sleep problems in which the vibrator was recommended. Gentle, relaxing treatments along the whole spine were the most common patterns of treatment for insomnia and other sleep problems.



Applicator Not Specified

Condition: LUMBAGO

Reading Information: 348-20; Male, 50 years; 9/1/33

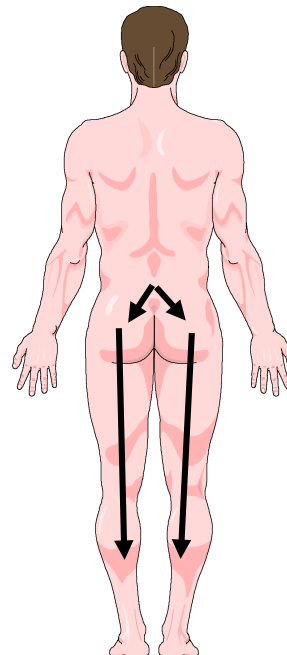
Attachments: Ball applicator

Technique: Apply deep vibration with ball applicator over lower lumbar and hip joint. Follow the sciatic nerve down to calve of leg. The session should last fifteen to twenty minutes.

Other therapies:

1. Hot Epsom salts packs over lumbar area following vibration
2. Abdominal castor oil packs
3. Diet

Comments: This man received twenty-five readings for various systemic problems.



Ball Applicator

Condition: MIGRAINE

Reading Information: 1857-1; Female; 38 years; 4/2/39

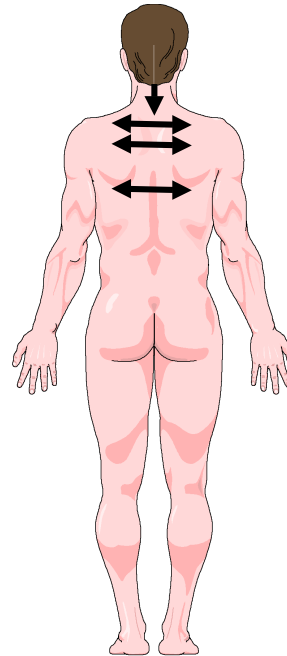
Attachments: Not specified

Technique: At bedtime run the vibrator across 9th thoracic and brachial center (1st, 2nd and 3rd thoracic) and cervicals

Other therapies:

1. Castor oil packs over gall bladder
2. Colonic irrigation
3. Diet
4. Osteopathic adjustments
5. Jerusalem artichoke
6. Abdominal massage with peanut oil and olive oil

Comments: The Cayce readings gave various causal patterns for migraine. Liver/gall bladder dysfunction was one common pattern as described in this case. In addition to the bedtime session, the electric vibrator treatment prescribed in this reading was recommended specifically to relieve acute migraine symptoms and reduce the need for medication during an attack.



Applicator not specified

Condition: MULTIPLE SCLEROSIS

Reading Information: 1676-1; Female; 31 years; 9/1/38

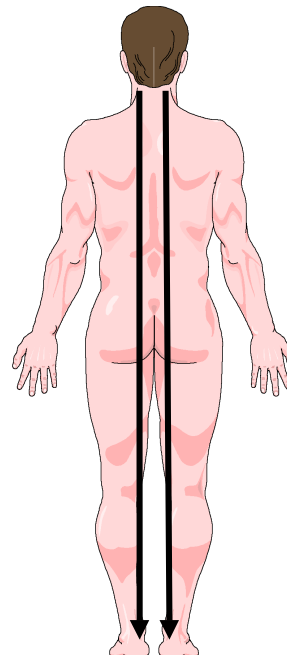
Attachments: Cup Applicator

Technique: Before massage is given, use cup applicator on each side of spine from base of brain to feet. Take at least twenty to minutes.

Other therapies:

1. Spinal hot pack with camphor/turpentine/mutton suet compound
2. Spinal massage with cedar wood oil/sassafras oil/pine needle oil compound
3. Diet
4. Attitude adjustment

Comments: Although this reading was indexed as multiple sclerosis (MS), in his MS report Walter Pahnke, MD classified it as "Group II" indicating that the MS diagnosis was uncertain with only motor and sensory symptoms suggestive of that disease. The wet cell battery with gold was added to the treatment plan in a later reading for this individual.



Cup Applicator

Electric Vibrator Therapy

Condition: PARKINSON'S DISEASE

Reading Information: 2491-1; Female; 69 years; 4/24/41

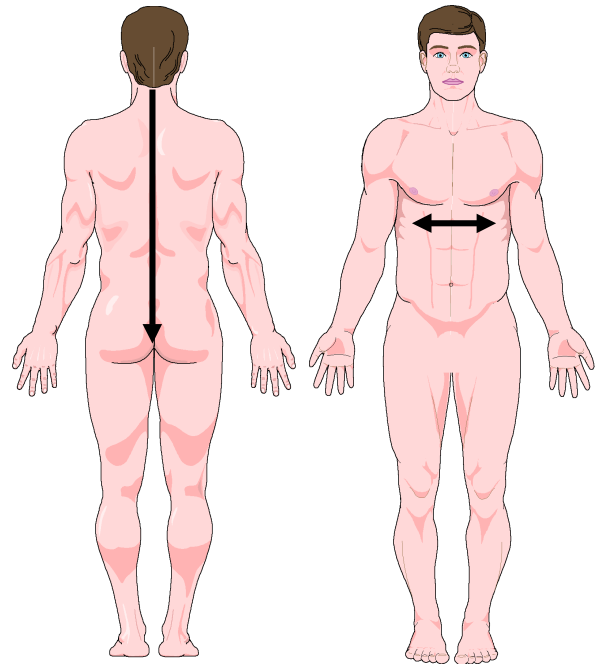
Attachments: Sponge applicator

Technique: After massage, give thorough and gentle treatment of entire spine (more on the spine than on either side) for at least 20 minutes. Use circular motion. Then give treatment across the diaphragm area on both sides.

Other therapies:

1. Wet cell battery with gold and Atomidine
2. Massage with peanut oil
3. Diet

Comments: Note that the vibrator treatment requires a circular motion more on the spine than on either side.



Sponge Applicator

Sponge Applicator

Condition: PARALYSIS

Reading Information: 448-2; Male, Adult; 1/28/34

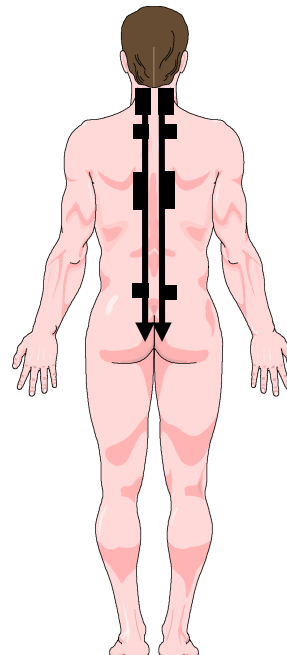
Attachments: Ball applicator

Technique: Provide "deep manipulation" with ball attachment along spine with special emphasis on the cervical centers, 3rd thoracic center, 8th, 9th and 10th thoracic area, and 4th lumbar center every other day for ten to fifteen minutes each session.

Other therapies:

1. Massage after vibrator therapy
2. Radial Appliance
3. Diet
4. Attitude adjustment

Comments: A special massage oil was recommended containing camphor gum, cedar oil and mustard oil.



Ball Applicator

PART II

OSTEOPATHIC CONCEPTS

The concept of vibration and its therapeutic application is discussed in many early osteopathic texts. Usually, therapeutic vibration given by an early osteopath involves manual technique (using the hands) rather than electric vibration (Figure 14-17). One of the more explicit descriptions of osteopathic vibration is provided by Barber:

Vibration. - We have recently discovered that vibration administered by the hand quickens, stimulates, strengthens, and assists very materially in reducing congestion and inflammation, and is very beneficial in many cases, in addition to the regular osteopathic treatment; in fact, we have cured cases of stammering, asthma, and various other troubles in which we failed to get results by the regular osteopathic manipulations. Vibration should be applied with a loose wrist-joint, the whole or a part of the palmar surface of the hand or fingers being used. The movements in the wrist-joint are abduction and adduction, while the movements of the elbow are flexion and extension; the hand lies immovable upon the part of the body on which it rests. Through a quick succession of individual movements, with a perfectly loose wrist-joint the vibrations are produced. Flexion and extension of the wrist must be carefully guarded against, as this would produce pressure, which would be injurious in many localities. In fact, vibration correctly applied is such a wonderful instrument in relieving pain that we cannot impress this one point too forcibly upon the minds of our readers: Always vibrate with a loose wrist-joint, using no greater pressure than the weight of the hand, as the entire benefit to be derived from the treatment is lost if this point is neglected...

Vibrations might be compared to fine shaking movements, in which the whole or part of the palmar surface of the fingers or hand is used. The benefit to be derived from this treatment depends so largely upon the manner in which it is administered, and the

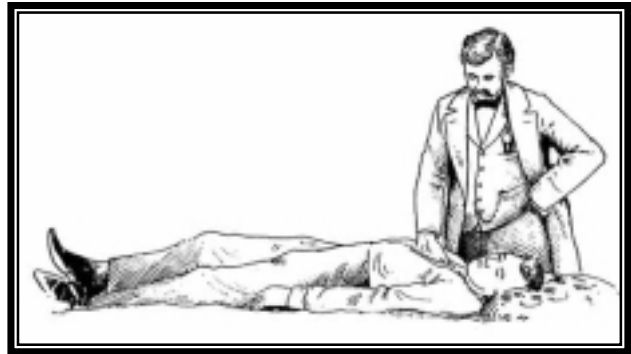


Figure 14: “Vibration” from *Osteopathy Complete* by Elmer D. Barber, D.O. (1898). See Barber’s written description of manual vibration in the text.

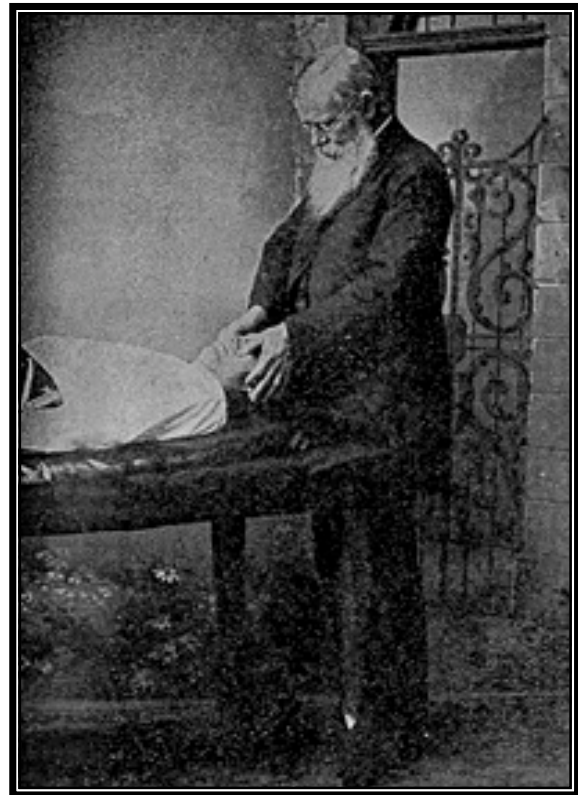


Figure 15: “VIBRATION OF THE FACIAL MUSCLES” from *Osteopathy Illustrated* by A. P. Davis, D.O., M.D., N.D (1909). “This move is made by placing the thumbs on either side of the alae of the nose, and using pressure on the malar bone, letting the thumbs slide downwards and outwards on the under edge of the malar processes of the superior maxillary bones. Repeat the movements two or more times.”

*treatment is so applicable in such a variety of cases, that we cannot be too particular in educating ourselves to vibrate correctly. Place the hand lightly upon the patient, using no pressure. The movements at the elbow are flexion and extension, while those of the wrist are adduction and abduction. The vibrations are produced through a succession of quick individual movements. There should be no straining of the muscles in the operator's arm, or strong contractions of the muscles of the hand, arm, or shoulder. When given correctly, with the hand on the anterior surface of the thorax, the vibrations can be easily felt by the other hand placed upon the back of the patient while with a stiff hand and arm no motion can be distinguished upon the back. To further give an idea of how delicately the movements should be made, place a tumbler of water upon a table, and the vibrations are given absolutely correct upon the same, the water will not move from side to side, but simply quicken in the center. The table should be fairly large to make a fair test. (Elmer D. Barber, *Osteopathy Complete*, 1898)*

Osteopathic physicians probably received more referrals from Cayce than any other health professional. Edgar Cayce made numerous references to electric vibrator therapy in relation to osteopathy. On numerous occasions, Cayce equated electric vibrator treatment with osteopathic treatment (e.g. 3795-2, 2587-3, 1541-12). In a few instances, vibrator therapy was said to be preferable to osteopathy for a specific individual at a particular point in time (306-1, 442-2, 854-1, 924-1, 2514-13, etc.). Therefore, to understand the “why” of electric vibrator therapy from the Cayce perspective, it is almost essential to have a basic understanding of some fundamental osteopathic concepts.

The Concept of Regulation

During Edgar Cayce's lifetime, osteopathic therapy consisted of two definite approaches to treatment. The most obvious emphasis was on finding structural problems and correcting anatomical abnormalities. In



Figure 16: “VIBRATORY MOVEMENT OF VISCERA” from *Osteopathy Illustrated* by A. P. Davis, D.O., M.D., N.D (1909). “The patient lying on the back, the operator places one hand out and covering as much of the abdomen as one hand will, placing the other hand on his own, over abdomen of patient, using gentle pressure rotates from left to right slowly and firmly for several moments, then disengages his hands and goes through a process of kneading for a little time; then repeat the rotary process and the percussing (tapping) process.”



Figure 17: “VIBRATING THE EYES” from *The Household Osteopath* by Francis J. Feidler, D.O. (1906). “With the patient's eyes closed place all the fingers of each hand around each eye-ball; then with a gentle pressure use the ball of the eye to treat the blood vessels and nerves behind the eye.”

other words, if a spinal vertebrae was out of alignment, an “adjustment” was required to put it back in place.

On the other hand, manual therapy was also used to regulate the physiological processes of the body (such as coordination and drainages – to be discussed below). Regulating treatments focused on re-establishing equilibrium and balance among the various systems and processes of the body. Thus, the two aspects of treatment were (1) correction of structure (anatomy) and (2) regulation of function (physiology).

In practice, these two aspects were often addressed by the same treatment. Here is a quote from the early osteopathic literature that acknowledges the two basic approaches to manual therapy. Note the reference to "centers along the spine," a key concept for understanding physiological regulation as the basis for coordination and drainages:

In our treatment of a spine there are two points which we may take into consideration; two objects which we may have in view. In the first place, we may wish to TREAT THE SPINE ITSELF [anatomical correction]. In the second place, we may wish to REACH, BY TREATING THE CENTERS ALONG THE SPINE, THE VISCERA TO WHICH THESE NERVES RUN [physiological regulation]. It is not always possible to disassociate these in your practice. I have divided these points thus simply for convenience in the consideration of them. (Charles Hazzard, The Practice and Applied Therapeutics of Osteopathy, 1899)

Edgar Cayce often recommended both types of treatment (structural correction and functional regulation) in his readings. Typically he spoke of "specific adjustments" and "coordinating treatments." For example, he would frequently suggest that the clinician make the specific correction of a spinal lesion and then go on to assist the body in establishing coordination.

Electric vibrator therapy can assist with both structural correction (especially as an adjunct to chiropractic treatment, as discussed below) and physiological regulation (by vibrating “centers” along



Figure 18: “INHIBITING THE VAGUS NERVE” from *The House Household Osteopath* by Francis J. Feidler, D.O. (1906). “At the junction of the collar bone and breast bone, and under the muscle that goes from the side of the skull to the collar bone, press upward against the collar bone firmly and steadily for a minute.”

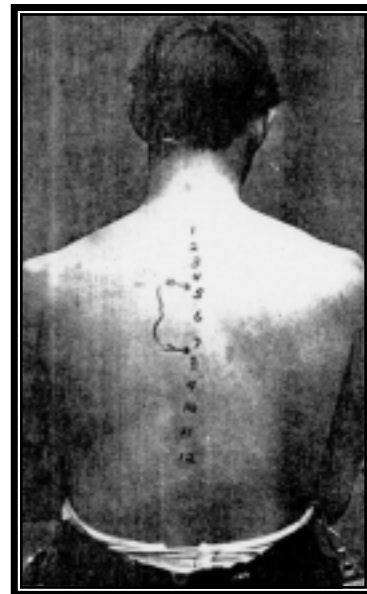


Figure 19: “Center for the Stomach” from *Principles of Osteopathy* by Dain L. Tasker, D.O. (1916)

the spine and abdomen to influence the activity of organs).

The Concept of Centers

Understanding the concept of centers is essential for the application of regulative treatments. In other words, there are nerve centers that influence the activity of the various organs and systems of the body. To appreciate traditional osteopathy, and its relevance to electric vibrator therapy, it is necessary to know where the centers are and how to therapeutically influence them. Thus, the concept of centers is inherent in the osteopathic model of treatment.

From the beginning of the profession, osteopathy recognized the significance of certain nerve ganglia as important centers that influence and regulate the vital processes of the body such as circulation, assimilation and elimination (Figures 19-20). The excerpts that follow are from the early osteopathic literature. Note that specific nerve centers regulate vital physiological processes.

*We all agree upon the one great point, that man is a machine, and that nerve-centers have been discovered upon which a pressure of the hand will cause the heart to slow or quicken its action, from which we can regulate the action of the stomach, bowels, liver, pancreas, kidneys, and the diaphragm. The thousands of people snatched from the grave by an application of these never-failing principles are proof positive that at last the keynote has been struck; and a school [osteopathy] established that can explain intelligently why certain manipulations produce certain results. (Elmer D. Barber, *Osteopathy Complete*, 1898)*

Certain points on the surface of the body are spoken of as "Centers." This word has become a part of the osteopath's technical vocabulary. It does not convey to the mind of the osteopath the same meaning which attaches to it when used in physiological text-books.

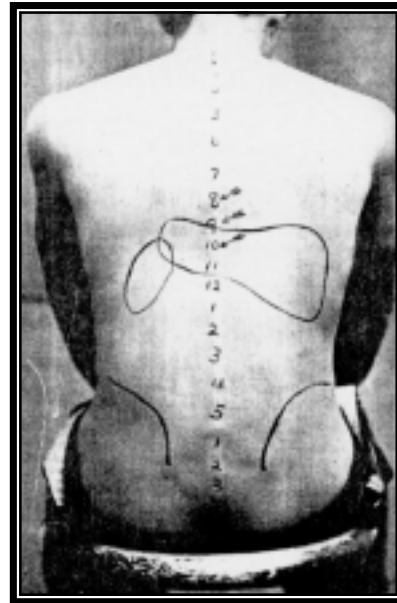


Figure 20: "Posterior surface outline of the liver and spleen with their centers indicated." from *Principles of Osteopathy* by Dain L. Tasker, D.O. (1916).

