

yon, nine miles; Summit of Pike's Peak (via cogwheel railroad), twelve miles. In addition to these well-known localities there are scores of canyons, caves, waterfalls, and charming nooks which the sojourner may seek out for himself. The railroad journey to the top of Pike's Peak is one never to be forgotten. The view from the immense height of 14,147 feet is almost appalling in its scope and grandeur. A post-office for the benefit of tourists is maintained at the apex of the Peak by the national Government during the summer season. It has been well described as the loftiest post-office in the United States. The meteorological conditions at Manitou and Colorado Springs are very favorable to invalids, the climate being dry and the temperature even and not subject to sudden changes. The winter months are mild and pleasant—so mild, indeed, that excursions are almost daily made to the neighboring canyons and glens, where outdoor picnics are held with as much safety to health as in the summer.*

Within the town limits are nine cold springs, which are divided into two groups: (1) the Soda Springs which resemble in taste and properties the well-known Apollinaris water; and (2) the Iron Springs. These springs are controlled by the Manitou Mineral Water Company, and, in addition to the immense local consumption by visitors, the waters are bottled and sold to dealers throughout the United States. The Manitou ginger-ale and Manitou soda-water also have an extensive sale, and an inspection of the immense bottling establishment of the company is one of the features of a visit to the resort. The waters of two principal springs, as analyzed by Prof. Elwyn Waller, Ph.D., analytical chemist, New York City, were found to contain:

MANITOU SPRINGS.

ONE UNITED STATES GALLON CONTAINS:

Solids.	Manitou. Grains.	Navajo. Grains.
Sodium chloride	23.94	23.79
Potassium sulphate	10.68	15.35
Sodium sulphate	11.14	10.93
Sodium carbonate	40.00	42.00
Lithium carbonate	.71	.81
Calcium carbonate	69.08	69.33
Magnesium carbonate	16.68	16.04
Iron oxide	.02	.02
Alumina	.07	.10
Silica	2.49	2.46
Total	175.47	182.23

Both contain free carbonic-acid gas.

The waters of these springs are especially recommended in dyspepsia. During the author's sojourn at the springs, he had abundant opportunity to test the virtues of the Soda Springs in his own person and in that of one of his travelling companions. A glass of this water will almost instantly give relief in pyrosis, acid eructations, or flatulence, and its habitual use prevents the recurrence of these disagreeable symptoms. They are further of decided benefit in renal and bladder disorders. The waters of the Soda Springs, being clear, sparkling, and very palatable, form an excellent table beverage. The iron waters are highly beneficial in debility, in early phthisis, and in anemia and chlorosis. Numerous excellent hotels and boarding-houses are maintained at Manitou Springs. The visitor will find all the arrangements for his comfort and well-being equal to any that may be found at a first-class Eastern resort.

MANNA.—"The concrete, saccharine exudation of *Fraxinus ornus* L. (fam. Oleaceae)" (U. S. P.). Numerous other varieties of manna than this, the official one,

* Dr. L. D. Seabee gives us the following temperatures for the winter months: November, 48°; December, 43°; January, 40°; February, 48°; March, 50°; April, 64°. These records were made at 12 noon. At 6 P.M. the temperature was twelve to fifteen degrees lower. There was no rain from November 11th to March 15th.

are known, and some of them will be noticed at the close of this article.

This, the manna-ash of Italy, Sicily, Asia Minor, etc., is a small, graceful tree, with smooth gray bark, slender branches, odd pinnate leaves, and the characteristic inflorescences and fruit of the genus. It grows to about twenty feet in height, and is often cultivated, both in and beyond its natural habitat, for ornament, but does not yield manna excepting in Southern climates. In Sicily, whence most of the manna of the present time comes, the trees are regularly cultivated for this purpose, being planted in rows in "orchards," and allowed to grow unmolested until the stems are nearly as large as the leg. Then the tapping is begun, and repeated every summer for a dozen or more years, until the tree is exhausted. The usual method is to make a transverse cut through the bark near the base of the trunk, and to follow it each day with another, about an inch higher up than the last, during favorable weather. It is done in the middle of the summer, and hot, dry days are essential to success. The sap exudes from these cuts—a thick, syrupy, very clear, and sweet liquid—and soon concretes on the bark of the trunk, or on leaves, sticks, straws, etc., laid for it. These lumps are either cut or "flaked" off, great care being taken not to get any of the bark, and in this state they constitute the highly prized "Flake-manna," which is graded in sizes. The exuding tears often drop to the ground, and sometimes form large masses at the base of the trunk. This, with the scrapings from the trunks, is assorted into inferior grades, "small flake," "sorts," "cake manna," etc., some of which are very impure.

