

The BUILDING *of a*

TEMPLE



of



HEALTH



BIRD'S-EYE VIEW OF NEW MAIN BUILDING.

The Building of a Temple of Health

THE destruction of the main buildings of the Battle Creek Sanitarium on the morning of February 18, 1902, afforded an opportunity such as has rarely been offered for the construction and equipment of a building which should stand as a model for the world as a temple of health and healing. The managers of the institution were not slow to recognize this, and although not a little embarrassed, financially and otherwise, by the great loss sustained by the fire, soon set about making plans for the erection of a new structure which would be in every way more suitable for the purposes required of it than the burned buildings had been.

The First of its Kind.

The Battle Creek Sanitarium was the first institution of the sort in the world; that is, it was the first medical institution at which an attempt was made to bring together in one place and under one management all rational healing agencies, giving special prominence to those physiological or natural healing agents the scientific knowledge of which has been chiefly developed within the last century, especially hydrotherapy, electrotherapy, massage, exercise, diet, sunlight, mental and moral influences, rest, and general health culture.

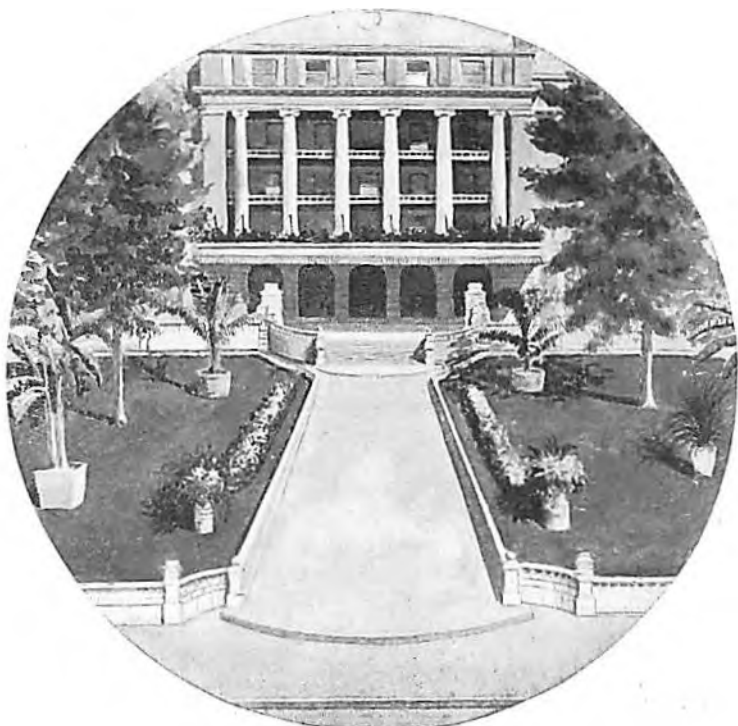
The Evolution of the Sanitarium Idea.

The completion and equipment of this temple of health marks another advance step in the progress of scientific medicine. The Battle Creek Sanitarium

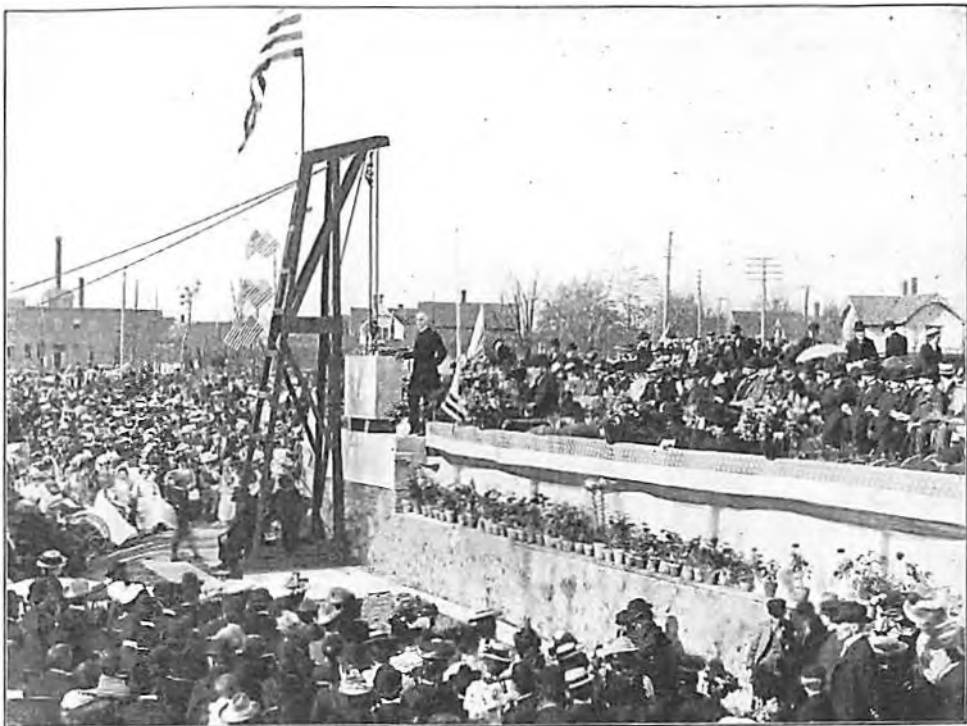
method of dealing with several large classes of invalids which are generally considered as incurable, has come to be recognized the world over as having superior merits.

The physiological method of treating diseases, both acute and chronic, has in recent times received a remarkable impetus. Bacteriological and physiological research has brought out into a clearer light the principles upon which these methods are based, and has shown the solidity of their foundation, so that their scientific value is no longer questioned. Text-books in medical practice which twenty-five years ago, and even ten years ago, quite ignored the methods of treatment which have been in use in this institution for more than twenty-five years, now recommend them as of highest efficiency and likely to succeed when all other methods fail.

"Physiological therapeutics," the scientific term by which these methods are now known, can no longer be ignored. Every text-book on therapeutics gives a more or less complete exposition of the methods which this institution has been foremost in developing and promulgating in this country. The time is not far distant when these methods will be practiced by every progressive physician, and will be made accessible in every community through properly equipped treatment rooms presided over by trained attendants. The Battle Creek Sanitarium has already sent out over a thousand physicians and nurses, trained in these methods, and nearly a hundred branches in different parts of the world are in co-operation with the parent institution, actively engaged in training an army of conscientious men and women who, as rapidly as their training is completed, will go out to take a foremost place in the battle against death and disease which is being so earnestly waged by thousands of conscientious physicians and trained nurses in every part of the civilized world.



The Main Entrance.



The Laying of The Corner Stone, May 11, 1902.

Naturally those who have had the benefit of nearly a third of a century's experience in pioneer sanitarium work, should be better prepared than those of less experience to appreciate the requirements for an institution of this sort. In the gradual development of the sanitarium idea and sanitarium work, the managers had been compelled to study carefully every problem connected with building construction, furnishing, the general arrangement of bathrooms and other treatment rooms, and a thousand questions of practical importance which daily experience in the treatment of several thousand invalids annually had brought forward for consideration.

Exhaustive Research at Home and Abroad.

In the building up of the great work of the Battle Creek Sanitarium and its branches, the leading managers have also made a careful study of the work and experience of others engaged in allied efforts on these broad and far-reaching lines. Several extended visits have been made to Europe for this purpose. The methods of administering baths, massage, and similar modes of treatment have been studied among specialists in all the leading countries in Europe, from Stockholm to Naples, and investigations in special lines have even been extended to the Orient.

In the plan of this new structure it was incumbent upon the management to summarize the results of their long and varied investigations, and to make such further studies of building material, modes of construction, plans, furnishings, etc., as might be necessary to make them fully abreast with the very latest progress in durable, fireproof, and sanitary construction.

The amount of work to be done and the short period of time within which the work must be accomplished and decisions of fundamental importance made

rendered the task almost appalling ; but the board of management and the building committee set themselves to their task with great earnestness and energy, with what results it is the purpose of this booklet to tell.