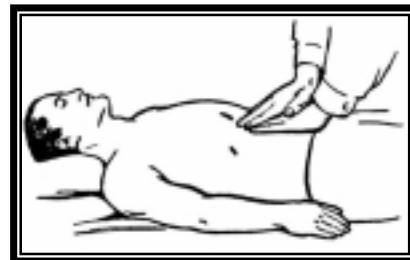


Figure 21: "STIMULATION OF THE SOLAR PLEXUS" from the *Text-Book of Osteopathy* by the American College of Mechano-Therapy (1910).



Figure 22: "INHIBITION OF THE VASO-MOTOR" from the *Text -Book of Osteopathy* by the American College of Mechano-Therapy (1910).

A physiological functional center in the central nervous system is that point where the action of a certain viscus or other structure is governed.

*An osteopathic center is that point on the surface of the body which as been demonstrated to be in closest central connection with a physiological center, or over the course of a governing nerve bundle.... No portion of the nervous system ever functions absolutely independently. The action of every portion affects all other portions, but certain areas in the brain and spinal cord seem to be somewhat set apart to govern or coordinate the physiological activity of certain organs. Physiology has demonstrated a large number of these centers. (Dain L. Tasker, D.O. *Principles of Osteopathy*, 1916).*

Thus the significance of these major centers is that they help to coordinate the nervous systems and the vital processes of the physical body. The following section will discuss the two primary techniques for influencing the centers.

Stimulation and Inhibition

The early osteopaths used massage and manipulations to *stimulate* or *inhibit* the activity of organs via the centers for that organ (Figures 21-24). Here is an example from the early osteopathic literature that mentions the use of stimulating and inhibiting treatments to the coordinating centers as the basis of osteopathic regulation:

Although it is a well-established principle of neurophysiology that the action of nerves can be influenced by mechanical stimuli, it has remained for the osteopath to demonstrate that it is entirely practical, and that it is more effectual to apply the stimulus to the nerve supplying the tissue or organ than to apply it directly to the structure involved. He has furthermore proven the physiological teaching that a sudden pressure over a nerve followed by immediate retraction will stimulate or excite the nerve to action; and on the other hand, a gentle steady pressure quiets



Figure 23: “INHIBITING THE SACRAL NERVES” from *The House Household Osteopath* by Francis J. Feidler, D.O. (1906). “With the patient lying face downward. With the fingers of one hand press hard upon the sacrum, into the depression on each side of the center, while with the other hand the legs are lifted up and held for a minute. Move the fingers an inch lower to the next pair of depressions and treat the same way. Also treat the third set of the depressions in the same manner.”



Figure 24: “Stimulating the Liver” from *A Manual of Osteopathic Manipulations and Treatment* by Wilfred L. Riggs, D.O. (1901).

or deadens the action ... It is not only obvious that there must be perfect continuity of nerve-force in order that any organ may receive a message to discharge a certain function, but proper innervation is an indispensable factor in the vitality of every tissue and organ. *COORDINATION OF THE NERVE-FORCE* [emphasis added] of the body is no less essential, for with the nervous energy of one part of the body in a state of excitation as compared with the rest, there is excess of some function which makes unnecessary demands upon the vitality of the body ...

With a thorough knowledge of the various nerve-centers, and the innervation of the different tissues and organs, the *OSTEOPATH IS ABLE TO COORDINATE THE NERVE-FORCE OF THE BODY* [emphasis added]. He can increase the nerve-current to almost any part of the being, and can quiet an excessive one as well. (Barber, *Osteopathy Complete*, 1898)

Stimulating and inhibiting techniques are mentioned in many osteopathic texts. Here are a two examples:

Stimulate - To manipulate the parts thoroughly.

Inhibit - To desensitize or hold the part for from one to three minutes. (Goetz, *A Manual of Osteopathy* 1909)

Stimulation and inhibition are terms which have been used to describe the manner of manipulating the tissues of the body. Stimulation usually consists of a quick stroking or rotary massage. Inhibition consists of slow, steady pressures, often applied with stretching of the underlying or adjacent tissues. (Ashmore, *Osteopathic Mechanics*, 1915)

Based on the these considerations, it becomes obvious as to why Edgar Cayce sometimes recommended electric vibrator therapy as a substitute for, or in place of osteopathic therapy. Using the electric vibrator over a particular center will tend to stimulate or inhibit the activity of that organ in a



Figure 25: “VIBRATORY MOVEMENTS; NECK AND BACK” from *Osteopathy Illustrated* by A. P. Davis, D.O., M.D., N.D (1909). “The patient being seated on a stool or chair, the operator bends head of patient forward against chest, places the ends of the fingers of both hands close tip to the edge of occiput, just posterior to mastoid processes on either side of neck, and with quick successive movements, holding finger ends against the skin so as not to slip, but move the skin with the fingers; makes movements with ends of fingers, held steadily toward spinous processes and back towards ears of patient, several times rapidly; then moves ends of fingers downward, and goes through same sort of moves, continuing this until these moves include the muscles of back of neck down to top of shoulders. This is a thrilling, vigorous, exhilarating treatment, and aids in promoting circulation of the blood, regulating it, and stimulating recurrent nerves along side and back of neck in all of the cervical region, and embraces the spinal accessory as well, on either side of spine all the way- or anywhere over body.”

manner analogous to the osteopathic techniques described above.

The Edgar Cayce readings use slightly different terminology in regards to stimulating and inhibiting treatments. The readings speak of *stimulation* and *relaxation* (instead of *inhibition*) as the basis for regulation of the centers.

Cayce's distinction between stimulation and relaxation seems to be based upon the strength of the treatment. Deep manipulations stimulate; a lengthy gentle massage relaxes. In some cases, he followed more closely the standard osteopathic technique for relaxation, that is, holding a steady pressure on the nerve center. The osteopathic literature also acknowledges the association between inhibition and relaxation. For example, McConnell (1935) recommends using a "continuous inhibitory relaxing pressure" when the patient is nervous or fearful. He also utilizes a "gentle, firm, continuous inhibitory relaxing method" as a prelude to making specific adjustments (McConnell, *Selected Writings of Carl Philip McConnell, D.O., 1935*)

Dr. Brown (Appendix A), describes the use of the electric vibrator for producing stimulation or inhibition of nerves centers as follows:

Vibratory Treatment should be divided into inhibition and stimulation, although some authors have three or more divisions of this subject. It seems that the point where stimulation merges into inhibition is so vague that no intermediate term need be used.

Stimulation is that form of vibration which will increase the activity of a nerve cell or of the part to which it is applied, or increase the function of the organs which are controlled by the centre over which vibration is given. Inhibition is the opposite, and when treatment of this character is given, it serves to decrease the activity of the parts to which it is applied, or to the part controlled by the nerve centre to which it is given. Stimulation can be obtained in from five seconds to a minute and a half, increasing the length of time as the amount of pressure and length of stroke are decreased, or conversely decreasing time as pressure and stroke are increased. Inhibition requires from thirty-five to forty seconds up to two to three minutes, the shorter the stroke and the less pressure exerted, the

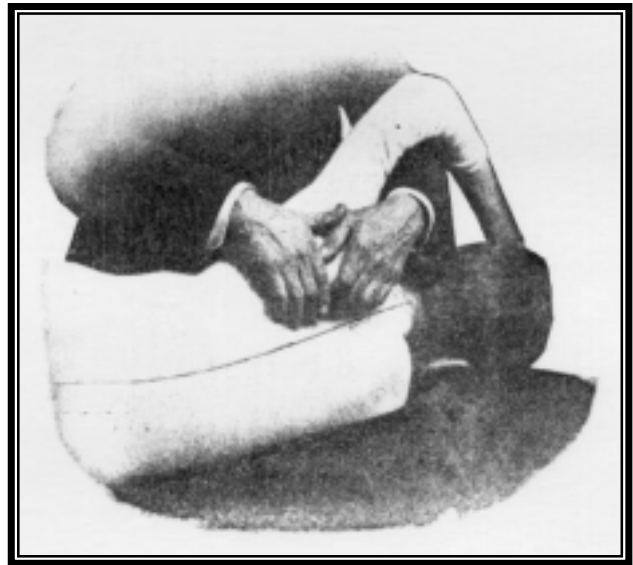


Figure 26: "MANIPULATION OF THE MUSCLES IN THE BACK, IN GENERAL TREATMENT OF THE SPINE" from *A Manual of Osteopathy* by Eduard W. Goetz, D.O. (1909). "HAVE the patient lie on his side, with his arm loosely thrown over yours as shown; begin at the second dorsal vertebra and work all the way down the back to the end of the spine, working the muscles on the side of the spine towards you. With considerable pressure, draw the muscles upward and outward away from the spine; now move your hands down the back a few inches and repeat the movement and so on down, releasing the patient's arm after you have reached the tenth dorsal vertebra. (The location of the vertebrae may be seen in cut No. 1, page 24.) Now turn the patient to his other side and work the muscles away from the spine in an endeavor to stretch them. This treatment may be made more effectual and complete by placing your fingers on the opposite side of the spine and drawing it upwards towards you; work so all the way down the spinal column."

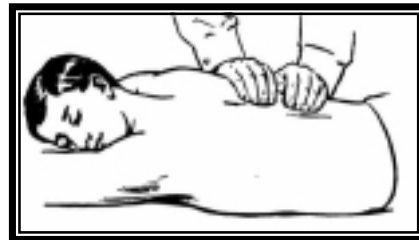


Figure 27: "Relaxing Tissues of the Back" from the *Text-Book of Osteopathy* by the American College of Mechno-Therapy.

more time is required. To secure either inhibition or stimulation quickly, it is best to use the ball attachment; where it is desired to continue the treatment for a longer time, then the softer attachment may be used. (Brown, *Vibratory Technique*, 1914)

The Concept of Coordination

Cayce's heavy emphasis on coordinating treatments that regulate the systems of the body is consistent with the osteopathic and medical practice of his day. Gregory (1922) went so far as to equate coordination with health and incoordination with disease:

*It is the existence and continuation of the normal equilibrium, and of perfect co-ordination and reflex action, which maintain perfect health, and it is the existence of some variation and loss of the perfect equilibrium of nerve action which engenders derangement of function, and the resulting incoordination, and their consequences, which is disease. (Gregory, *Spondylotherapy Simplified*, 1922)*

The importance of establishing and maintaining coordination is one of the most important themes in the Cayce health readings. Likewise, incoordination in all its myriad forms, was the most frequently cited source of disease. Thus, in recommending the use of both corrective and regulating (coordinating) types of treatment, Edgar Cayce demonstrates a vast knowledge of anatomy and physiology, of health and pathology, and of the therapeutic resources that were available at that time.

The concept of coordination is important to our discussion of electric vibrator therapy. The early osteopaths recognized the problem of only providing corrective treatments, particularly when the correction is "too severe" in one portion of the spine. Not only is the spinal lesion being corrected, but the centers associated with this area of the spine are being overstimulated in relation to the other centers along the spine.



Figure 28: "HEART, HEAD, VASO-MOTORS" from *The Household Osteopath* by Francis J. Feidler, D.O. (1906). "With the patient lying on either side. The tips of the fingers of the upper hand show where treatments are made for the heart, and to regulate the blood supply to the head. The tips of the fingers of the lower hand show where the treatments are made for the lungs."

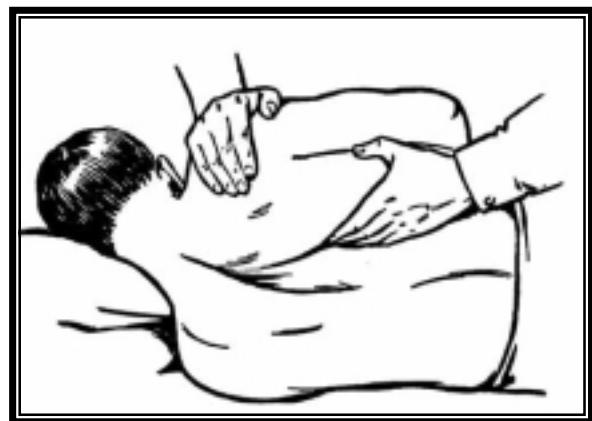


Figure 29: "MANIPULATION OF THE SHOULDER" from the *Text-Book of Osteopathy* by the American College of Mechano-Therapy.

Keep in mind that these centers assist in regulating the vital processes of the body (including the organs and glands). So, the organs in one part of the body may be overstimulated in relation to the organs of another portion in which the centers are not treated. Since some forms of treatment tend to focus only on finding and making anatomical corrections (chiropractors often use this approach), electric vibrator treatment to assist with coordination may be appropriate. This issue will be addressed in detail in the next chapter.

Of more immediate concern is the specific techniques used by osteopaths to insure coordination. Paraspinal massage in the form of rotary or circular massage along each side of the spine was one of the most frequent coordinating techniques discussed by osteopaths and recommended in the Cayce readings (Figures 26-27). The basic technique closely resembles, both in form and function, the use of the electric vibrator along the spine as described in previous chapters.

The Concept of Drainage

In the preceding sections, the primary focus has been on using manual therapy regulatory techniques for establishing coordination of the body's systems. This section will deal with another important regulatory function advocated in the Cayce readings and the early manual therapy literature – *drainage*.

To understand the natural process of drainage, it is helpful to review the physiology of this aspect of elimination as presented in the osteopathic literature:

The artery carries nutritional substances and oxygen to the tissues. Its functional impairment results in deficient oxidation. Contrariwise, any circulatory perversion affects the respiratory function. Upon the lymphatic circulation falls the duty of direct cell-feeding and drainage. Veins are charged with general drainage. They are more easily compressible than arteries on account of their thinner and more flaccid walls. Interference with their physiological activities results in passive hyperemia and a storing up

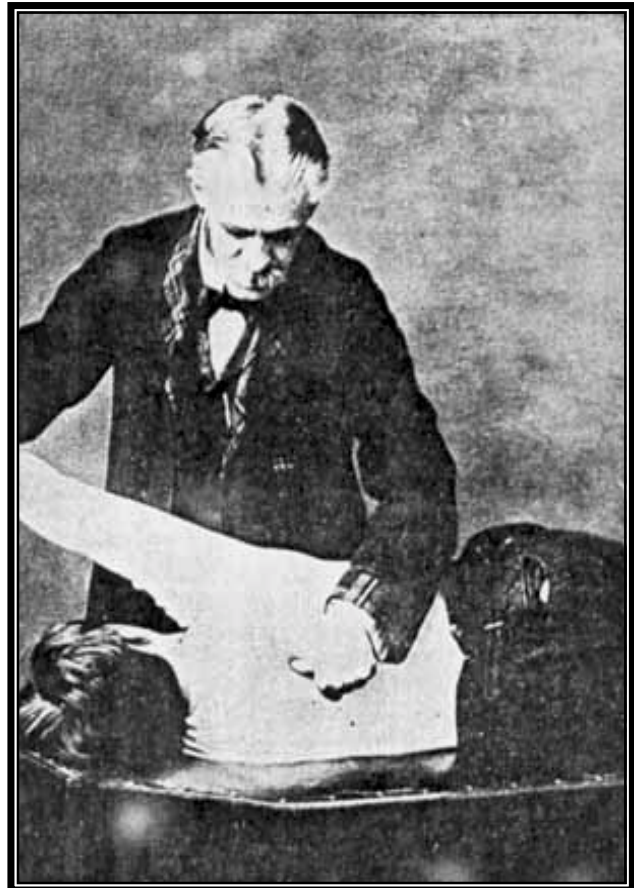


Figure 30: "TO STIMULATE THE CIRCULATION TO THE HEAD" from *The Household Osteopath* by Francis J. Feidler, D.O. (1906). "With the patient lying on his side, raise his arm well above the head, at the same time pressing with the thumb of the disengaged hand on the rib about an inch from the spine. Continue the pressure of the thumb while you lower the arm with a backward and downward motion. Lower the thumb to the next rib and repeat the movement until the lower border of the shoulder blade is reached. Treat the other side in the same way."

in the tissues of catabolic products. (Downing, *Principles and Practice of Osteopathy*, 1923)

Thus, venous and lymph circulation are the primary pathways of waste removal and tissue cleansing in the body. The expression "setting up drainages" is commonly used in the Cayce readings where tissue cleansing is needed.

The osteopathic literature and the Edgar Cayce readings contain many examples of specific techniques for assisting with drainage (Figures 28 and 30). Due to the limited focus of this book, an extended discussion is beyond the scope of this work. (See the Resources listed at the end of this chapter if you wish to learn more about this fascinating topic.) The primary concept to keep in mind is that normalizing circulation to the tissues of the body is the basis for therapeutic drainage. Thus, by using the vibrator to stimulate superficial circulation (via the cup applicator) or by influencing vasomotor nerve centers that govern systemic circulation (via deep manipulation with the ball applicator), improved drainage can be obtained. The general treatment format used by early osteopaths is one of the means for improving drainages throughout the system.

General Treatment

Edgar Cayce often recommended “general treatment” in addition to “specific treatment.” In other words, sometimes the body can benefit from a relaxing full-body treatment, whether by massage, manipulation or vibration (Figure 26). Many of the early osteopathic manuals contain explicit descriptions of how to give a general treatment.

In nervous troubles and in many constitutional diseases Osteopaths have discovered that they get better results when they give the general treatment. This helps the circulation and makes a tired patient feel like new; and the treatment, after all, when there are no specific lesions to remove, is but little more than deep massage, in which nearly all the muscles of the body are manipulated. (Murray, *Practice of Osteopathy*, 1925)

The significance of the general treatment is that it provides a simple format for regulatory techniques such as coordination and drainages. By its very nature, a general treatment will improve circulation, which is a prerequisite for drainages. Because the general treatment tends to stimulate all the

nerve centers, it also has a coordinating effect that is lacking if only a specific adjustment is made.

Additional Resources

The preceding discussion of osteopathic concepts as they relate to electric vibrator therapy includes a substantial amount of documentation and explanation of the concepts of regulation, nerve centers, coordination and drainages. However, we have barely scratched the surface of this deep and complex subject. Here are some additional resources for individuals interested in pursuing this topic further.

Chapter Three from *Principles and Techniques of Nerve Regeneration* by David McMillin (A.R.E. Press, 1989) contains a more exhaustive discussion of the above topics with extensive quotes from the Cayce readings. You will recognize some of the formatting, as I have adapted this chapter from the previous work.

Meridian Institute has contributed a chapter to a textbook that covers many of the same topics. “Physiological Regulation through Manual Therapy” (*Physical Medicine and Rehabilitation: State of the Art Review*, Vol. 14, No. 1, February 2000 published by Hanley & Belful, Inc: Philadelphia) is a more academic resource covering these basic osteopathic concepts that are emphasized in the Cayce readings.

The *Early American Manual Therapy* collection is a web-based resource available on the Meridian Institute website. Virtually all of the historical citations in this book are included in the EAMT collection.

www.meridianinstitute.com

CHIROPRACTIC AND VIBRATOR THERAPY

The previous chapter laid out some basic osteopathic concepts that help us to understand *why* Edgar Cayce so often preferred osteopathic treatment over other systems of healing and *how* electric vibrator therapy achieves some of those primary therapeutic effects. In this chapter we will briefly focus on vibrator therapy as an adjunct to chiropractic treatment.