DESCRIPTION.—Manna suitable for medicinal use is thus described in the Pharmacopœia: "In flattish, somewhat three-edged pieces, occasionally eight inches (20 cm.) long, and two inches (5 cm.) broad, usually smaller; friable; externally yellowish-white, internally white, porous, and crystalline; or in fragments of different sizes, brownish-white, and somewhat glutinous on the surface, internally white and crystalline; odor, honey-like; taste sweet, slightly bitter, and faintly acrid. On heating 5 parts of manna with 100 parts of alcohol to boiling, and filtering, the filtrate should rapidly deposit separate crystals of mannit. Manna consisting of brownish, viscid masses containing few or no fragments of a crystalline structure should be rejected." There is much opportunity for economy in purchasing a good grade of manna, without selecting the very high-priced flakes, which are superior in appearance only.

COMPOSITION.—Fine qualities of this drug contain seventy or eighty per cent. of mannit (C₆H₁₂[OH]₆), a sweet, crystalline, sugar-like, peculiar substance, also found in other sweet saps. There are also traces of fraxin, a neutral bitter substance which is found in the bark of several other species of ash, and which injuriously affects the quality.

ACTION AND USE.—The best (not bitter) specimens of manna contain nothing of importance besides this mannit. They are not poisonous or deleterious in any quantity, and exert on the human body simply the influence of a very gentle catharsis. Manna has been for a long time a favorite laxative for infants and children, on account of its pleasant taste, but it is becoming scarcer and is used less and less frequently. Dose (adult), from 25 to 50 gm. (℥ i. ad ℥ iss.), which may be taken in substance or dissolved in water. The only official preparation is the compound Infusion of Senna (*Infusum Sennæ Compositum*, U. S. P.), made as follows: Senna, 6 parts; manna, 12 parts; sulphate of magnesium, 12 parts; fennel, bruised, 2 parts; boiling water, 80 parts; water. Macerate, strain, and add water enough to make 100 parts—a cathartic.

The name "manna" has been applied to a number of sweet exudations from trees and plants which grow in various parts of the world. *Fraxinus excelsior* L., the common European ash, like many others of the genus, yields a sweet sap, and is said to yield a little manna in Sicily. Allhagi manna, from a small leguminous plant of

India, is in small, roundish, hard tears. Tamarisk manna, from Arabia and Persia, is also in small tears. "Shir Khist" is from a species of *Cotoneaster*, collected in India; oak manna, from several species of oak, and Briançon manna, from the larch. None of these has, however, in European markets, any importance as compared with the variety here described.

Henry H. Rusby.

MARDELA SPRINGS.—Wicomico County, Maryland. Post-Office.—Mardela Springs. Hotel.

This resort is located on the Baltimore, Chesapeake and Atlantic Railroad, twelve miles west of Saulsbury. Under the name of Barren Creek Springs they have been used for medicinal purposes for many years. There is much charming scenery in the neighborhood, and the atmospheric conditions during the summer months are of a very desirable character. The location is about two hundred feet above the sea-level. Messrs. Taylor and Bacon, of the springs, supply us with the following analysis by Prof. P. B. Wilson, of the Baltimore University School of Medicine:

ONE UNITED STATES GALLON CONTAINS:

Solids.	Grains.
Silica	1.28
Arsenious acid	Strong trace
Ferrie oxide (iron sesquioxide)	11.50
Alumina	.34
Sodium chloride	.78
Calcium carbonate	1.35
Magnesium carbonate	.04
Calcium sulphate	.01
Sodium carbonate	Trace
Total	15.30

The water is a strong chalybeate. It is a very efficient tonic and diuretic, and contains sufficient arsenic to give it valuable alterative properties. It promotes the appetite, aids the digestion, and increases the general powers of nutrition. It is highly recommended by physicians of Baltimore in cases of weakness and irritability of the bladder, anemia, and chlorosis, dyspepsia, chronic cystitis, and urethritis, and in amenorrhœa, leucorrhœa, and other functional disorders of the female pelvic organs when due to debility. The water is found in the Baltimore markets.

James K. Crook.