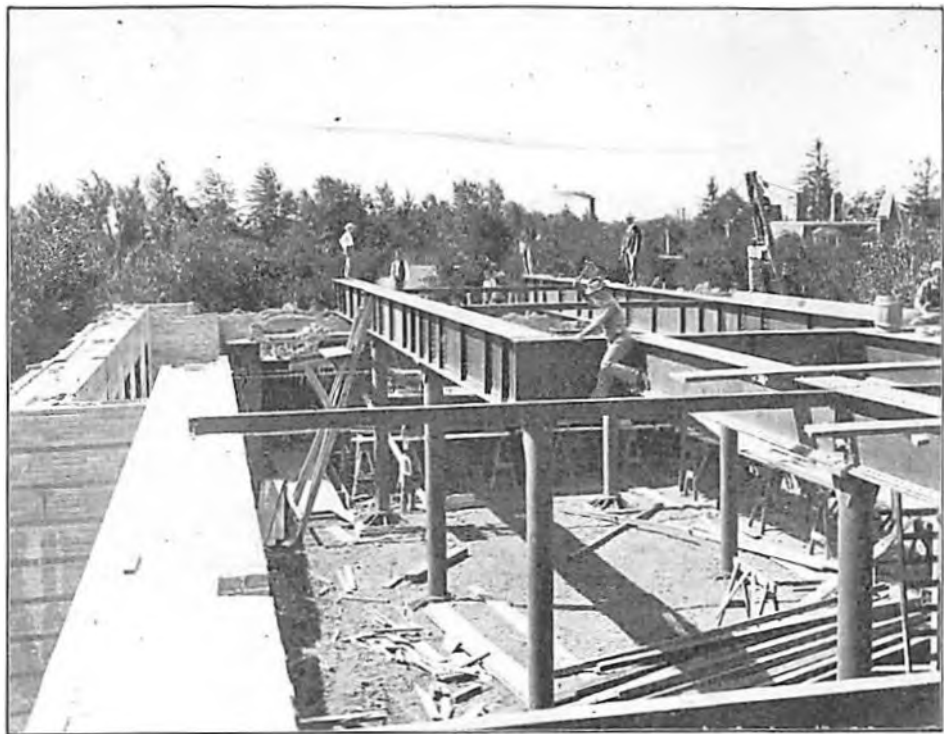
A Unique Problem.

The first thing essential was, of course, to develop and perfect a general plan. This was something which could not be supplied by any contractor or architect, no matter how skilled in the planning of ordinary large buildings. The building to be erected was to be neither a hotel nor a hospital, but it must have some of the features of both without the objectionable features of either one. It must be more homelike than a hotel, and must be less suggestive of surgery, fever wards, and medical paraphernalia subjects than the ordinary hospital. It must be in every sense of the word "A Temple of Health," a place absolutely free from all depressing tendencies, full of life and sunshine,—cheerful, sanitary, uplifting to the fullest degree, and in every particular suited to the culture of health,—physical, mental, and moral.

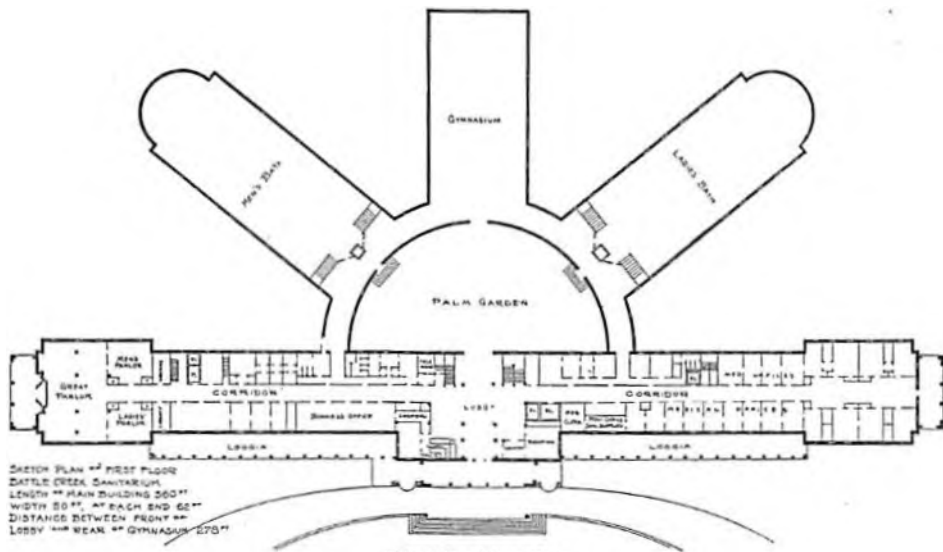
The general appearance of the building, external and internal, must be simple, yet dignified. It must be pleasing and beautiful without extravagant decoration or embellishment. Its style must be in harmony with the character of the work to be carried on in it.

A Competitive Study of Plans.

A number of the leading architects of the country were called in, a careful outline of the plans was submitted to each of them, together with instructions embodying the above ideas, and they were asked to submit elevation and other detail for approval. Many very attractive designs were presented, and after care-



Constructing the Heavy Iron Framework.



The First Floor Plan.

ful consideration the designs submitted by Mr. F. M. Andrews, of Dayton, Ohio, were accepted as embodying most fully the ideas of the committee and as being the plan best adapted to the needs of the case.

The Perfected Plan.

The accompanying cut shows the general plan and arrangement of the building, as represented in the first-floor plan. The design is that of a main building with three separate buildings in the rear, connecting with each other and with the main building by a semicircular corridor. The space between the buildings is occupied by a fourth building of elliptical shape, also connected with the corridors. The main building runs north and south, faces the west, and connects by corridors with the buildings on the east, the central one of which is the gymnasium. The building north of the gymnasium is the gentlemen's bathroom; the one south of it, the ladies' bathroom. The smaller elliptical building between these and the main building, is the palm house.

The main building is 525 feet in length, exclusive of the porches, and forty-six feet in width, the width being increased at either end and in the center to fifty-eight feet. It is five stories in height, with a ten-foot basement, and a roof story of lighter construction and somewhat less width, occupying nearly the whole length of the building.

The treatment buildings are each 150 feet in length, sixty-six feet in width, and three stories in height above the basement. The gymnasium is 120 feet in length, and nearly the same height as the treatment buildings. The combined length of all the structures is very nearly the same as that of the old buildings, the average height somewhat less, and the width a little greater.

The general plan, as a whole, resembles that of the old structure, the effort having been, in planning the new building, to eliminate the inconvenient and unsuitable features of the old building, and to embody every desirable new feature in plan and arrangement.

A Detailed Description of the Plans.

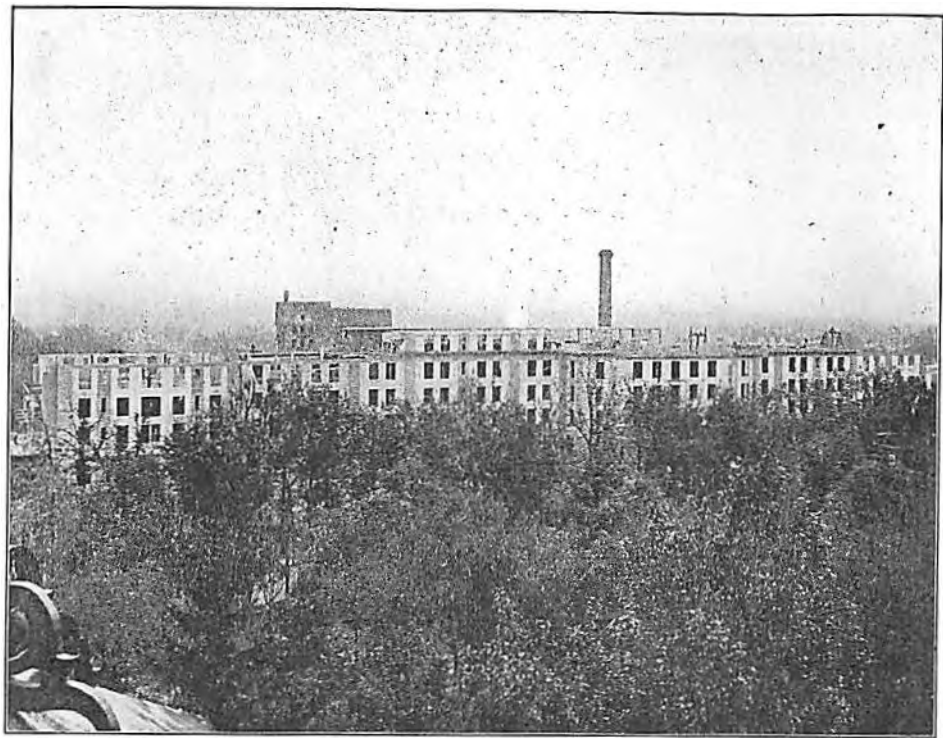
For the benefit of the tens of thousands of invalids to whom every nook and corner of the old building became familiar while under treatment and training in years gone by, we will present something of a detailed account of the plans of the present building.