Here is an example of vibrator therapy as an adjunct to chiropractic treatment, in a reading given by Edgar Cayce:

As we would find, these [corrections] may be done either through osteopathic adjustments and general manipulation, or through chiropractic adjustments and through the use of the electrically driven vibrator following same.

Now, get the difference between these: If the osteopathic manipulations are given, do not use the vibrator. If the chiropractic adjustments are given only, then USE the vibrator - at least every other day, evenings preferably, when retiring. (410-1)

Here is another example that is even more explicit in describing the effects of chiropractic and vibrator therapy as compared to osteopathic treatment that combines both adjustment and massage:

... if the corrections are made by adjustments chiropractically, then USE the vibratory forces with same as indicated. If the osteopathic method is used, with the general massage that goes with same, the vibrator treatments would not be so necessary, though the vibrator may be used by the body itself ... (1633-1)

Clearly in these cases the electric vibrator treatments were to serve a function comparable to that normally provided by osteopathic treatment. At this point in our discussion, the reason should be obvious. The chiropractors of that era tended to only make adjustments without attempts to coordinate the nervous systems or setting up drainages by soft tissue massage

and manipulation. The electric vibrator therapy was to provide these aspects of treatment. Thus one way of integrating vibrator treatment with chiropractic is to use the vibrator *after* the chiropractic adjustments to provide systemic physiological regulation. This is comparable to Cayce reminding an osteopath to provide coordinating treatments after making a spinal adjustment.

The other way that vibrator therapy can be used in conjunction with chiropractic treatment is to use the vibrator *before* the adjustments to relax the muscles and assist with the adjustment. In reading 589-3, given for a chiropractor who was setting up his practice, Cayce suggested that the vibrator be used in this manner.



Figure 31: Heavy duty modern vibrator used by a Cayce oriented chiropractor as an adjunct to chiropractic adjustments.

PART III: HISTORICAL RESOURCES

APPENDIX A

VIBRATORY TECHNIQUE

**BENJAMIN HOUSTON BROWN, M. D.
(1914)**

INTRODUCTORY.

The object of this book is to furnish the general practitioner in as simple and compact form as possible, the technique to be used in the treatment of various conditions by Mechanical Vibratory Stimulation.

In writing this it has not been deemed necessary to include anatomy and physiology, with which all practitioners of medicine are familiar. All theory has been left out, and only a practical working basis given, so that any physician possessing a vibrator may take any individual case and in a moment's time be able to learn just how and where to apply vibration. The technique which is furnished here is based upon an experience of a number of years in which fully twenty-five thousand treatments have been given, covering many hundred individual cases of a widely varying lot of conditions. The technique which is described is one which has proven most efficacious in the writer's experience.

It is sincerely hoped that this small manual will serve the purpose for which it is written and that it will enable the practitioner to broaden the field of usefulness of his vibrator.

ATTACHMENTS AND TREATMENT.

Every vibrator should possess at least two attachments for spinal work, one to be used where the amount of sensitiveness present is not very great, and another in which a milder form of treatment can be given to those cases in which the spine is extremely sensitive. An attachment for local use over the abdomen and over the limbs is necessary, and should

be in the form of a brush, so as to give only superficial stimulation. In addition to these, there should be a special attachment for treating the eye, one for treating the throat, and another, for rectal or uterine vibration.

The spinal treatment should always consist of as heavy vibration as the patient can stand and this should be increased at each treatment until they are able to bear quite a heavy treatment.

For inhibition it is always best to use the attachment which will get deeply in the tissues and bring about the result very quickly. Inhibition can generally be obtained in from twenty-five seconds up to a minute and a half, depending on the length of stroke and the amount of pressure being used. With heavy vibration and heavy pressure, the result is obtained in from twenty-five to thirty seconds; if the pressure be decreased and the stroke be diminished, to a medium, then forty-five to fifty seconds are required; if the shortest stroke is used, and pressure be light, vibration should be kept up a minute to a minute and a half, rarely more.

STIMULATION AND INHIBITION.

Vibratory Treatment should be divided into inhibition and stimulation, although some authors have three or more divisions of this subject. It seems that the point where stimulation merges into inhibition is so vague that no intermediate term need be used.

Stimulation is that form of vibration which will increase the activity of a nerve cell or of the part to which it is applied, or increase the function of the organs which are controlled by the centre over which vibration is given. Inhibition is the opposite, and when treatment of this character is given, it serves to decrease the activity of the parts to which it is applied, or to the part controlled by the nerve centre to which it is given. Stimulation can be obtained in from five seconds to a minute and a half, increasing the length of time as the amount of pressure and length of stroke are decreased, or conversely decreasing time as pressure and stroke are increased. Inhibition requires from thirty-five to forty seconds up to two to three minutes, the shorter the stroke and the less pressure exerted, the more time is required. To secure either inhibition or

stimulation quickly, it is best to use the ball attachment; where it is desired to continue the treatment for a longer time, then the softer attachment may be used.

ABNORMAL POSITION OF THE COCCYX.

If the coccyx be displaced anteriorly or laterally, the muscles in the surrounding parts should be thoroughly relaxed, and then the attachment must be placed within the rectum and brought back against the coccyx and pressure exerted until the coccyx is forced back into its normal position. If the treatment causes a great deal of pain, the operator should not try to completely replace it in less than four or five treatments. After the bone has been put in place, the muscles attached to it should be gently stimulated, causing them to contract and hold the bone in its proper place. If the displacement be posterior, heavy vibration directly over the posterior surface of the coccyx should be used, being however, not to force it into position too quickly.

ADENITIS.

The treatment of adenitis, no matter what the cause be, should consist of vibration over the glands themselves, and over the chains of lymphatics leading from and to them. If pain be present, then the spine should be examined for sensitive points, and these should be inhibited. It is always necessary, though, to stimulate the liver and spleen and to keep the bowels in good condition in order that absorbed products may be eliminated; otherwise febrile symptoms will appear. If the adenitis be of tubercular origin, a very mild spinal treatment should be used in addition to the local treatment for the purpose of stimulating the system as a whole. The results in adenitis are uniformly good, even in those cases in which fluctuation may be detected,

ALOPECIA.

Treatment of alopecia should be directed to improvement of the circulation in the scalp. This may be accomplished by vibration applied over the vaso motors which control the blood vessels which supply

the part. The centres controlling this are found in the cervical and upper dorsal region. The treatment over the spine should be stimulative, while that over the cervical region anteriorly should be inhibitive. Local treatment should be given with the brush for fully five minutes.

Treat cervical regions anteriorly and posteriorly. Ball, posteriorly, medium stroke, 15-20 seconds each point. Brush anteriorly 45-50 seconds.

AMENORRHEA.

Amenorrhea, like all diseases of the menstrual function, is peculiarly susceptible to Mechanical Vibratory Stimulation, unless there be some obstruction, such as plugs, displacements, or other anatomical abnormalities that prevent the normal flow. Even in some cases in which displacement is the causative factor, good results are obtained by stimulation of the centres controlling the ligaments, in such a manner as to tone them up and cause them to bring the uterus back into its natural position. The cases of this condition which yield most readily are those in which abnormal conditions can be outlined along the spine, such as muscular contractions, and sensitiveness, and in the treatment, all of these things should be taken into consideration. Where contraction exists, the treatment should be such as to produce a relaxation of the muscles; where sensitiveness is obtained, the treatment should be carried to the point of inhibition, that is, until all sensitiveness disappears.

Ordinarily, the treatment of amenorrhea should be given with the ball attachment, medium stroke and medium pressure, fifteen to twenty seconds at each point from about the eighth or ninth dorsal down to the upper border of the sacrum. Examination of these points will usually show muscular contraction and sensitiveness. However, if these do not exist, treatment should be applied just the same.

Many cases of amenorrhea are due to anemia, and these should be given a general spinal treatment for the purpose of toning up the system as a whole. It is also well to thoroughly stimulate the spleen, as this will have a good effect on increasing the number of red corpuscles in the blood. In amenorrhea, as in other

conditions, all symptoms must be taken into consideration, and if there be painful areas at any point an inhibitive treatment should be given; if constipation exists, treatment should be given for the relief of this. Where no apparent cause can be discerned, it is always well to look for abnormal positions of the pelvis and for displacements of the coccyx, as if either of these conditions exist, they will exert a very profound effect upon the sympathetic and spinal nervous systems and produce deleterious results. At times the non-appearance of the menstrual flow is due to inactivity of the ovaries, and this will require, in addition to stimulation over the ovarian centres, the application of vibration over the ovaries anteriorly; i.e., the patient should be placed upon her back and deep vibration be given in the iliac fossae.

ANEMIA.

Give general spinal treatment with the brush, medium stroke and medium pressure, placing the attachment immediately over the spinous processes. Give this for a minute and a half to two minutes; then, with the ball attachment, thoroughly percuss the liver and spleen. Also use technique for raising the ribs. Then, with the ball and deep pressure, medium stroke, vibrate over the spleen anteriorly three-quarters of a minute to a minute and a half. If constipation exists use technique for correcting same.

ANGINA PECTORIS.

Angina Pectoris may be benefited by vibration by use of inhibition over the centres which are found from the seventh cervical to the eighth dorsal inclusive. Very often examination of the thorax will show that one or more of the ribs are deflected from their normal position. Another common condition found is displacement of the clavicle at its sternal articulation. If any of these anatomical deviations be found, they must be corrected. This can usually be done in one or two treatments, although the displacements may recur until the muscles are toned up sufficiently to hold them in position, or, as is often the case, the deviation is due to muscular contracture which is pulling the bones from their normal position, then the muscles must be

relaxed. In the treatment of this condition, vibration must also be given over the whole thorax, and an inhibitive treatment must be given the pneumogastric nerves. While giving the treatment over the thorax anteriorly, it is well to have the patients extend their arms over their head, and to have a pillow doubled up under their back so as to bring the thorax into as much prominence as possible. Treatment B Ball, cervical and dorsal regions, and at posterior angle of ribs.

ANKYLOSIS.

Only the fibrous form of ankylosis is amenable to vibratory treatment, and many of these cases require a long course of treatment before any result is obtained. Heavy vibration should be given over the joint itself, and at the same time the operator should forcibly move the joint as much as possible. The centres controlling the blood supply to the affected part should be stimulated so as to increase the arterial flow and to relieve venous stasis. The circulation can also be directly benefited by using vibration over the blood vessels of the part, following their course and always working from the joint toward the trunk. The local treatment should be heavy over the joint itself, and light over the blood vessels. Treatment B Ball, spine, medium stroke, medium pressure, 15-20 seconds at each point. Brush locally.

APPENDICITIS.

Look for displacements of the lumbar vertebrae, and for contractions of the erector spinae, or quadratus lumborum muscles. If a displaced vertebra is found, use the technique that is described in another chapter. Relax all contracted muscles by heavy vibration twenty-five to thirty seconds over each point. If none of these abnormalities are found, then vibrate heavily with medium stroke twenty-five to thirty seconds at each point from the ninth dorsal down to the sacrum. Use ball attachment with deep vibration a minute to a minute, and a half over the region of the appendix.

ASTHMA.

Varying results have been obtained by the use of vibration in this particular disease, all, depending upon the cause. As is well known, asthma may be caused from disease of the heart or kidney. These being organic in character, are not amenable to vibration, though if given at the time of a spasm, it may bring about temporary relief. Other cases of asthma yield better results, especially those which originate in some disorder of the nervous mechanism, and also those due to congestion of the various viscera. In asthma due to disease of the heart, treatment should be directed to the inhibition of the spinal centres lying in the area between the third and eighth dorsal. In those due to degenerative processes of the kidney, the treatment should be inhibitive, but should be given to the lower dorsal and the upper two or three lumbar. If the etiological factor be of nervous origin, the treatment should be inhibitive, and should be applied throughout the dorsal region. The patient should be turned upon his back, and an inhibitive treatment should be given to the pneumogastrics. Beneficial results are greatly hastened by thorough vibration of the thorax anteriorly. As is sometimes the case, asthma is due to a reflex condition from the nose; here the treatment should be inhibitive, but should be directed to the peripheral terminations of the nerves supplying the nose. This is best given with the small facial or eye attachment, used locally.

Anatomical defects are often productive of asthmatic conditions; this is especially true of a depression of one or more ribs. Such conditions as this should be corrected by using the technique which is given in another part of the book under "Abnormalities of the Bony Structures Forming the Thorax." If the paroxysm be due to a congested condition of the liver, the liver centres should be inhibited; i.e., inhibition should be given to the centres lying between the fourth and eleventh dorsal, inclusive. In addition to this, the vibrator should be applied over the liver posteriorly, using a percussion stroke forty-five to fifty seconds. This usually suffices to reduce any congestion, and thus relieves the asthmatic attacks. Treatment B Ball, cervical region to ninth dorsal, medium stroke, 15-20 seconds each point. Brush over thorax anteriorly.

BELL'S PALSY.

Vibration has proven efficient in a great many cases of Bell's Palsy, and should be given as follows: with the brush attachment, stroke less than medium, vibrate thoroughly over all facial muscles on the affected side; this should consume four to five minutes. The ball should then be used throughout the cervical region for the effect on the trophic centres. The stroke and the pressure should be medium, and the attachment should be left at each point twenty-five to thirty seconds. The sympathetics which lie in front of the transverse processes of the cervical vertebrae should be stimulated with the soft attachment; to do this requires three-quarters of a minute to a minute on either side.

BRONCHITIS.

Practically the same treatment is necessary here as that which is described under tonsillitis, laryngitis, etc., with the addition of mild vibration over the thorax anteriorly.

CATARRHAL DEAFNESS.

The vaso motors controlling the blood vessels to the head and face arise at about the second dorsal vertebra, and from this point they go anteriorly, and mingle with the inferior cervical ganglia; from thence they go as a single cord, through the middle and superior cervical ganglia, and, with the internal carotid artery, they enter the base of the skull, where they form the carotid and cavernous plexuses, and are closely associated with the ophthalmic branches of the cranial nerves. In their course, they send off a connecting branch which joins Jacobson's Nerve. This fact should always be taken into consideration in the treatment of any condition affecting the head or face. A routine treatment for catarrhal deafness, and one which will serve in most cases to bring about a cure, use the spinal attachment fifteen to twenty seconds at each point from the third dorsal up to the first cervical, going on either side of the spine; then, with the same attachment, same stroke, and same pressure, place the machine in such a manner as to get a percussion stroke. This should be used over the mastoid processes forty-five to fifty

seconds each. The patient should then be placed on his back, and the cervical sympathetics stimulated twenty-five to thirty seconds; then, with the ear attachment go directly over the external meatus, vibrating here thirty to forty seconds. If the attachment is cup-shaped, the instrument should be raised and lowered so as to produce a suction effect, and thus cause an outward and inward motion of the drum. It has been recommended by some to use percussion over the point of the jaw, at the same time closing the ears by means of the fingers. This has been used successfully by Dr. Wilbur L. Wright, Washington, D. C.

If a neurasthenic element is present in the condition, as one will often find, in addition to the above treatment, a general spinal stimulation should be given. The treatment generally serves to abate all noises, and after a time to increase the power of hearing, and one can safely say that improvement should follow in from 90 to 95 percent of all cases treated.

CEREBRAL-ANAEMIA.

Use ball attachment, heavy pressure with medium stroke forty to fifty seconds over each point from the first cervical to the fourth or fifth dorsal. Vibrate over the cervical region anteriorly a minute to a minute and a half on either side.

CEREBRAL-HYPERAEMIA.

With the ball attachment, medium stroke, from the first cervical to the fourth or fifth dorsal, going on either side of the spine and placing the attachment between the transverse processes of the vertebrae, leaving it at each point twenty-five to thirty seconds. Then with the soft attachment vibrate forty to fifty seconds over the sympathetics in the cervical region. These can be reached anteriorly.

CHOREA.

It will be found that a large percentage of cases having choreic spasms will yield in comparatively few treatments to Mechanical Vibratory Stimulation. The treatment should be inhibitive, and

should be directed to the centres controlling the area in which the spasms occur, as, for instance, if the facial muscles are those involved, the treatment should be directed throughout the cervical region and over the exit of all cranial nerves supplying the face; if the hands and arms are at fault, then the treatment should be given over the cervical and upper dorsal regions, and if the lower limbs are involved, vibration should be applied to the lower dorsal and lumbar regions. The operator should always bear in mind that any points which are extremely sensitive, or any areas in which muscular contraction lies should be given attention.

COLITIS.

Colitis, where there is a catarrhal condition of the mucous membrane lining the intestinal tract, is, as a rule, readily relieved by vibratory treatment; the intestinal tract, with the exception of the rectum, being supplied by sympathetic nerves, may readily be affected by the use of vibration over the great sympathetic plexuses, which may be reached through the abdomen, or by means of the rami-communicantes, through the posterior primary divisions of the spinal nerves. The majority of the sympathetics in the intestines are derived from the splanchnic area, and as these lie in the dorsal region, they may be reached by using vibration over the posterior angles of the ribs, the vibration being transmitted through the bones to the sympathetics, which, in the dorsal region, lie on the heads of the ribs. Treatment either given locally over the abdomen or along the spine should be of a stimulative character; this will relieve the venous stasis and allow the free circulation of the blood in the vessels. For the relief of pain, the treatment should be given locally to the point of inhibition.

CONSTIPATION.

It is safe to say that at least 95 percent of cases of this condition, whether they be chronic or acute, will be greatly benefited by vibratory stimulation, as there can be no doubt that mechanical or physical treatment is the ideal method to be used in conditions of this kind. Drugs and enemas are of no avail, as their use only serves to give temporary relief, and they have to

be increased in frequency and amount each time they are given, while vibration gets at the seat of the cause, and by relieving or removing it, brings about the desired cure.

The conditions which prevail more often in constipation than any others are atony or spasticity of the intestinal walls, and one or the other condition usually exists in constipation of any form. Atony may be due to lack of stimulation to the nerve supply of the intestines, due to an insufficient amount of food being taken into the system, or it may be due to overloading of the intestines, in which case a constant irritation to the nerve endings in the intestinal walls will, after a time, fail to arouse any response, and the intestines will become distended, and the peristaltic movements will be greatly diminished in frequency and force.

A frequent cause of constipation is the failure on the part of the patient to respond to the impulses which the packing of the feces in the rectum brings about; this, as in cases of overloading of the intestines, results in atony of the rectum. When an atonic condition of the rectum exists, it is manifested by contracture or extreme sensitiveness at points overlying the foramina of the sacrum, due to the fact that the rectum, receiving its nerve supply from the sacral plexus of nerves, they are reflexly affected.

The various secretory organs which furnish the fluids whose action is the digestion of food may be at fault, owing to the increase or decrease of any one of their constituents, thus changing their chemical make-up, or if the fluids themselves be small in quantity, digestion cannot take place, as there is too small any amount of fluid to affect the amount of food which is taken in.