MARIENBAD.—"This is a well-known Bohemian spa, lying in a pleasant valley, surrounded by forest-covered hills, not far from Carlsbad. Its elevation is about 2,000 feet above the level of the sea. There are eight springs known as the Kreuz-, Ferdinands-, Carolinen-, and Ambrosius-Brunnen, and the Wald-, Wiesen-, Rudolfs-, and Marien-Quelle. Of these the most important are the two first mentioned. The following is the composition of four of the springs, according to analyses made at different times by different chemists. The proportions of the solid constituents are given in grams per litre.

	Kreuz-brunnen.	Ambrosius-brunnen.	Wald-Quelle.	Rudolfs-Quelle.
Sodium sulphate	3.873	0.275	1.06	0.11
Potassium sulphate	.054	...	.20	.02
Sodium chloride	1.257	.075	.37	.06
Sodium carbonate	.965	.115	1.00	.14
Calcium carbonate	.556	.270	.38	1.12
Magnesium carbonate	...	...	.40	.67
Aluminum carbonate	.405	.200	...	...
Lithium carbonate	.005	...	...	...
Strontium carbonate	.001	...	...	...
Manganese carbonate	.040	.035	.02	.04
Ferrous carbonate	Trace.	...	Trace.	.07
Manganous carbonate	.001	...	...	.03
Aluminum and calcium phosphates	.007	.050	.10	.01
Silicic acid	...	...	...	...
Bromides, fluorides, organic matters, etc.	Traces.	Traces.	Traces.	Traces.
Total solid constituents	7.174	1.020	3.53	2.27

"The springs all contain a certain proportion of carbonic-acid gas. They are employed for the greater part internally. The Marienquelle, however, is used for bathing; it is very weak in solid constituents, containing only 0.182 part per thousand, but is pleasantly carbonated.

"The waters of Marienbad are prescribed in cases of abdominal plethora, gout, hemorrhoids, chronic dysentery, hepatic congestion, etc., occurring in well-to-do individuals accustomed to indulge rather freely in the pleasures of the table. They are also very useful in obesity, and are especially recommended in affections associated with the menopause. The waters of some of the springs have considerable reputation in the treatment of neuralgia and of chronic catarrhal troubles of the respiratory organs and bladder. Ordinary baths are not much employed, though gas- and mud-baths are made use of to some extent. The season at Marienbad lasts from the beginning of May to the beginning of October. The climate is not mild, yet not disagreeably raw. The waters are exported in very large quantities. This spa is much frequented, the average number of guests each year being 21,000.*"

[Obesity is "the great specialty here," and corpulence stalks abroad on every hand. When one, however, has rid himself of his superabundant adipose tissue, great care must be paid to the diet, else the "too, too solid" fat will not remain melted. The accommodations are abundant and good; there is an English and Scotch church service, and there are over forty doctors. Marienbad is reached from London via Cologne, Nuremberg and Eger in thirty hours.—Edward O. Otis.]

MARIETTA, GEORGIA.—Situated in the northwestern part of the State, twenty miles from Atlanta, at an elevation of from 1,100 to 1,200 feet above sea-level. It is a town of some 3,384 inhabitants, with a dry sandy soil, and an invigorating climate with a large proportion of sunny days. In 1888, there were 263 sunny days, and 102 rainy or cloudy days. For the same year the average minimum and maximum monthly temperatures, the extremes of temperature, and the rainfall were as follows for the months of October to May.

	Average minimum temperature of month, Degrees.	Average maximum temperature of month, Degrees.	Maximum temperature, Degrees.	Minimum temperature, Degrees.	Rainfall, Inches.
October	49	64	77	37	3.93
November	44	58	75	26	4.38
December	34	49	64	18	4.97
January	36	49	72	12	3.10
February	40	54	69	10	4.00
March	39	58	77	19	9.81
April	52	73	82	42	1.68
May	57	74	85	41	5.13

The average yearly temperature is 57.66° F.

There are no humidity statistics known to the writer, but at Atlanta, twenty miles distant, the average relative humidity, as ascertained from observations taken at 8 A.M. and 8 P.M., is 71.8 per cent., with an average mean yearly temperature of 60.7° F.

It is said to be a breezy region, but there are no wind storms or fogs. Malaria does not exist here. There are two hotels, well kept, quiet, and comfortable, good boarding-houses, and a few houses for rent. The summer climate is also said to be "delightful," and the place is much resorted to at that season. Marietta is easily reached from New York and Washington via the Great Southern mail route.

Edward O. Otis.

MARJORUM. See *Labiatae*.

MARKASOL is bismuth borophenate, an antiseptic dusting powder.

