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PHYSICAL DETERIORATION RESULTING FROM SCHOOL LIFE; CAUSE; REMEDY.[1]

BY J. H. KELLOGG, M. D.,

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SOME years ago, while spending a short time among the Yuma Indians in the vicinity of Old Fort Yuma, Arizona, I observed, one morning, a considerable number of old warriors and chiefs gathering in from the forest, and collecting in the old fort. Upon inquiry, I found that there was to be an Indian school-meeting, the first one ever held among the Yumas.

The school had been started some two years before by Sister Alphonse and two or three other devoted Catholic sisters, who had ventured into the wilds of Arizona to undertake the experiment of educating the Yuma boys and girls. But their school had not prospered. The children had been kindly treated; they had been supplied with an abundance of food, whereas before they were often hungry; they had been furnished with clothing, including hats, bonnets, shoes, and stockings, whereas before they had roamed the forest in nakedness. The schools were furnished with all the necessary modern appliances, and the teachers labored earnestly in behalf of the students; nevertheless, Sister Alphonse confessed to me that the school was not a success, and that the old Indians were very much opposed to it.

I inquired the reason for this opposition, and was told that the Indians complained that going to school did not agree with the health of the children; that after having been in school a few months, they were far less robust and vigorous than before, and that they suffered from indigestion, catarrh, and other diseases, from which they were before as free as the birds, the antelopes, and the prairie-dogs among which they lived. The good sisters honestly admitted that the complaint of the old Indians was not without foundation, and that it was true that for some reason the little wild children of the forest began to lose their vigor and vivacity soon after entering school, and therefore some of the most sagacious parents had kept their children at home.

The school-meeting had been called for the purpose of presenting to the old Indians the advantages of an education, so as to convince them, if possible, that the children would better have an education even if the getting of it should spoil their stomachs, weaken their lungs, destroy their keen sense of smell through catarrh, impair their eyesight, dull their hearing, and deprive them of the hardihood which had enabled them for centuries to maintain the independence which they still possessed.

I did not remain to hear the conclusion of the matter, but a few years later, in passing through the country on a visit to the Pacific Coast, I spent a day among these same Indians. I found the school flourishing, to the great delight of the good sisters, but the children perishing. Their forest air of rollicking freedom had disappeared, and the evidences of physical depression and deterioration were unmistakably apparent. Civilization had conquered, and the Indians had become convinced that their children must be educated, even at the expense of health and vigor.

The deteriorating influence of school life upon children has been so long and so generally recognized that I do not need to undertake the demon-

[1] Read before the National Educational Association at Buffalo, N. Y., July 9, 1896.

stration of the reality of the stupendous evil, nor to cite the abundant statistics collected by various workers in this country, England, Germany, and Russia, which show so graphically the enormous proportions which the evil has assumed.

Until the recent development of gymnastics in connection with our colleges, seminaries, and, to some extent, the public schools, to be a scholar, a cultivated man or woman, meant almost universally to be a chronic invalid. The man or woman of letters is still generally pictured as a person of rather attenuated form, pale countenance, hollow eyes, lax muscles, and if not nervous or hysterical, escaping those dismal afflictions only by virtue of extraordinary force of character or especially favorable environment.

I think, however, there are good grounds for believing that the aristocracy of dyspeptic literati is diminishing in numbers, thanks to the influence of the bicycle, college athletics, the growth of more sturdy ideas relating to education in general, and the scores of missionaries sent out into different parts of the country by the Chautauqua School of Physical Culture and allied institutions.

It is still true, however, that the majority of persons engaged in the educational training of children and youth have little appreciation of the importance of giving attention to the physical condition of their pupils as well as to their mental and moral training. If the conditions of school life were properly related to the health of the children, the school period would be the most regular and healthful of the whole life. Childhood is not burdened with perplexing cares and anxieties, nor subjected to trying emergencies, as is adult life, and the perfect regulation of that period should be in the highest degree conducive to normal and healthful activity. But that this is not the case under existing conditions is everywhere recognized. The annual vacation is itself a confession of the unhealthful and exhausting character of school work. Exhausting work is by no means favorable to the best development. The permanent results of school training depend upon tissue changes in the brain structure, which, in turn, depend upon digestion, circulation, and the various nutritive processes of the body. Hence sound health and the proper performance of all the bodily functions are the conditions most essential to a sound education.

This question is one of the most important which could possibly be considered by the great body of educators gathered in this city to-day, and of such superlative importance is it, that every other question might profitably be laid aside, and the entire time of this great convention devoted to the consideration of the causes which make school life unhealthful and exhausting, and the remedies required.

I shall not, however, in this brief paper, undertake to deal with the almost numberless phases of the subject which has been assigned me, especially as branches of this great question have been ably and comprehensively considered by various writers whose works may be readily consulted. I wish especially to place before this association for earnest consideration, a single phase of the subject which quite extensive observation leads me to believe has been, to a large extent, ignored. My paper will deal chiefly with the injurious effects of incorrect postures in sitting and standing in the development of displacements of the internal viscera, and the long train of evils arising therefrom.

Incorrect Attitudes.— The displacement of the internal viscera,— particularly prolapse of the stomach, prolapsed or floating kidney, prolapse of the bowels, and displacement of other viscera,— is a morbid condition, the existence and significance of which have been recognized only in comparatively recent times. Much has been written with reference to the influence of wrong positions in sitting in producing spinal curvature, flat chests, and other deformities which are externally visible; but, so far as I know, little or no attention has been given to the relation of incorrect posture to internal displacements.

My own attention was called to the importance of the relation of these displacements to the general health, by the writings of Glenard and Pasteur, two eminent French physicians, who, twelve or fourteen years ago, began to address the profession upon this subject. Glenard pointed out that with the great majority of persons suffering from chronic indigestion, prolapse of the stomach or bowels, or both, is the fundamental cause of the disease, and showed that many dyspeptics may be cured by the simple application of a bandage for the support of the prolapsed organs. Professor Bouchard, the eminent French pathologist, later pointed out the fact that Bright's disease of the kidneys, rheumatism, pulmonary consumption, and other chronic maladies, are traceable to the same cause, the foundation for these maladies being laid in indigestion resulting from displacement of the digestive organs.

Something more than six years ago I began a careful study of this subject, and soon noted a very distinct relation between displaced conditions of the internal organs and the external form of the body.

In order to make my observations more exact, I devised an instrument by which a profile of the entire body could be quickly made, and began to make tracings of my patients in connection with the physical examination, with reference to the location of the principal viscera of the trunk. I made in this way many hundreds of tracings, until I fully established the facts to which I wish especially to call attention, and which I will also demonstrate by copies of some of the typical forms of internal and external deformities which I have observed. The accompanying cuts will illustrate some of these deformities. (Figs. 1–4.)

Although I have found these deformities present in both men and women, they have been of very much more frequent occurrence in women,— a fact which I have attributed to the unhealthful features of the conventional mode of dress, and to the weaker physical development of women. Nevertheless, I have found displacements of the viscera associated with certain external deformities in a large number of both men and women who had never injured themselves by constriction of the waist, in which cases I have, I believe, been able to trace them directly to improper attitudes in sitting. In the great majority of cases of the latter class, patients have not been aware of the internal deformities existing in the form of a prolapsed stomach, floating kidney, or prolapsed bowels, until I have called attention to the fact by a careful physical exploration, whereby the location of the stomach, kidneys, and other viscera may be exactly determined.

From a careful study of the health of these cases, I have become convinced that in the majority of instances the foundation of these defects is laid in childhood, and during the school-going period. But before making further remarks of a general character, I wish to call more particular attention to the exact nature of the evil which I am endeavoring to discuss.

The trunk is practically divided into two cavities. The division of the lower cavity into pelvis and abdomen is an artificial and not an anatomical subdivision, being useful for the purposes of description, but misleading and confusing unless ignored in studies concerning causation and pathological relations. Anatomically, the trunk is divided by the diaphragm into two cavities only, the upper containing the chief organs of respiration and circulation, and the lower containing the principal organs of digestion and the genito-urinary apparatus. The chief anatomical facts which I desire to have kept in mind are the normal position of each of the viscera which occupy the lower cavity of the trunk, and the mode by which these various organs are held in place. It will be remembered that the liver, spleen, pancreas, and stomach are all located above the diaphragm, or at the waist, as shown in the accompanying diagram after Ziemssen. (Fig. 1.)

