The
BATTLE CREEK SANITARIUM
An Institution for Health Reconstruction

Origin
Purposes
Methods

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AIMS AND OBJECTS

The Central Idea Is Reconstruction

Briefly stated, the general purpose of the Battle Creek Sanitarium is:

1. To aid chronically sick people to recover their health as far as may be possible.
2. To instruct those who have gained health how to live biologically, so that they may remain well.
3. To promote race betterment through biologic living, by original research and by educational efforts through publications, lectures and other means.

The aims and objects of the Battle Creek Sanitarium are thus set forth in its Articles of Incorporation and Charter granted by the State:

“The objects of said corporation and other matter germane and auxiliary thereto, are as follows:

To found a hospital or charitable asylum within the State of Michigan for the care and relief of indigent or other sick or infirm persons, at which institution may be received also patients and patrons who are able to and do pay for the benefits there received, and which institution shall devote the funds and property acquired and received by it from time to time from all sources, exclusively to maintaining itself, improving its condition and facilities, extending its benefits and usefulness, and facilitating and promoting its purposes, by such sanitary, dietetic, hygienic, and philanthropic reforms and efforts as are germane or auxiliary thereto; all of its said purposes being undenominational, unsectarian, philanthropic, humanitarian, charitable, and benevolent, and in no manner directly or indirectly for private profit or dividend to any one.”

Origin

The institution is the result of the development of the idea of institutional treatment which began more than a century ago in the little mountain village of Graefenberg,
in Eastern Silesia, now a part of Czecho-Slovakia, where an unlettered but extraordinarily sagacious peasant boy, Vincent Priessnitz, was inspired to apply to himself and his neighbors, the cold water methods long in use among the primitive folk of that region in the treatment of accidents and the common ailments of their domestic animals. His success was so remarkable that his practice rapidly developed, and within a few years chronic invalids from all over the world were making pilgrimages to Graefenberg; and while some were doubtless injured by the crude methods employed without the direction of scientific medical knowledge of diagnosis, etiology, and pathology, thousands of persons suffering from disorders supposed to be incurable, made good recoveries.

The attention of the medical profession was thus called to the use of water in the treatment of disease and to the fact that disease is cured by the efforts of the body itself, aided by the various forces of the natural world, rather than by drugs.

Learned medical men as well as the laity, nobles, princes, and royal personages, visited Graefenberg and studied the methods which, though clumsy and empirical, were nevertheless remarkably efficient. Water cures were established in France, England, Germany, and in this country, and for half a century were quite popular, doubtless largely as a result of the general reaction against the drastic measures of the “artificial methods” at that time in current use.

**A New Era in Medical Science**

But a new era was dawning in medical science. The experimental method of research under the stimulating influence of Claude Bernard and his followers was being applied to human physiology and therapeutics. Jacob Bigelow of Boston created a sensation by reading a paper before the Massachusetts Medical Society on “Rational Medicine;” and Dr. Oliver Wendall Holmes made a still greater commotion by his poem, “Rip Van Winkle, M. D.,” also read at the annual medical meeting. Tradition says that these verses came near destroying his professional standing.

Dietl, a brilliant pupil of the famous Rokitanski, thus formulated the new medical thought:

“Nature creates and maintains, therefore she must be able to heal.”
The Health Institute, 1866
Currie of England, aided by John Hunter's body thermometer, had made a scientific study of the use of water in fevers. Winternitz of Vienna had visited Graefenberg and had made an experimental study of the methods of Priessnitz to determine their physiologic effects.

Duchenne and Du Bois Raymond in France and George M. Beard, in this country, had begun a scientific study of electro-physiology and electro-therapeutics.

Ling of Sweden had developed a scientific system of medical gymnastics.

Sylvester Graham, an ancestor of Dr. Graham Lusk, the eminent New York physiologist, had started a notable diet reform to which the world owes graham bread and the low protein regimen; Voit and Pettenkofer were occupied with the study of metabolism and the physiology of nutrition, by scientific laboratory methods, while Neuram and Sprenger of Switzerland were demonstrating the value of an out-of-door life in the treatment of lung tuberculosis.

The "cold-water-cure" which had become a popular "fad," with empiricism in general in and out of the regular profession, was on the wane. The new era of scientific medicine was dawning.

The Early Water Cure

Just at this time, in the fall of 1866, a small water cure known as a Health Institute was started at Battle Creek by a group of men who had been influenced by the teachings of Graham and his followers. The enterprise prospered moderately for a few years, but its success rapidly declined with that of others of its kind, and at the end of ten years, the trustees were ready to close its doors to save further accumulation of debts.

The writer, then a recent graduate from the Bellevue Hospital College of New York, was asked to take charge of the place, and consented to do so on the condition that he should be permitted to eliminate the empirical element and to reorganize the work upon a scientific basis. From that time (October 1, 1876) until now, January, 1921, the institution has been under the present management, which at present consists of a board of ten trustees, all of whom are connected with the institution as physicians or business managers.
An Independent Race Betterment Enterprise

The institution is wholly independent of any other enterprise or association. Although the original incorporators were members of a peculiar sect, the institution was never owned, endowed, or controlled by that body or by any other. Its original religious affiliation was dissolved many years ago (1902) when an attempt was made to force it under sectarian control. This coercive effort led to a complete severance of all sectarian affiliations.

It should be clearly stated that the Battle Creek Sanitarium has no branches anywhere, and has no connection with any of the so-called Battle Creek “treatment rooms” and small sanitariums in various parts of the country; some of these, notwithstanding our oft repeated protest, persist in making their announcements in such a way as to give the impression of identity in character or management with the Battle Creek Sanitarium. All such representations are grossly misleading and often appear to be intentionally so.