Taking the treatment of constipation up in order as the etiological factors are given we must, in addition to correcting all faulty habits, take into consideration the anatomical abnormalities which exist in atonic conditions of the intestines. Treatment is best applied through the splanchnic area, for reason that the intestines, with the exception of the rectum, are supplied by sympathetic nerves, and to reach these, we must depend upon the transmission of the vibratory impulse either through the posterior primary divisions

of the spinal nerves by way of the rami-communicantes, or through the bony structures themselves, in the latter case using vibration over the posterior angles of the ribs, for reason that the sympathetics in the area which supply the intestines lie on the heads of the ribs themselves. Here stimulative vibration must be given, unless the operator is able to detect sensitive points; in this case, the treatment is given to the point of desensitization of all tender spots.

In those cases where spasticity exists, the operator will, as a rule, find an intense amount of muscular contracture, and here it is his duty to relieve contractures by using vibration over each contracted muscle until it is thoroughly relaxed. Relaxation can be determined by the appearance of sensitiveness, and the vibration should be continued until this sensitiveness disappears. The operator will then know that he has succeeded in inhibiting the nerves over which he is working.

Where the amount of liver secretion is very great, the spinal attachment should be used from about the second to the eleventh dorsal on the right side, leaving the attachment at each point thirty to forty seconds. If the amount of fluid be too small, then fifteen to twenty seconds at each point will suffice.

Where the pancreatic fluid is in excess, inhibition should be given from the seventh to the eleventh dorsal inclusive, or, if the fluid be small in quantity, then stimulation of these points should be sought for.

Constipation due to packing of feces in the rectum is best relieved by exceedingly heavy vibration given for a brief period of time over the lower lumbar and sacral regions, or, if as is often the case, the sphincters are contracted and the physician possesses a vibrator which is capable of divulging the sphincters, then this operation should be performed.

All cases of atonic constipation are greatly benefited by a mild stimulation of the pneumogastrics, and some few cases of atony are greatly relieved by work over the abdomen itself, the rule being to follow the course of the colon. The average man would think that the abdominal treatment was preferable in all cases, but experience has shown otherwise, for the

reason that very few men will carry vibration to the point of stimulation only, and they usually think that the abdominal treatment should be of from fifteen to twenty minutes duration. They do not stop to consider that with the great plexuses of sympathetic nerves which are reached through the abdomen they will secure inhibition very quickly, and thus decrease the peristaltic action instead of increasing it, as they would like. If abdominal treatment is given at all, it must be very brief, never lasting over a minute to a minute and a quarter, and the treatment should be confined to the colon alone. Of course, in speaking of the brevity of abdominal treatment, we do not mean those cases in which the brush or soft attachment is used to secure the toning up of the abdominal muscles themselves, as in cases of this kind the treatment may be lengthened to two or three minutes, providing that heavy vibration is not given.

In conjunction with vibratory treatment, it is always necessary, of course, to correct all faulty habits on the part of the patient, and in those in whom lack of exercise is the cause, then more exercise must be prescribed; in those in whom the diet is at fault, this must be corrected, or in the cases of those in whom the amount of fluids taken is deficient, the physician must impress upon the patient that a sufficient amount be used.

CORYZA.

Heavy vibration with short stroke twenty-five to thirty seconds at each point from the first cervical to the fourth or fifth dorsal. Use the soft attachment over the cervical region anteriorly thirty-five to forty seconds at each side. Use the facial attachment over the point of articulation of the nasal bones with the frontal B minute to a minute and a half, giving fairly deep pressure. Use light vibration either side of the nose.

CYSTITIS.

The spinal attachment must be used to the point of inhibition to the lower part of the spine, beginning at about the ninth dorsal, and going down over the sacrum. Heavy vibration must be applied in the perineum, and over the lower portion of the

abdomen. The lymphatics in the inguinal and femoral regions must be stimulated, as should also the liver and spleen.

About every other treatment the rectal attachment should be applied, passing it well up into the rectum, and bringing it forward so as to get as much vibration directly to the bladder as possible. These cases are also, as a rule, benefited by allowing the attachment to rest over the prostate gland for a half to three-quarters of a minute. It is sometimes well to use the brush over the lower part of the abdomen, using deep pressure and vibrating here for about a half to three-quarters of a minute. In the spinal treatment the attachment is left at each point fifteen to twenty seconds. The vibration in the perineum should not be continued longer than three-quarters of a minute to a minute. The stimulation over the lymphatics should be continued for a minute and a half to two minutes. In stimulating the liver and spleen the ball should be used with percussion stroke forty-five to fifty seconds over each.

DEVIATIONS OF THE BONY STRUCTURES FORMING THE THORAX.

Deviations to be looked for in the thorax consist of depression or elevation of one or more ribs, displacements at their spinal attachment in any direction, or at their junction with the cartilages. To detect the depression or elevation of a rib or displacement at its articulation, the operator should place his fingers in the intercostal spaces, comparing one side with the other, and comparing the spaces above and below. As a rule, where a rib is displaced, one can detect sensitiveness by using digital pressure at the point where the rib articulates with the vertebra. The technique for replacing a rib which is depressed is as follows: Use the brush attachment, placing it at the posterior angle of the rib, and using a short stroke and heavy pressure; while holding the instrument here, the operator should place his hand over the patient's shoulder down the anterior surface of the thorax. He should then lift up on the patient's body in such a manner as to spread the ribs apart, with the pressure at the posterior angle serving as a fulcrum and the

patient's body as a lever. Pulling up in this way the muscles which are attached to the ribs will serve to pull the rib into its normal position. If the displacement of the rib be upward, then the same attachment and pressure should be used at the posterior angle, but the operator should place his fingers on the affected rib at some point distant from the spine and use downward pressure in such a manner as to force the rib down into its normal alignment. If a rib be displaced forward at its articulation with the spine, the brush should be placed at some point on the anterior wall of the thorax over the affected rib, using heavy pressure, at the same time the operator having his hand on the affected rib at a point about the mid-axillary line. Pressure should be downward and toward the sternum. This will pull the rib back into its proper position. If the displacement be backward at the articulation of the spine, heavy pressure directly over the rib will force it into position.

DIABETES MELITUS.

Look for abnormalities in the ribs. If found, correct same. Otherwise use ball attachment, medium stroke, medium pressure, from the first dorsal to the fourth or fifth lumbar. Same attachment, same stroke and same pressure at the angle of the ribs fifteen to twenty seconds at each point. Thoroughly percuss the liver and spleen, using medium stroke and medium pressure. Then with short stroke and light to medium pressure vibrate forty to fifty seconds at the base of the skull. Vibration should also be given twenty-five to thirty seconds over the pneumogastric nerves.

DIARRHOEA.

In acute cases of diarrhoea, especially that form in which the condition is due to increased peristaltic action, Mechanical Vibratory Stimulaton forms a very valuable method of treatment. Of course, if there be bacteria or any other agent in the intestines, which, by constant irritation are exciting the intestines to excessive action, then these must be removed before relief can be obtained. Examination of the spine in diarrhoea will usually disclose an excessive amount of

sensitiveness or muscular contracture in the lower part of the spine, especially through the lumbar region.

The treatment by vibration consists of heavy pressure with a short stroke over all sensitive points or over all contracted muscles along the spine, and it is best to continue the vibration at each point forty-five to fifty seconds. In addition to this, the patient should be placed on his back, and, using the short stroke with deep pressure, thoroughly vibrate the plexuses of sympathetics which lie in the abdominal cavity.

While holding the attachment over the abdominal points, the stroke should be gradually increased until it is at medium. If the above treatment does not cause a cessation of the symptoms then the operator must use the throat attachment with stroke a little less than medium, forty to fifty seconds over the pneumogastric nerves.

If the digestive fluids be at fault, then stimulation or inhibition, as it may be required, should be used over the centres controlling the organ at fault, using stimulation where secretion is deficient, and inhibition where it is excessive.

DISPLACEMENTS OF THE CLAVICLES.

Displacements of the clavicles are detected by comparing the two sides, or comparing the clavicles with those of a normal individual. Displacements are usually anterior or posterior, although they may be up or down. Where the displacement is posterior, the vibrator should be used with the brush attachment to relax all muscles around the articulation; then the operator should place his fingers on the under surface of the bone and lift up. This will pull the bone into its proper position. If the displacement be anterior, heavy vibration directly over the bone at its articulation will serve to correct the abnormality.

DISPLACEMENTS OF THE PELVIS.

These may be of the pelvis as a whole in which the muscles on one side of the body contract and pull the pelvis from its normal position, or there may be some slight displacement at the sacro-iliac synchondrosis. These are always detected by the

apparent difference in the length of the limbs; to determine this the patient should lie on his back, lying as flat as possible. The operator should stand at the foot of the table and bring the patient's feet together, placing his thumbs on the internal malleoli. If any difference exists, it is easily discernible in this way, as when the patient's feet are brought together, the operator's thumbs will not be in contact, one will be higher or lower than the other. It may be that the abnormality is such that one limb is apparently longer than the other, and to determine whether one limb is too short or too long, digital pressure should be used in the inguinal region on either side. It will be found that there is extreme sensitiveness, or there is a marked thickening of Poupard's ligament on the affected side. To correct the condition of the pelvis the muscles in the lumbar region and the deep abdominal muscles should be thoroughly relaxed, as should also be the gluteal muscles. If, for example, the left limb be at fault, then the patient should be placed on his right side, keeping the right arm extended and flexing the left limb at the hip and at the knee. The operator should then grasp with one hand the anterior superior spine of the ilium on that side, and the tuberosity of the ischium with the other hand. If the difference be an apparent shortening, then he will use pressure downward and backward with the hand on the anterior superior spine, and downward and forward with the hand on the tuberosity of the ischium. If the difference be an apparent lengthening, then the reverse should be used; the pressure should be upward and backward on the tuberosity of the ischium, and downward and forward on the anterior superior spine.

DYSMENORRHEA.

If cases of this character are treated during the menstrual period, relief from pain can, as a rule, be obtained by use of inhibitory vibration over the spinal centres which are found from about the eleventh dorsal down to the upper border of the sacrum. It is often necessary to treat this condition daily during the period, as freedom from pain may not last longer than a few hours.

Some cases of dysmenorrhoea yield quickly and the results are permanent. This is especially true of those cases in which sensitive points can be detected along the spine. When sensitiveness is found, no matter in what portion of the spine, vibration must be given until the sensitiveness disappears. To be able to elicit tenderness in any case is always a favorable sign, and those cases treated a week or ten days before the beginning of the flow will usually have a period free from pain. In those cases in which no abnormalities can be detected along the spine, either in deviations of the bony structures or in sensitiveness over the posterior primary divisions of the spinal nerves, vibration will serve to give only temporary relief, and it is best to withhold treatment until the flow begins, or, at the most, give it only a day or two in advance.

Careful examination should always be made to see if there is any displacement of the vertebra or the ribs, or if the pelvis is drawn from its natural position. The treatment in these cases should always be given with the spinal attachment, and if no sensitiveness is detected a medium stroke, medium pressure, and fifteen to twenty seconds at any one point is sufficient; if sensitiveness is obtained, then a shortened stroke should be used, and the attachment should be held forty to fifty seconds over each tender point.

DUCHENNE-ARAN'S DISEASE.

This condition, commonly known as progressive muscular atrophy, is due to some disturbance of the trophic centres in the upper portion of the spinal cord. Atrophy usually begins in the small muscles around the thumb and gradually extends up the forearm and arm until the pectoral muscles are involved. Prognosis in these cases must be doubtful, although some cases will be greatly benefitted. Treatment should be both local and spinal, giving the local treatment with the brush attachment and medium stroke, beginning at the hand and gradually working up to the shoulder. The patient should also be allowed to hold the vibrating part in his hand forty to fifty seconds. Spinal treatment must be stimulative and if the sensitiveness is not too great, the ball should be used, leaving it at each point fifteen to twenty seconds,

having the stroke adjusted to medium, and the operator exerting medium pressure. The spinal treatment should be given throughout the cervical region, and down as low as the fourth or fifth dorsal. This same attachment should also be used at the posterior of the ribs on the affected side. While giving the treatment over the ribs, the operator should extend the patient's arm above his head so as to spread the ribs apart as much as possible.

ECZEMA.

This condition is a most difficult one to treat by medicinal means, and the cases usually are of long standing and if any relief is obtained at all, it is usually only temporary. Vibration has proved very valuable as a method of treating this condition, and the results obtained have been of a permanent character. The form of eczema which is especially susceptible to vibration is that known as the senile variety, although many cases of different origin may be cured. Vibratory treatment should be directed in such a manner as to stimulate the circulation to all points involved, and should also be given over all lymphatic areas, and over the liver and spleen so as to promote absorption and elimination. It is, as a rule, not best to use the attachment directly over the part which is in a state of eruption, although treatment may be given the surrounding tissues. If constipation exists, this must be corrected.

ENLARGED PROSTATE.

If of the acute variety, such as follows gonorrhoeal inflammatory conditions, a favorable prognosis can be made in all cases of enlarged prostate; if of the senile variety, one is not so safe in promising to bring about much reduction in the size of the gland, although he can promise a certain amount of relief. In the acute conditions the enlargement rapidly reduces, and all pain and discomfort are relieved; in the senile form, the first noticeable change is in softening of the gland, thus allowing the urethra to dilate and permit of a free passage of the urine without the use of a catheter.

Vibration in either of the above forms must be both local and spinal. The spinal treatment should be given first, and should consist of stimulation from the

eighth or ninth dorsal down to the end of the spine, for the purpose of starting up free circulation in the parts, and a percussion stroke must be used over the liver to equalize the circulation between the Portal System and the hemorrhoidal vessels. The next point is the local treatment, and this should be administered as follows: if the vibrator gives a percussion or rotary stroke, it does not matter in what position the patient is placed; if the stroke be lateral, then the patient must be placed on his side, and the vibrating arm placed in such a manner as to allow of a gliding stroke over the back of the prostate. The machine must always be put in motion and the attachment well lubricated before it is allowed to pass into the rectum. In passing the attachment within, the first direction of the instrument is anterior; i.e., almost directly towards the umbilicus, until it is well within the sphincter; then it should be turned backward and allowed to follow up the posterior wall of the rectum until it is well above the prostate. It should now be brought forward and downward until it rests on the gland, and should be left there three-quarters of a minute to a minute and a half.

If there be any vesiculitis accompanying the prostatic trouble, and this is the rule in acute prostatic disease, the attachment must be pushed forward and to either side, so as to reach the vesicles and milk their contents into the urethra. After the local treatment, if there be any sensation of bearing down or other discomfort about the anus or rectum, vibration must be given in the perineum. This should be of a mild character, and should be kept up a half to three-quarters of a minute. It will usually be found that this will suffice to relieve all discomfort.

ENURESIS.

Before undertaking to treat cases of this condition, a thorough physical examination should be made to see if there be any anatomical cause, and if any are found, they must be corrected. If examination fails to reveal an adhering prepuce, or any other anatomical defect, then a favorable prognosis can be made, and no other treatment than Mechanical Vibratory Stimulation is needed. These cases usually show a great amount of muscular contraction in the

lower part of the spine, and treatment should be directed to the relaxation of the muscular structures, and to the inhibition of the spinal centres which are found from about the ninth dorsal down to the fifth lumbar. Inhibition is secured here by first relaxing the muscles, using the vibrator, and leaving it over each interspace between the transverse processes thirty to forty seconds. Treatment should be given daily until the desired result is brought about.

EPILEPSY.

Epilepsy, is, as a rule, a very unfavorable condition to treat, as no matter what remedy be used, the patient will for a time be improved, only to, after a time, again become as bad as, ever. Vibration will produce permanent results only in those cases in which anatomical, defects are responsible for the condition. These anatomical defects are usually found in the, cervical region, and consist of deviations of the cervical vertebra to one side or the other. These can be replaced by using vibration to relax the muscles and then placing the attachment at the transverse process on the opposite side to which the spine is deviated. Pressure should be exerted here, and at the same time, the operator, with his thumb on the spinous process, should try to force the vertebra back to its normal position. It may require ten to fifteen treatments before this can be accomplished. If no displacement of the vertebra is discernible, then all sensitive points must be treated, and if they are not to be found, then a general spinal stimulation is required.

FACIAL TIC.

Spasmodic contractions of the muscles of the face should be treated locally, giving especial attention to the nerves which supply the muscles, always treating them until inhibition is secured. A thorough examination must also be made of the spine to detect any sensitive points. These are usually obtained in the cervical region on the opposite side to which the spasms occur. Treatment here should be given with the ball until the sensitive points are inhibited. Cases of this character are best treated every day for two to three weeks, and then treatments may be decreased to one or two treatments per week until a cure is effected. It

rarely takes more than six or eight weeks to get a complete cure.

FACIAL NEURALGIA.

This condition is best treated by local application of vibration to the point of inhibition over the nerves as they emerge from the bony structures. If, for instance, the supra-orbital nerve be at fault, then an inhibitive treatment must be given over the supraorbital notch; if the infraorbital is affected, then over the malor bone; and if the facial nerve is the one involved, it may be reached by directing the treatment over the parotid gland. A cure may be hastened by correcting the blood supply to the face and head, and this may be done by use of vibration over the cervical region, both anteriorly and posteriorly, always vibrating until all sensitive points are inhibited, or, if they be not present, then using it to increase or decrease the amount of blood to the head and face by giving an inhibitive or stimulative treatment, as may be required.

FLOATING KIDNEY.

For this condition treatment should be applied from the eighth dorsal to the second or third lumbar, using the spinal attachment with medium stroke and medium to heavy pressure twenty-five to thirty seconds, going over the area two or three times. The patient should then be given a gentle treatment with the brush the entire length of the spine a minute to minute and a half. Following this, vibration should be applied over the abdomen, getting deeply down into the tissues with the ball attachment, thus causing the ligaments to resume their normal tone and pull the kidney back into its proper position.

GASTRALGIA.

Heavy vibration from the third to the ninth dorsal on the left side; also at the posterior angles of the ribs on the left side. Vibrate at each point twenty-five to thirty seconds. Then use ball, with deep vibration, medium stroke, over the stomach anteriorly.

GASTROPTOSIS.

In order to relieve conditions of this kind, it is necessary that the vibrations reach the sympathetic nerves and that the degree of treatment should be a stimulative one. It is rare to find a case of distension of the stomach in which one cannot outline distinct sensitive points in the dorsal region, extending from about the third or fourth down to the tenth or eleventh. This sensitiveness is more marked on the left side, and usually is apparent even out to the angle of the ribs and along the border of the scapula. The treatment is best given with the ball attachment, varying the stroke and pressure in accordance with the amount of sensitiveness present, gradually increasing stroke and pressure until a medium stroke and quite a degree of pressure can be used. While vibrating over the ribs themselves, the operator should place his hand in the patient's axilla on the side which is being treated, and exert pressure upward so as to spread the ribs apart. This same thing can be accomplished by extending the patient's arm above his head, grasping it firmly and using extension. About every third treatment application should be made over the abdomen going directly over the area in which the stomach lies. This whole treatment should not consume more than two and a half to three minutes. If there be any marked sensitiveness present, a general spinal treatment with the brush attachment may be given in addition.

GLEET.

Give a stimulative treatment from about the eighth or ninth dorsal down the rest of the spine, using the ball attachment with medium stroke; then, with the brush attachment, stimulate the lymphatic glands in the inguinal and femoral regions, and use vibration directly over the penis a half to three-quarters of a minute.