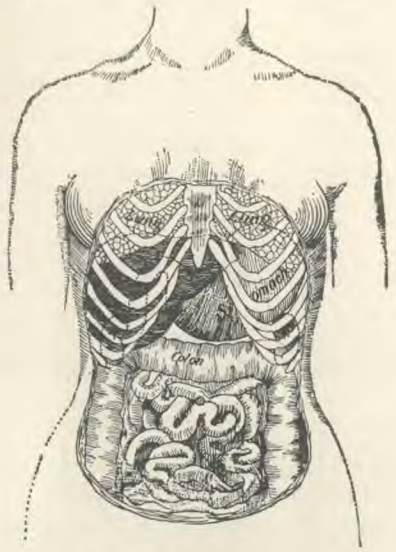

FIG. 1.— A Normal Figure.

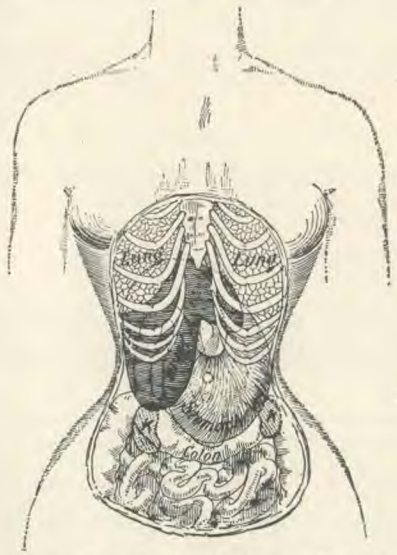

FIG. 2.— Stomach and other Viscera Displaced.

The transverse colon lies at the waist line, the point of junction of the ascending and transverse colon on the right side dropping a little below the line, while the point of conjunction of the transverse with the ascending colon at the left side rises considerably above the waist line, being held in place by the pleuro-colic fold of the meso-colon. The kidneys lie just at the waist. The greater portion of the space below the waist is occupied by the in-

testines and the bladder. It is noticeable that the organs of the greatest weight and functional importance are located at or above the waist.

How are these important organs held in position? Although fitted together with the nicety of an articulation, the viscera are certainly not held together by anything corresponding to the firm ligamentous bands which unite the osseous elements of the joints. The so-called ligaments which hold in place the liver, stomach, spleen, and bowels cannot properly be called ligaments, as very little ligamentous structure enters into their composition. The same must be said of the ligaments which are supposed to support the organs of the pelvis.

The organs are really held in position by the muscular walls of the abdomen and the support of the adjacent organs, as all are fitted snugly together like the various articles contained within a well-packed trunk. The liver and kidneys and the greater portion of the stomach, when in their proper positions, are almost entirely covered at the front of the body by the ribs. The abdominal muscles, which constitute the chief support of these organs, are joined to the ribs above, and to the upper border of the pelvic bone below. It will readily be seen that in bending forward, the two points at which these are attached — the ribs above and the pelvis below — are brought nearer together; consequently the abdominal muscles are relaxed, and the natural support of the organs of the trunk is removed. At the same time, in bending forward, the lower ribs approach the spinal column, thereby forcing downward the organs which lie beneath them; namely, the liver, kidneys, and stomach. These, in turn, crowd down the colon, intestines, and other organs which underlie them. Thus we have two causes operating together to produce displacement of the organs which lie at the upper part of the trunk,— an abnormal pressure above, and the removal of the natural support below.

A glance at Fig. 1 will show at once the relation of the ribs to the liver, stomach, and kidneys. It should be recollected, also, that the spleen and pancreas lie beneath the ribs, as well as the organs before named.

In a person whose figure shows a normal outline, as in the accompanying figure (Fig. 6), that of a German peasant woman, it is noticed that there is a strong anterior curve of the spine, a full chest, and that the abdominal muscles are well drawn up. A lessening of the posterior curve of the trunk results at once in a depression of the chest and waist, and produces an abnormal fulness in the lower abdomen,— the natural consequence of the displacement of the organs lying about the waist downward, and a forward bulging of the abdominal walls. This is well

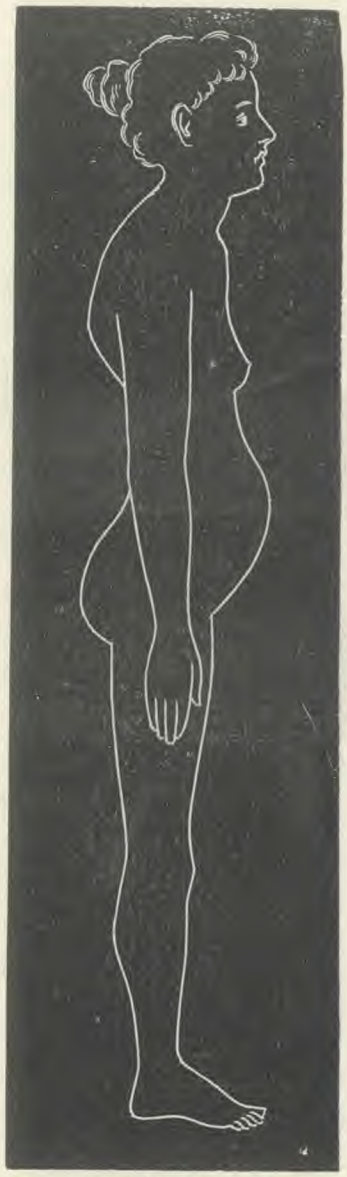

FIG. 3.— The Result of Relaxed Sitting.

FIG. 4.— Same person as shown in Fig. 3, with posture deformities corrected.

shown in Fig. 7, the outline of a seamstress, who, in her occupation, has acquired the habit of sitting in a relaxed position, bending forward over her work.

It thus at once appears that when the student sits at his desk in the schoolroom, leaning forward over his book or work, there is not only danger of acquiring a curvature of the spine and a correspondingly ugly shape, but there is an actual compression and displacement of internal organs, which, if the morbid condition becomes permanent, will, as the result of habit, produce serious disease, and cripple the individual for life.

We see a vast multitude of such cripples going about the world,— persons whose round shoulders, flat chests, forward carriage of head, and abnormally straight spine, indicate prolapsed and disordered stomachs, livers, kidneys, and bowels.

Not only are the organs within crippled in their action by the stooped position in sitting, walking, and standing, but the lungs are likewise hampered. On having a round-shouldered, flat-chested person breathe into a spirometer after a full breath, I have found the lung capacity to be only 270 ; whereas the same person, standing in a proper position, was able to expel 310 inches after taking a full inspiration, an increase of fifteen per cent.

The involuntary respiration must be interfered with to even a greater extent. The person breathing in a stooped sitting position is constantly in a state of air-starvation, a fact which is evidenced by the disposition to straighten up and draw a long, deep breath every now and then, which is constantly noticed in persons who habitually sit at study or work in a stooped attitude.

The physical injury which a person receives from an incorrect sitting posture is of far greater consequence than the mere ugliness of the appearance. The posterior curvature, or abnormal straightening of the spine, resulting from an improper sitting position, is the most common of all forms of spinal curvature, but singularly enough, is not mentioned even in special medical treatises. Round shoulders and flat, hollow chests are considered, but nothing is said of posterior curvature of the spine. By studying this matter closely, we find posterior curvature present in all these cases, if not the cause of the conditions. Every round-shouldered person, every flat-chested person, has posterior curvature of the spine.

There are three forms of posterior curvature : —

1. That which affects the upper part of the spine, causing the head to be thrust forward over the chest. There is extreme roundness of the shoulders, and the hips are carried back. This form is most common in aged people, and in laboring men who have to bend over their work.

2. That form which affects the middle portion of the spine. In these cases the head and hips are both thrown forward. This form is found in young and middle-aged people, and is usually due to bad positions assumed in sitting and standing, and a lack of development of the muscles of the trunk.

3. That in which the lower, or lumbar, region of the spine is affected. In these cases the forward curve is effaced, or nearly so, the spine becoming straight. The hips are nearly on a line with the spine, giving a most ungraceful figure.

FIG. 5, A. Spleen Displaced from Corset Wearing.