Change of Name

One of the first things done by the new management was to change the name, as well as the policy and methods of the institution. The old title, “Health Reform Institute,” was dropped for a new name by which it has been since known, “The Battle Creek Sanitarium.”

In place of the old hostility to physicians and organized medical practice, the present management has always sought in every way possible to make the work of the institution supplementary to that of enlightened and progressive practitioners, and to cooperate with every effort for the advancement of scientific medicine and race betterment.

Methods

First of all, let it be said that the Battle Creek Sanitarium employs no secret methods of any kind, and does not claim to possess any panacea for human ills. The organized therapeutic method which has become known throughout the United States, and more or less throughout the world, as “The Battle Creek Idea” or “The Battle Creek Sanitarium System” is the result of a systematic and comprehensive effort carried forward for nearly half a century, to bring together in one place, under unified
control, all the resources afforded by modern medical science whereby a sick man may be aided to the recovery of his health. From the beginning, this has been the consistent aim of the present management. If the progress has been slow, this may be attributed to the fact that the promoters of the work have had no precedent to follow, and have been compelled to proceed slowly and cautiously in the testing and installation of methods and appliances, in many cases conducting preliminary researches extending over years and requiring expensive journeys to distant foreign countries. Scores of such journeys have been made for observation and investigation, and to gather the fruits of scientific medical study and experiment from the world's laboratories and clinics, and other centers of medical progress.

No expense has been spared to make this effort to construct a complete and comprehensive system as exhaustive as possible. The fact that none of the earnings of the institution have been distributed, but that all have been retained for the building up of its work has placed at the disposal of the management funds sufficient to provide any and every appliance, method, apparatus, or other means or measure which has been proven to be of essential value in the treatment of the sick.

Team Work

Cabot of Boston, and other writers, have forcibly set forth the necessity for "team work" in both examination and treatment in order to give the sick man the benefit of up-to-date, expert, medical advice and care. For more than thirty years this plan has been in operation at the Battle Creek Sanitarium, and has been more highly perfected as the various specialties, from time to time, have appeared in the several branches of scientific medicine.

For a thorough-going, up-to-date medical examination there is needed a considerable body of medical experts, various highly developed apparatus and appliances, and a series of well equipped laboratories and laboratory experts—chemical, bacteriological, metabolic, pathological, serological, electrocardiographic, X-ray and anthropometric.

The Examination

The routine examination, which every patient undergoes, includes the following:

11
1. A record of the patient's illness and of his antecedents, habits, and all other particulars bearing upon his case.
2. A thorough physical examination of the body, physique, skin, chest, abdomen, joints, viscera, etc.
3. Inspection of the mouth by a qualified dentist, which leads to an X-ray study of the teeth in case there are any indications of disease.
4. A careful examination of the tonsils and of the nose and throat by a specialist with reference to focal infection.
5. Preliminary examination of the eyes by an oculist, which may lead to a more critical examination later if any indications therefor are found.
6. Fluoroscopic X-ray examination of the chest—heart and lungs—which visualizes these organs and any gross lesion which may be present.
7. A microscopical and serological examination of the blood. Determination of the blood count, both red cells and leucocytes, of the hemoglobin, and color index. A differential count is made when indicated. The Wassermann test is made in every case.
8. A chemical examination of the blood to determine the efficiency of the kidneys by estimating the amount of uric acid, urea, and excretory products and also the amount of sugar present.
9. An examination of the stools to determine the character of the "flora," and the presence or absence of parasites, blood, etc.
10. The strength of each of the larger groups of muscles (30 groups) is determined by means of the universal dynamometer, and the results are shown on a graphic.
11. The blood pressure, systolic and diastolic, are determined by the stethoscopic method, and also the vascular tonus.
12. In addition to a chemical and bacteriological examination of the stools, careful proctoscopic examination of the rectum is made as a part of the routine study of cases.
13. A careful chemical examination of a 24-hour specimen of urine is made in every case. This includes quantitative tests of the urine for indican and the total nitrogen, as well as the usual tests.
The Sanitarium Annex
THE SANITARIUM HOSPITAL BUILDING
Special Examinations

Lungs.—When the fluoroscopic examination or the clinical findings give grounds for suspicion of lung disease, the case is studied by a chest expert, a stereoscopic X-ray examination is made, and also a complement fixation test of the blood, together with a bacteriological study of the sputum.

Heart and Bloodvessels.—Suspicious indications lead to an examination by a specialist in this class of disorders, with the aid of the electrocardiograph and other means.

The Kidneys.—Suspicion of renal disease leads to a study of the kidney function by means of a renal test ration combined with a quantitative study of the urine and chemical examination of the blood for urea, uric acid, creatinine, and non-protein nitrogen. The phenolphthalein test is also employed. Cystoscopic examinations of the bladder and segregation studies of the kidney function are made by a genito-urinary expert.

The Stomach.—Special studies of the chemical work and motility of the stomach are made by means of the Ewald test breakfast, the test dinner, fractional examinations of the stomach fluid as first made by Hayem and Winter of Paris (1889) and recently systematized by Rehfuss, and by the X-ray barium meal. The duodenal tube is used for study of conditions of the duodenum.

The Intestine.—Special studies are made of the colon and of the intestinal tract in general by means of the carmine capsule test, and the X-ray barium meal and barium enema, in addition to examination by the proctoscope.