The External Appearance.

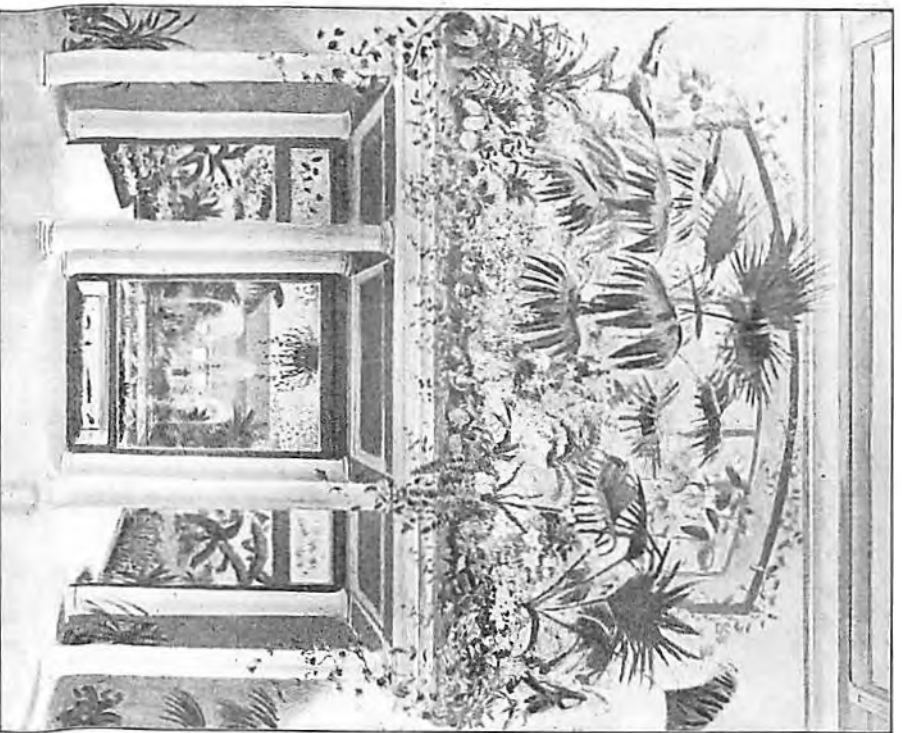
The general style of the building is that known by architects as the Italian renaissance. There is a wide porch at each end and in the middle, reaching from the basement to the fourth story. The central porch is surmounted by a graceful pediment. A wide veranda extends along each side of the central porch, nearly the whole length of the building. The outer walls of all the buildings are faced with pressed brick, the body being a lively buff color, broken at regular intervals by pilasters of gray brick. Suitable reliefs of cut stone produce proper architectural effects. The general style and coloring is exceedingly pleasing to the eye, and has drawn forth only expressions of admiration from those who have seen the building.

Plan of the First Floor.

The visitor alights from his carriage nearly at the level of the main floor, the ground having been raised several feet at the front of the building to



The Appearance Sept. 23, 1902.



View of the Palm Garden from the Lobby.

accomplish this. On entering one of the three large doors of the main entrance one finds himself in a spacious lobby the ceiling of which is supported by a number of pillars of simple, graceful form. He notes the high paneled ceiling, the clerk's desk, and the information bureau at the left, the reception room at the right, and a large elevator a few steps farther on. Crossing the center, he finds at the left, a broad marble stairway; at the right, a post office and literature depot, and a cosy corner.

Opposite the main entrance are two doors leading through the palm house to the gymnasium. These doors are of glass, and are placed about ten feet apart; the intervening space is filled with plate glass, making a glass partition between the palm garden and the lobby. Over the doors and the glass-filled opening, at a height of about ten feet, is a narrow flower balcony, some twenty feet in length; over this balcony is a series of high, broad windows through which a flood of light enters the main lobby from the east, producing a wonderfully bright and cheerful effect.

A Charming Vista.

The glass partition between the lobby and the palm house places before the visitor, on entering the building, a charming vista of palms and tropical plants resembling an Oriental garden, with a cool fountain playing in the center, the entrance to the gymnasium appearing at the farther end, a distance of 150 feet from the main entrance. No one who has ever traveled in Mexico can forget the delightful impression produced by the glimpses of tropical splendor concealed in the inner gardens of well-to-do Mexican homes, and now and then half revealed to the passer-by through a barred iron gate or an open shutter. This uplifting, inspiring influence is obtained by the arrangement suggested. Contact with

nature, with lovely flowers, the ever-wonderful miracle of growth, the opportunity to witness the resourcefulness of life, the activity and energy of the living forces acting in the plant, is always encouraging and inspiring in its influence.

A Saunter Down the Corridor.

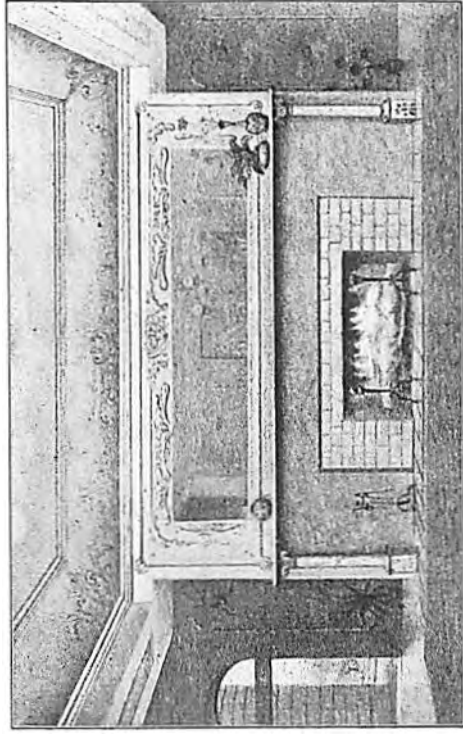
Starting down the main hall toward the north, one finds, first, at the right, close to the grand stairway, a telegraph office and the central telephone offices for the Sanitarium telephone system. Here are also found a force of call boys. This is the headquarters for "wants" communicated by the telephone system. Across the hall at the left is the cashier's office. Just beyond this is the business-manager's office, the stenographer's office, the chaplain's office, a series of medical offices, the library, the ladies' parlor, and lastly the grand parlor at the north end of the building.

A Mammoth Fireplace.

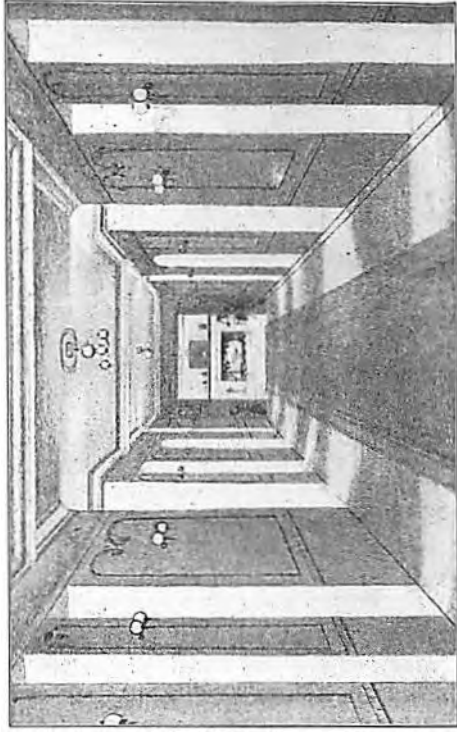
In the center of the parlor on the north side is a great fireplace which faces the hall, so that its cheerful light can be seen from the extreme end of the building, more than five hundred feet away. The parlor is lighted with broad windows with circular tops. The paneled ceiling, fourteen feet above the floor, is supported by a few gracefully ornamented columns. The outlook from the parlor is upon beautiful green shaded lawns, flower beds, wide walks, and pleasing vistas.

The Gents' Corridor.