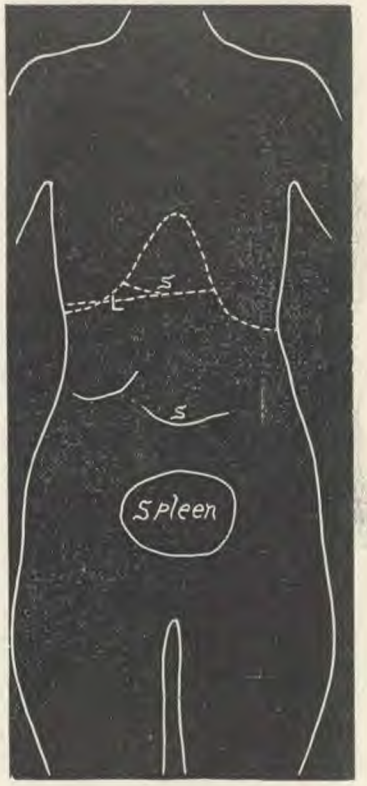

FIG. 5, B. Front View of same person.

Incorrect sitting may result either from defects in the seat, or from negligence on the part of the pupil. A seat that is too broad naturally results in posterior curvature, for the reason that no support can be obtained from the back of the seat unless the pupil leans back so far as to make his position absolutely insupportable without relaxation of the muscles.

Too high a seat drags the lungs downward, and produces a similar effect. A low desk encourages a stooped position in sitting.

If the student has a habit of sitting too far forward upon his seat in a relaxed position, posterior curvature of the spine naturally follows. Students not infrequently acquire a slack habit of sitting in a relaxed position with the trunk bent backward at the middle, even when the seat and desk are properly constructed both in relation to each other and to the pupil. Correct sitting is a forcible position,—not a strained position, but one in which the muscles of the trunk are active.

To remedy this evil, which I have sketched too briefly to give any adequate idea of its importance, requires: —

1. Constant correction by the teacher, of the improper attitudes assumed by students, and the employment of suitable corrective exercises for two or three minutes at every change in the day's program.

2. A regular, systematic course of scientific physical training as an essential part of the daily work of every pupil in every school in all grades.

The conditions which surround the child during its school life are a mold into which it grows, and whereby the whole after life of the man or woman is favorably or unfavorably influenced.

Later revelations in medical science have established beyond doubt the fact that a large share of chronic and disabling ailments from which men and women suffer, have their foundation in the erroneous habits and vicious conditions of life during childhood and youth.

When the writer was a pupil of Professor Hartelius, the director of the Royal College of Gymnastics at Stockholm, Sweden, some thirteen years ago, he was told by that eminent and experienced teacher of gymnastics that he had never encountered curvature of the spine in a single case in which the individual had had the advantage of gymnastic training during his school-going period. At that time, gymnastics had long held a prominent position in Sweden, being by law obligatory in every school. The result is to be seen in the erect and well-developed physique which is the prevalent type in Sweden. One may see on the streets of Stockholm a larger proportion of men and women with fine figure and graceful carriage than in any other city in the world.

The benefits of exercise in connection with school work are not confined to its influence upon the bodily shape. The growing period is the only time in life at which any marked changes can be effected in the physique. This is the time for enlargement of the lungs, development of the chest, and the correction of any errors, weaknesses, and morbid tendencies. Systematic daily exercise, carefully adapted to the age and strength of children, pro-

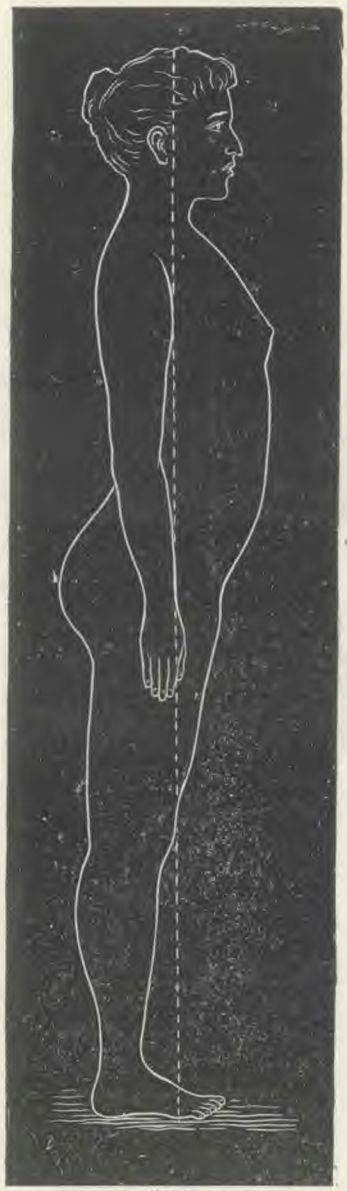

FIG. 6.

FIG. 7.

duce, even within a comparatively short period of time, marvelous results; *e. g.*, an eminent French physiologist found the volume of respiration during sleep to have doubled in the students of a boarding-school, as the result of six months' systematic exercise.

During the twelve or fifteen years spent in school, the sedentary habit often becomes firmly established, so that in after life exercise is avoided as much as possible, through a natural aversion to it, whereas the physiological necessity for exercise increases with advancing age; so that a cultivation of the habit of exercise and the appetite for it may be properly regarded as one of the important objects to be attained during the school-going period.

A thoroughly enlightened community will provide, in connection with its public schools, gymnasia and lavatories; and when we become sufficiently civilized to value health as highly as does the savage, we may expect that our municipalities will take such steps as will save a sufficient amount of money now wasted in attempting to repair the ravages of alcoholic drunkenness and other forms of vice, to provide for every city a suitable number of public gymnasia and swimming-baths; and that it will be considered at least as important that a child should have a large pair of lungs and a vigorous chest as that he should understand Greek and Latin or natural philosophy, and more important that a man or woman should be able to swim than to calculate an eclipse of the moon. Our schools, seminaries, and colleges are every year turning out a lot of young men and women who might properly be termed "school cripples," who are maimed in body by the neglect and the harmful environment to which they have been subjected, and damaged intellectually by the one-sided and artificial methods under which they have been trained.

A volume might easily be written — indeed, volumes have been written — upon the evils arising from deficient ventilation, bad lighting, dust, the vicious habit of spitting, and other means of transmitting disease, as well as the danger of moral contamination and the contraction of sexual vices, from the evil associations to which children are more or less exposed in our schools.

The limit of this paper has already been reached, however, and I will conclude by urging upon every teacher in our public schools the importance of making a careful study of all that pertains to the physical welfare of his pupils while under the teacher's care; and I would further add the suggestion that immense advantage might be gained by the holding of parents' meetings at regular intervals, for the purpose of discussing the needs and interests of the child in both the home and the school, and securing the co-operation of parents in establishing for the child in the home such conditions as will second the efforts of the teacher in the schoolroom in the development of a well-rounded character, and the attainment of the highest possible educational ideal,— that recognized by the ancient Greeks, who set us a noble example in so many matters pertaining to education; viz., "A sound mind in a sound body."

ZOOLOGICAL HEALTH-STUDIES.

BY F. L. OSWALD, M. D.,

Author of "Physical Education," "The Bible of Nature," etc.

9. Climatic Instincts.

A FEW years ago the editors of an Eastern newspaper tried to assist home and health seekers by advertising a symposium of opinions on the question of "The Best Town to Live in."

But, as might have been expected, a plurality of votes was cast in favor of the most populous cities, many of which owed that distinction to the accident of their superior accessibility. New York and Baltimore, with the enormous scope of their harbor-nets, catch a thousand immigrants for one who strays to Southern Michigan or Northern Alabama, and fifty per cent. of those settlers will have no hesitation in backing their lot with their ballots; but should the number of such votes be allowed to outweigh the reasons for selecting Ann Arbor or Huntsville as an all-the-year-round residence?

With precautions against the risk of a similar fallacy, sanitarians should use the statistics of such works as Russell Wallace's monograph on the geographical distribution of animals. As a general proposition, it may hold good that regions of our planet peopled by the greatest number and variety of animal aborigines must have been recommended by a preponderance of creature comforts, in the widest sense of the word, but the unqualified application of that rule would often lead to strange inferences. The

forests of the great West Indian Islands, for instance, abound with wild-growing fruit, but there are no monkeys; the herbage of the upper Sierras is not surpassed in the Eden of the European Alps, but there are no wild cows, no chamois, no deer, no sheep, and not even rabbits, the largest undoubtedly indigenous mammal being the *huttia*,— a sort of heavy-bodied bush-rat. North Dakota, when first discovered, had about forty times as many varieties of wild animals; but would that circumstance justify the conclusion that the Bad Lands of the upper Missouri were naturally forty times more attractive than the royal vega of San Domingo? The contrast remains a biological curiosum, but may be partly explained by the fact that migratory animals, following the valley of the Father of Waters in a northwesterly direction, would finally reach the stone-chaos of the Bitter Root Mountains, while the Elysium of the Antilles is divided from the mainland by a gulf which no wingless wanderer is able to pass.