W. A. Bastedo.

* From the former edition of the HANDBOOK.

MARK WEST SPRINGS.—Sonoma County, California. Hotel and cottages.

This resort is situated eight miles from Santa Rosa, near the famous "Petrified Forest" on Mark West Creek. It is reached by rail to Calistoga or Santa Rosa, and thence by carriage or stage over a picturesque drive to the springs. The mountain region along the road is coming under a high state of cultivation, and beautiful villas and private mountain retreats are springing up in all directions. The springs are beautifully located at an elevation of 800 feet in a small valley formed by the junction of four canyons. The hotel and grounds are at the bases of three venerable mountains known as Mount Washington, Mount Lincoln, and Mount Grant. The air is clear and dry, the temperature ranging from 80° to 90° F., with cool, bracing sea breezes. There are excellent hotel accommodations and several cottages for family use. Hot sulphur and mud baths have been constructed, with all facilities for the comfort of the visitor or invalid. There are several springs on the place, one of them a sulphur spring, yielding about 200 gallons per hour. The temperature of the water is 82° F. It contains: Sulphate of sodium, sulphate of magnesium, salts of potassium (trace), chloride of sodium, carbonate of sodium, carbonate of potassium, carbonate of lime, silica, alumina, free carbonic-acid gas, sulphureted hydrogen gas.

There is also a strong chalybeate spring, yielding 600 gallons of water per hour, having a temperature of 65° F. The largest spring has a flow of 5,000 gallons hourly; this is a sparkling carbonated water, very palatable, and gently aperient in its action. The water at these springs has been found useful in a considerable variety of affections. The baths are sulphurous. *James K. Crook.*

MARSHMALLOW.—*ALTHÆA.* "The root of *Althæa officinalis* L. (fam. *Malvaceæ*)" (U. S. P). The Marsh-mallow is a tall, perennial salt-marsh herb of temperate European sea coasts. It is also largely cultivated, sometimes for ornament, but chiefly for its root, in Southern Europe. The root of commerce is from six inches to nearly a foot long, usually about half an inch in greatest thickness, simple and regularly tapering. It is nearly white, from the removal of the outer bark, and marked with several broad grooves and numerous small, brown, slightly elevated spots. It is more or less fuzzy with long, hair-like, partly detached bast fibres. It snaps readily, owing to its large amount of starchy parenchyma, but the parts still cling together by their tough bast fibres. It has a sweetish and strongly mucilaginous taste. It is about one-third gum and another third starch, with about ten per cent. of pectin, eight per cent. of sugar and one per cent. of asparagin. Its properties are wholly nutritive and demulcent. There is no pleasanter adjunct than the official *Syrupus Althææ*, of five-per-cent. strength.

The leaves and flowers are also rich in gum, and both are much used in domestic practice in Europe for poultices and demulcent drinks. *Henry H. Rusby.*

MASSAGE.—**DEFINITION.**—Massage (from the Greek, *masso*, I knead or handle; Arabic *mas'h*, press softly; Sanskrit, *maksh*, to strike, to press, to condense) is a term generally accepted to signify a group of procedures which are best done with the hands, such as friction, kneading and manipulating, rolling and percussing the external tissues of the body in a variety of ways with either a curative, palliative, or hygienic object in view. In many cases massage should be combined with movements, passive or active, assistive or resistive, as may be required, and these are often spoken of as the Swedish movement cure. Most scientific men prefer to have the word massage embrace all these varied forms of manual therapeutics, for the reason that the word cure attached to any form of treatment whatsoever is often misleading.

HISTORY.—Massage, in some crude form or other, has been used from time immemorial by savage and civilized people, because it is founded on instinct. The history of massage is coeval with that of mankind, and those

who have thought it worth while to record their appreciation of it have in almost every instance been men of eminence either as physicians or as philosophers, poets, or historians. The aphorisms of Hippocrates embodied the wisdom of the past and presaged the developments of the future to a greater extent than most ancient or modern writers on massage have shown any evidence of understanding. He says: "The physician must be experienced in many things, but assuredly also in *anatripsis*, the art of rubbing up; for things that have the same name have not always the same effects. For rubbing can bind a joint that is too loose and loosen a joint that is too rigid. Rubbing can bind and loosen; can make flesh and cause parts to waste. Hard rubbing binds; soft rubbing loosens; much rubbing causes parts to waste; moderate rubbing makes them grow." The results which he has predicted will follow when the necessary previous conditions have existed.