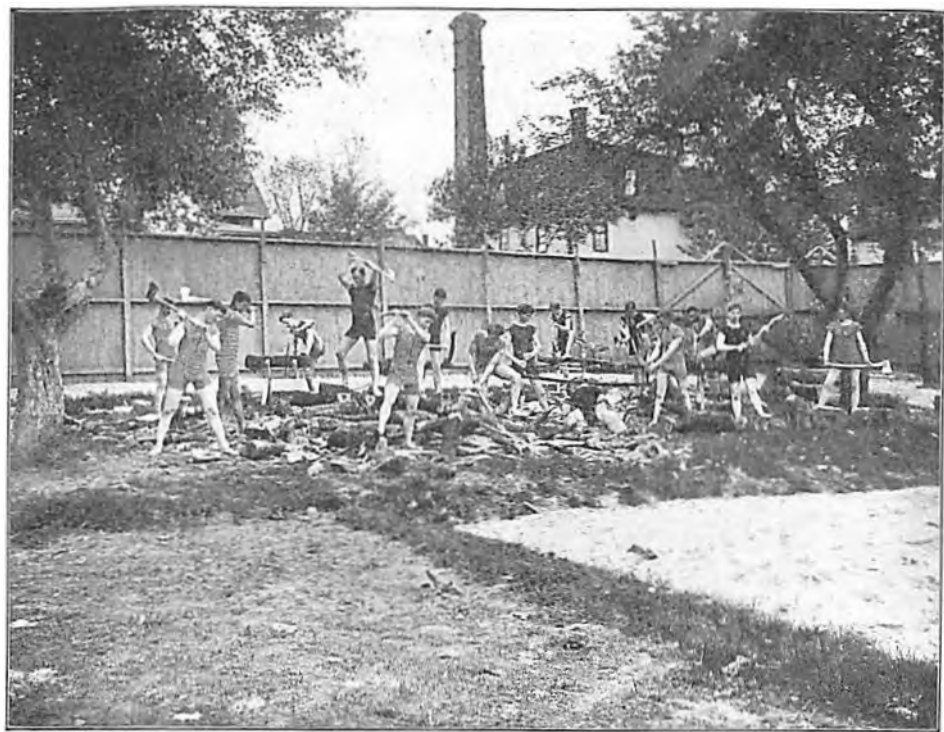
Turning back toward the lobby from the grand parlor, we find upon the left, first the gentlemen's parlor and the writing room; then the north elevator, and



The Mammoth Fire-place in the Parlor.



The Main Corridor Looking North from the Lobby



Chopping and Sawing Wood in the Outdoor Gymnasium.

next a row of medical offices especially for gentlemen. These offices are reached by a private corridor, leading from the gentlemen's bathroom.

The Ladies' Corridor and Elevator.

Returning to the lobby and starting south, we find on the left-hand side, first the post office, then a series of ladies' offices which are connected with the ladies' bathroom by a private corridor. This corridor is also connected with the south elevator. The arrangement is such that ladies may visit the bathroom and return to their rooms without entering the public hall on the main floor, a very great convenience, and one which will be much appreciated.

On the west side of the south hall, beginning at the main lobby; are offices for the superintendent, the medical clerk, and various specialists,— eye, ear, nose, throat, nervous disorders, etc. There are also dental offices, and offices for the special application of electricity, phototherapy, compressed air chambers, arctic bath, the X-ray, and various other unique methods of treatment.

At the extreme south end of the first floor there are eight beautiful private rooms,— four on each side.

The second, third, fourth, and fifth floors of the main building are wholly devoted to patients' rooms. About half of the rooms communicate with private bathrooms.

On each floor there is a general bathroom for ladies, a similar one for gentlemen, and parlors in the center and at each end of the building.

On the sixth floor is found, at the north end, the operating room. Next is the kitchen, the serving room, the dining room, and the solarium; at the south end is the roof garden. Each of these features will be mentioned later.

The Corridors.

The halls are nine feet wide. For a distance of thirty or forty feet from each end, the corridor is increased to a width of seventeen feet. The halls at each end open upon the broad balconies of the porch.

The corridors are always filled with fresh, warm air, and are well lighted by the extra large transoms over the doors. The marble mosaic floor produces an exceedingly rich and pleasing effect. The floor is laid off in squares by narrow lines of white marble blocks which cross the hall at regular intervals.

Bath and Treatment Buildings.

The two bath buildings are identical in size, appearance, and arrangement. The south side of the basement of each building is devoted to lavatories, special douches, and other treatment requiring toilet arrangements. Special ventilation has been provided for these rooms. Rooms for nurses' supplies and some class rooms are also found in the basement. The east end of each basement is cut off for a swimming pool thirty feet wide and sixty feet in length, the pool running crosswise of the building.

A Convenient Arrangement.

The first floor of the bath building is devoted exclusively to baths of various sorts. Arranged along the outer wall on the north side, are small compartments, each devoted to some special form of bath. Groups of dressing rooms and finishing rooms containing massage couches are arranged close to the bath compartments so that the patient can prepare for his bath within two or three steps of the place where his treatment is to be received and completed.

On the opposite side of the bathroom are to be found rooms devoted to Turkish baths, electric-light baths, Russian baths, vapor baths, and other facilities for the application of thermotherapy and phototherapy. There are several shower baths and douches arranged at proper intervals, together with shampoo rooms and other conveniences. At the farther end are the plunge and the great swimming bath, which are very important features of the treatment system.

Royal Recognition of Battle Creek Methods.

The various forms of electric-light baths in use in this department are a unique and original feature of the Battle Creek Sanitarium. It is here that these baths were invented and first used. Thousands are now in use in this country and in Europe. Through our European representative, an electric-light bath has been installed in King Edward's palaces, Windsor and Buckingham. The emperor of Germany has also had an electric bath placed in his palace for the use of his family, and King Christian has done likewise. Many lords and dukes and princes have also put in these baths. This is certainly a royal recognition of Battle Creek methods.

The second floor of the bath building is divided into compartments for applications of electricity, massage, manual Swedish movements, special forms of corrective gymnastics, and other allied methods of treatment. Here, as well as on the first floor, the dressing rooms are convenient to the rooms in which treatment is administered, so that the patient does not have to travel about in a sheet before or after receiving treatment.

Sun and Air Baths.

The third floor of the bath building is devoted to light and air baths. There

are also some rooms which will be occupied by nurses until required for other uses.

The Gymnasium Building.

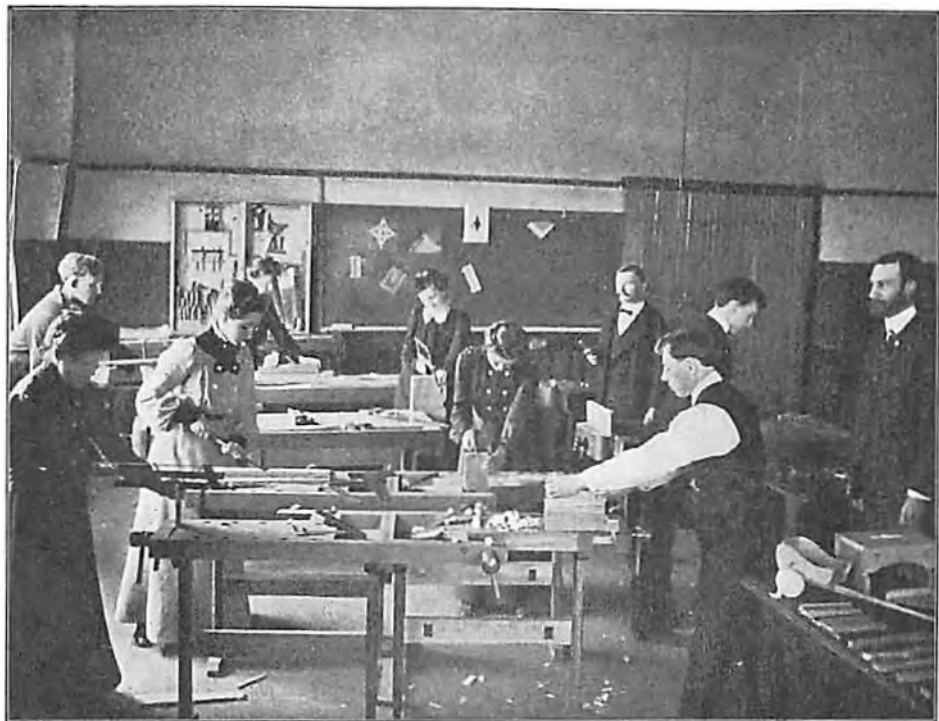
This fine large building (66 x 120 feet), will afford ample opportunity for gymnastic training and indoor exercise. It has a high, trussed roof, a gallery for a running-track, and is supplied with every convenience which can be usefully employed in physical training.

Mechanical Swedish Movements.