In confining, however, our comparison to the great continents of the Old and the New World, we find three different regions vying in the variety of their native fauna: The tablelands of the tropics, the terrace lands and foot-hills of the temperate zone, and, in summer, the wooded lowlands of the higher latitudes.

The explorers of the hunting-grounds near the headwaters of the Orange River witnessed such scenes as might easily give one the impression that all the four-footers of Karl Hagenbeck's menagerie had broken loose together, and were inspired by too much confidence in the strength-in-union principle to mind the possibility of recapture. Quadrupeds that would create an unheard-of sensation in the tame hunting preserves of Europe were classed as mere nuisances by Gordon Cumming and other hunters in quest of maximum-sized game. But the modern Nimrod cannot help recording his emotions when one morning he saw both elephants and rhinoceros in rifle-shot range, besides giraffes and lions and such trifles as half a dozen different species of antelopes and baboons. The plebiscite of that assemblage clearly seemed to give Southeastern Africa the preference over any other part of the present earth, and that verdict has been confirmed by the vote of more than one modern traveler. "If I had the means to choose my earthly abode according to my own fancy, where would I live? — In Paris, of course, the Mecca of all good Americans."

"Yes, but leaving made dishes out of the question, and speaking only of the unbought luxuries of nature?"

"East Africa, then, by great odds," said Colonel Frank Thompson of the Cincinnati Zoo; "I have poked about every continent thus far discovered, but the sunny South of the Transvaal beats them all for an absolutely perfect climate. One hundred and forty-two clear, genial days in a stretch, without one mist, without any night-chills worth mentioning, and no superheated afternoons — what more could one expect this side of paradise?"

"And that in the winter," he added,— "the June to August winter of the Southern hemisphere. In midsummer they have an occasional thunder-shower, and need it, to keep the vegetation from withering to the roots."

North of the equator the Abyssinians enjoy their sunshine season from Christmas till March, at the same time of the year when Florida attracts Northern winter tourists, and it is then that the park-like valley of the Blue Nile, with its mountain-born tributaries, swarms with winged refugees from the less hospitable regions on the other side of the Alps. Half a hundred varieties of north European song-birds and water-fowl scorn the allurements of the intermediate countries, and travel straight from the Rhine to the Bar-el-Gazal,— from deer forests and the haunts of the hill fox to the pastures of the Oryx antelope and the cave castles of the mane baboon. It would be a mistake to suppose that those winter guests eke out the existence of mournful exiles; the naturalist Brehm heard pine-thrushes sing their anthems in the Zalla Range and Northern finches in the valley of the Settite, evidently quite at home, for the time being. "She went roaring from one blaze into another," said an ogre of a medieval witch hunter, in commenting on the laments of his victim; and the happy visitors of the tropical Switzerland go singing from Eden to Eden.

But about the end of March they rally their traveling companions for the return trip, the experience of many thousand generations having convinced them that the summers of the tropics cannot, after all, compete with those of the higher latitudes, where Nature, after the slumber of the long winter trance, awakens with the exuberant mirth of a new youth and new morning.

Hence the springtides of animal life that gather about the garden spots of the habitable North at the season of universal rebirth, returning emigrants from the tropics, from the temperate zone, and the hardier natives that have disdained to seek safety in flight, all unite to celebrate the sun-festival of a country that has expiated the surfeits of the preceding summer in all-redeeming ice-storms. Expurgat-

ing frost has killed out the incipient disease microbes, and creatures who in one way or another have survived the ordeal, may now abandon themselves to compensating enjoyments, like the devotees of Islam at the end of the Rhamadan season.

That more or less conscious feeling of immunity from the risk of contagion is at the bottom of the instinctive preference for what we call a bracing climate, while the lack of that guarantee haunts the revelers in the Edens of regions that appear to have been designed for the special benefit of the insect world — countries where "wasps with six pair of wings are buzzing about the sirup-pot, while a nondescript with nine eyes in its body is hastening across the bread and butter," as Sydney Smith describes them.

"Do you suppose I did not have as much sense as a bird of passage?" asked Lucullus, when one of his guests ventured to criticize the airy architecture of his summer palace; and a semi-annual change of climate will perhaps remain the most enviable privilege of wealth.

But, next to that, can there be any harm in constructing a model winter-fort in a country already blest with the advantage of a fine summer climate, and thus obviating the trouble and expenses of constant migrations? It is a plan that recommends itself to lovers of a permanent home,— "one storm-proof anchorage in life's troubled sea,"— and is moreover endorsed by the example of quite a number of our instinct-guided fellow creatures — not bees and ants only, but foxes, squirrels, and beavers, and, in a modified sense, also of one winged home-seeker. The waxwing, *Ampelis garrulus*, as a rule, passes the winter in the semi-tropics, and returns in the spring to the pine forests of the distant North — to Finland and Norway in the Old World, and to British North America on this side of the Atlantic. But in the highlands of the southern Alleghanies I came across a remarkable exception to that rule: Far up in the Alp-like border mountains of Tennessee and western North Carolina there are coniferous woods where the Canadian waxwing has taken up his summer quarters, raising his brood of chattering youngsters as safely as in the solitudes of the pathless Northland. At first I doubted the facts communicated by our Tennessee guide, but had to revise my zoological data when my boy Willie discovered a nest of the feathered colonists and raised two of the callow young till the red sealing-wax-like patches on the wing feathers were plainly developed.

The migratory ancestors of those nestlings had perhaps been caught in an extra afflictive snow-storm, or on their return to their birthplace on the banks of the Ottawa, had found their pine woods in the possession of lumber-sharks, with nothing but stumps to indicate the site of the old nest-trees. And on one of their winter excursions they may have come across highlands strikingly resembling their native country both in climate and vegetation, an altitude of six thousand feet being an almost exact climatic equivalent of eighteen additional degrees of northern latitude. And moreover this pinewood oasis at the threshold of a perennial summerland could boast a remarkable freedom from insect plagues, and the steepness of the summit-cliffs guaranteed protection from the inroads of the tree-feller for ages to come. Then why stray farther, and fare worse? Congenial weather which in northern Canada ended in October could here be enjoyed till Christmas, and from the storms of the next three or four months the adjoining lowlands offered a convenient refuge.

All things considered, the weary wanderers decided to stay and build tabernacles; and in the course of years the generation of mountain-summerers may come to outnumber that of the long-distance travelers.

One of the most amiable natives of our East-American woodland, the pine-finch, or crossbill, has, indeed, learned to weather the climate of the highlands almost the year round. Only after the heaviest snowfalls of an especially hard winter, flocks of the little red-breasted mountaineers, with their graceful movements and flute-like call notes, visit the valley regions, and are so unconscious of any offense against the majesty of the lord of creation that they will pick seeds from the cones of an old Christmas tree in the farmer's back yard, and cling to their perch even after three or four bullets have grazed their frost-ruffled plumage. At the first intimation of milder weather they return to their highlands, where the survival of the fittest has made them almost frost-proof, and the hardiest of all cage-birds.

There are times of the year when the bird melodies of the terrace-lands of Alabama and northern Georgia seem to fill every bush and tree for hundreds of miles along the foot-hills of the Blue Ridge. In the coast forests of the tropics, concerts of that sort become almost deafening at sunrise, but the intermediate region, the malarious lowland swamps of our Gulf States, is remarkable rather for the absence of animal life; in the great "pine barrens" of South Carolina and the tarheel State the naturalist may roam for hours without hearing any sound

but the sighing of the sea wind or the occasional rattle of the ivory-bill woodpecker. Of insects there is no lack,—nay, there is even an undeniable abundance at sunset,—but song-birds and deer seem to shun the monotony of the somber forest, and not at present only, the lack of game, as compared with the upland districts, having been noticed by the first explorers more than two hundred years ago.