Amongst the old Greeks and Romans massage in some form or other was patronized by people of widely different classes, from the patricians, the wealthy and the learned down to poor decrepit old slaves; and for the most diverse purposes: with some as a means of hastening tedious convalescence, with others as a luxury in conjunction with the baths, and with still others to render their tissues supple and enduring preparatory to undergoing feats of strength, so that there would be less likelihood of sprains and ruptures.

To Peter Henrik Ling, of Sweden, credit is given for having instituted what is so well known as the "Swedish Movement Cure." In 1813 the Royal Central Gymnastic Institution was established at Stockholm in order that Ling might practise and teach his gymnastics, which were adapted to the well and the sick. The critics of Ling quickly brought forward testimony to prove that his method was but a revival of that of the ancients. But, however his genius and the claims of priority made for him may have been disputed, there was no doubt as to the merits of the system which he rescued from oblivion. In some of the large cities of this and other countries, institutions similar to the one at Stockholm exist where movements and stirring up of the external tissues of the body by hand and by machinery are employed. When they rely too much on machinery for this purpose their existence is generally brief.

The field of usefulness of massage has gradually been extending, so that now it has found its way into every general and special branch of medicine, frequently meeting with signal success after the apparent failure of every other means. He who would understand this art, its indications and contraindications in all their ramifications, ought to be a well-informed man. Dr. J. Zabudowski is a full professor of massage at the University of Berlin, and the force of circumstances requires that he should not be the least learned man of the faculty.

MODE OF APPLYING MASSAGE.—Vague generalities still exist as to the best manner of doing massage; and these are not rendered clearer by calling slow and gentle stroking, *effleurage*; or by speaking of deep rubbing as *massage à friction*; or by using the word *pétrissage* for manipulation or kneading without friction; or by calling percussive, *tapotement*. These and other subdivisions of massage can all be grouped under four heads: friction, percussion, pressure, and movement. Manipulation, malaxation, deep rubbing, or kneading is a combination of pressure and movement without allowing the hand to slip on the skin. It is of more value than all the other procedures, and constitutes the massage, properly so called, of the older writers and also of the later ones who know anything about it. Each and all of these may be gentle, moderate, or vigorous. Some general remarks will save repetition. 1. All of the single or combined procedures should at first be begun moderately, then gradually increased in force and frequency to the fullest extent desirable, and should end gradually as begun. 2. The greatest extent of the hands and fingers of the manipulator, consistent with ease and efficacy of movement, should be adapted to the surface worked upon, in order

that no time shall be lost by working with the ends of the fingers, or with one portion of the hands, when all the rest might be occupied. 3. The manipulator, if too near the patient, will be cramped in his movements; if he is too far away, they will be lacking in energy, indefinite, and superficial. 4. The patient should be in an easy and comfortable position, with joints midway between flexion and extension, in a well-ventilated room, at a temperature of 70° to 75° F. Any sensations of tickling will soon disappear when firm, steady, deep kneading is employed. 5. The directions of these procedures usually should be from the insertion to the origin of the muscles, from the extremities to the trunk, in the direction of the returning currents of blood and lymph, unless there be a plug in a vein. 6. What constitutes the dose of massage is to be determined by the force and frequency of the manipulations, and by the length of time during which they are employed, considered with regard to their effect upon the patient; in other words, the reaction must be studied. A good manipulator will do more in fifteen minutes than a poor one in an hour, just as an old mechanic working deliberately will accomplish more than an inexperienced one working furiously.

In using friction upon the limbs, after the strong upward stroke, the hand should return gently grazing the surface, so as to impart a soothing sensation; it should not press upon the parts so vigorously as to retard the currents pushed along by the upward stroke; and thus a saving of time and effort will be gained. The manner in which a carpenter uses his plane represents this to-and-fro movement very well. Six to a dozen or more of these up-strokes and as many returning may be used at a time, according to the effect desired. On the hands and feet the friction may be done in a rectilinear manner, parallel to the long axis of the limb, and on the arms and legs it can be used not only in straight lines but also by long oval strokes extending from joint to joint, the strong stroke up, the light one returning. It is well to begin these strokes on the inner side of both arms and legs so that the larger superficial and deep vessels may first be emptied, as this makes room for their tributaries to pour their contents into them. From the base of the skull to the spine of the scapula forms a well-bounded region for downward and outward semicircular friction; and from the spine of the scapula to the base of the sacrum forms another surface over which one hand can sweep in downward and outward strokes, alternating with those of the hand at work upon the shoulder, the patient for this purpose lying on the opposite side. The application of friction to the hip should be done in an upward direction with alternate strokes from the insertion to the origin of the glutei; to the chest, from the insertion to the origin of the pectoral muscles; and to the abdomen, from the right iliac fossa in the direction of the ascending transverse and descending colon. Friction over the stomach should be upward and inward from the left side, and over the liver, up and in from the right side.