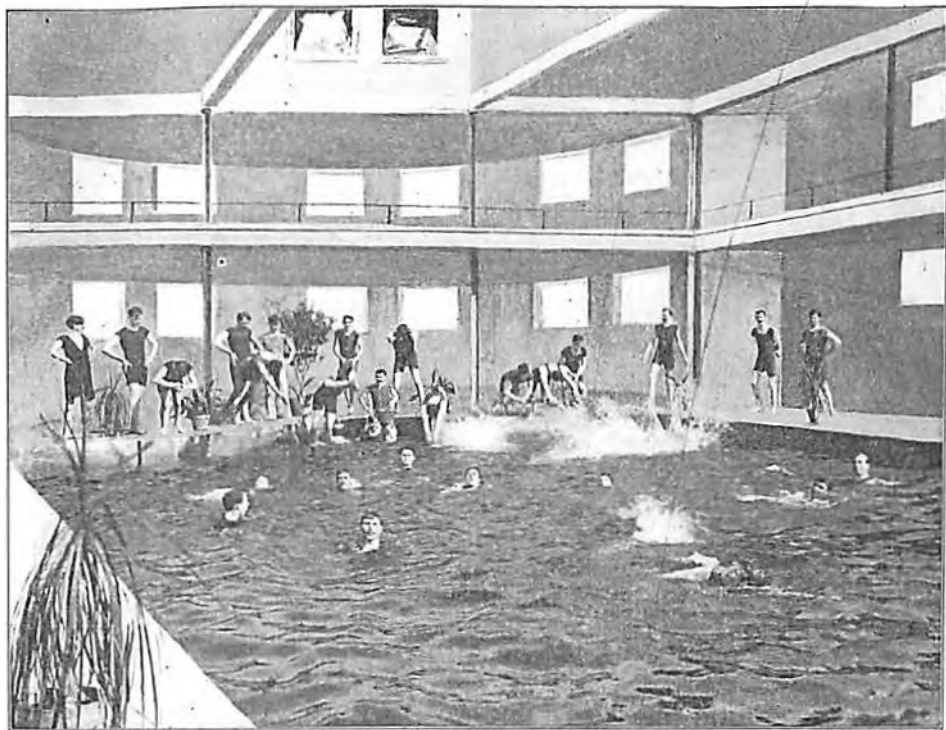
In the basement of the gymnasium is found machinery for the application of mechanical Swedish movements. Many of these machines were originated in the institution, and are extensively manufactured in the Sanitarium machine shops, which are constantly employed in work of this sort for the benefit of the Sanitarium and its branches. Of these machines may be mentioned vibrators, kneaders, shakers, breathing machines, mechanical trainers and manipulators, and various ingeniously contrived mechanisms for encouraging feeble hearts, weak lungs, and slow stomachs to healthful activity.

Gymnastic Sloyd.

A portion of this room is devoted to gymnastic sloyd, a special feature of the physical culture department, which has been installed within the last year by the aid of Professor Aksel Mikkelsen, the government superintendent of sloyd for Denmark. The superintendent of the Sanitarium became acquainted with Professor Mikkelsen and his system while visiting Copenhagen, and by a special arrangement brought him to this country for the purpose of giving the instruction



Gymnastic Sloyd.



One of the Great Swimming Baths,

necessary for installing the system in this country in connection with the Sanitarium, which is its first introduction into the United States; in fact, as far as we know, this is the first time that gymnastic sloyd has ever been employed in a systematic manner as a curative agent except at the Skodsborg Sanitarium, an allied institution located at Copenhagen under the supervision of Dr. Ottosen.

No Dark or Unventilated Rooms.

By a special and unique arrangement, light and air are admitted to every part of the extensive bath and treatment apartments. This is accomplished by means of a light shaft, nine feet wide, and extending nearly the entire length of the bath building, reaching from the first floor to the roof. This admits light everywhere, so that there is not a dark corner in the whole building, and ample provision is made for the freest circulation of air. Each floor opens directly into the light shaft, so that it is impossible for the air to be confined anywhere.

The Basement of the Main Building.

The north end of the basement is occupied by fresh-air ducts, automatic heating apparatus, and stores, next to which is a sort of annex to the main kitchen on the roof. Here all the rough work of the kitchen is done, such as the preparation of fruits and vegetables, the polishing of silver, etc. Here are found the enormous stores of canned fruits, dried fruits (foreign and domestic), health foods, and other Sanitarium delicacies which are daily served to Sanitarium guests. There is no wine cellar and no meat room, but the amply stocked store-rooms are always well supplied with choicest fruits and perishable table delicacies. In the central portion of the basement beneath the lobby, are to be found

the great pumps which operate the five elevators, and the hot- and cold-water supplies.

South of the center are the pharmacy, accessible both from the corridor and from the lower floor of the south veranda, the office of the head engineer, the steward's office, the office of the electrical engineer, and the nurses' headquarters. There is also a reading room for nurses, a call-boys' headquarters supplied with lockers for uniforms, and a model cooking school where patients receive instruction.

The Chapel.

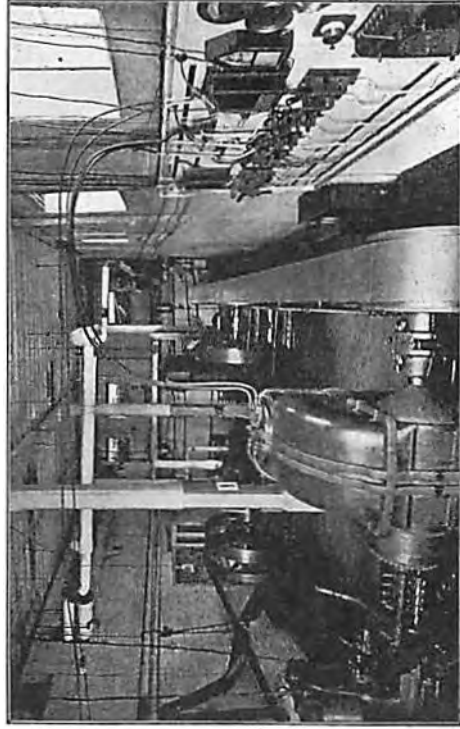
The south end of the basement, higher than the rest on account of the slope of the ground, is fitted up for a chapel, for which purpose it is admirably adapted, being high, light, and quiet.

Porches and Verandas.

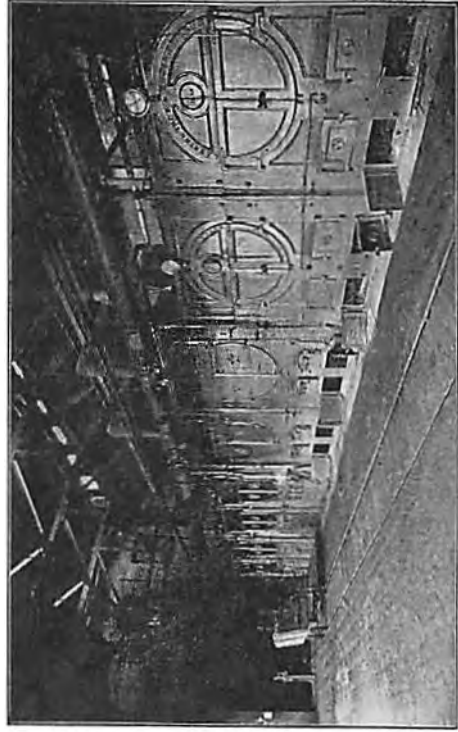
The total area of porches and verandas is over thirty-two thousand square feet, or about one and one-fourth acres, affording standing-room for more than fifteen thousand people, and furnishing ample room for more than a thousand couches, accommodating as many patients with air and light baths. This calculation includes

The Roof Garden.

One of the most practical and attractive features of the institution, located at the south end of the sixth story, and beautified in the summer season by palms, flowers, and foliage plants. It is well supplied with reclining chairs and couches for the use of patients, each of whom is required to spend several hours daily in



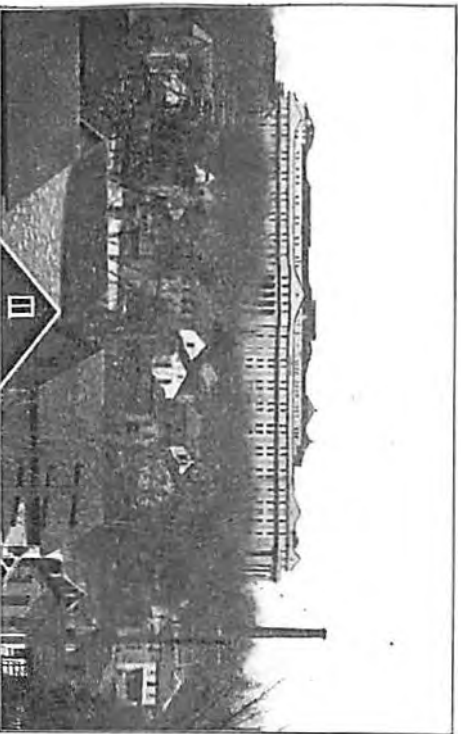
The Dynamo Room.