Pelvic Disease in Women.—Special examinations as indicated, are made by experienced gynecologists, both men and women physicians.

Joint Diseases.—In addition to special X-ray studies, a careful search is made for possible focal infection in teeth, tonsils, colon, or other parts.

Nervous Disorders.—An experienced nerve specialist or an alienist makes a careful study of each case in which the need of such expert aid is indicated.

Diatheses.—Cases of obesity, diabetes, suspected hyperthyroidism, hypothyroidism, pituitarism, emaciation without apparent cause, myxedema, and other cases of known or suspected metabolic disturbances are subjected to careful metabolism study by the aid of the Tissot or Benedict ap-
paratus, both for the purpose of differential diagnosis and as a means of checking up and regulating the measures of medical or surgical treatment employed.

**Therapeutic Methods**

A fundamental principle, never lost sight of, is that the curative forces are within the body rather than outside of it. The chronically ill are in a state of low resistance. The ability to withstand the attacks of germs and other causes of disease has been weakened. In general, the chief cause of lowered resistance is to be found in unbiologic habits which burden and handicap the natural forces of the body and consume its energy.

So the first thing to be done is to correct these faults of regimen and conduct, and get the patient established in a biologic mode of life.

By careful instruction, tactfully given, and a wholesome environment, especially the contagion of example, the patient is soon inducted into the simple or biologic order of life, and after a few days’ experience he begins to realize benefit from the new program and is convinced that he is on the right road and beginning a new era in his life.

A prominent feature of Battle Creek Sanitarium philosophy is that the average chronic invalid is suffering from the effects of a bad intestinal "flora." That is, he is suffering from chronic poisoning through the absorption of toxins produced by trillions of putrefactive and other poison-forming bacteria thriving in his colon. If these are not always the direct cause of his malady they predispose to disease and always, when present, greatly handicap Nature in her efforts to effect a cure.

To remedy this condition, one of the first things to be done for the average chronic invalid is to change his intestinal "flora." This may be accomplished in a few days, in most cases, by the employment of a special regimen, the "fruit regimen," perhaps followed by the "milk regimen."

**A Biologic Diet**

Modern experimental researches have conclusively proven that man is naturally a low protein feeder. His normal diet is that of the primates, the zoological class to which he belongs, along with the chimpanzee, the orang, the gorilla and other anthropoids. The normal human
dietary also includes a considerable amount of roughage that gives to the alimentary contents sufficient bulk to provide vigorous peristalsis and frequent bowel movements—at least three daily evacuations or one after each meal. This is necessary to prevent the stasis which gives rise to putrefaction, retention of body wastes, and consequent intestinal toxemia.

**Hydrotherapy**

Water, hot and cold, by far the most versatile and universal of all therapeutic agents, is employed in scores of ways with almost infinite modifications of combination and dosage, to meet varying types of organic and functional disorders presented by a large group of chronic invalids. No “courses” or “routine” are employed. Such methods are tolerated only by the empiricism of the old “water cure” days, which unfortunately, still dominates the practices of “bathing places,” “resorts,” “springs,” and most “cures” in this country as well as in Europe. Only when employed with precision which takes careful and exact note of temperature and pressure, as well as of duration, will this powerful therapeutic method demonstrate its right to stand at the head of the list of general therapeutic procedures.

The crude methods of the “cold water cure” have been here refined and supplemented by careful graduated procedures, a sort of “hydriatic ladder,” by means of which the patient with feeble resistance is gradually lifted to a higher level of vital vigor, through the systematic development of his natural defensive mechanism.

In “Rational Hydrotherapy,” a work of 1200 pages, will be found a detailed description of the methods employed in this department, and a description of the many new methods and modifications of old methods which have here been perfected.

**Light Therapy**

The electric light bath (incandescent) now in use in large hospitals and sanitariums throughout the civilized world was devised and first constructed at the Battle Creek Sanitarium where it has been used for thirty years (since 1890). For years, this valuable addition to physiotherapy was little appreciated in this country, being scarcely used in the United States elsewhere than at its place of origin, until introduced in Europe by visitors to the Chicago
Exhibition of 1893. It rapidly spread through continental Europe and was some years later imported into this country by a New York firm of surgical instrument makers, since which time it has rapidly won its way into popular favor, as is the case with most forms of physiotherapy. However, it is so rarely applied with the scientific precision necessary for the best results that its real value is as yet not properly appreciated.

The arc light, the photophore, the "Mercury" or "Quartz" or "Actinic Light," are allied forms of Light Therapy, each of which meets a special and important class of indications.

The history of the electric light bath and a full description of its therapeutic value as developed in the work of this department will be found in "Light Therapeutics."

**Electrotherapy**

Through the efforts of Duchenne in Europe and Dr. George M. Beard in this country, electricity, long used empirically, began about fifty years ago to find a scientific basis as a curative means. Later, Apostoli of Paris made a great stride in advance by the utilization of the amperemeter and other instruments of precision in determining dosage. A post graduate course with Dr. Beard forty-six years ago, (1875), and a visit to Paris a few years later to study the methods of Apostoli, laid the foundation of this department on a substantial basis at a time when trivial methods in general use, the "buzzers" and "shock machines" of the last generation, were justly regarded as outside the pale of scientific medicine.

In the building up of this department tests were made of electrical currents from different sources and of different forms, induced, galvanic, thermic, cells, batteries, magnetos, etc. By chance, a form of induced current was discovered which produced strong muscular contractions with each change of direction and without other sensations than that of motion, a thing until then unknown, and at once recognized as a matter of great importance because of the entirely disagreeable, and even painful, skin effects produced by all the forms of electrical apparatus at that time in use when applied in quantity sufficient to cause muscular contraction.