Whence this contrast? Pigs, squirrels, and panthers cannot well be credited with a predilection for picturesque scenery, and, indeed, crowd the dead-flat jungles of the Mexican coast plain, but in choosing between two malarious regions, they may possibly prefer that of the tropics proper, where the deadly stagnation of the festering air is more frequently broken by violent gales. No instrument for measuring the ratio of atmospheric impurities has as yet been invented, but our lungs can dispense with such assistance, and after a good storm the moisture and perfume-laden air of a tropical coast forest can be breathed with as much pleasure as the resinous aroma of pine woods in the healthiest Northern uplands. The air is both cool and fragrant, and does not become oppressive till late in the afternoon, just before the interaction of heat and moisture brews up another thunder-storm. In the land of our next neighbors those evening storms recur almost with the regularity of the marine tides; in the delta of the Rio Lerma—the "Rio Grande de Santiago," as the Spaniards called it—the midsummer sun rises almost invariably in a clear sky, the morning winds sweeping through the dripping foliage of the sylvan arcades remain cool till 11 A. M.; about noon the first clouds rise, and at or about 3 P. M. the leeward banks of these clouds turn black, electric twitches dart to and fro, with more and more audible consequences; two hours after a chilling blast announces the advent of the first rain gust, parrots and squirrel-monkeys shriek in chorus on their flight to shelter, and for a period varying from thirty minutes to six hours, the microbe-laden atmosphere undergoes a thorough washing and winnowing, each separate twig of the boundless forest being scoured by the gale in a manner that does not leave mildew a ghost of a chance to cling to a living organism.

Beasts and birds enjoy such storms, while they hate the all-day drizzle of the Northern winter, and sicken in the atmosphere of the semi-tropical lowlands, where stagnation often reigns supreme for weeks together.

It is also worth remembering that the summer nights of the equatorial regions are from three to four hours longer than those of the temperate zone; the land wind from the next sierra sets in about an hour after sunset, and, altogether, the natives of the tropics enjoy abundant chances for refrigeration.

Hence the sad results of the prejudices that led to the seclusion of Mr. and Mrs. Rooney, the marvelous man-apes of the Cincinnati Zoo, that were dosed with stove heat and imprisoned between double walls of heavy plate glass till the lungs of the poor forest exiles became hotbeds of microbes. They died at the end of the third summer, while dozens of their less valuable and less caloric-dosed relatives continue to thrive, for exactly the same reason that gypsy brats, sleeping in airy barns and woods, outlive the air-famished children of the rich.

"*Ex como el Paraiso,*"—"Why, this is like paradise," said the Spanish friar who accompanied Baron Humboldt on his boat-trip to the sources of the Rio Madeira, when they saw a multitude of wild beasts step out on the open sand of the river shore on the way to their drinking-places. It was in the evening, when half an hour of sunshine intervened between a refreshing shower and a cool night, but the dreams of Eden would have yielded to visions of a very different place if the valley had been subjected day and night, and all the year round, to the brooding heat which the constructors of that glass prison inflicted on poor Pat Rooney.

Animals avail themselves even of local differences of temperature, and in Mexican California it has been noticed that the fauna of the eastern, or gulf-side, shore is much less abundant than that of the west shore, which is exposed to the cooling breezes of the Pacific.

(To be continued.)

A WARNING comes from the Woman's Health Protective Association against the outdoor exposure of eatables by retail shops and stands. The president of the organization voiced the feeling of all hygienists when she said, "We believe that all fruits and vegetables should be displayed inside the stores. Push-cart venders and those who sell from wagons should be compelled to have a covering to their vehicles, else all kinds of deleterious matter and disease germs fall upon them."

CURIOUS FOOD SEEDS.— Various kinds of seeds have been employed for food. The Indians of North America eat the seeds of certain cacti, which are parched, pulverized, and made into a palatable gruel. Their fondness for the seeds of some pines is well known, these "piñons" being to them what sugar plums are to white people. Sunflower seeds, too, they parch, grind, and make into cakes, which are said to be equal to corn bread. From the same seeds they get oil for anointing their bodies. Seeds of many kinds have been found in the ruins of the ancient cliff-dwellers of Utah, the evidence being satisfactory that they were used for food. Among these may be mentioned the common garden bean, which is also discovered in mounds in Arizona. The cliff-dwellers used to eat the seeds of the ordinary "pigweed." Indians generally to this day consume the seeds of many species of grasses, making bread and mush from them. Along the rivers in Colorado and Arizona, grass seeds are collected in great quantities for grinding into flour. Grape seeds, gourd seeds, and acorns are likewise employed. Of poisonous seeds the famous Calabar bean is a notable example; it is said to be worse than strychnin. Another seed alleged to be poisonous is that of the common cockle, which finding its way into wheat fields, poisons the bread made from the wheat. It is the bane of millers in the Northwest. It is popularly supposed that horse-chestnuts are very unwholesome. Nevertheless, in Turkey they are roasted for coffee, fermented for liquor, and utilized for horse medicine. In India there is a kind of seed that varies so little in respect to size as to be used for a weight standard. It is called the "retti," and weighs one grain. From its name is derived the word "carat."—*Popular Science News.*

HYGIENE OF THE MODERN SCHOOL.— Dr. G. Stanley Hall, president of Clark University, Worcester, Mass., says:—

"The great danger in our schools arises from imperfect health. . . . It has become the custom in some countries that some of the best and most progressive city wards provide doctors to examine every child in the lower grades of the schools. This doctor examines the child's complexion, eyes, muscles, and as to appetite, etc., and gives directions according to the needs of the case. . . . Thus spinal curvature and other diseases are often found. . . . But the great result of all of it is this, that the modern school seems to be a force tending to physical degeneracy. . . . For myself, I say, What shall it profit a child if it gain the whole world of knowledge, and lose its own health? Or what shall a child give in exchange for its health? . . . We have forgotten that children cannot sit still, yet it is one of the commands that resound in the schoolroom from morning till night. We have found that the idea that children can sit still must be abandoned, and teachers must learn to possess their nerves and patience if the children do not sit still. We all live for life. There is nothing so great as being alive."

A TRAIN-LOAD OF PILLS.— Between six and seven million pills of one kind or another are estimated to be the daily consumption in the United Kingdom. In the early part of 1890 the daily consumption of pills was given by the *Chemist and Druggist* as 5,643,961. That paper asked its subscribers throughout the United Kingdom to supply it with estimates of the number of pills consumed in the kingdom daily. The estimates were based on the actual daily sales by their correspondents of ordinary pills, prescription pills, and patent medicine pills. The average of these estimates, which came in from all parts of the country, showed that the daily consumption at that time was considerably over five and a half millions, which would give one pill per week to every man, woman, and child of the population. Taking the average pill to weigh three grains, the year's supply for the United Kingdom would weigh 178 tons, or enough to fill thirty-six ordinary wagons, and make a train-load which it would require two powerful engines to pull.—*London Tid-Bits.*

THE ALMIGHTY'S TREATMENT OF NERVOUS DEBILITY.— When Elijah was utterly depressed in mind, says the *Independent*, and believed that his brave attempt to create a reformation in Israel had completely failed, and that there was nobody left that cared for the true God, and was ready to die of a broken heart, then God gave him a quiet desert, far from distraction, then a good sleep, then a comfortable meal, then sleep again, then more food, and then a six weeks' vacation. After that, he recovered his spirits, and was greatly improved in his religious feeling, his faith in God, as well as in bodily condition. One's religious moods, if not his religious life, may often depend on the condition of the body. — *Canada Lancet.*

A SCIENTIST recently tested the air of a lecture-room that was not properly ventilated, and found that it contained two million disease germs to the cubic yard.

EXERCISE FOR SEDENTARY PEOPLE.

THE most important point to be gained by exercise for sedentary persons is the development of the lungs. Anything which will bring the lungs into vigorous activity is good exercise for persons of sedentary occupations, such as editors, teachers, physicians, lawyers, or other professional men, and students. Hopping up and down in a corner may bring the lungs into vigorous activity, if one can find no more convenient or agreeable form of exercise.

Beneficial results may be obtained by a voluntary expansion of the lungs, or what is known as deep breathing. These expansive movements of the lungs may be greatly facilitated by such simple exercise as raising the arms at full length to a horizontal, and then to a vertical, position. The muscles attached to the arms pull at the sides of the chest, and draw them outward, thus increasing the size of the chest cavity. But voluntary respiration is tiresome, and one finds himself much fatigued after practising deep breathing for three or four minutes. The muscles of the chest become weary, and it seems very irksome to continue the exercise. The case is very different, however, when the deep breathing is induced by the demand for an increased supply of air as the result of active muscular exercise, such as jumping, running, swimming, bicycle riding, or vigorous gymnastic exercises of any sort.