At every treatment it is always necessary to thoroughly stimulate the liver and spleen; this is best done by use of the ball with a percussion stroke over these organs posteriorly forty-five to fifty seconds each. This will promote the elimination of the waste products. In the treatment along the spine the attachment should be left at each point about fifteen to twenty seconds. The local treatment with the brush

over the glands may be continued from a minute and a half to two minutes.

GOITRE.

Both the simple and the exophthalmic varieties of goitre form conditions which are favorably affected by Mechanical Treatment. The results to be obtained in simple goitre are very pleasing and usually manifest themselves at once, and rarely will the first treatment fail to cause a noticeable reduction in the size of the gland. Sometimes this may amount to as much as a quarter of an inch or more. In the exophthalmic variety, the treatment is followed by a rapid abatement of the extreme nervous symptoms, and a marked decrease in the number of heart beats. The insomnia can be relieved and the patient made to feel very comfortable. Ordinarily, both forms of goitre require both local and spinal treatment, although occasionally one will meet with cases of the simple form in which local treatment alone is necessary. In fact, some of these cases the spinal treatment will retard rather than hasten the result. Local treatment should be given with one of the soft attachments, and should be stimulative, using mild vibration and keeping it directly over the gland. The spinal treatment should be given throughout the cervical region and down to the third or fourth dorsal, using medium vibration twenty-five to thirty seconds at each point. In the case of the exophthalmic form, the spinal treatment should be given the whole length of the spine, and in addition, vibration must be given over the thorax anteriorly and posteriorly. In both forms it is necessary to stimulate the chains of lymphatics in the cervical and axillary regions. Always look for displacements of the sternum and for deviations of the vertebra.

If there be any rise in temperature following any of the treatments, the liver and spleen should be stimulated.

GOUT.

All efforts here should be directed to the breaking up of deposits in the joints, and to their absorption and elimination; this, of course, between attacks of pain. During painful periods the treatment

should be such as would produce inhibition of the nerves supplying the painful area. To break up the deposits, local treatment is essential, and should be applied over the parts themselves, at the same time using forcible flexion and extension of the joints. The brush should be used along the course of the veins draining the part, and over the lymphatics in the neighborhood, and at all points along the limb. Absorption and elimination may also be promoted by stimulation of the spinal centres, and by direct stimulation of the liver and spleen. Treatment must also be directed to the intestines, and to the centres governing the kidneys.

HEADACHES.

Where no cause can be found, a general spinal treatment should be given, and vibration should also be used at the posterior angle of the ribs. Occasionally a cure may be hastened by use of the brush over the head locally, going directly over the painful areas. If the headache can be attributed to an anemic condition, then an inhibitive treatment should be given through the cervical region, which will inhibit the vaso constrictors and thus allow the vessels to dilate and increase the amount of blood to the brain. If hyperemia exists, then the treatment should be stimulative, i.e., such as will contract the vessels and decrease the amount of blood to the brain. If constipation is the cause, then use technique which is given under heading of "Constipation." If congested liver be the etiological factor, then use percussion over the liver posteriorly forty-five to fifty seconds, and use the ball attachment with medium stroke and medium pressure fifteen seconds at each point from the second to the tenth dorsal, inclusive.

HEMORRHOIDS.

Alleviation of all painful symptoms usually results from vibratory treatment, although the variety of hemorrhoids which are more susceptible to treatment is the internal form. Where one has internal tumors which are protruding through the sphincters, relief is immediate. This is accomplished by use of the rectal attachment directly against the tumors, even

though they be bleeding, held at each point a minute to a minute and a half, or until the tumors retract into the rectum. Each treatment usually suffices to hold them within twenty-four to forty-eight hours, and after nine to twelve applications, a permanent result is usually obtained. Before giving the local treatment the spine must be thoroughly stimulated from about the eighth dorsal down to the coccyx. Percussion must also be used over the liver to equalize the circulation between the Portal and Hemorrhoidal vessels.

Where treatment is given at a time when protrusion does not exist, the attachment must not be passed within the sphincters, but must be used around the anus only, for the purpose of stimulating the muscular structures to contract and hold the tumors within.

External hemorrhoids yield slowly, and the best treatment is local, using the rectal attachment directly over the tumors themselves.

If after a rectal treatment any sensation of bearing down is felt, then the operator must relieve this by use of the ball attachment in the perineum, being sure to get the attachment on the inner side of the tuber

HODGKIN'S DISEASE.

Ball attachment, medium stroke, medium pressure the entire length of the spine, twenty-five to thirty seconds at each point. Percuss over the liver and spleen with medium stroke, medium pressure, forty-five to fifty seconds each. If constipation is present, correct same. If any abnormalities in the bony structures are found, use technique described. Use brush attachment, medium stroke and medium pressure over all enlarged glands.

ICTERUS.

Give a general spinal treatment, and vibrate thoroughly over the liver and spleen posteriorly, and stimulate all lymphatics. Look for displacements of the ribs as the causative factor and if found, correct them. If there be spasmodic contractions of the ducts, then

use inhibition over the spinal centres, and, if possible, directly over the part itself.

As a rule, in these cases one will usually find constipation, and if this is found, it must, of course, be corrected by using the technique which is given in another part of this work. In the general spinal treatment, unless there be an extreme amount of sensitiveness, the ball should be used, leaving it at each point between the transverse processes ten to fifteen seconds. If the spine be very sensitive, then the brush should be used over the whole length of the spine two or three times; in these cases the whole spinal treatment should not last longer than a minute and a half to two minutes. If there is spasmodic contraction of the ducts, inhibition should be secured by using the ball, with medium to heavy stroke over the spinal centres, leaving it at each point forty-five to fifty seconds.

IMPOTENCY.

This is a condition which every practitioner is called upon to treat, and one for which he has very little in his armamentarium to offer as a relief. Vibratory treatment has been very successfully used in relieving the condition, and the results are usually quickly obtained. This is especially true of those cases which are purely functional in character. The treatment should be of a stimulative form, and should be given to the lower part of the spine, beginning at about the eighth dorsal, and going down to the coccyx. Vibration should also be applied in the perineum, and about every third or fourth treatment the prostate should be massaged. Occasionally benefit may be obtained by stimulation of the pelvic plexuses of the sympathetic nerves. These may be reached by treating over the abdomen, using deep pressure and the ball attachment. In all cases of this kind the operator must examine the cervical region, where he will usually find the muscles very puffy, soft and flabby. Where this is found very heavy vibration should be given, going not only over the points on either side of the vertebra, but over all parts of the muscles themselves.

INFANTILE PARALYSIS.

The treatment should be a general spinal with the ball attachment, medium stroke and medium pressure, leaving the attachment at each point between the transverse processes of the vertebra twenty to thirty seconds; then, with the brush, a minute to a minute and a half over the limbs that are involved. If the lower extremities are affected, the ball should be used over the epiphyseal lines at the lower end of the femur and the upper end of the tibia to promote cell growth and thus prevent shortening. The local treatment over the limbs is not of as much importance as the spinal treatment.

Cases of this character require a long course of treatment, and the results to be obtained are prevention of shortening to a certain extent, building up of the atrophied muscles, and bringing the limb up to normal temperature.

INTESTINAL CATARRH.

This should be treated in the same manner as Colitis Mucous.

LEUCORRHOEA.

Use the ball attachment, medium stroke and medium pressure twenty to thirty seconds at all points from the ninth dorsal down. Also over all sensitive points that are found. About once every four or five treatments a mild stimulative treatment should be given directly in the vagina. This should not occupy more than a minute to a minute and a half. In some cases it may be necessary to use the ball over the abdomen directly over the uterus.

Where the ball is used over the abdomen, as deep pressure should be given as the patient can stand. In some cases it will be found that the attachment cannot be used in the vagina; when this is so, the treatment will have to be directed to the rectum, passing the attachment well within, and holding it against the anterior wall so as to transmit as much of the vibration to the uterus as possible. The brush should be used over the lymphatics in the inguinal and femoral regions a minute and a half to two minutes. For

the pains in the lower part of the spine the brush should be used directly over the sacrum, using heavy pressure three-quarters of a minute to a minute. The stroke should be at medium.

LOCOMOTOR ATAXIA.

A great deal may be promised the patient suffering this condition, in relieving pains, giving control of the bladder and rectum, improving the gait, and in some cases restoring the reflexes and giving a return of sexual power. The treatment consists of heavy vibration at the sciatic notches twenty-five to thirty seconds each, and then the entire length of the spine twenty to twenty-five seconds at each point. No treatment is required over the limbs. As this condition is caused by a degeneration of the cells in the posterior columns of the cord, the operator cannot say just how much improvement will result from the treatment, as it will depend entirely upon the amount of cell matter which is left in these columns that is not destroyed, but is in an inactive state.

LUMBAGO.

This condition usually requires one to three applications of vibration, which should be given with as long a stroke and as heavy pressure as the patient can bear over the lumbar muscles and through the lower dorsal and lumbar regions of the spine. Relief is usually experienced at the first treatment, and after three or four is generally permanent. Cases which do not yield to one or two treatments should be examined to see if the pelvis is in an abnormal position; if so, this should be corrected.

In some cases of lumbago the amount of sensitiveness would be so great as to prohibit the use of the ball; if such be the case, the brush should be used beginning with short stroke and gradually increasing it as the patient can stand it. As a rule, after a half to two minutes of this, the patient will be able to stand the use of the ball; if so, the treatment should be begun with short stroke, gradually increasing it, as with the brush, and increasing pressure also.

MASSAGE OF THE PROSTATE.

The rectal attachment should be used to massage the prostate, and should be passed within the sphincter, first directing the attachment in a line toward the umbilicus, and after it passes through the sphincters, turning it toward the posterior wall of the rectum, following this course until it is well above the gland; then bringing it downward and forward until it rests upon the prostate. Here it should be left a minute to a minute and a half, constantly using pressure upon the gland itself. Examination of the penis at this time will usually disclose an emission of fluid, showing that the contents of the gland have been stripped and forced into the urethra. Here, as in all cases of rectal treatment, if there be any sensation of bearing down, the ball should be used in the perineum, and on the inner side of the tuber ischii.

MELANCHOLIA.

In melancholia all the viscera are in a more or less inactive state, and require a heavy stimulative treatment. As it is a well-known fact that the majority of these cases present a very sensitive spine, the operator must use great care in beginning the treatment, although it is often found that cases which are very sensitive to a digital pressure will be able to stand quite a heavy treatment with the vibrator. If this is impossible, then, of course, the treatment must be very mild at first, beginning with the brush attachment and short stroke, gradually increasing the amount of pressure until they can stand a heavy treatment; then beginning with the ball and short stroke, gradually increase the severity until they are able to stand a treatment using medium stroke and medium to heavy pressure. In these cases it is always well to spread the ribs and to use percussion over the liver and spleen. Where constipation exists, this should be corrected by use of the technique which is given in another part of this work.

MENOPAUSE.

Women who are passing through the period when menstruation is gradually ceasing, are usually affected with a large variety of extreme nervous

conditions. These are irritability, insomnia, vague pains all over the body, bearing down sensations, etc. These cases require a general treatment, the severity of which will depend upon the amount of sensitiveness present, although the treatment should always be very brief, owing to the ease with which these patients are exhausted.

MENTAL DISEASES.

Mental disease of any form should be given a general spinal treatment, using as heavy vibration as the patient can stand, giving it two and a half to three minutes. Treatment should be given every other day.

METRRORRHAGIA.

Between menstrual periods a general spinal treatment should be given with the brush attachment, using medium stroke and medium pressure, being careful not to give over two or three minutes to the whole treatment. During a period of menstruation, the ball should be used with medium stroke and light to medium pressure twenty to thirty seconds over all sensitive points and throughout the lower dorsal, the lumbar and the sacral regions. Always look for abnormalities of the bony structures, especially malposition of the coccyx.

MIGRAINE

This is best treated with the ball attachment and stroke a little less than medium, with light to medium pressure, throughout the cervical region; then, with the brush, thoroughly vibrate over all parts of the scalp.

Treatment may be given daily, and if necessary, more than once during the twenty-four hours. The operator should always look for abnormalities in the cervical region and for displacements of the clavicles. These are often found, and when corrected give instant relief from the severe pain. In many cases a very light treatment over the eyes will have a good effect. If the cases do not yield to this treatment, a general spinal treatment should be given in addition, using the brush attachment directly over the

spinous processes, going over the spine four or five times, consuming about two and one-half to three minutes. The treatment through the cervical region with the ball attachment should be given about fifteen to twenty seconds at each point. The vibration over the scalp should be kept up for four to five minutes.

MULTIPLE NEURITIS.

Use the ball attachment, medium stroke, the entire length of the spine, vibrating at each point twenty-five to thirty seconds, using medium to heavy pressure. The brush should then be used over all painful areas until inhibition is secured. The brush should also be used in a general spinal treatment, going over the spine four or five times, placing the attachment directly over the spinous processes. Constipation is usually present, and this should be corrected; it is very often necessary to give rectal treatment in order to do this. A light stimulative treatment should be given over all muscles which are beginning to atrophy, or which are in a state of atrophy. The brush should also be used along the course of all painful nerve trunks.

MUSCULAR ATROPHY.

With the brush attachment, vibrate over the muscles involved, two to three minutes. Then with the ball, medium stroke, medium pressure, twenty-five to thirty seconds over all points in which the motor and sensory nerves and trophic centres are found.

MUSCULAR RHEUMATISM.

This condition usually yields in from one to three or four treatments. The treatment should consist in relaxation of the muscles and inhibition of the nerve supplying the painful area.

In the treatment along the spine the ball attachment should be used with as heavy pressure as the patient can bear twenty-five to thirty seconds at each point, using a medium stroke. Care should be used to see that the attachment is placed directly between the transverse processes as to get immediately over the posterior primary divisions of the spinal nerves

supplying the painful area. If the patient can stand it, the ball should be used directly over the muscles involved, keeping up vibration until inhibition is secured. In beginning the treatment over the muscles, it may be necessary to use light pressure at first, but this should be gradually increased as the pain lessens.

MYALGIA.

It is rarely necessary to give anything more than a local treatment in cases of myalgia, and as a rule one or two treatments will suffice to produce permanent relief. The treatment should be given with the ball attachment, medium stroke and medium pressure, and the attachment should be left over the muscles until all pain is relieved. Those cases which do not yield rapidly should be examined for displacements of the bony structures, and if none are found, then inhibition should be used over the nerves supplying the part at the point where they emerge from the spinal column.

NEURASTHENIA.

This condition should be treated practically the same as melancholia, special attention must be paid to the cervical region.

NEURITIS.

Inhibition should be used over the point of emergence of all spinal nerves supplying the painful area. If it be the lower limbs that are involved, then an inhibitive treatment should be directed to the sciatic notch; if the brachial nerves are the ones which are affected, then treatment should be given along the course of the nerves down the arm; then the patient should be made to grasp the attachment tightly and hold it for a minute to a minute and a half while it is in motion. All sensitive points along the spine should be inhibited, and all muscles should be relaxed. The ball attachment is preferable in the treatment of cases of this kind unless there be an undue amount of sensitiveness to pressure; then the brush should be used.

NOSE BLEED.

Use very heavy vibration with the short stroke from the first to the third cervical, if the ball is used, going on either side of the spine, and if the brush be used, then directly over the spinous processes.

OBESITY.

Begin with the ball attachment and medium stroke and thoroughly vibrate over the obese parts; then gradually increase the pressure and length of stroke, until the patient can stand a very heavy treatment. In the beginning treatment should not last over three minutes; the time should be gradually increased until the patient can stand twenty to twenty-five-minute seances. The operator should carefully avoid treatment over the spine, but should give special attention to the liver and spleen, and to the lymphatics, stimulating them so that all the waste products can be quickly eliminated.

OTITUS MEDIA, CHRONIC.

See Catarrhal Deafness.

OVARIAN NEURALGIA.

Inhibition should be secured over the spinal centres which are found from the eighth dorsal down to the second lumbar; also use of inhibition directly over the ovary itself with the ball attachment. This can be reached by giving deep abdominal treatment. Displacements of the coccyx and abnormal position of the pelvis must be looked for, as either one of them is sufficient to produce neuralgic conditions of the ovary.

PAIN

All abnormalities in the bony structures must be corrected, all muscles be relaxed, and inhibition of the nerves supplying the part be secured.

To secure inhibition, the ball should be used with medium stroke and medium to heavy pressure directly over the point where the nerves supplying the part emerge from the spinal column. Treatment in these cases may be given three or more times a day, if

necessary, but should one do this, the treatment must be directed to the nerves supplying the part only, and not to the whole spine, as a general spinal treatment given so frequently would exhaust the patient. Some cases will only have temporary relief from the spinal treatments, and here it may be necessary to use the treatment locally; if so, the brush should be used with as heavy pressure as the patient can stand, directly over the part, leaving it there until inhibition of the peripheral terminations of the nerves is secured. Local treatment is always necessary in neuralgia of the facial, supraorbital or infraorbital nerves.

PARALYSIS.

In paralysis of any character, a general spinal treatment is required. Use the ball attachment, medium stroke and medium to heavy pressure, leaving it at each point twenty-five to thirty seconds. In addition to the spinal treatment, the brush should be used over the affected parts, beginning at the distal portion and working toward the trunk. For the purpose of increasing absorption and elimination, the liver and spleen should be stimulated; all lymphatics should be given thorough treatment with the brush, being careful not to use enough pressure to injure these delicate structures. Treatment in these cases may be given daily, and the patient should be instructed to exercise the parts as much as possible between treatments. In obscure cases of paralysis one will often find a deviation of some of the vertebrae, and if these are found, they must be corrected. If there be loss of control of the rectum, an occasional application of vibration just around the anus for half to three-quarters of a minute will prove effective.

PARALYSIS AGITANS.

In paralysis agitans the spine must be left alone, and the treatment should be of a general character, going over the limbs, over the trunk posteriorly and anteriorly, and over the cervical sympathetics. It should be as heavy and severe as the patient can possibly stand, and should be given for five to ten minutes, or even longer. The patient should then take the attachment in either hand for a minute each.

The results in this condition will be only temporary relief of all aggravating symptoms, and no cure can be secured.

While using the ball over the heavy muscles of the back, it is well for the operator to use his free hand to lift up the tissues and then force the ball into them as deeply as possible. This will have a very decided effect on these structures, causing them to become soft and pliable, and when this is accomplished, the patient will be able to move more freely and rapidly.

PARALYSIS, TRAUMATIC.

Rarely can a complete restoration of function be secured in cases of paralysis due to hemorrhage, although the muscles may be brought up by stimulation over the trophic centres in the spinal cord, and by local vibration over the muscles themselves. Treatment can usually be depended upon to build the muscles up to a certain extent and to improve movements.

PARESTHESIAS.

Perverted sensation in the different portions of the body may be treated by giving a stimulative application of vibration both over the motor and sensory nerves, and over the centres controlling the nutrition to the part. The majority of these cases will get well quickly, especially if there be no neurasthenic element present.