This discovery was made known in a paper read before
Parlor in the Main Building
THE SANITARIUM LOBBY
the American Electro-Therapeutic Association at its meeting held at Chicago in September, 1893.

A few years later, d'Arsonval of Paris, experimenting with currents of high frequency, discovered that pain was eliminated when the change in the direction of the current was made at zero potential. This explained the painless character of the new current. The form of the electrogaph of this current gave to it the name “sinusoidal.”

The discovery of this painless current proved of very great value to the work of this department, as it greatly broadened the field of application of electrical currents. The new current was immediately utilized as a gymnastic measure—particularly for strengthening the weak muscles of the trunk in a large class of cases. The method was subsequently generalized in an “Automatic Exercise” apparatus which has proved of great value as a reconstructive measure, and is now in use not only at the Battle Creek Sanitarium, but in army reconstruction hospitals, in institutions and by physicians throughout the United States.

The galvanic current in various forms, the sinusoidal bath, static and faradic currents, and the special adaptation of the “wireless” current known as “diathermy” are all used extensively and efficiently in appropriate cases.

**Scientific Feeding**

The older Flint used to say to his students: “When your patients ask you what, when, and how much to eat, say to them, eat what you like, when you like, and as much as you like.” Forty-five years ago, when this remark was made, in the writer’s hearing, the science of dietetics did not exist. There was no basis for the scientific feeding of the well and only the crudest notions, generally wholly erroneous, about the feeding of the sick.

Lacking any other guide, it was rational and certainly safer, to follow Nature rather than the miscellaneous jumble of notions which were current and which, unfortunately, still survive. This was Dr. Flint’s justification in discarding all dietetic maxims and trusting wholly to the patient’s natural instincts.

This naturally led us to the study of diet from a biologic standpoint, and the establishment of a low protein diet as the practice of the institution. The observation of Lancaster and others in India, and the classical studies of Zuntz
of Berlin, of Chittenden and Mendel of Yale in 1902-4 and the later studies of Folin of Harvard, Mendel and Osborne of Yale and McCollum of Johns Hopkins, have provided a scientific basis for the dietetic system which has been in vogue in this institution for nearly half a century, another illustration of the fact that the greatest discovery of all is the modern recognition that Nature is the wisest of teachers and a safe guide when intelligently followed.

The exhaustive studies of the composition of foodstuffs made by Atwater and his associates provided a basis for developing a system of food dosage which had not been previously attempted. Feeding by calories, rather than by weight, made possible a quick and accurate estimate of the energy value of a "serving" and of a meal.

Calories first appeared on a dinner bill-of-fare at a banquet tendered in the Battle Creek Sanitarium dining room to a distinguished guest, the late Dr. Henry P. Bowditch (1904), the well known professor of physiology of Harvard University. Since that time (1904-1921), the daily "menu" of each meal served in the several dining rooms of the institution has shown not only the total value of each serving in calories, but the number of calories of protein, fat, and carbohydrates. The menu also shows the "reaction balance," that is, whether the particular foodstuff will tend to alkalinize or to acidify the fluids of the body and to what extent.

This arrangement enables the physician, the dietitian, or the instructed patient, to "balance" his bill-of-fare so as to provide nutrient material of the right sort in just such proportions as the physician may deem best to prescribe.

Recent progress in food chemistry has made possible a further advance in accurate dosage of food by which the diet is also balanced for food lime, iron and other organic salts, as well as for the several essential vitamines.

Of course such a system as this, to be of value must be accurate in every detail. The kitchen becomes a scientific laboratory. Specially trained cooks are required. The presiding genius of the kitchen must have the same sort of training as the head of a chemical laboratory. All the twenty-five dietitians who "balance" the bills of fare for the Battle Creek Sanitarium patients have had an elaborate course of training including two years of practical study and training in the institution before being trusted with the responsibility of acting as dietetic aids for the physi-
East Hall, One of the Homes for Nurses
cians. Each year the Battle Creek Sanitarium School of Home Economics turns out forty or fifty new graduates from whom are selected the recruits needed for the growing work of the institution.

**Medical Gymnastics—Kinesitherapy**

Forty years' study of the physiology of exercise, and experience in its therapeutic applications, have resulted in the development of a system based upon definitely established principles and well determined data.

First of all, a careful diagnosis of the patient's neuromuscular system is essential. This is accomplished by means of a universal dynamometer that was developed after many years of persevering effort and has now been in use in the institution for nearly thirty years, and for more than half that time has also been in use in the leading gymnasiums of the country and in the government military academy at West Point, and the Naval Academy at Annapolis where it is made the basis of the system of training. By means of this instrument the strength of each of thirty groups of muscles is determined and the total strength of the body. A graphic made from the data thus obtained shows at once the relative strength or weakness of each group of muscles, and the relative strength of the patient and of each of his principal muscle groups to that of a normal person of the same height.

The data obtained from the strength graphic together with the results of examinations of the heart, lungs, kidneys and other organs, enable the director of this department to divide the cases into groups for general exercise and to determine the special needs of individual patients.

Patients in bed from chronic disease or convalescent from surgical operations or acute illness, have "bed exercises" consisting of deep breathing and a few light "movements" which prevent the injurious effects of confinement in bed on digestion and heart action, and prepare them for getting upon their feet a little later.