One does not find it hard work to breathe deeply when engaged in exercise of sufficient vigor to demand deep breathing. It is rare indeed that the muscles of respiration become weary when there is a real necessity for their use. The arms and legs quickly tire, but the lungs and heart are ready for work so long as their activity is a necessity. The reason of this is that the operation of breathing, though under control of the will, is ordinarily automatic. The usual movements of respiration are executed under the influence of impulses received from the respiratory center or centers in the medulla oblongata. In involuntary respiration, the inspiratory movement is induced by an impulse from the higher nerve centers, as is the case with involuntary movements of all sorts; hence such movements quickly give rise to fatigue. For these reasons, hopping up and down in a corner, though the most monotonous form of exercise, is preferable, as a respiratory exercise, to the best devised forms of so-called breathing exercises. But it is far better, as before intimated, to engage in some form of exercise which will be agreeable, as well as efficient in developing respiratory activity.

The writer considers swimming as one of the most useful of all forms of physical exercise, for the reason that it brings into activity the muscles which are not ordinarily employed. Man seems to be the least adapted to progression in the water of any animal. Other animals, the dog, for example, is so naturally formed for swimming that he does not have to learn to swim. The horizontal attitude of body and the natural elevation of the head above the line of the spinal column, together with the small size of the head compared with the remainder of the body, and the favorable position of the nose, which is lifted free from the water, while leaving almost the entire remaining portion of the body submerged, renders it very easy for an animal to keep afloat. The movement of the limbs of a dog in swimming are precisely the same as in walking; he simply walks in the water, holding his nose high, and does not have to trouble himself with the modifying of his movements to suit the element in which he is moving, whether in the air or in the water. With man, this is different. In the water

he must move his limbs in a way in which he has no occasion to move them when on the land. The consequence is that when he makes his first attempt to swim, he finds the muscles which he must necessarily use, weak and easily exhausted; therefore, learning to swim requires much practise and considerable time.

The great health advantage in swimming is in the fact that the head must be carried well backward, and the arms must be used in a way which will develop the shoulder retractors, or the muscles which draw the shoulders backward; hence it is one of the finest of all means for developing the chest, and overcoming the tendency which exists among all sedentary persons to become round-shouldered.

Swimming thus constitutes a most healthful form of recreation. It is refreshing, promotes appetite, and is one of the most valuable of all accomplishments. The majority of deaths from drowning are due to the lack of knowledge of this useful art. A few practical hints about how to learn to swim may be found of value, in connection with the accompanying cuts. The old method of teaching a boy to swim was to throw him into water deep enough to drown him, making it, with him, a case of "sink or swim." The modern method, however, is more humane. The following is the one commonly employed in teaching swimming in the modern swimming-schools: —

FIG. 1.—FIRST POSITION IN SWIMMING.

FIG. 2.—SECOND POSITION.

The Movements.—There are three movements for the arms and two for the legs, the movements for the arms starting with the position for the arms shown in Fig. 1.

At the first movement the arms are carried outward at the sides to the position shown in Fig. 2, the palms facing backward.

At the second movement, the arms are brought from the position shown in Fig. 2, to that shown in Fig. 3.

FIG. 3.—THIRD POSITION.

At the third movement, the arms are thrust directly forward to the position shown in Fig. 4.

The time occupied in movements 2 and 3 together is the same as that of movement 1 alone.

The two movements of the legs are as follows: During the first movement of the arms, the legs remain straight out, as in Fig. 4. During the second movement of the arms, by which they are brought to the position shown in Fig. 3, the knees are flexed, and the legs drawn up. For strong swimming, the knees are drawn well up under the body,

FIG. 4.—CHANGING FROM FIRST TO SECOND POSITION.

a position which cannot be assumed except in the water, or with the body suspended by a belt. The second movement of the legs is executed with the third movement of the arms, the legs being thrust downward and outward, assuming at the end of the movement the position shown in Fig. 1.

By the aid of a teacher, these movements may be easily acquired by the following method: The pupil being placed in water not higher than his shoulders, seizes one end of a stick, the other end of which is held by the teacher, who stands in a boat or upon a pier. The first thing the pupil should do is to acquire the ability to balance himself in the water. A firm hold upon the stick enables him to maintain his position, and by degrees he learns to flex the back in such a manner as to keep the head above water and the heels near the surface.

Having acquired his balance in the water, and

gotten the idea of the position to be assumed, the pupil takes his first lesson in leg movements. In swimming, the arm movements and leg movements are executed together, with the exception that the first arm movement is made without simultaneous movements of the legs, the two movements of the legs being executed only with the second and third arm movements. In order to establish the proper rhythmical movement, the teacher counts for these combined movements, "One — two — three, one — two — three, one — two — three," the time given to "two" and "three" being each one half that given to "one." In counting for the leg movements, only "two" and "three" are counted, a pause of equal time being substituted for "one."

After practising the leg movements for a few minutes, the pupil is supported in the water by means of a belt passed around his body in such a position as to balance him in the water. The belt is attached to a rope supported at the end of a stout pole, one end of which is grasped by the teacher, who thus supports the pupil in the water very much as he might a large fish attached by his back to a hook and line suspended at the end of a long pole. The pupil is now made to execute the arm movements, keeping time to the count, "One — two — three, one — two — three," the movements being made in the order above described. After practising the arm movements for a time, the arm and leg movements should be combined, remembering that the leg movements are made only with the second and third arm movements, the legs resting in the position shown in Fig. 4 during the first movements of the arms.

After the pupil has acquired a little confidence, and has learned to combine the movements fairly well, he is provided with a swimming-belt and cast loose into the water to navigate himself. In a short time, if he has given good attention to his instruction, he will be able to move about in the water with ease and confidence. Then the floating power of the belt may be gradually decreased, either by lessening the number of corks; or if an inflated rubber belt is used, by letting out, from time to time, a little air.

It is well for pupils to practise the above-described movements by resting the center of the body upon a small raised platform or a camp-chair, as shown in the accompanying cut. By this means the muscles employed in swimming may be developed, and the ability to co-ordinate the proper movements may be increased, so that much more rapid progress will be made while the pupil is in the water.

Lessons in swimming should constitute a part of the regular course of education in our public schools; and if teachers would sometimes arrange to take classes of boys and girls separately, to a suitable place, being careful to surround the exercise with proper precautions, it might be made not only interesting and healthful, but the knowledge thus gained prove of much benefit all through life. There is not one boy, and probably not one girl, in a hundred who would not be delighted with the opportunity thus afforded them of engaging in a natural and healthful exercise, and at the same time becoming proficient in the art of swimming.—*J. H. Kellogg, M. D., in Education Extension.*

VITALITY AND MODERN LIFE.

By vitality I mean the power to take the materials about one and to make them a part of one's self. Stated negatively, it is the power to resist the disintegrating influences which are always operating upon one's life. Upon the maintenance of vitality depend most things that make life worth living, and, in the end, life itself. . . .

The large bulk of the early impressions which come to children are received either directly or indirectly through muscular contraction. One of our modern definitions of thought is that it is a faint recalling in some way of past muscular actions,—dried sections, so to speak, of actions, or skeletons of something which has come through muscles with their nerves. One of the large and apparently main requirements in many of the schools, in the generation just preceding ours, was that of keeping still. The significance of this in regard to the development of the nervous system and the child's chief source of information will perhaps be evident. Varied muscular contraction is the chief source of the development of the nervous system, and yet to keep children still was one of the main requirements of that educational system which looked to the same end. City life, with its close quarters, limited playgrounds, little sunshine and air, does not encourage vigorous out-of-door play. This tendency away from play is emphasized by the increasing bookishness of our whole generation. Our children go to school where they keep pretty quiet even now. They do an immense amount of reading and thinking, the hours and inclination for play are dimin-

ished, and the hours and inclination for intellectual activity is increased. Thus we see in the lessening of vigorous out-of door play of children, one of the greatest factors of modern life, tending toward a lack of full neural development, and also a lack of that power which can only come through such plays as are instinctive in every wholesome child.

The heavy work of the world is now done by machinery. The introduction of the use of steam and electricity has taken away from the muscles of man the bulk of the heavy work, which during all the ages has made him strong and enduring, and able to bequeath these qualities in increasing quantity to his children.