As a rule constipation is present in all cases of paresthesia, and this, of course, should be corrected. In paresthesia of the hands one will often find displacements of the ribs or of the upper dorsal or cervical vertebrae. In paresthesia of the feet one will very frequently find displacements of the pelvis. These abnormalities must be corrected before a cure can be expected. In the spinal treatment the ball should be used with medium stroke and medium to heavy pressure, leaving it at each point fifteen to twenty seconds. Local treatment is rarely necessary, although it may be given, using the brush and medium stroke a minute and a half to two minutes.

PLEURITIC ADHESIONS.

Ball attachment, medium stroke and medium to heavy pressure throughout the dorsal region and over the thorax anteriorly; then the ribs must be raised, as described in another part of this book.

POST DIPHTHERITIC PARALYSIS.

This condition, as well as all cases of paralysis following acute infectious diseases, can be greatly improved, if not entirely cured, by use of Mechanical Vibratory Stimulation. The treatment should be directed the entire length of the spine, using the ball attachment, medium stroke and medium to heavy pressure fifteen to twenty seconds at each point; then going over the muscles themselves with the brush. All lymphatic glands, and the liver and spleen must be stimulated to promote the elimination of all poisonous products.

If the voice be affected a stimulative treatment should be given through the cervical region both anteriorly and posteriorly, using the soft attachment anteriorly on either side of the pharynx forty to fifty seconds each. If there be atrophy of the muscles on one side of the spine, especially so in the cervical region, the operator will in all probability be able to find displacements of the vertebrae. These should be corrected first by using a stimulative treatment to the atrophied muscles so as to build them up, and then by using the technique which is described under abnormalities.

POST FRACTURE CONDITIONS.

Treatment should be given over the spinal centres supplying the part, and over the trophic: centres which control the nutrition using the ball attachment, then with the brush give two to three minutes' treatment over the seat of the fracture itself, then thoroughly stimulate all lymphatics which drain the area, and follow up the course of the veins in the part.

POST OPERATIVE CONDITIONS.

Patients convalescing from operations should be given a mild spinal treatment the entire length, using the brush and never giving over a minute and a half to two minutes for the entire treatment. If pain be present then, of course, inhibition of the nerves supplying the painful area must be secured.

PROSTATITIS.

See technique for treating enlarged prostate.

PSEUDO-HYPERTROPHY.

Use ball attachment, medium stroke, heavy pressure, forty to fifty seconds at each point from the first cervical down to the second or third lumbar. Use medium stroke ball attachment, medium pressure, percussing over the liver and spleen posteriorly forty-five to fifty seconds. Thoroughly stimulate the chains of lymphatics with the soft brush attachment. If constipation exists, use technique described for same.

RENAL HYPEREMIA.

Heavy vibration forty to fifty seconds over each point from the eighth dorsal down to the third or fourth lumbar. Relax all contracted muscles and treat all sensitive points. Percuss over the liver and spleen forty-five to fifty seconds. Use deep vibration a minute to a minute and a half over the abdomen in the area in which the kidneys lie.

RHEUMATISM.

An inhibitive treatment must be given the spinal centres and also the spinal nerves which supply the part. During an attack of pain inhibition of the peripheral terminations of the nerves supplying the painful area must be secured. This is done by use of the brush, medium stroke and as heavy pressure as the patient can bear. Special attention must be given the excretory organs and the lymphatic system to promote elimination of retained products of metabolism.

Treatment should be given daily, and in some cases of extreme pain, may be given even oftener. In some cases displacements of the pelvis or of the bony structures forming the thorax may be found, and it is always well to look for these.

SCIATICA.

Pain in the sciatic nerve or any of its branches may be relieved by use of inhibition over the nerve at some point in its course. This is best given at the sciatic notch, where, after relaxation of the muscles one has the nerve upon a bony background. Here it will only require forty-five to fifty seconds to produce complete relaxation of the muscles and inhibition of the nerve itself.

In some cases in which the pain extends down the leg or into the foot, vibration must be given over the calf. The secret of all success in the treatment of this condition is the thorough relaxation of the muscles, and the inhibition of the nerve. In cases of long standing it is rare to find one in which there is not some displacement of the pelvis from its normal position, and in such cases as this, complete relief will not be obtained until the pelvis is replaced. The technique for replacing the pelvis is given in another chapter.

SENSITIVE SPINE.

Use mild vibration the entire length of the spine, increasing the severity of the treatment as the sensitiveness disappears, never giving over a minute and a half to two minutes' treatment, as these patients are easily weakened.

SINGULTUS.

Inhibition should be applied through the cervical region over the origin of the phrenic nerves, and the same treatment should be given over the pillars of the diaphragm, and over its attachment to the thorax. The patient should be placed on his back with the knees drawn up, and heavy vibration should be applied well up under the ribs, so as to get in as close contact with the diaphragm as possible; twenty-five to thirty seconds over each of the pneumogastriacs is also useful,

and in many cases will cause immediate cessation of the spasms.

SPINAL CURVATURE

Examine the back and note on which side of the spine the muscles are contracted. Over these use a very heavy vibration two to three minutes. On the opposite side use the brush attachment with mild or stimulative vibration one to one and one-half minutes. The brush should also be used directly against the spinous processes on the side toward which the convexity of the curve is directed, using pressure in such a manner as to try to force the bones back into their normal alignment.

SPINE.

The physician using vibration should depend almost altogether on spinal treatment to obtain results, although in some painful conditions it may be necessary to use vibration locally to obtain the desired effect. Local vibration should be given in cedema, ankylosis, and other local conditions of this character, though, even in these, it is always best to give spinal treatment in addition.

In spinal treatment the ball should always be used where possible. If there be extreme sensitiveness, then the brush must be used. However, it is always well to try to use the ball, making the stroke short and the pressure very light at the beginning of the treatment.

SUPPRESSED URINE.

Ball attachment, medium stroke, and medium to heavy pressure twenty-five to thirty seconds over all points from the eighth dorsal to the third or fourth lumbar; use same attachment, same stroke and same pressure over the region of the kidneys posteriorly a minute to a minute and a half. Relax all contracted muscles and treat all sensitive points. Look for deviations in the pelvis, and if found, correct same. Use the brush over the chains of lymphatic glands.

TETANY.

Use heavy vibration with medium stroke forty-five to fifty seconds over the muscles involved. Also use same attachment, same stroke, same pressure, and same length of time along the spine over the points where the nerves which supply the part emerge.

APPENDIX B

CHAPTER 4 FROM *MECHANICAL VIBRATION* BY A. SNOW, M.D. (1912)

The Procedures of Mechanical Vibration

MECHANICAL-VIBRATION OR VYBRA-
MASSAGE in the modern sense produces *vibration* as understood by physicists, whether that motion be to and fro in one plane, up and down, percussory, oscillatory, mixed recurrent or rotary. When a vibration is induced through connected particles of matter a succession of waves are set in motion which form a line known as the *wave line*. From a fixed point on one wave to a corresponding point on the next is one *wave length*. When several wave lengths send impulses throughout a given area, motion from each follows resulting in interference. *Interference* may increase, decrease, or inhibit motion. It may cause areas of different degrees of vibration, and in membranes, etc., it may result in vibration in segments or stationary vibratiolas, the points of least vibration being called *nodes*, the points of greatest motion, *antinodes*, and the portion between two nodes, a *ventral segment* or *loop*. The resultant wave will be longitudinal if the particles in vibration and the wave path be in the same direction, or transverse when they are in opposite directions. The rapidity of the wave transmission is increased with the increase of the elasticity of the medium as it more easily transmits "waves made up of condensations and rarefactions," hence the elasticity of the region treated will influence the effect. Therefore with a given rate of vibration one tissue or organ may have few waves transmitted in a given time, whereas another may have many consisting of nodes, antinodes, and loops produced with marked rapidity under which conditions physiological inhibition may be induced instead of stimulation. It is also possible in an organization so intricate and complex as the human body that *sympathetic* vibrations may be elicited in certain parts in harmony, i. e., having the same periods of vibration. When the vibration period peculiar to a particular part is not recognized, mechanical vibration may cause *forced*

vibrations. Gage [*Elements of Physics*] states that "When a vibratile body is compelled to surrender its own vibration period and to vibrate in an arbitrary manner imposed upon it by another, the phenomenon is known as forced vibrations," which may occur when mechanical vibration is applied to a part.

THE STUDY OF HARMONIC VIBRATION is a field yet requiring much investigation, but in connection with it, it must be remembered that an increase in the number of vibrations shortens the wave length and increases the pitch and that "the vibration frequency of strings of the same material varies inversely as their lengths and the square roots of their weights and directly as the square roots of their tensions." All of which are important factors to be considered.

Vibration may be administered in the following forms, irrespective of the type of vibrator - although some vibrators may be found to be more suitable for some modes of application than others.

1. INTERRUPTED VIBRATION is an interrupted vibratory impulse communicated to the body without pressure, or with varying degrees of pressure.

A. *Superficial* without pressure.

B. *Deep* with light, moderate, or heavy pressure. Heavy pressure may be compressing in character.

2. STROKING - A superficial vibratory impulse applied with motion over a part, no pressure being exerted.

3. FRICTION - A deep vibratory impulse applied with motion, and varying degrees of pressure over a part.

The subdivisions according to directions are:

A. *Centripetal* vibratory friction.

B. *Centrifugal* vibratory friction.

C. *Circular* vibratory friction.

4. ROLLING - A forward and backward movement of a part over underlying structures. It is a form of kneading.

THE OPERATING ROOM should be well ventilated and warm (about 75° F.), because the chilling of a patient causes unnecessary discomfort and induces a state of muscular contraction whereas all parts should be relaxed or in a state of repose when being treated.

THE FURNITURE NECESSARY will depend somewhat on the type of machine used. In general, a long, hard table, the height of an operating table, which can be elevated at either end is desirable. Two adjustable arm rests are a convenience for treating the arms if the operator has no assistant, as the best work can only be accomplished when all parts are in a state of relaxation, and are properly supported. Two hard pillows of different sizes will be of service. The table should not be so wide that the operator cannot easily reach across, because some machines cannot be conveniently operated from either side. If provided with rollers it can be readily moved about by the operator which is often an advantage. A hard-cushioned Morris chair is also useful in some cases, supporting the body in a relaxed and comfortable position when it is not necessary to have more than a moderate resisting surface as when treating the eye, ear or nose. A stool is useful when applying special vibration with the patient sitting. The furniture essential for use with an oscillator is mentioned in the chapter describing its therapeutic application.

Thoroughly examine each patient before treatment for obvious reasons. Prolonged mechanical vibratory treatment over a site is best given on the bare surface. If the patient is a woman and she is to lie down for treatment, she should remove waist, corsets, and all other clothing about the upper part of the body except her undervest, which, in certain cases, as when vibratory friction is applied to the arm, should have short, loose sleeves. In some cases it is preferable to make the application to the bare skin. It is always best to cover parts not being treated. If the upper part of the body is to be treated, let the patient wear a kimona, which can easily be pushed aside as indications require. All waistbands of the underwear should be loosened, so as not to interfere with circulatory activity and to permit the tissues to be generally relaxed.

If a man is to be treated he should remove coat, vest, suspenders, collar and outer shirt, and all cases whatever other clothing necessary so that the vibration may not be interfered with. Interrupted vibration may be administered directly over an intervening medium unless prolonged, but mechanical vibratory stroking, friction, or rolling or prolonged

interrupted vibration is best applied to the bare skin. The work should be done in a most thorough and systematic manner, with due regard to technique; and no part should be left until the treatment is finished, opposite portions of the body being best treated successively, because it is thought by some to "intensify the effect upon the nerve centers." All treatment should be mild at first, then gradually increased in pressure and speed and finally finished with diminishing motion. Painful parts should be treated with caution.

It is sometimes advisable that the patient should rest on the table for a short time after treatment and then arise slowly in order to maintain a state of absolute repose and composure so as to avoid the disturbing factors which follow sudden change from a horizontal to an upright position. It should not be inferred that vibration cannot be applied without the removal of corsets and other garments, but it is best to follow the suggestions given to obtain the best results from mechanical vibratory treatment.

THE PATIENT'S POSTURE during the treatment should depend upon the indications of the individual case. The elevation of the head should be regulated by the end sought and the comfort of the patient. In cases of oedema of the neck the lowering of the head induces a violent headache, therefore elevate the neck and shoulders with a hard pillow or pad, and if the patient is lying face downward, allow the arms to rest in a half flexed or otherwise suitable position on the arm rests if such are provided on the table. In case the operator has no assistant and is giving a treatment to an arm or leg he may use hard-cushioned pads which serve to elevate the arms or feet as desired. An extremity is best treated when it is elevated, the patient allowing it to rest in a relaxed state. During a spinal treatment the patient should lie in the prone position, arms loosely hanging over the sides of the table, unless contra-indications exist, in order to secure relaxation of certain muscles of the back. Spinal treatments of the cervical and upper dorsal regions can sometimes be more easily administered with the patient sitting.

JOINTS ARE BEST TREATED in a position midway between flexion and extension. If the patient lies on his back, his arms may rest extended upwards

on the arm rest, if one is provided on the table, toward his head, unless contra-indicated, otherwise the operator should support the joint with his left hand.

WHEN TREATING THE CHEST place a hard pillow beneath the thorax to elevate it and throw the ribs outward.

FOR INTERNAL RECTAL TREATMENT the patient should lie on the right or left side, preferably the right, with the knees drawn up, his back being towards the machine. The knee chest position is preferred when high enemas are given with mechanical vibration. Other positions will be considered in connection with the treatment of various conditions when taken up in subsequent chapters. In all cases the position of the patient should always be such that the part treated will be relaxed and the patient comfortable. The posture should be such that the vibratode can be easily applied, thereby assisting in securing the end desired.

THE FIRST TREATMENT should be short in order to accommodate gradually the tissues and the patient. Although there are many who advocate treatment upon alternate days, it is better practice, the author believes, in most cases to follow the rule applied to static methods by Dr. Wm. Benham Snow in his work on "Static Electricity and the Use of the Roentgen Ray," which is to "bridge the condition of relief from treatment to treatment, lessening the frequency as the requirements permit." Usually best progress is made when daily treatments are given for four to ten days, and in some cases for longer time.

Many of the failures leading to such remarks as "Vibration gives temporary relief, but I have seen no cures, and will not give it much consideration until I do" are caused by lack of attention to technique as regards the site of application, duration of application and a non-observance of "bridging" in the management of cases. No set rule can be made as to methods which will be applicable to all cases, irrespective of cause, condition, effect to be sought or to the frequency of treatments. Such absurdity can only equal the administration of a particular dose of a drug indicated in a disease irrespective of sex, age, or idiosyncrasy, for a fixed length of time, expecting in all cases to obtain the same result.

THE INTERVALS OF REST during administration should be as long or twice as long as the treatment of different parts of the body, and the periods of intermission, when interrupted vibration is applied, should be as long or twice as long as the periods of contact unless prolonged interrupted vibration is employed. A rest of at least half an hour following the treatment will assist the "fixation and perpetuity" of the vibratory effects.

Vibration should not be administered irrespective of the duration of time elapsing after eating. It is advisable not to apply it sooner than half an hour after eating and abdominal mechanical vibration is best applied at least after the elapse of one hour.

THE DAILY ADMINISTRATION should be at a particular time, not in the morning one day and in the evening another. The *duration* of each treatment and the *frequency* of the interruptions during the treatment will also depend on the speed of the machine, stroke, and on the modes of application of interrupted vibration, stroking, friction, or rolling. It should vary from three minutes to fifteen, or even longer. For instance, deep or compressing interrupted vibration is relatively short, but stroking, friction and rolling are usually of longer duration. Sometimes twenty minutes or more will be required to treat a case where varied modes are indicated and results show that such prolonged administrations are not contra-indicated. The patient's physique and the conditions to be treated should always be considered. The most careful application with large experience, judgment and close observation will greatly assist the operator in making correct discrimination.

Too much stress cannot be placed on the three important factors of administration - speed, stroke, and pressure - as employed in mechanical vibration therapy.

IF A MODERATE RATE OF SPEED be applied with a medium stroke without pressure, and the same rate of speed and same stroke be supplemented by pressure, deeper penetration and diffusion result. The employment of a given speed and medium stroke without exerted pressure will induce the same depth of penetration as another slower rate of speed and

medium stroke with some pressure; and if the speed be much accelerated the penetration without exerted pressure will be relatively increased.

If a given speed and shortened stroke be employed without exerted pressure, the effect is more superficial than with an increased speed and same stroke with pressure. In other words, increasing the speed intensifies the effect. Effects produced by light, moderate, or heavy pressure are modified by the length of stroke, and rate of speed relative to the part to which it is applied; *what causes stimulation of one part of the body may induce inhibition in another*, other things being equal.

- (1) *Pressure under all conditions* increases penetration and diffusion of vibration.
- (2) *To increase or lessen speed with a given stroke* will increase or lessen penetration and affect the quality of the vibration, producing fine or coarse vibrations.
- (3) *An increase or lessening of stroke* with a given speed increases or lessens penetration and affects diffusion.

In the employment of mechanical vibration due regard must be paid to stroke and speed. As a rule a low rate of speed with a sufficiently long stroke has a sedative effect on pain, and also a high rate of frequency with a medium or short stroke has a numbing effect. Directions as to stroke in chapters following should be considered in a relative sense, for the medium stroke of one machine corresponds to a stroke much shorter than the medium of another stroke being an arbitrary factor.

WHEN APPLYING INTERRUPTED VIBRATION TO THE SPINE, a full stroke with a moderately rapid rate of speed is desirable. The ball vibratode is used for spinal vibrations.

IF APPLIED TO THE EYE OR EAR, however, the shortest possible stroke is necessary. The soft rubber cup shaped vibratode is preferred in these sites.

FOR ABDOMINAL WORK the rubber covered disc vibratode with a medium or full stroke is generally preferable.

FOR THE ADMINISTRATION OF FRICTION generally a medium or full stroke is to be preferred, but for vibratory stroking, the shortest stroke

is in order. The rubber covered disc vibratode is used when applying friction, and either the disc or the soft rubber cup shaped vibratode is employed when stroking is indicated.

THE STROKE, it will be observed, should always be *adapted to the part* treated and the SPEED to the indications of the case. For example, the shortest stroke might be applicable with vibration of short duration and moderate speed for anaesthesia, but vibration of long duration with a rapid or high rate of speed should be applied for the relief of *spasm* of the same part.

PRESSURE, as applied to vibratory therapy may be designated as light, moderate, or heavy pressure exerted by the hand of the operator when applying the vibratode. Dr. Thomas Stretch Dowse [*Lectures on Massage and Electricity in the Treatment of Disease*] says that "pressure is transmitted variably, according to the resisting power of the tissue to which it is applied - to its vitality - and to its mass. Pressure of *given quantity* deranges molecular integrity, alters equilibrium, and so engenders irritability and instability. Pressure of *given intensity* produces molecular inertia and death. According to the nature of the pressure applied and the resisting power of the tissue operated upon, so do we get changes in such tissues of molecular activity and irritability, or molecular derangement and death." Light pressure on the trunk of a nerve acts as a stimulus and is transmitted to the nerve. Continued deep pressure applied to a nerve induces sedation, as it numbs and may essentially paralyze the nerve, and probably at the same time lessens the blood supply of the part.