"Chair exercises" is the next step in advance. Then come light calisthenics, Swedish movements, indoor gymnastics, swimming, outdoor gymnasium work in small clothes, games (golf, tennis, volleyball, croquet, pitching quoits, etc.), folk dancing, swimming, hikes, boating, automobile, horseback riding, etc. As much exercise as possible is taken in the open air, especially in the warmer
months. In the winter, out-door walks, sleigh riding, tobogganing, skating, skiing and other winter sports are in vogue. All is done under direction. Skilled directors and trainers are developed by a three years' course in the Battle Creek Sanitarium Normal School of Physical Education, which graduates every year forty or fifty well trained physical directors, most of whom find positions awaiting them in academies, public schools, play grounds and sanitariums.

The work of this department is checked up by metabolism studies which determine the amount (foot pounds) of work represented by the different forms of exercise.

Re-examinations by the dynamometer show the progress being made. A patient who finds, as is often the case, that he has gained 500 pounds in strength has reason for encouragement and if overfat, rejoices to find that at the same time he has dropped off a few pounds in weight.

The system of medical gymnastics developed here is comprehensive enough to meet all needs, from the feeblest bedridden patient to the “stale” athlete who is anxious to “come back”, or the portly business man whose athletic college days are only a vague memory and who must make haste to escape the consequences of unhygienic living by a moderate return to boyhood activities.

Automatic Exercise

By a special application of the sinusoidal electrical current, any amount of muscular exercise desired may be administered to a patient automatically and painlessly, even without the mental and nervous fatigue which often follows exercise, especially in neurasthenic cases, and by reason of which such persons dread and avoid physical activity as much as possible, and greatly to their injury. Indeed, a feeling of refreshment and even of exhilaration, instead of fatigue, is often felt after this kind of exercise.

The patient takes his place in an easy reclining chair, the electrodes are adjusted to arms, legs, abdomen, and other fleshy parts, sand bags are placed upon the electrodes, and in a moment the muscular contractions begin, first one arm, then the other, then one leg, the other leg, the abdomen, the back, and then a repetition of the same series of contractions again and again about once every two seconds, until the desired amount of work has been done. The amount of work done at each contraction is determined by
the weight of the sand bags which serve also to hold the electrodes in firm contact with the skin.

No prickling, tingling, or other unpleasant sensation is felt, only the consciousness of motion which is more marked the heavier the weights which the muscles are made to lift at each contraction. A feeble patient will be given small sandbags, weighing five to ten pounds, while a fat man who wishes to reduce will be given bags weighing as much as sixty to seventy-five pounds for the largest muscular groups. Such a patient, though reclining at ease, will be fairly drenched in perspiration after a few minutes and may lose as much as two pounds in weight in thirty minutes.

Automatic exercise is found highly beneficial in a considerable number of cases, especially the following:
1. Patients who are too feeble to stand erect or who cannot walk sufficiently to afford them a proper amount of exercise to maintain a balanced circulation and good digestion. Muscular exercise is absolutely essential to normal nutrition, and various disorders develop, often quite rapidly, when a patient remains in bed without exercise.
2. Cases in which so many large muscular groups have been rendered inactive by paralysis that the patient is unable to walk about, especially cases of hemiplegia.
3. By daily automatic exercise the nutrition of paralyzed muscles may be maintained while repair of the lesion is taking place, so that the wasting and degeneration due to inactivity are prevented. This is an essential function of automatic exercise which cannot be secured in any other way.
4. Cases of myxedema and all forms of hypothyroidism. Careful metabolism tests indicate as possible a temporary increase of metabolism to the extent of 800 percent or even more.
5. Cases in which the patient cannot be induced to take sufficient amount of voluntary exercise either because of indolence, or on account of fear of injury from physical activity. Not a few persons have acquired with other invalid habits a chronic indisposition to muscular activity. Automatic exercise is an excellent means of training for such cases.
6. Cases of arthritis, or gout affecting the knee, hip, ankle, or toe-joints in such a way as to interfere with exercise upon the feet. Automatic exercise will secure to such patients the benefits of a long and vigorous walk without causing pain or injury to the affected joints.
7. Cases in which the heart is weakened to such a degree by myocarditis or other serious disease as to require the interdiction of walking or other forms of voluntary exercise. By a careful application of automatic exercise the patient may be given all the benefits of voluntary muscular work without the least danger of injury to the heart.

8. Cases of high blood pressure either with or without arteriosclerosis. The effect of voluntary exercise in such cases is to raise blood pressure, at least temporarily. Automatic exercise lowers the blood pressure by dilating the peripheral vessels and lessening the viscosity of the blood.

9. Cases of low blood pressure due to general lack of tone. Automatic exercise is especially valuable in cases in which the blood pressure falls when the patient assumes the upright position and it is also especially indicated in cases of arteriosclerosis with secondary low blood pressure.

10. Automatic exercise is a useful accessory treatment in special surgical cases and in rest cure cases. The exact gradation and precise dosage of which automatic exercise is capable enables it to render especially valuable service in these cases.

**Massage**

All the classical methods are applied by the aid of well trained attendants. If massage does not take the place of exercise because of its small influence upon metabolism, it is nevertheless of real service in regulating the circulation, in restoring mobility to stiffened and contracted parts, and in promoting the absorption of exudates. This department employs constantly during the year more than forty masseurs and masseuses and trainers, and during the busiest months many more than this number.