For manipulation or kneading the same division of surfaces and direction of working should be made as for friction; and it is a very good rule, but not an absolute one, that stroking and kneading should alternate. Adapting as much as possible of hands and fingers to the part to be *masséed*, making three manipulations and passing three times over a surface, as from wrist to elbow, constitute a very good plan; then half a dozen strokes should be made, and so on. The grasps should alternate, one hand contracting as the other relaxes, and the advance on new territory should be such as to permit of the hand overlapping one-half of what was *masséed* at the previous grasp. For this purpose the two hands may encircle a limb, one slightly in advance of the other; or a single group of muscles may be *masséed* at one time by alternate squeezes with each hand.

For manipulation of the back we have the patient lie on one side as for friction, and then, while steadying the head with one hand pressed against the temporal region, we make the fingers of the other work vigorously from the median line upward and outward toward the inser-

tion of the muscles at the base of the skull. The direction of the manipulations on the rest of the back should generally be downward and outward from the spine in graceful curves, and on the hip upward and outward, the two hands alternating in the same direction. On large people with very firm tissues, one hand should often be reinforced by placing the other upon it, the *masséing* thus being done with all the strength that can be put forth. The force used here and elsewhere must be carefully graduated so as to allow the patient's tissues to glide freely over each other; for if it be too great the movement will be frustrated by the compression and perhaps bruising of the patient's tissues; if it is too light the manipulator's fingers will slip; and if gliding with strong compression be used the skin will be chafed. In order to avoid this last objection, which is almost a universal error, greasy substances are employed, so that would-be masseurs may rub without injuring the skin. When the skin is cold and dry, or cold and moist, and insufficiently nourished, as in certain fevers and other morbid conditions, there is no doubt of the value of inunction; but no special skill is required to do this. Removal of hair is also unnecessary; for massage can be done as effectually on the head as on any other part.

On the chest and abdomen the same general direction will be observed for manipulation as for friction, but the pressure will be more gentle than on the back and limbs, as the tissues here will not tolerate being so strongly squeezed. On the chest, alternate circular kneading may be done with one hand on each side; or one side may be done with both hands, one at the upper, the other at the lower part, the direction of the circular kneading being down, in, out. On the abdomen, firm, deep kneading is usually best in the direction of the colon, the greatest force being used with the heel of the hand on the side of the abdomen next the operator, and on the other side the strongest manipulation being made with the fingers, care being taken to avoid the frequent and disagreeable mistake of pressing at the same time on the anterior parts of the pelvis.

Percussion, often useful for relaxed muscles, may be done in a variety of ways. In the order of their importance they are as follows: 1. With the ulnar borders of the hands and fingers. 2. The same as the first, but with the fingers separated. 3. With the tip ends of the fingers united. 4. With the palms of the hands. 5. With the ulnar borders of the fists. 6. With the palms of the hands held in a concave manner so as to compress the air while striking. The blows should be smart, quick, and springy, and usually with the ulnar borders of the hands directed transversely to the muscular fibres; except in the case of the back, which may not only be percussed with the hands at right angles to it while the patient lies face down, but also still more effectually when the patient stands slightly bent forward so as to put the dorsal muscles on the stretch. The hands of the percussor are then most easily held parallel to the spinal column, and can rapidly strike the muscles on each side of it, causing, we have every reason to suppose, a vibratory effect as when the string of a bow is struck. Moreover, in this position, the muscles, being tense, protect the transverse processes from the impact which the blows communicate to the roots of the nerves as they emerge from the intervertebral foramina, and the vibratory effect of this upon the distribution of the nerves is perceived as a peculiarly delightful and agreeable thrill.

Remedial movements, wrongly called medical gymnastics, have been more fully than clearly described in books on "Movement Cure." According to the descriptions of them which I have read the patients would have to be made for the movements rather than the movements adapted to the patients. Passive movements should be given to parts which the patient cannot move; assistive movements when the patient can do but a part and not the whole of a movement; resistive movements, when the patient is strong enough to oppose resistance for the purpose of cultivating increase of strength. Much learned nonsense has of late been written about various move-