In the employment of vibration, moderate pressure is recommended to the nerves over points or between the transverse processes on each side of the spine alternately in most cases, but of course many factors should be considered before the operator decides upon the degree of pressure to apply. Tolerance to pressure increases during an administration, and during the progress of a course of treatment.

If too great pressure be used nausea, weariness, or pain may result. Pressure over a nerve trunk should be applied with caution. Sometimes the

pressure should be applied directly over the seat of pain as well as over the seat of its origin, as in neuritis.

Pressure should be light at first during an administration and gradually increased as the pain lessens to as great a degree as constantly increasing deeper pressure can be borne. If the case under treatment be a stubborn one, do not attempt to fully relieve all of the pain at one administration. Be satisfied with a short treatment and its results, or the patient will be the sufferer.

A *moderate pressure*, but firm, is advisable when it is sought to produce spinal stimulation. The application over the spinal region should be made between the transverse processes, care being taken not to place the vibratode too close to the spine.

It should be remembered that a *heavy pressure*, especially when prolonged, produces an inhibitory effect which is exhausting. For this reason heavy pressure is applied in the form of deep interrupted vibration, as for relief over a painful motor point. Sudden heavy pressure is valuable in the treatment of some painful conditions, as neuralgia, but it should be administered with care. Zederbaum has demonstrated that sudden heavy pressure on a *nerve decreases its irritability*, but if the same pressure is gradually increased, the decrease was slower and not so "marked." A principle to be remembered was aptly stated when Dr. Geo. H. Taylor [*Massage*], the noted pioneer investigator in vibratory work, said, "The *degree of force* of processes applied must be apportioned to the degree of irritability of the different parts of the body and must be the *greatest* to the *least* irritable parts. *Sensitiveness to impression is an approximate measure of irritability.*" Luderitz found that *motor nerve fibres are paralyzed sooner than sensory by continuous pressure*. These are reasons why we should refuse the patient's request for a longer treatment, as is sometimes the case.

TECHNIQUE requires attention and careful study, as failure or success so often depend on the method employed in vibratory treatment. A good apparatus will permit the operator to use it as the trained masseur would use his hand - according to its particular adaptability in all its forms from the lightest touch to the greatest force.

When a vibratode is applied to the surface of a patient it should not come suddenly in contact, as a blow or shock, but should be at first applied with a light touch or pressure. A light touch has a soothing effect. A cold metal vibratode is disagreeable when applied to the bare skin of the patient. It is desirable therefore that such a vibratode be warmed to about the temperature of the body before it is used.

ASEPSIS is also important with the promiscuous use of vibratodes. They should be thoroughly cleansed by boiling or by washing them with alcohol or solutions of carbolic acid or bichloride.

INTERRUPTED VIBRATION may be defined as an interrupted vibratory impulse communicated to the body without pressure or with varying degrees of pressure. It may be subdivided into two classes, superficial and deep. The deep may be compressing in character.

(1) *Superficial interrupted vibration* may be considered a very short, light interrupted touching of the part with the vibratode.

(2) *Deep interrupted vibration*, on the other hand, may indicate a very short interrupted application of a vibratode to a part of the body with pressure - light, moderate, or heavy. *Compressing interrupted vibration* is a term which indicates very slowly interrupted vibratory compression of a part, exerted with heavy pressure. Vibration applied with any exerted pressure, light or heavy, penetrates deeply, relative to the stroke, speed, and the structure of the part treated.

SUPERFICIAL INTERRUPTED VIBRATION is accomplished by lightly touching the part, the periods of rest being as long or twice as long as the time of contact, which should be but for a few seconds. It imparts a varied light movement, the vibration varying in rate, force, form, and rhythm, according to the speed used, and the relative power of a machine, as some machines, running at a given rate of speed and having a known power, but of a certain type of construction, impart much more force than others using the same power and running at the same rate of speed on account of the particular movement or stroke of the vibratode - to and fro, rotary, up and down, or oscillatory.

This method of vibration is applicable in the treatment of the eyes when an effect soothing in character is desired, as it acts as a sedative to the nervous systems lessening nervous irritability. It is desirable, when using superficial interrupted vibrations, that quiet prevail, as the effect thereby is intensified. This type of vibration can be employed with all machines including an oscillator provided with a hand applicator. The application can be made with the vibratode held in a sidewise or perpendicular position, the position altering somewhat the form of movement imparted, i. e., a vibratode that gives a to and fro motion in a horizontal plane if held perpendicularly, will give a percussion stroke when held oblique or parallel to the surface plane.

DEEP INTERRUPTED VIBRATION is administered by applying the vibratode with a light, moderate, or heavy pressure to the surface of the patient for a few seconds, and then removing it. The applications should always be followed by intervals of rest as long or twice as long as the period of application unless prolonged interrupted vibration is employed. As a rule, such applications should be made three, four, or five times to a given site and should be moderate or heavy, according to indications. This form of vibration differs from superficial interrupted vibration in that some pressure is used. An administration should always be begun with light pressure, gradually increased as pain diminishes. According to Taylor [*Massage*], imparted motion "contributes to and participates in chemical activity" and it is necessary that there be a certain degree of motion with pressure in order that motor energy may restore the chemical change which is present in health. He thought also that physical results were proportional to the different rates of transmitted motion, i. e., a deep interrupted vibration with light pressure, a given speed and stroke being used, gives a different degree of penetration than a moderate pressure with the same speed and stroke. The same authority believed that there are two periods for waves of motion that have been transmitted one when "fibres, membranes and molecules glide upon each other with some degree of adhesion, promoted by pressure," this period being quite "similar in quality and rate of motion, whether the waves are long or

short." The second period is at the end of the stroke when "the direction of the motion is reversed," when reinforced energy is set free into other forms of energy, principally chemical energy. One of the principal uses of this phase of vibratory work is stimulation of the spinal nerves through the internal branches of the posterior divisions of spinal nerves, and the sympathetic nerves through the rami communicantes. If the pressure applied be too great, the patient will complain of pain over the back in some cases for several days after the treatment. This has led some already to condemn and abandon vibratory treatment. Treatment should therefore be begun with light pressure, the operator bearing in mind Zederbaum's demonstration that sudden heavy pressure on a nerve decreases its irritability and that the degree of pressure should be governed by the irritability of the several parts, and must be greatest to those which are least irritable. Jacoby [*Journal of Nervous and Mental Diseases*, 1885] of New York found that rapidly repeated percussion on the nerve of a muscle increased the muscular contractility, but if too long continued, exhausted it.

DEEP INTERRUPTED VIBRATION IS APPLICABLE to oedema, swelling, pain, and congestion, and is especially useful in the treatment of joint affections. Always bear in mind that *light pressure stimulates*, and *heavy pressure exhausts*.

BY COMPRESSING INTERRUPTED VIBRATION is designated firm pressure applied to a part interruptedly. Contacts with such interruptions should in most instances be made for a number of times less than when using short interrupted vibration. It is particularly indicated for application to "motor points" and for spinal vibrations, and at painful sites for the purpose of numbing the nerves and lessening the blood supply. Hyperaesthesia is also favorably affected by its employment. In the treatment of hyperaesthetic cases vibration of long duration is indicated.

When applying compressing interrupted vibration to the abdomen, during each forced expiration carry the vibratode more and more deeply and allow for short intervals of rest, few in number.

By VIBRATORY STROKING is designated lightly touching a part of the body with a vibratode and at the same time moving it over the surface in indicated directions.

When about to apply vibratory stroking the operator should test the speed, rate, and stroke by placing the vibratode on the side of his own cheek or forehead and lightly stroking the parts. When it produces a soothing, agreeable sensation the conditions will be right for making an administration. The stroke should be as short as possible, the speed fairly rapid, but not so rapid as to produce stimulation. For this form of administration a soft rubber vibratode, particularly the rubber covered disc or soft rubber cup shaped vibratode is preferable. The writer has applied it very successfully in the treatment of headache, and has noted that in this condition the stroke should be made rather slowly and with a very careful touch. It may be applied many times over the same place, the effects sought determining the duration. The touch should be very light in order that a sense of friction is not produced a soothing effect being desired. It may also be applied for reflex effects to areas of the skin, stimulation of which, by massage, was first advocated by Kellogg for the purpose of reflexly stimulating the spinal centers with the object of affecting not only the muscles, but the internal organs as well, and also to increase secretory, excretory and vascular activity.

According to Starr the segmental localization of muscular reflex acts is as follows:

4C to 1D – Pupillary reflex. Pupil dilates when neck irritated.

5C to 1D – Scapular reflex. Contraction of scapular muscles when skin over scapula is irritated.

5C to 6C – Biceps and supinator longus. Flexion of the forearm when their tendons are tapped.

6C – Triceps reflex. Extension of forearm when tendon tapped.

7C – Scapulohumeral reflex. Adduction of arm when inner lower edge of scapula tapped.

6C to 8C – Extension of hand when extensor tendons at wrist tapped.

7C to 8C – Flexion of hand when flexor tendons at wrist tapped.

8C to 1D – Palmer reflex. Finger clonus caused by stroking palm.

9D to 12D – Abdominal reflex. Retraction when side of abdomen stroked.

1L to 3L – Genital reflex. Contraction of abdominal muscles when testicle squeezed.

2L and 3L – Patella tendon. Knee-jerk when tendon at knee struck.

1S to 3S – Foot clonus. Flexion of ankle due to extension of Achilles tendon.

1S to 3S – Plantar reflex. Flexion of toes or extension of great toe and flexion of others when sole of foot tickled.

Kellogg [*Art of Massage*] also adds the thoracic at the sides of the thorax "between the fourth and fifth ribs."

It must be remembered when the chain, consisting of the centripetal nerve carrying the message, the anterior horn of the spinal cord and the motor nerve is broken, the reflexes are accordingly affected, being absent or lessened in degree. The stimulus to produce a reflex action must be stronger than one required for stimulation of the motor nerve directly, and the stimulation of "the specific end-organ of the afferent nerve" produces more easily a more complex reflex movement than stimulation of its trunk [Hall: Landois and Stirling. *Text-Book of Human Physiology*, 4th edition, page 809].

PLANTAR STROKING is indicated in cases characterized by loss of tone of the legs; *cremasteric and gluteal stroking* in rectal or vesical atony; abdominal stroking for relaxed walls of constipation, and lack of tone; and *interscapular* stroking in certain cases of anemia. In general, vibratory stroking is used where there is a lack of muscular tone in the area, to which stimulation of the reflexes induces contraction and increases the tone.

VIBRATORY STROKING can be most effectively applied in respect to direction by observing the rules of stroking as used for massage which are as follows:

"Head – from before backward, starting at the center of the forehead and from above downward, starting at the vertex.

Back – from above downward, from the median line outward.

Chest – from the sides toward the median line.

Abdomen – upper part, from the sides inward and upward; middle part, toward the median line; lower part, from below upward and inward.

Arms – from the shoulders toward the hands.

Legs – from the hips downward.

Feet – from the toes toward the heel."

Stroking is generally directed against the venous flow, but may be applied in any direction indicated in the case.

VIBRATORY FRICTION applied with moderate pressure is of more value than is generally recognized. It is applied by moving the vibratode over a part of the body with varying degrees of pressure suited to the particular part or condition under treatment. Winternitz demonstrated that friction by hand power increased the excretion of moisture 60 percent., and dissipated heat more than 95 per cent. and in some cases increased heat elimination 95 per cent.

WHEN APPLYING VIBRATORY FRICTION the vibratode should be moved rapidly over the surface, and since superficial effects only are sought, such as its effects on the circulatory system and lymphatics, a light, or between a light and a moderate pressure, will be required. A fairly short stroke (one suited to the part treated) and a fairly rapid rate of speed are also essential features of this method of application. If the skin is delicate or moist a little talcum powder dusted over the surface to be treated before applying the vibratory friction will assist in diminishing the friction irritation, but it is seldom necessary. A rubber covered disc vibratode is preferable for the administration of this method.

VIBRATORY FRICTION MAY BE APPLIED TO MEET DIFFERENT INDICATIONS, *centripetally*, toward the heart, *centrifugally*, away from the heart, and in a *circular* direction. If the direction be centripetal, follow the course of the large veins particularly, i. e., the course of the median on the median line of the anterior surface of the forearm, and the ulnar along the inner border of the forearms both anteriorly and posteriorly, the basilic on the inner and the cephalic on the outer side of the arms.

CENTRIPETAL VIBRATORY FRICTION increases the flow of lymph, blood and chyle, and assists absorption, whereas CENTRIFUGAL VIBRATORY FRICTION tends to lessen such activity, and is used to produce soothing and derivative effects on organs, as relieving oedema. If the chest be treated, let the direction be from the sternum on either side toward the axillary space; and in case of the abdomen from the median line down and out, and in some cases circular, the umbilicus being taken as the center. Vibratory friction centripetally over the parts between the affected portion and the heart is indicated in swelling, dropsy, gout, rheumatism, sprains, sciatica, etc. If the inflammation be local, vibra-massage should be applied particularly between the site and the heart.

Headache may sometimes be relieved by the application of vibratory friction of the spine, thus affecting the vaso-motors. Pelvic pain may often be relieved by applying vibratory friction over the lumbar and sacral regions.

CENTRIPETAL VIBRATORY FRICTION may be applied to the *head* from the median line backward, downward, and outward to the line of the middle, or inferior cervical region. When applying it to the neck anteriorly follow the line of the vessels from above downward. When applying it to the hand and the arm for producing other than the lightest superficial penetration, a little less than medium stroke is to be preferred with moderate pressure, and a medium rate of speed. The patient should lie upon the table, at first face downward, resting his hand and arm on the arm-rest, or lightly on the palmar surface of an assistant's hand, while with the other the assistant should support the patient's elbow, the hand being held higher than the elbow. Treatment should be given with the patient's arm perfectly relaxed, else the muscular tension will oppose the effect sought. Apply the vibratode five or six times, beginning at the finger tips, particularly in the intermetacarpal spaces and extending it to the wrist. To the wrist, in most cases, also apply deep interrupted vibration with moderate pressure in the usual manner, the operator supporting the wrist with his left hand. Then, with the patient lying on his back with the arm supported on an arm-rest or an assistant holding the hand elevated as before, make the

application to the palmar surface of the hand and arm, applying deep interrupted vibration with moderate pressure in the palm, and about the wrist for the purpose of reflexly inducing greater circulatory activity. The *fore-arm* should be treated from the wrist to the elbow, posteriorly and anteriorly, the vibrator being moved rapidly over the surface following the course of the ulnar, the median and the radial veins. Then apply deep interrupted vibration to the elbow joint it being supported by the operator's left hand. This should be followed by vibratory friction of the arm from the elbow to the shoulder, and interrupted vibratory treatment of the axillary glands. The treatment is usually not continued longer than for seven or eight minutes to an arm. In applying it to the *lower extremities* proceed from the toes to the heel, then from the toes to the ankle, using deep interrupted vibration with moderate or heavy pressure, according to the thickness of the foot, under the arch of the foot and about the ankle. In applying it to the leg, the patient should lie face downward with leg flexed on the thigh and supported by an assistant. Apply then vibratory friction posteriorly, first from the ankle to the popliteal space four or five times, moving over the surface following the course of the veins; then anteriorly. Then use interrupted vibration at the knee joint two or three times in the depressions about the joint. The thigh should be given a vibratory frictional treatment posteriorly and anteriorly, then apply deep interrupted vibration to the groin. When used to lessen oedema of the arm, apply deep interrupted vibration to the axillary glands, then vibratory friction from the elbow toward the axilla. Deep interrupted vibration of the elbow joint should follow. Vibratory friction centripetally should then be applied to the forearm, followed by deep interrupted vibration to the wrist joint. The hand should then be treated with vibratory friction. A similar plan should be followed for oedema of the legs and thigh.

VIBRATORY FRICTION TO THE NECK should be applied from the space between the angle of the jaw and the mastoid process downward and inward to the lower border of the neck, and then outward to the shoulders after which apply extremely superficial interrupted vibration on each side of the larynx.

Posteriorly employ vibratory friction from the occipital protuberance over the neck downward and outward. It is desirable to have the patient lie face downward at first and then on her back and allow a few minutes' interval of rest between these applications. A medium stroke is preferred.

When applying VIBRATORY FRICTION TO THE CHEST the patient should lie with the arms upon the arm rests of the table the inclination of which will depend upon indications. Apply the vibrator from the insertion of the pectorals toward the sternum three or four times and then below the pectoral muscles, vibrating from the sternum out and around to the axilla following the course of the ribs.

VIBRATORY FRICTION IN THE CIRCULAR AND CENTRIPETAL DIRECTIONS should be applied with fairly deep pressure when application is made to the hip. *Circular friction* is first employed and then centripetal, forward along the iliac muscle from the great trochanter.

When applied to the *back* begin at the occiput and follow each side of the spinal column to the pelvis, then apply friction from above downward, the vibratory circular friction to be employed with moderate pressure above the scapulae. *Below the scapulae* follow the ribs from without inward toward the spine. Then use deep interrupted vibration with moderate pressure from above downward alternately on each side of the spinal column making the applications between the transverse processes three or four times to each site. Care must be exercised that the pressure is not too heavily applied lest pain and tenderness follow. As demonstrated by Professor Maggiora the duration of an application is an important consideration requiring an exercise of care lest it be too long. *Vibratory friction* is applicable to inflammatory conditions and oedemas. In such cases begin the friction at the part nearest the trunk and gradually approach the distal part affected *always working toward the trunk*.

THE APPLICATION OF FRICTION is best based upon methods in use for years by scientific masseurs.

"(1) Head - from before backward and above downward.

- (2) Neck - downward.
- (3) Back - above shoulder blades circular; from shoulder blades to sacrum down; in the region of the loins, from the sides toward the spine.
- (4) Hips - circular.
- (5) Chest - from the sternum toward the axilla.
- (6) Abdomen - upper part, from above downward, and outward; lower part, from the median line downward and outward.
- (7) Arms and legs - from below upward."

In cases of oedema of the arms vibrate the axilla then start at the inside of arm and proceed up, at the same time gradually approaching the hand. Apply interrupted vibration at each joint as it is reached.

"(8) Hands - from the finger tips to the wrist, dorsum first.

(9) Feet - from toes to the heel on dorsum first then from toes to the heel and instep alternately."

In oedema of legs apply interrupted vibration to the inguinal glands. Then commence at inner side of thigh and proceed up, at the same time gradually approaching the foot. Apply interrupted vibration to each joint as it is reached.

"(10) Face - from the median line of the forehead outward to the temples, then downward toward the chin."

FOR GENERAL VIBRATORY TREATMENT the patient should be clad in a loose robe and all parts except that to be treated should be covered. The order preferred is that used in general massage, - "(1) Arms, (2) chest, (3) legs, (4) abdomen, (5) hips, (6) back, (7) head, (8) neck." General treatment is very rarely indicated and when used should be exceedingly short, the vibratory frictional treatment being the one best suited for the purpose.