This department also gives special attention to the correction of such very common deformities as round shoulders, flat chest, forward carriage of the hips, and other defects due to bad posture. Special trainers take these cases in hand and by “setting up” drills and other exercises, usually succeed in making a great improvement in the habitual attitude and physical bearing of the patient and a commensurate improvement in health.

The training of these cases consists of drills and exercises with and without the aid of inclined tables and other special appliances adapted to the education of the weakened muscular groups which require special attention in these cases.
MEN AND WOMEN BATH ATTENDANTS
DEPARTMENTS

As the work has gradually enlarged from a group of 12 patients in the autumn of 1876 to 1200 or more in the summer of 1916 and since, it has become necessary to divide the medical work into more or less distinct departments, of which the following may be especially mentioned:

**Neurology and Psychiatry**

This department in charge of experienced specialists includes, in addition to offices especially equipped for surgical, neurological and psychological investigations, special wards for the care of patients belonging to this class.

Special provision is made for patients requiring isolation.

**Cardiovascular and Renal Disorders**

This department is in charge of an expert who has had special preparation for his work by training under the ablest European specialists and who not only makes a careful study of the condition of the heart and blood-vessels in each individual case, but carefully supervises the patient's regimen and treatment, and directs his whole course of life. The large facilities at hand render possible the control of the patient's daily life in such a way that excellent results are attained in a large number of cases which, under ordinary conditions, are found refractory to medical treatment.

**Disorders of the Stomach and Intestines**

These disorders are so commonly present, either as an original or complicating factor in all forms of chronic disease, that every internist engaged in institutional work must necessarily be prepared by both training and experience, to deal with all forms of gastro-enteric symptoms.

But in addition, there is maintained a special department in which careful attention is given to the colon by experts and assistants especially trained for this particular work.

In this department are employed methods of massage, the application of which is guided by the results of X-ray examinations of the colon. Special cultures for changing the intestinal flora and combating colitis and other forms of infection are used, together with different forms of elec-
tricity and other measures intended to correct the various pathological conditions which cripple the colon and, through interference with its function, give rise to stasis and the intestinal toxemia which lies at the foundation of many chronic ills. The success of this department since its organization nearly ten years ago has been so great that it has constantly grown until, in the slackest seasons, the number of patients receiving daily treatment is rarely less than 150. This department undertakes to make such a study of the colon in each case as will determine the immediate cause, or causes, of existing stasis (constipation), or colitis, and to afford such aid by treatment and training as will enable the crippled colon to dispose of the body wastes and food residues in the prompt and efficient manner required to prevent toxemia and associated troubles.

**Genito-Urinary Department**

In this department trained experts make examinations of the bladder, kidneys, and other parts of the genito-urinary system and administer such special treatment as may be indicated.

This department is provided with properly equipped offices, for men and women separately, and treatment rooms especially adapted to this work.

**Bacteriological and Serological Department**

In this department experienced bacteriologists and serologists and an able corps of assistants make routine and special bacteriological examinations of the urine, blood, gastric fluids, stools and other fluids and tissues, and prepare various vaccines and serums as may be required.

**Lying-In Department**

An obstetric ward and an out-patient obstetric service are conducted under the supervision of experienced obstetricians who undertake not only to conduct the lying-in woman safely through her confinement, but by preliminary care and training to prepare her for the coming ordeal in such a manner as to mitigate to a marked degree both the anxiety and the suffering involved. Laughing gas and oxygen anesthesia is used with much satisfaction to the patient.
Swimming Tournaments
This department consists of elaborately equipped laboratories presided over by well-trained, qualified experts aided by a large corps of assistants.

Physiological, chemical and other experimental researches are in constant progress.

In one branch of this department, extensive animal feeding experiments are carried on through which most interesting information is constantly coming to light. During the several years in which this department has been conducted, the effects of various dietaries have been observed on thousands of animals, and the facts carefully noted and compiled.

**The Hospital**

While the fundamental aim of the institution is to bring the sick to recovery by the correction of erroneous habits and training in biologic living in connection with the application of non-surgical measures of treatment, especially the thorough-going application of physiotherapy, it was found necessary early in the history of the work to provide for the care of surgical patients, and for more than forty years a surgical department has been maintained. From a single small ward, this department gradually developed until it became necessary several years ago to provide a separate hospital building.

In the development of this department, surgeons were sent for training to Berlin, Vienna, Paris, London and other great European centers, and thus a corps of surgical experts was gradually developed, while at the same time was developed an adaptation of the Sanitarium method for the care of surgical cases, with the object of eliminating to the highest degree possible not only the dangers but the inconveniences and the various other objectionable features of hospital experience. The success of this method may be inferred from the following paragraphs which we quote from a letter received a few years ago from one of the leading surgeons of the United States, who occupied a very high position in the Army Medical Service during the Great War:

"For about five years I have been operating at the ________, at ________. I have been struck by the uniformly favorable reaction in operative procedures under the hydrotherapeutic treatment that they apply before, during, and immediately after the anesthetic. I have un-
derstood that it is a treatment following the lines of procedure established at your institution. Have you anything in pamphlet form, or anything to which you could refer me, that explains scientifically why these patients uniformly promptly recover their circulation, are quickly restored to normal, the pain caused by gas in ordinary cases eliminated, and almost invariably recover without apparent shock or ether-pneumonias?"

Briefly stated, the object of the present management of the Battle Creek Sanitarium, during the many years of work, has been to develop through highly organized team work, and the bringing together of all known and well validated remedial agencies, a comprehensive and superior system of dealing with the sick in which the causes of disease, as well as the results and symptomatic expression of morbid conditions, should be eliminated, and thus the sick man be given not only temporary relief from sufferings and inconvenience, but an uplift to a higher level of physical existence, with the advantage of increased vigor, endurance and efficiency—new lease of life and a new sense of physical well being, through biologic living.