The elaboration of material means finer, the production of material, coarser, work; so with the balance of emphasis now being placed on elaboration, rather than on production, we find a second great cause tending to lessen the muscular work done by adults.

Vigorous and varied muscular work causes one to breathe deeply, the heart to beat strongly, the skin to perspire, and the individual to demand more food. All the organs concerned are brought and kept in a state of increased efficiency by such legitimate and natural use; the blood is purer, the brain better nourished. The individual is constantly being remade. As an old tissue is broken down by work, it is replaced by new; thus muscular work is one of the greatest means of renovating or rejuvenating the tissues. While the adult does not need to exercise for purposes of neural development, he still needs to exercise more or less for purposes of health; in other words, in order to keep the heart and lungs and the digestive system and nervous system in that condition of efficiency which results in the highest capacity. Parents brought up without any notion of the necessity of muscular work, and not being compelled by sheer necessity to take muscular exercise, seem to be unable to bequeath to their children that inheritance of vitality which is normal, and to which every child has a right. Thus the gradual taking away of muscular work from the race is resulting in a condition of older tissues, less vitality, and less virility. The full results of this are only shown after several generations.— *Luther Gulick, M. D., in Physical Education.*

FOOTBALL IN YE OLDEN TYME.— King James the First, though not averse to martial exercises, disliked and condemned football as not one of "those exercises apt to the furniture of a gentilmanne's personage, adapting his body to hardnesse, strength, and agilitie." As early as 1458 it was decreed and ordered by the Parliament of Scotland "that football and golf be utterly cried down and not to be used."

Carew, a writer of the time of James I, describes "hurling," a kind of football played in Cornwall. "The ball in this play," he says, "may be compared to an infernal spirit, for, whosoever catcheth it, fareth straightways like a madman, struggling and fighting with those that go about to hold him. It is accompanied with many dangers, some of which do even fall to the players' share; for proof thereof, when the hurling is ended, you shall see them returning home as from a pitched battle, with bloody pates, bones broken and out of joint, and such bruises as serve to shorten their days; and yet all is in good play, and never attorney nor coroner troubled for the matter."

An extract taken from Sir Thomas Elyot's "The Boke called the Governour," published in 1531, runs as follows: "Some men wolde say, that in mediocritie, which I have so moche praised in shootynge, why shulde not boulynge, pynnes, and koytyng be as moche commended? Verily, as for the last two to be utterly abjected of all noble men; in likewise foote balle, wherein is nothynge but beastly furie and extreme violence; whereof proceedeth hurte, and consequently rancour and malice do remaine with them that be wounded; wherefore it is to be put in perpetuall silence."— *N. Y. Medical Times.*

CYCLING AS A SEDATIVE.— One of the many salutary influences claimed by the advocates of the wheel in the substitution of this mode of open-air exercise for narcotic drugs is the relief of neuralgia, "nervousness," insomnia, and other disorders of the nervous system. It is claimed that since the rage for wheeling has become so general in Chicago, the number of opium and morphine habitués has perceptibly decreased, and that many of the thirty-five thousand victims of the habit in that city are finding relief through a spin in the open air rather than by a resort to their favorite drug.— *Sel.*

ALL the world 's a road,
And all the men and women merely riders.
They have their tandems and their safeties,
And divers other wicked vehicles;
And each one in his time
Rides in various ways.—*Sel.*

CONDUCTED BY

MRS. E. E. KELLOGG, A. M.

ONE MOTHER'S WAY.

"MAY we go to the river, mama? Ed. Taylor says he found some lovely stones down there yesterday, and we want to get some. Please let us go, mama."

I looked up anxiously, wondering what the mother would say, how she would meet the request of four-year-old Fred and his little sister,— a request even more loudly spoken in their features than in words.

I had reached my friend's Idaho home from the East only the day before, and one of my first impressions, as I took in her immediate surroundings, was the danger to her children which lay in the swift, treacherous Snake River, which ran its weird course not far from the house. I had not mentioned the subject, but the child's question served to emphasize my thought, and I eagerly awaited her answer. It was but a moment, and there was no suggestion of annoyance in face or voice, as she said in her animated way: —

"I have been wondering how it would be for you to have a little river of your own in the back yard. I will give you each a strong iron spoon, and you can dig a big ditch instead of a well, as you generally do. Then you may dip water from the barrel out there to fill it, and have a canal something like the one we saw when we went driving with Mr. Clark last week."

"O," exclaimed Fred, "that will be fun! Where are the spoons? We will dig a big one, won't we, Ruthie?" And full of enthusiasm they set about their work, where I found them half an hour later in the mysteries of head-gates, brakes, and other features peculiar to an irrigated country.

The larger river had been quite forgotten in their absorbing interest in their own smaller one; the children had suffered no sense of restriction; there had been not a trace of antagonism between the mother and her little ones; and when, toward evening, she suggested that we all take a walk to the river, and gave the children a basket in which to gather stones, there was a manifest happiness which evidently found its highest expression in the mother's presence.

The next morning proved cold and sunless, and I heard my friend say to her husband, unnoticed by the children: "I wish you would bring in a pan of that dry sand from the back yard. It won't do for the children to go out in this cold wind, and I must plan to entertain them indoors."

Not long after breakfast Fred announced his intention of going out to see the canal of his digging the day before, and was immediately followed by Ruthie's, "Me go too."

Taking no apparent notice of his remark, the mother said: "Fred, did you ever hear of a sand garden in the house? I read of one a few days ago; and if you like, you and Ruthie may make one."

Of course the boy was all attention, and full of questions, while the mother spread upon the floor several large newspapers, and then, going to the kitchen, closely followed by the children, she brought in two basins of sand and some wooden toothpicks, with some bits of colored paper, and placing the basins on the floor, showed them how they could stick the toothpicks in the sand for trees, and bits of colored paper for flowers.

All thought of going out of doors was forgotten as the little ones, with an occasional hint from mama, and much assistance to Ruthie from Fred, arranged and rearranged their trees and flowers. An hour passed before the sand garden began to pall, then Fred ran to the window, and was evidently meditating an out-of-door excursion, when his mother asked, "Fred, where are those stones you gathered yesterday?"

"They are in the shed. Do you want them?"

"Yes; I've been thinking of a nice game you might play with them."

Fred ran to get the stones, while mama removed the sand garden, easily gathering up that which was spilled on the papers. She then sent Fred to the kitchen for the clothe-spin bag, which he presently came dragging into the room.

"Now," said mama, sitting down on the floor, "I want you to make a ranch, and teach Ruthie how to make one. You see, you can make the fence of the clothes-pins, laying them down end to end, and using one for a gate; then play that the little stones are cows and horses, and put them in the fields."

It took but a few moments, and the mother resumed her work, while the children busied themselves in making fields and driving cattle till dinner-time, after which the bright sunshine permitted the renewal of canal digging in the back yard.

Going out to watch them, I was struck with the fact that, although they helped themselves freely from a barrel of water by the side of the house, their clothes were not wet or soiled, and remarked upon it to their mother.

"That, I think," she said, "is largely the result of my teaching. Fred has always had a passion for playing in the water, and I knew I must indulge him as far as possible, if I would keep him from the river during his toddling years. As soon as he could sit at the table in his high-chair, I often gave him a spoon with two tin cups and a little water, which he could pour from one to the other, but I made him understand that if he got his dress wet, it was to be taken away. Of course I was obliged to take it away from him occasionally at first, but he soon began to exercise care, and now he seldom has an accident while playing with water; and it has been the same with Ruthie. They often play with sand and water, making mud pies the whole forenoon, without soiling their clothes or hands, something that I am very prompt to commend them for, so that they really pride themselves on their care in this direction. Of course I always provide them with spoons and cups, so that they may have no excuse for putting their hands into the water.

"I have a neighbor who, when her little boy asks for a spoon to make mud pies with, tells him a stick is good enough, and refuses him a cup for the purpose, and then complains because he gets his hands and clothes muddy. The same neighbor says to her boy when he asks to go to the river: 'No, you can't go to the river; if you do, I 'll punish you,' with the result that he steals away, and she is kept in a constant state of fear lest he be drowned.

"I make many mistakes in regard to my children, but I try to regard their reasonable wants, and make it a point to say to them whenever possible, "Do this," rather than, "Don't do that." It is my theory that if we give sufficient attention to the *positive* in training a child, the *negative* will take care of itself."