VIBRATORY ROLLING, the last modality, is applied by using the ball or roller vibratode to roll backward and forward over a part with varying degrees of pressure, moderate particularly, to stimulate functional activity especially of the skin. If the arm is to be treated roll the parts on the underlying structures to and from the shoulders gradually approaching the elbow and in like manner from the elbow toward the hand. The stroke should be in accordance with the indications, and the rolling should be rapid but the

speed medium. When manual massage is used centripetal friction followed by the rolling has been found useful. It favors the production of heat and stimulates cellular activities.

The above includes forms of application to which modern vibrators of different types of independent motion may be adapted. A growing demand will eventually bring forth more perfect machines as new features are suggested by skillful clinicians. It seems probable however that the skill and technique of the hand united with the never tiring power employed with modern appliances under the absolute control and guidance of the skilled operator, is certain to accomplish more easily and with better results the otherwise laborious task of the masseur, the degree of touch as a factor sacrificed in mechanical vibratory work being dependent on the operator's individuality of touch transmission.

A good rule to follow is that of scientific massage. "All of the single or combined procedures should be begun moderately, gradually increased in force and frequency to the fullest extent desirable, and should end gradually as begun. "Vibration can be used to advantage oftentimes in connection with electricity, hydrotherapy, phototherapy, and exercise, passive or active, assistive or resistive. If the part treated be motionless and exercise is indicated, prescribe passive motion. If there be slight but not complete motion use assistive movements, if a superfluity of motion resistive movements are indicated, but care must be taken not to strain the part. The motions should be slowly and regularly executed, and each movement should be followed by a short interval of rest. It is also necessary that the exercises be taken daily. When dizziness, palpitation of the heart, pain in the chest, very rapid breathing or any other difficulty follows the exercises, they should be modified, possibly changed, or even omitted for a time until the powers of the patient warrant a continuance. There should always be an interval between the time of exercise and the meal preceding as well as the meal following.

APPENDIX C

**EXCERPTS FROM *THE ART OF
MASSAGE* BY J. H. KELLOGG, M.D.
(1895)**

Mechanical Vibration. – One of the most useful of all the several forms of mechanical massage is mechanical vibration. The highest rate of movement which can be attained by the hand is ten to twelve to-and-fro movements per second, whereas, by the use of mechanical, electrical, or acoustic devices, effective vibratory movements may be produced at any rate desired between forty or fifty per second to ten times that number. Vibratory movements forcibly communicated to the body at the rate of eighty per second, have been shown to produce at first a distinct muscular contraction with each oscillation; but if the vibration is long continued, the individual contractions become gradually less distinct, and after a time merge one into another, so that the contractions become continuous, or tetanic. From this fact it is apparent that mechanical vibration is capable of producing very decided physiological results as a mode of exercise; and that it exercises a powerful influence upon the circulation is a frequent observation. My patients constantly report that vibratory movements make them warm, and restore the balance of the circulation when disturbed by morbid reflex action, so that, while the feet are warmed, the head is cooled.

Carefully conducted experiments which I have made, show that the temperature of a part subjected to mechanical vibration is actually increased, the amount of the increase depending upon the length of the application, and the degree of depression below the normal temperature at the start.

Vibration is also one of the most efficient means with which the writer is acquainted for relieving the great variety of paraesthesias from which neurasthenic patients suffer, such as numbness, formication, tingling, etc.

The Vibrating Chair. – Figs. 115 and 116 represent a vibrating chair which I devised in 1883, and have since

had in constant use at the Battle Creek Sanitarium. The usual rate of vibration which I employ is sixty per second. A person needs to experience but a single application to become convinced of the powerful physiological effects which may be produced by mechanical vibration. When seated in the chair, strong vibratory movements are experienced, in which the whole body takes part. The greatest amount of force is applied to the lower portion of the trunk. The vibratory impulse communicated are felt powerfully in the lower bowel, and have a decided stimulating effect upon the rectum.

By placing the hands upon the arms of the chair, and inclining the trunk either forward or backward, the impulses may be transmitted more or less forcibly, as desired, from the lower to the upper portions of the spinal column. The application should continue from three to ten minutes, to secure decided physiological effects.

Vibrating Platform. – In standing erect upon the moving platform on which the chair rests, the muscles of the legs are brought into powerful action. Not only the muscles of the lower leg, but the muscles of the thigh, are thrown into tetanic contraction by the strong vibratory movements transmitted through the legs (Fig. 116). The application usually lasts about five minutes. A separate platform may also be used.

The Vibrating Bar. – Fig. 117 is a very imperfect representation of an apparatus I had constructed several years ago, in which a suitable mechanism drives a pair of horizontal bars at a high rate of speed. In using the vibrating bar, the hands are first placed upon it with the fingers spread and held rigid, but with the wrists flexible. This throws the hands into violent vibration without communicating the vibratory impulses to any other portion of the body. The bar is then seized by the hands, which grasp it tightly while the arm is partly flexed at the elbow, the shoulder joint being relaxed. Then, straightening the arms and holding them rigid, the muscles of the shoulders being fixed and the bar held firmly, the vibratory movements may be communicated to the upper spine and head with very

great vigor, producing a powerfully stimulating effect upon the upper spine.

The vibratory impulses may also be communicated to the stomach, liver, loins, sacrum, rectum, and other parts by bringing these portions of the body into direct contact with the bar.

Powerful endwise vibratory movements are given to the legs by placing the patient in a chair facing the apparatus, with the feet against the uprights which support the end of the bar opposite the driving mechanism. The vibratory movements obtained from this apparatus are applied to each part from half a minute to one minute.

Vibration of the Arms and Legs. – The legs are vibrated in three ways: (1) By means of an endwise movement; (2) by means of a lateral movement; (3) by means of a rotary movement. The effects of these three modes of vibration are similar, yet in some respects different. The time of application is usually from three to five minutes.

Endwise vibration is by far the most vigorous of the three modes. It is administered by means of a horizontal vibrating bar against the end of which the feet are placed, supported in suitable tests (Fig. 118).

Lateral vibration is administered by means of the same apparatus, the feet being placed against the side of the bar instead of the end (Fig. 118)'

Rotary vibration is produced by means of a rotating bar, against the end of which the feet are supported (Fig. 119).

The leg is held straight, not flexed as in the cut. The same apparatus is used for the arms.

Nerve-percutor, or Vibrator. – This instrument, which I have recently had constructed, and to which reference has previously been made, consists of a metallic chamber in which a mass of soft iron is made to play to and fro with considerable force by means of an alternating electrical current passing through a coil of wire which constitutes a part of the chamber. The blows struck by the oscillating mass of iron are communicated to the portion of the body under treatment by a brass rod terminating in a knob. By means of this simple device, very vigorous vibratory

movements may be applied to the head, to a nerve trunk, or to any part of the body to which it is desirable to make vibratory applications (Fig. 121).

Vibration of the Trunk. – In Fig. 120 is shown a method of applying vigorous vibratory movements to the trunk. The apparatus consists of a mechanism by means of which a strong horizontal bar is made to oscillate at the rate of 1200 to 1500 per minute. By means of suitable padded rests placed upon the bar, vibratory movements may be communicated to the back, the abdomen, or to either side, as may be desired. The special purpose of this apparatus is to communicate mechanical motion to the liver, stomach, bowels, and other abdominal viscera. It is a vigorous means of stimulating peristaltic activity, and of quickening the circulation in the large viscera of the abdomen. This apparatus the writer has had in use at the Battle Creek Sanitarium for twenty years, and has found it an exceedingly effective device. It is not simply a means of amusing the patient, but is capable of producing powerful physiological and therapeutic effects. The time of application to each part is usually from three to five minutes.

Mechanical Kneading. – By means of suitable apparatus, mechanical kneading may be applied in a very efficient manner to the bowels, the arms, the legs, and even to the whole trunk

Mechanical kneading of the abdomen is one, of the most useful of the several forms of kneading; it may perhaps with justice be said to be the most useful of all. It is best administered by means of the apparatus shown in the cut (Fig. 122). The writer had this apparatus specially constructed for the purpose some twelve years ago, and has had it in constant use since. The apparatus consists of a table with a large aperture near the center of its top. In this opening plays a series of six vertically-placed bars, each surmounted by a suitable pad. Each bar is separately actuated by a cam, or eccentric, so that it has its own independent motion. These six eccentrics are so arranged as to give a wave-like form to the combined movement of the six kneading pads. Simultaneously with the vertical movement of this kneading device, the

table top, with the patient which it bears, is made to move back and forth, thus changing the relation of the pads to the abdominal surface, and causing them to knead the entire abdomen. The two sets of movements are so timed that the wave-like kneading movement is made to follow very closely the course of the colon, thus bringing this part of the intestine especially under control. Zander has a similar machine.

I have found this apparatus of very great service in the treatment of constipation. It is not, of course, a panacea for this disease, which arises from many different causes; but it is a most efficient auxiliary to other measures, and riot a few cases have been observed in which the patient traced the greater part of the benefit received from a systematic course of treatment to this apparatus alone.

Mechanical kneading of the abdomen is useful not only in constipation, but also in cases of dilatation of the stomach in which there is, as a result of the dilatation, a considerable degree of motor insufficiency, in consequence of which the stomach does not empty itself with normal promptness. This treatment is of value in all cases of slow digestion so-called, and should be used within an hour or two after each meal. The kneading is usually continued from five to fifteen minutes.

Mechanical kneading of the arms is executed by means of the apparatus shown in Fig. 123. When the pressure is made sufficient to prevent the rubbers from slipping over the surface, the movement is that of rolling, a form of deep kneading; with lighter pressure, it is that of friction. This is a valuable mode of utilizing mechanical massage. The time of application is from three to five minutes.

The legs may receive mechanical massage by means of a similar apparatus, shown in Fig. 124. This is an excellent means of aiding the circulation in cases in which the legs and feet are habitually cold. The application should be continued from five to eight minutes, or until the extremities are thoroughly warmed.

Mechanical kneading of various parts may also be employed, as shown in Fig. 123. The apparatus utilized is similar to that used for rotary vibration of the feet. A suitable pad is secured at the end of a bar,

which is made to rotate while it rests against any portion of the trunk to which it can be conveniently applied. It is especially useful in making applications to the back, stomach, bowels, shoulders, and the region of the liver. In cases of gallstones, it is a most excellent means of jostling imbedded calculi down into the bile duct, thereby hastening the emptying of the gall-bladder. It also facilitates the discharge of the fluid contents of the gall-bladder, and is thus a valuable aid to digestion. It will be apparent from these observations that this particular form of apparatus is a very efficient form of vibration, as well as a thorough kneading procedure. The time of application should be from one to three minutes to each part.

Trunk Rolling. – The apparatus represented in use in Fig. 125 consists of a pair of pulleys moving in alternation and in opposite directions, a fraction of a revolution in each direction. To each pulley is attached one end of a broad strap, which is passed around the trunk in such a manner that, as the strap is pulled first in one direction and then in the opposite, the tissues are acted upon very much as in certain forms of palm kneading. When applied about the waist, it is a very excellent means of administering a rolling movement to the muscles of the trunk, and a shaking movement to the viscera; when applied across the shoulders, the effect is that of deep kneading. This is a favorite apparatus with patients who are under treatment by mechanical massage. It was devised by the author about ten years ago. This application is so vigorous that it is not usually continued longer than from two to four minutes.

Mechanical Percussion. – There are two forms of percussion which may be administered mechanically, viz.: (1) Slapping; (2) Beating.

Slapping is administered mechanically by means of a vertical revolving bar, to which is attached a broad strap about sixteen inches in length (Fig. 126). The strap is fastened to the bar at its middle, the two ends being free; and thus two blows are struck at each revolution. Different degrees of force are secured by modifications of the speed with which the bar is made to revolve, the thickness of the strap, and the position

of the patient in relation to the bar and the strap. The time of application, is from one to three minutes.

Mechanical slapping is a most effective measure for stimulating the surface circulation. In this respect it is not excelled by any procedure which can be administered by the hand. It is most usefully applied to the shoulders and back, the legs and thighs, and the soles of the feet.

Mechanical beating (Fig. 127) is an efficient mode of percussion, though less valuable in comparison with beating administered by the hand than is mechanical percussion in comparison with manual percussion. It is most effectively applied to the spine and chest, and over the abdomen. The apparatus shown was devised simultaneously by the writer and by Zander, of Stockholm. The usual time of application is from two to four minutes.

Mechanical Friction. – Friction may be applied to the soles of the feet by a revolving ribbed cylinder (Fig. 128)¹ which was first used by Zander. The writer has added a number of features which have proved serviceable. One of these is the employment of an apron to cover the ribs of the revolving cylinder, thus preventing the wearing upon the patient's stockings or slippers; another improvement is the insulation of the chair in which the patient sits, which I was led to make by noticing that sparks could often be drawn from different parts of the patient's body while receiving treatment from the apparatus. It is not an uncommon thing to see the hair of a patient sitting in the insulated seat, erected by the electric charge generated by the friction of the machine. It is possible that a certain portion of the static electricity may be generated by the driving belt. This phenomenon is of course chiefly confined to the colder months, when the atmosphere is dry.

The apparatus is a very valuable one, as it performs its work efficiently, and does something which cannot be so well accomplished in any other way. It is a favorite machine with our patients. The application is a very agreeable one, and may be continued almost *ad libitum* without injury. The usual time is from five to ten minutes.

Tilting-table. – In Fig. 129 is represented a tilting-table, which the writer devised nearly twelve years ago, and has had in use since. The patient lies upon his back while one end of the table top is lifted by means of a large earn operating beneath it. The patient lies with his head at the stationary, end of the table.

The purpose of this apparatus is to secure what I have termed "vasomotor gymnastics." When the hand is raised above the head, a strong contraction of its blood vessels occurs, the effect being rendered visible to the eye by blanching of the skin. At the same time that the blood vessels of the arm are thus made to contract by a vasomotor reflex, the vessels of the corresponding portion of the brain also contract by a repetition of the movement, real gymnastics of the muscular walls of the vessels may be executed, and thus relaxed vessels be contracted and strengthened, and local congestion relieved, if so situated as to come within the sphere of the reflex action set up by the change in the position of the arm.

This same principle applies with equal force to the lower extremities, which have a relation to the organs of the pelvis similar to that which the arms sustain to the brain. Leg raising, with the patient lying in a horizontal position, is one of the recognized and most valuable movements in the medical gymnastics of the Swedes. There is, however, a certain disadvantage in this mode of exciting vascular contraction. It is impossible to raise a limb by voluntary effort without a certain degree of strain, which involves holding the breath, and producing, as a result, an increase of pelvic and portal congestion, so that the exercise must to some degree defeat

its own purpose. In this exercise, also, but one leg is raised at once. When the lower part of the body is elevated mechanically, there is no exertion on the part of the patient, consequently no strain, and both limbs are elevated at the same time; thus the maximum effect is obtained.

This apparatus is of great service in all forms of pelvic congestion, in ovarian disease, uterine catarrh, displacements of the pelvic viscera, and in rectal disease of various forms. After spending a few minutes upon the tilting-table, rising and falling with its oscillations at the rate of about eight times a minute,

patients suffering from the maladies named and others similar, almost invariably express themselves as experiencing a marked sense of relief. The effects of this mode of passive exercise of the blood vessels are so agreeable that patients are inclined to continue the application as long as they are allowed to do so. As a rule, ten to fifteen minutes is sufficient to secure decided physiological effects.

Pelvis Tilting. – Nearly all forms of pelvic disease give indications for the use of the tilting-table above described. In displacement of the womb or ovaries, however, as well as of the stomach, liver, kidneys, bowels, and other abdominal organs, it is important to combine with the vasomotor gymnastics described, the employment of position as an aid to restoration of the displaced viscera. This is accomplished by adding to the tilting-table above described a device by means of which the pelvis is lifted free from the table while the patient lies upon the face, thus causing the abdominal wall to sag downward (Fig. 130). As the table is tilted, the patient is lifted into such a position as to cause gravity to make an upward (in relation to the normal position) pull upon the viscera of the trunk. The device consists simply of an attachment placed in the center of the table, which is made to rise more rapidly than the table itself, thus lifting the pelvis before the rest of the body, and holding it in this relation until the table returns to a state of rest. The effect of this apparatus is increased, if, while the patient is elevated, the attendant applies percussion or beating to the sacral region.

The use of this apparatus alone is not sufficient to restore displaced organs to position, but it aids greatly in relieving congestion, and is certainly a help toward a cure of visceral prolapse. The application should be made daily, or twice daily, and continued from eight to ten minutes each time.

Trunk-exercising Apparatus. – Figs. 131 and 132, represent forms of apparatus which are of substantial service in exercising the muscles of the trunk. Although the results obtained are different, the principle of both machines is the same, and is based

upon the fact that the body involuntarily seeks to maintain its equilibrium.

Active-passive Rotation of the Hips. – Fig. 131 is an apparatus so constructed as to cause a seat to revolve in such a manner that its plane shall continually change, thus inducing the patient, when seated upon the apparatus, to contract the muscles of the trunk in maintaining his equilibrium, the body being steadied by the hands. There is thus secured a complete and perfect rotation of the hips. This is a most excellent form of exercise for persons with weak trunk muscles, which is the condition of most women who come under the care of the gynecologist, as well as of a large share of the cases of nervous dyspepsia in both men and women. This apparatus has the advantage over other forms of gymnastic apparatus in that it brings the muscles into action automatically, as in walking, and thus secures a more complete and natural movement of the muscles of the trunk. The first applications with this apparatus should be brief, not more than one or two minutes, as the muscles of the trunk are brought into such vigorous action that they are likely to be overtaxed, especially in feeble persons. The apparatus may be used either with or without power attachment, but is usually employed without.

Trunk Flexion. – In the apparatus shown in Fig. 132 the movement is a tilting of the seat from side to side. It is used in two positions: (1) With the patient sitting parallel with the line of movement; (2) with the patient sitting at right angles to the line of movement. In the first position, the patient is induced to make alternate flexion of the trunk forward and backward; in the second position, the patient flexes the trunk from side to side.

The use of this apparatus is indicated in the same class of case as the preceding. Its action is less powerful, and consequently it is especially adapted to feeble patients at the beginning of a course of treatment, and as an introduction to the more vigorous movements. The action of this apparatus being less energetic than the preceding, the applications may be somewhat longer—two or three minutes at first, and longer after the patient becomes accustomed to them.

Mechanical Respiration. – In Fig. 133 is shown an apparatus by means of which artificial respiration may be mechanically administered. In its use the patient is seated upon a stool, the arms being placed over movable rests, which fall in the axillae. The back is supported by a padded rest placed between the shoulders. When the machine is set in motion, the shoulders are lifted upward and backward in such a way as to expand the chest in an efficient manner, producing a strong inspiratory movement quite independent of any effort on the part of the patient. The effect is to correct the condition known as flat, or hollow, chest, and to give flexibility to the chest walls when they have become rigid in consequence of insufficient use. This apparatus is in part modeled after a similar arrangement by Zander, but several improvements have been added; among others, is a device by means of which the arms, as well as the shoulders, are raised, thus increasing the vigor of the inspiratory movement.