How this has succeeded may be judged from the fact that within this period the patronage of the institution has increased from 230 in 1875 to 7467 in 1920. This does not include those who came for rest and a vacation and who did not take medical treatment.

In the following statistics will be found a condensed summary of the medical work of the institution from its beginning to January 1, 1921.

Total number of patients, 143,643. Surgical cases 26,245, of which 8698 involved the abdomen, 3357 the liver, gall bladder, stomach and intestines and 4247 the pelvis.

EDUCATIONAL DEPARTMENT

In addition to the extensive educational work continually carried on for the training of patients in correct habits and all that pertains to biologic living, three well-organized training schools are conducted, namely: The Battle Creek Sanitarium and Hospital Training School for Nurses, which receives annually 75 to 100 students for a three years' course of training; The School of Home Economics, which numbers about 125 students in its several courses; and the Normal School of Physical Education, with a similar number of students.
The usual requirement for admission to these various schools is a high school education. Each year, however, the schools register an increasing number of students who have completed a college or university course.

The work done by the schools is of university grade, and is recognized with full credit by leading universities. The combined student body numbers between five and six hundred.

The students in all these schools are given an unrivalled opportunity for practical experience in connection with their theoretical training. Recruits are secured from the graduates for our constantly growing corps of expert assistants.

THE BATTLE CREEK SANITARIUM AND HOSPITAL SCHOOL OF NURSING

Courses of instruction for nurses were begun at The Battle Creek Sanitarium Hospital in October, 1877. The first regular Nurses' Training School class was organized in 1883. The first class was graduated in November 1886. More than 1600 young women and men have been graduated from this School since its organization.

The Battle Creek Sanitarium-Hospital School of Nursing was a somewhat new departure in the training of nurses. No attempt has previously been made to put into the hands of women and men by systematic instruction and daily drill the diversified and wonderfully efficient curative means comprised under the general head of physiologic therapeutics. The Battle Creek Sanitarium was the first institution in which all efficient means of cure known to modern scientific medicine were combined under one roof and one management. The School of Nursing was a part of the plan of the promoters of this enterprise whereby it was hoped to disseminate and propagate the methods which are so widely known as the “Battle Creek Sanitarium System.”

This School differs from the ordinary training school both in the scope of instruction given and in the methods of training. The curriculum includes all that is comprised in the course of training given in schools connected with large general hospitals, and in addition a great number of subjects not included in the ordinary nurses' course of study and training. This is a natural result of the great
variety of curative measures employed in the Battle Creek system of treatment, with all of which the nurse must become thoroughly familiar.

A large dispensary connected with the institution provides material for instruction and practice in dealing with emergency cases and in obstetrical nursing and the nursing of infants and children. By request of the Metropolitan Insurance Company, this department has taken over the patrons of this Company in the city of Battle Creek which has materially added valuable experience and service to the student nurses. Miss Teresa Miller, to whom the Sanitarium furnished a scholarship for the first course in Public Health Nursing given at Ann Arbor, has been appointed as assistant supervisor and instructor of the students in practical service in this department.

During the period of the war more than 150 graduates of this School entered army service through the Red Cross and otherwise. All of those who were called overseas have returned save one, Miss Hazel Babcock of Blanchard, Michigan, who made the supreme sacrifice, and was laid to rest after several months of patriotic service. Some of these nurses are still in army service; some have returned to their posts at the Sanitarium.

The nurses' training covers a period of three years. The course of instruction continues throughout the training and comprises an average of six to eight hours weekly, including lectures, classes, and practical demonstrations.

Beginning with January 1, 1919, the educational requirement was raised from the 10th grade to full High School standard, but on account of the inadequate number of applicants and the increasing demands of the institution, students were accepted on the previous standard of 10th grade or satisfactory equivalent, with graduates of High School preferred.

On account of the great demand of the Government for nurses in the army during the years 1917 and 1918, and the rapid growth and development of the institution, the supply of nurses has not been equal to the demand.

The Battle Creek Sanitarium and Hospital School of Nursing offers to young women unusual opportunities for training, with medical, surgical, and obstetrical service; three months affiliation with the Children's Free Hospital in Detroit; one to two months of public health service con-
nected with the Sanitarium dispensary and an unusual service in hydrotherapy and massage.

The Board of Trustees has recently made some changes in the financial inducement by granting an annual allowance to each student who creditably completes the practical and theoretical work required. This allowance is $100.00 the end of the first year; $125.00 at the end of the second and $150.00 at the end of the third year.

For eight hours service per day, or fifty-two hours per week, the student receives a maintenance of board, room and laundry; tuition; experience; uniforms after probationary period (three outfits during the three years); $15.00 a year for shoes and all required text books.

For all time served over fifty-two hours per week the student receives a cash allowance of 20 cents per hour the first year; 25 cents the second and 30 cents the third, thus giving the young woman who is self-supporting the opportunity to maintain herself while taking her training.

East Hall, which was originally built for a nurses' home but turned over for the use of patients at the time of the fire of 1902, was returned to the Training School for the housing of nurses in the fall of 1918.

Post-Graduate Course

An eighteen-weeks' postgraduate course is offered in Hydrotherapy, Massage and Medical Dietetics beginning with the first of June of each year. This course is open to nurses who are graduates of accredited Training Schools.