The Mammoth Heating Plant.



In the Solarium.



View of the Sanitarium from a Distance of One Mile.

the open air. Patients soon learn to enjoy these air baths even in the very coldest weather. Well bundled up and tucked in by the attendants, they lie and breathe the crisp, cool air, drinking in health, and working up a splendid appetite for the easily digestible, highly nourishing, and daintily served foods which are supplied twice, three times, four times, or more a day, as may be called for by their individual prescriptions.

The Solarium.

North of the roof garden, and adjoining the dining room, is the spacious solarium, which, in addition to numerous long windows on the sides, is provided with an enormous skylight, through which the sunlight pours down, to the great benefit of those whose extreme feebleness compels them to take their daily light baths indoors. In the summer time, the solarium is used as an overflow for the dining room, and at all seasons it is employed as a lobby in which patients love to gather for a social chat before and after meals.

The south elevator and stairway lead direct to the south end of the solarium. The central elevator lands passengers close at its north end.

The Dining Room at the Top.

The dining room proper, extending from the serving room to the solarium, is 170 feet in length and fifty feet in width. To this length should be added that of the solarium, which may be used when needed, giving a total length of 220 feet, and an area of 11,000 square feet, or a little more than one fourth of an acre.

The ceiling of the center of the dining room has the shape of an elongated dome, the top of which is twenty-two feet above the floor. Above this dome is a long ventilator which admits light and gives egress to air, thus affording a means

by which as strong a movement of air as may be needed may be always secured.

The dining room is beautifully decorated with landscapes, sky and cloud effects, fruit pieces, palms and flowering plants.

The entire dining room will seat one thousand persons, and another thousand may be easily accommodated in the adjacent roof garden. The kitchen and serving-room facilities are sufficient to feed two thousand persons at one time if necessary.

The advantages of locating the kitchen and dining room upon the roof need to be only mentioned to be appreciated:—

No Kitchen Odors.

By this arrangement, the kitchen odors and steam which, when a kitchen is located in the basement are sure to penetrate every nook and corner of the building, pass directly into the open air, so that every part of the building must be absolutely free from this objectionable feature which the keen nerves of the sensitive invalid always recognize in hotels, boarding houses, and, with a few exceptions, in sanitariums also. The top of the house is the only proper place for the kitchen and dining department of a large establishment. This is especially true of a sanitarium. The kitchen, the basement, the walls, carpets, bedding, curtains, and all absorbent substances and surfaces in the building soon become saturated with the odorous vapors which are continually rising from the culinary operations taking place in the kitchen, in spite of every precaution which can be taken. It is this cause, more than anything else, which gives to hotels and boarding houses the stale odor which is so characteristic of such places.



The Laboratory Building and Nurses' Dormitories.



The Sanitary and Physiological Chair.



The Arctic Bath.

A Well-Ventilated Kitchen and Serving Room.

The Sanitarium kitchen and serving room are arranged with a large ventilator extending the whole length, so that the upper part of these rooms may communicate with the open air, giving ready egress to vapors of every description as soon as formed. Of course the Sanitarium kitchen never produces the horrible odors of burned grease, smoking meats, and other nauseating emanations with which hotel kitchens are redolent, but even the agreeable odors of Sanitarium dishes are sometimes obnoxious to the hypersensitive, capricious olfactories of nervous invalids.

The Surgical Operating-Room.

The surgical operating-rooms are separated from the culinary department by solid walls, with no communicating openings. The operating-room is spacious and high, provided with a mammoth skylight and ample sidelight as well as artificial lights. It is flanked on either side with anesthetic rooms, bandaging rooms, a preparation room, and other necessary apartments, including an emergency room. Here is ample room for surgical stores and supplies of all sorts, and every appliance pertaining to a thoroughly equipped modern operating-room.

The walls are finished with white cement, which is polished as smooth as glass, and is almost as hard as stone. The floor is of marble mosaic. Everything is nonabsorbent and easily kept free from dust and germs.

The Sanitarium surgical department has for many years carried the world's record for successful recoveries after grave operations, and no doubt the work in these improved quarters will enable it to beat its own record.

A sufficient number of rooms to accommodate surgical cases are set apart for this purpose at the north end of the fifth floor, beneath the operating-room. By this arrangement, surgical cases are not required to occupy a separate building, but, at the same time, are so isolated that there is no contact between them and other patients.

The traditional dread and apprehension which are connected with the word "hospital" or "surgical ward" often exercises a strongly deterrent influence upon sensitive and timid patients who are in great need of surgical attention, but who will suffer long and almost face death before consenting to go to a hospital or a hospital ward, although this prejudice is certainly unfounded

The Roof Promenade.

A fine promenade extends from the roof garden north, along the west side of the dining room. The walk from the south end of the roof garden to the north end of the promenade and back is just one fourth of a mile

Elevators.

Five elevators are provided for the convenience of guests. The central and largest is located adjacent to the lobby and at the right of the entrance. It runs from the main basement to the sixth story, landing at the top in the south end of the dining room close to the solarium, so that it may be used in carrying patients either to the dining room or to the solarium. This elevator has a capacity sufficient to enable it easily to carry thirty or forty persons.

The Ladies' Elevator.

A second elevator is located about 150 feet south of the main elevator.

This elevator, will be chiefly used by ladies, as it communicates both with the private corridor leading to the ladies' bathroom, and with the main corridor. This elevator runs from the basement to the solarium, with landings at each floor. It will also serve a convenient purpose in conveying patients to the chapel, near the entrance of which the basement landing is located.

The Parlor Elevator.

A third elevator is placed toward the north end of the building near the parlor. This elevator is for the convenience of patients who occupy the north end of the building in going to and from the parlor; it will also serve the surgical ward and operating-room.

The Bath Elevators.

Each of the bath buildings is provided with an elevator which runs from the basement to the third floor.

No elevator is required for the gymnasium, as this building may be reached from the main lobby through the palm house, or by means of the short corridors leading from the bath buildings on either side.

The Swedish-movement department in the basement of the gymnasium may be easily reached by the basement corridors of the bath buildings, or by stairway from the gymnasium.

Heating and Ventilation.

Especial attention has been given to this feature, one of the most important in connection with sanitarium construction. Each room is provided with a duct leading straight out through the roof, by which the cold and impure air is

removed from the floor, pure warm air being introduced from the corridors. Fresh air is let into the corridors through indirect heaters in the basement. This secures a constant movement of pure air from within outward, and from the wall to the corridors leading into the rooms. Fresh air is admitted in large quantity, not only on the first floor, from which it finds its way through the stairways to the upper corridors, but also near the end of each corridor, so that the air is everywhere kept fresh and pure as out of doors.

The parlors and other public rooms are ventilated by large special ducts, with which, in some instances, ventilating fans are connected so as to secure a sufficient draft at all times, even under the most unfavorable atmospheric conditions. A special plan has been introduced whereby the floor of the parlor is heated in cold weather, a feature which many invalids who suffer with cold feet will very much appreciate.