An opportunity is given to the nurses taking this postgraduate course to meet their expenses by service.

Six Months' Course in Hydrotherapy

The Battle Creek Sanitarium offers a six months' course in practical and theoretical service in the hydriatic department of this institution.

Arrangements may be made, by those who prove satisfactory and efficient in hydrotherapy, for a course in massage, by the paying of $50.00 tuition, or the extending of their time one year.

Requirements are good character, physical ability to work and at least a grammar school education.

A certificate is granted in hydrotherapy and massage to those who complete the practical and theoretical work satisfactorily.
During the past two years between 30 and 40 students have availed themselves of this opportunity and have proven this course a success.

THE BATTLE CREEK SANITARIUM SCHOOL OF HOME ECONOMICS

To meet the necessity for trained dietitians and institutional administrators and to satisfy the growing public demand for instruction and training along household lines, the Battle Creek Sanitarium School of Home Economics was organized in 1906.

The purpose of the School is to give young women a knowledge of nutrition and biologic living, and a training in household and institutional administration, so that they may direct and teach others to direct intelligently and efficiently their own households and the larger households— the institutions.

It offers two professional courses—a two years' course for dietitians and a two years' course for teachers.

Through its affiliation with The Battle Creek Sanitarium, it presents an unbounded field for observation and practical experience to those preparing for institutional positions.

Through its co-operative relations with the public schools of Battle Creek and suburbs, it is able to offer practice fields for those interested in teaching, as well as experience in school lunch-room management.

The offices, classrooms and laboratories of the School are in the buildings of the Battle Creek Sanitarium. Many of the instructors hold important positions in the professional or administrative work of the institution which comprises a family of two to three thousand persons throughout the year.

For several years, graduates of the School, who have registered at colleges and universities for work toward the bachelor's degree, have received full credit for the courses taken at the School of Home Economics. Some of the colleges and universities who have accepted the two-year courses as equivalent to two years' work in a University, are:

Teachers College, Columbia University, New York City.
Western Reserve, Cleveland, Ohio.
Michigan State Normal College, Ypsilanti, Michigan.

EMPLOYMENT: A special advantage of the School is the opportunity for students to meet a large share of their
A GROUP OF DIETITIANS

NORTH LODGE—HOME OF DIETITIANS
Normal School of Physical Education Students in Esthetic Posing

A Cooking Class
expenses by working in the departments of the Battle Creek Sanitarium.

THE NORMAL SCHOOL OF PHYSICAL EDUCATION

The Normal School of Physical Education is a prominent feature of the educational work of the Sanitarium. The object of the management in organizing this School was to promote the principles of biologic living by the training of physical directors, playground directors and trainers in physical education.

One purpose in the organization of the School was to provide skilled assistants for carrying on various lines of physical training, especially corrective and medical gymnastics and physical reconstruction, in connection with the work of the Sanitarium. During the war this School was selected by the United States Government as one of a small group of schools in which courses were given for the training of young women to act as reconstruction aids. A considerable number of students were trained in this work and did credit to the School by excellent service rendered both in this country and in France. The several hundred students who have been graduated from this School are to be found successfully engaged in their profession in all parts of the United States. The course of instruction which formerly covered two years has been extended to three years. The curriculum includes all the subjects taught in other schools of physical training and affords special opportunities for certain features of health culture which receive little attention in other schools.

Special opportunities are given for acquiring a knowledge of hydrotherapy, both theoretical and practical, massage, dietetics and other branches of physiotherapy. One of the special advantages afforded by this School is the opportunity given the students to live for a considerable period of time in an environment where high standards of health and physical efficiency are maintained and a chance to acquire, through constant training, biologic habits of living and to appreciate by personal experience the value of all round health culture.

Students who desire to do so have an opportunity to meet part of their living expenses by working in the various departments of the Sanitarium. A very considerable number of students take advantage of this privilege.
The entrance requirements include, besides good health and a natural fitness for the work, a diploma from a High School or its equivalent. The work done in the School is of university grade and is recognized as such by leading universities which give students full credit for the time spent in this School.

An effort has been made to make the courses of instruction in the several Schools sufficiently broad and comprehensive to insure not only proficiency in the special line of professional work but a thorough knowledge of the fundamentals of health culture through biologic living, and the training of the body in health promoting habits. For this reason the graduates of these Schools, as the value of their training has come to be more and more appreciated by the profession and public, have come to be in such great demand that, while the first object of the establishment of these Schools was to secure a body of expert medical assistants to aid in the work of the institution, the management for some years has found it increasingly difficult to meet the growing demands of the various departments of the institution for nurses, dietitians, physical directors, reconstruction aids and other classes of medical workers; and this notwithstanding the fact that from two hundred to three hundred students are each year enrolled by the several schools. Special courses of instruction are given for the training of nurses, dietitians, and physical directors in administrative duties and other lines of work necessary to prepare them to serve as hospital superintendents, head nurses or assistants in physicians' offices, dietitians for hospitals, hotels, restaurants and dormitories and physical directors for playgrounds, academies and public schools.

The success of the educational department of the institution may be judged in part by the fact that there has gone out from the School of Nursing more than 1600 graduates; from the School of Home Economics 234 graduates; from the Normal School of Physical Education 245 graduates.

Recent gifts to this branch of the institution aggregate more than three-quarters of a million dollars, which will permit an expansion of this department in the near future that will enable it to accommodate one thousand or more students, nearly double the number at present accommodated.

Literature giving further particulars concerning any of the medical or educational departments of the institution will be gladly furnished on request.