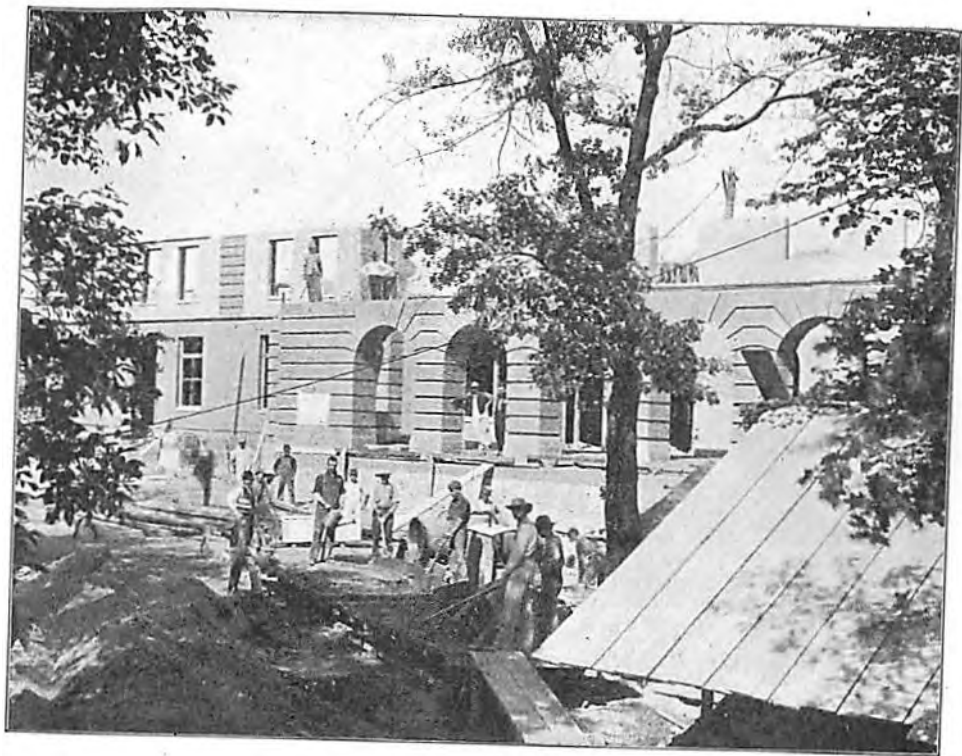
Automatic Heat Regulation.

The heating system combines both the direct and indirect systems. The piping is done in such a manner that the so-called "vacuum system" may be employed when desirable. Arrangements have also been made for automatic heat regulation, not only for the entire building but for individual rooms, so that the heater of a room may be set at any point desirable, 60°F, 65°F, 70°F, as may be required, and the temperature will be automatically maintained at this point. This will be found especially convenient for feeble patients who are not able to look after temperature regulation for themselves.

The walls of the building have been so thoroughly and carefully constructed that the heating and temperature regulation were comparatively easy problems. There is no opportunity for the entrance of wind, as the walls are absolutely



A View of the Rear Wings in Process of Construction.



Mixing the Material for the Concrete Floors.

impervious. An extra lining of porous brick affords protection against both cold and dampness. The amount of fuel required for heating the building has been found to be much less than was expected, on account of the great pains and care taken in the construction.

The foundations of the building are of stone resting upon broad concrete beds and a natural base of compact gravel. The walls are three feet in thickness, laid in Portland cement. The heavy brick walls which rest upon this foundation are laid in cement mortar. The brick is of an unusually excellent quality. The pressed brick which covers the outside is nearly impervious. This, with the inner course of hollow brick, serves as an excellent protection against frost and dampness. The shape of the building and its position in relation to the points of the compass ensure the largest amount of light and air. There are no high wing extensions to cut off light and obstruct air movement.

The Floors—The Fireproofing.

The question of floors was one of the most difficult problems with which the building committee had to wrestle. There were so many kinds of fireproof floor construction that it was not easy to determine which offered the greatest advantages, all things considered. After an exhaustive study of the subject, in the course of which the committee took several extended trips to visit buildings and inspect various modes of floor construction, it was finally decided to adopt a concrete floor, which consists of a combination of iron and Portland cement so arranged as to utilize the remarkable properties of artificial stone in resisting crushing strain, while at the same time utilizing the great tensile strength of large twisted steel wire cables, placed at intervals of a few inches, connected together with a carefully woven mesh-work of steel wire. These cables are

attached to heavy iron anchors securely fixed in the brick wall, and firmly held by several courses of brick laid in pure Portland cement mortar, forming a belt as solid as granite, several feet in width, and extending entirely around the building at the level of each floor. Heavy iron beams are put in wherever needed.

Enormous Stone Slabs.

The floors thus constructed each form a single solid slab of artificial stone extending from one side of the building to the other, and from one end to the other without break or interruption, except where necessary openings for stairways and ventilating ducts occur. This great slab of stone is not supported alone by the outer walls, but also rests upon thick corridor walls and is securely attached to them. One of these enormous slabs, weighing more than a thousand tons, constitutes the foundation for the floor of each story, and by its rigidity, as well as its weight, gives to the building a solidity and stability which could scarcely be excelled by any other construction. Indeed, it may be aptly compared to a building actually chiseled out of a mass of solid rock. The floors are so hard that they can be penetrated only by means of a cold chisel or a diamond drill.

The past year has been an exceptionally favorable one for the construction of a building of this sort, although the work has been considerably delayed by almost constant rain during the summer months; this very delay was beneficial in giving the heavy walls and concrete floors ample time for hardening, while the large quantities of water which fell upon them from the clouds was highly favorable to the development of the greatest possible degree of strength and durability.

The superintendent of construction, Mr. McMichael, a well-known and experienced Chicago architect and builder, assured the committee, after very careful and repeated inspections of the building, that not a single crack has appeared in any part of the supporting walls.

By this style of construction the building is composed almost exclusively of brick, iron, and stone, natural and artificial. The durability of artificial stone is shown by the massive ruins of the great Coliseum at Rome.

The great fires which have from time to time laid waste great areas in our cities have demonstrated that most of the so-called fireproof buildings are so only in name. Wood and other combustible materials enter so largely into their composition that they readily become food for flames when severely tested. In the construction of this temple of health, indestructibility by fire, wind, and water, has been made essential features. From basement to roof of fifth story, the great main building, five hundred and forty feet long, averaging fifty feet in width, contains nothing that can burn with the exception of narrow door and window cases. The staircases are of iron, marble, and slate. The pillars and beams are of iron and cement. Nothing short of an upheaving earthquake or a volcanic eruption can destroy this noble structure. It is a veritable rock of refuge in which one may feel as safe as in a Gibraltar fortress.

Floor Surfaces.

The rough concrete floors must be finished in some suitable way,—what sort of surface should be employed? This was indeed a knotty problem. Wood is objectionable on many accounts; it must be continually redressed, and it presents numerous cracks which afford a harbor for germs and vermin, to say nothing of the numerous open spaces beneath the floor. When a wood floor has been put

down, the wax finish put on, and it is announced as complete, the difficulties are only just begun. Necessary repairs and redressing are required as long as the floor remains in use.

Five Acres of Marble Mosaic.

After canvassing the question thoroughly, and investigating all sorts of materials which have been used for floor surface within recent times, the committee finally decided upon a marble mosaic floor, as on the whole affording the best solution of the problem. This floor surface consists of bits of marble of different sizes and colors held together by strong cement, and constituting a layer consisting of almost pure marble and about one half inch in thickness. Such a surface takes a fine polish, is waterproof, is nonabsorbent, and is practically identical with a pure marble surface,—it is indeed a little harder and more durable than a marble floor. The ordinary price for this floor is so high as to be practically prohibitive, but fortunately the committee were able to secure the services of an experienced and able artisan in his line, Mr. Pellerin of Detroit, and his large force of Italian mechanics, who have done this work at special rates, and who did the beautiful mosaic work of the Congressional Library building of Washington, D. C. This mode of floor construction originated in Italy, the land of mosaics and many other artistic inventions, and is little understood by others than Italians, who have been trained in the work in their native land. It is known as *Tarrazzo*.

Germ-Proof Floors.

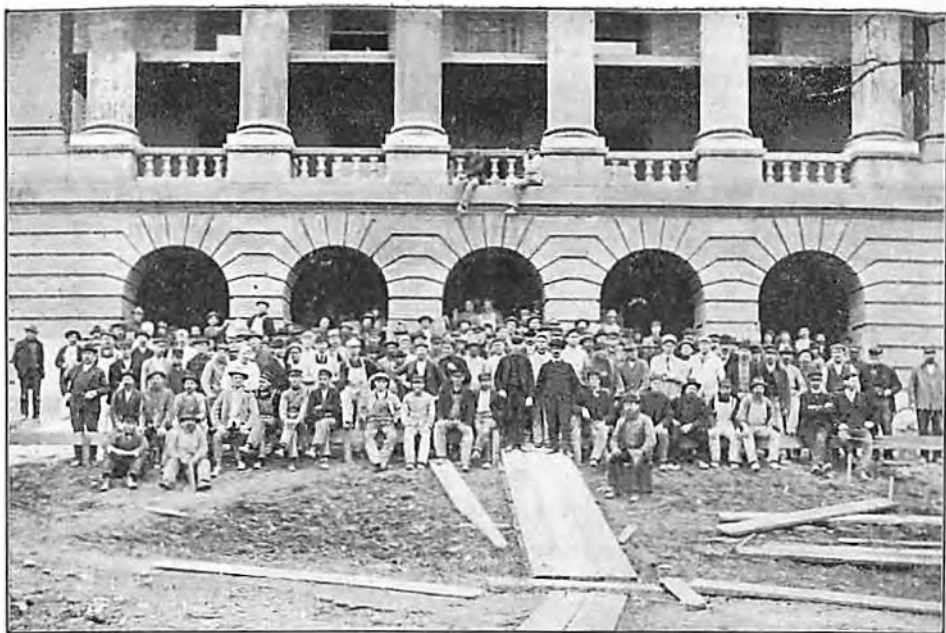
This indestructible floor in which germs and vermin can never find a lodging, is so beautiful that only small rugs will be needed to finish the furnishing. The mosaic is formed by a mixture of white, red, and black marble, and produces a decidedly pretty and inviting effect.



Italians Polishing the Terrazzo Floor.



Constructing the Porch.



Some of the Workmen Resting at the Noon Hour.

Solidity the Panacea for Noise.

The solidity of the floors and walls prevents the slightest vibration or resonance. In walking along a corridor one gets the impression of a solid street pavement; there is no rumbling from the rolling of wheel chairs, and no jar or vibration from heavy footfalls or shutting doors. The panacea for noise is solidity.

Germ-Proof Walls.

The partitions are made of stucco, or plaster of Paris, which is cast in large slabs closely resembling short, heavy planks. When plastered heavily with mortar these partitions have the solidity of brick, while at the same time having the advantage of lightness. The stucco slabs being hollow, form an excellent deafening, so that sounds cannot be readily communicated from one room to another through the partitions. The rooms are, for the most part, made communicating, but by specially constructed "door plugs" all sounds which might pass through an ordinary door are easily shut out when desirable.

Rooms.

Guest rooms are of reasonable size, good height, and conveniently arranged. Every room has a closet and one or more large outside windows facing either east or west. The rooms are well furnished, lighted by electricity, and each room is provided with a telephone which is connected with the Sanitarium telephone system. This makes it possible for the patient or nurse to communicate with physicians' offices, the business office, bathrooms, and every other department, thus securing immediate service of any sort required. Patients are also able to communicate with one another, to make appointments with phy-

sicians, bath attendants, hair dressers, etc. Long-distance telephone connections permit communication with distant cities.

Private Bathrooms.

About one half of the rooms are connected with private bathrooms which are furnished with solid porcelain tubs, lavatories, and the most improved toilet arrangements. The bathrooms, as well as ordinary rooms, have outside windows whereby light and necessary ventilation are secured. Both summer and winter heating is provided for the bathrooms, and an abundant supply of hot and cold water. Circulating pipes are provided for the hot water so that it will always run hot when the faucet is opened.

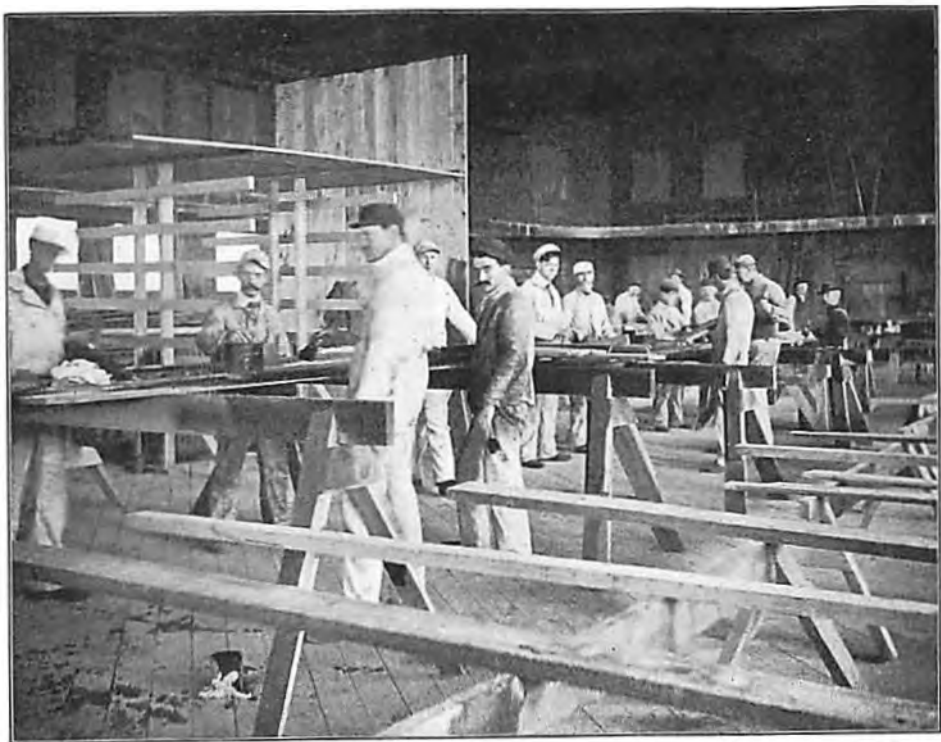
These private bathrooms will be found extremely convenient in the management of feeble and nervous patients and for morning and evening baths.

The Finishing.

The building is for the most part trimmed with red birch, finished so as to have the appearance of light mahogany. The effect is very beautiful, the trim harmonizing with the mosaic floor and the general character of the construction. The main parlor is finished in golden oak.

The Furnishing.

An exhaustive effort has been made by the committee to secure for the building the most thoroughly sanitary and appropriate furnishings, and they flatter themselves that they have succeeded in this particular to such an unusual degree that a few words may be properly said upon this point. Wooden bedsteads are, of course, discarded, all bedsteads being of brass, or a combination of brass and iron. The most improved forms of bedsprings have been furnished



Staining and Polishing the Woodwork.



Rear View of the Main Building.

regardless of cost. The same rule has been followed in the selection of mattresses and other bed furnishings, some of which represent new and important departures from ordinary lines.

The rooms are all provided with beautifully veneered dressers with large mirrors, writing tables, and washstands for rooms not directly connected with private bathrooms.

Especial attention has been given to the matter of chairs. The entire institution is furnished with chairs especially made for our use. They are unique, and represent an important advanced step in chair construction. The form of the chair is such that the back of the individual is properly supported so that he feels himself rested at once on sitting down. Falling or dropping forward, and thus depressing the chest and abdomen, is wholly prevented by the special curve of the chair-back. This innovation has attracted a lively interest among chair makers, who have vied with one another to meet the requirements of the committee. The accompanying cut shows a photo-reproduction of the Battle Creek Sanitarium chair which we have named the "physiological chair."

No Carpets.

As far as possible, wool and velvet rugs and carpets will be avoided, for the reason that fabrics of this sort are continually giving off into the air fine bits of wool or cotton, which being inhaled, give rise to irritation of the lungs and air passages. Carpets harbor quantities of dust which rises in clouds at every footfall. This dust is gathered from the street, and consists very largely of germs, hence is a constant menace to health through the inhalation of the germs of pneumonia, diphtheria, consumption, and many other diseases.

In a sanitarium, it is of the highest importance to suppress dust and to secure the greatest possible degree of air purity. It was for the attainment of this end that the managers decided to discard wood flooring, and to finish all floors in marble mosaic. In carrying out the same principle, they decided to discard the ordinary carpet as far as possible. Fortunately, a very excellent substitute has been found which seems to possess properties of a remarkably high sanitary value, for it does not hide and throw off dust. Whatever dust falls upon it readily sifts through, so that it is found on the underside. It may be easily removed by rolling up the carpet.

The Grounds.

The driveway has the form of a semicircle, and ascends at the rate of six inches to the rod so as to nearly reach the first-floor level at the main entrance.

The building stands twenty feet farther back from the street than the old building, increasing by that much the lawn surface. Barbour Street has been moved by the kind consent of the city council, one hundred feet north, thus extending the lawn in that direction. The grounds have also been increased by the purchase of property adjoining it upon the south. The whole site now comprises some seven acres in addition to the grounds connected with the numerous cottages and other buildings which surround the main building on every side, aggregating some twenty in number.

The time occupied in the erection of this building has been about one year. The corner stone was laid May 11, 1902. The building is now so nearly completed that it is confidently expected that the dedication of the finished structure may take place not later than June 1, and much of the building will be occupied before that time.