"But," I argued, "few mothers have that quickness of suggestion — that abundance of resource — which comes to you so naturally. The average mother is so slow that the thing she would not, is done before she is ready with her, 'Do this.'"

"You give me too great credit," she replied. "I am not quick or resourceful above the average mother. I simply plan ahead, anticipating so far as I may my children's wants. That canal device has been in my mind some time, awaiting a request to go to the river. I know that such requests are sure to come, and I try to hold myself in readiness for them. The stones we gathered and brought home were for a definite purpose. I suggested that they use them for cattle yesterday. Next time I shall propose that they make a village, and use them on either side of the street to represent houses — the larger ones for churches, stores, and station — and I shall give them some wooden toothpicks for the railroad ties.

"Toothpicks can be used in so many ways. A few days ago I bought a nickel's worth of dried peas. Some stormy day I shall soak them, and with some toothpicks teach the children how to make furniture and toys after kindergarten fashion. It will require only a few minutes of my time, and, with an occasional suggestion, they can amuse themselves in that way for several hours. I have already stored up in my mind hints for the occasion when it comes — chairs, tables, windmills, and other things which they can make.

"Another suggestion I am holding in readiness. Fred is learning to count; and he is ambitious to reach one hundred. I shall soon fill a restless hour with the suggestion that he count one hundred by taking ten little butter-dishes, and putting ten beans in each. I have a cup of beans in waiting for the purpose.

"Some pleasant day I am going to ask him to see how many kinds of leaves he can find in the yard; I have an old book which I shall give him for a leaf album, and encourage him to remember the names of as many leaves as possible.

"O there is no end of devices for amusing children, but you see I am not to be credited with quick wit, because most of my suggestions are the result of careful thought. I am firm in the belief that so

long as I can keep my little ones happily and healthfully active, they are developing what will not need to be rooted out later.

"The neighbor to whom I referred seems to act on the principle that diligence in the pulling up of weeds will make a beautiful garden, forgetting that a healthy soil must needs produce growth of some kind; she is bringing up her boy on 'don'ts' and 'stops'! Of course his activity must have an outlet somewhere, and the result is that he simply goes from one prohibited line of action to another. I tremble when I think of the result of such training upon his mature years."

My friend's words opened up to me new vistas in the mother's kingdom,— vistas which grew broader and more far-reaching as I studied her during the weeks of my visit. As the plant in rain and sunshine, so her children's natures seemed to unfold, naturally, beautifully. I seldom heard the word "don't" from her lips. The little ones suffered no sense of repression, but were actively employed from morning till night, with never a thought that they were in any one's way, and furnished a happy contrast to the child of negative training, whom I overheard tell Fred as they were playing together one day, "Harry Brown started to school yesterday; I guess his mother's glad; she won't have to worry so much now."

Here was the thought that a child is necessarily an incumbrance,— something to be put out of the way if possible,— harbored in the heart of one of those of whom Christ said, "Forbid them not, for of such is the kingdom of heaven."

As I turned from his warped and irritable nature to the naturalness and glad abandon of Fred and Ruthie, I realized as never before the necessity of centering attention upon the flowers, rather than upon the weeds that would choke them — the careful cultivation of the former, leaving to the latter no chance for growth.— *Adelia Cobb, in Christian Work.*

SANITARY DISH-WASHING.

PLENTY of hot water and clean towels are the essential requisites for expeditious and thorough dish-washing. A few drops of crude ammonia added to the water will soften it, and add to the luster of the silver and china. Soap may be used according to circumstances; all greasy dishes require a good strong suds. If the dishes have not been scraped clean, the crumbs should first be rinsed off in a pan of tepid water without a dishcloth, then carefully washed in clean hot water.

There should also be provided two dish-drainers, or trays, unless there is a stationery sink with tray on which to drain the dishes. For washing glassware and fine china, papier-maché tubs are preferable to anything else, as they are less liable to occasion breakage of the ware.

If many dishes are to be washed, frequent changes of water will be necessary, as the first soon becomes either cold or dirty. Perfectly sweet, clean dishes are not evolved from dirty dish-water.

The usual order given for the washing of dishes is glasses, silver, fine china, cups, saucers, pitchers, plates, and other dishes. This is, however, based upon the supposition that cups and saucers are used for beverages, and that plates are soiled by the use of various greasy foods; but in families where tea and coffee and animal foods are dispensed with, and saucers are used for grains with cream dressing, the plates are often cleaner than the saucers, and should be washed first. The general rule to be followed is always to wash the dishes least soiled first, and all of one kind together.

If for any reason the dishes must wait for a time before being washed, the best plan is to pack them carefully into large pans, cover with warm water, and let them soak. When ready to wash them, prepare hot suds for washing, and clear water for rinsing in additional pans. Do not use too hot water, as a high temperature will break glass, and "check" the enamel of ordinary ware.

All dishes used for milk should be first thoroughly rinsed in cold water before being washed in hot water or suds.

Be sure that the inside of all cups and pitchers is thoroughly clean. It is a good plan to have a mop made by fastening finger lengths of coarse cotton twine to a suitable handle, for washing the inside of pitchers.

In cleaning forks, spoons, or cups which have been employed in eating or beating eggs, rinse them in cold water before putting them into hot suds, as hot water cooks the egg, and causes it to adhere. Common table salt is said to be excellent for removing the tarnish from silver. Clean Dover egg-beaters by beating in a dish of cold water or by holding under a stream of cold water from the faucet, then

carefully rinse and wipe perfectly dry. Do not put the upper part of the beater into hot water, as it will remove the oil from the wheels so that they will not work easily.

Grain-boilers and mush-kettles should be allowed to cool, then filled with cold water and left to soak during the meal hour, when they can be easily cleaned.

Tin dishes should be washed with hot suds as soon as possible after using.

All tin and iron dishes should be thoroughly dried before putting away, to prevent rusting.

For cleansing iron pots, use soft water and soap or washing soda, with a wire dish-cloth or kettle-scraper. If the food adheres to the sides, fill with cold water and soak.

Kettles and all dishes placed over a fire should be cleaned on the outside as well as the inside. To remove the soot, rub first with pieces of dry paper, and afterward with damp paper, then wash with hot suds and a cloth.

Kettles and saucepans burned on the inside may be cleaned by putting a little cold water and ashes in them and allowing them to soak on the range until the water is warm.

Porcelain and granite-ware utensils stained from food burned on may be cleaned after soaking for a time in a solution of sal soda, which may be prepared by pouring boiling water over the soda in the proportion of two pints of water to one pound of sal soda, and stirring until dissolved. It may be prepared in quantity, and stored in a stone jar until needed.

Wash woodenware and bread-boards with cold water and sand soap. In scraping dough from the bread-board, always scrape with the grain of the wood, and be careful not to roughen the surface.

Steel knives and forks with ivory or wooden handles should not be put into dish-water. Hot water will expand the steel, and cause the handles to crack. Wipe them thoroughly with the moist dish-cloth, scour with bath brick, and wipe with a dry towel.

No dishes or utensils can be well cared for without good, clean dish-cloths and towels, and plenty of them. An excellent dish-cloth may be either knit or crocheted in some solid stitch from coarse cotton yarn. Ten or twelve inches square is a good size. Several thicknesses of cheese cloth basted together also makes a good dish-cloth, as do also pieces of old knitted garments and Turkish toweling. If a dish-mop is preferred, it may be made as follows: Cut a groove an inch from the end of a stick about a foot in length, and of suitable shape for a handle; cut a ball of coarse twine into nine-inch lengths, and lay around the stick with the middle of the strands against the groove; wind a fine wire or cord around the twine to fasten it in the groove; then shake down the twine, so it will lie all one way like a mop, and fasten to the handle by tying a second cord around it on the outside.

Towels for drying dishes should be of three different grades,— fine ones without lint for glass, silver, and fine china; coarser ones for the ordinary tableware; and still another quality for pans, kettles, and other kitchen-ware. A convenient size is a yard in length and half as wide, with the ends hemmed. As to material, fine-checked linen is usually employed for glass and silver towels, and crash for ordinary dishes, while for iron and tin-ware, towels which have become somewhat worn, or a coarse bag opened and hemmed, may be used. Old half-worn table-cloths may be made into excellent dish-towels.

It is of the greatest importance that all dish-cloths, mops, and towels be kept perfectly sweet and clean. Greasy dish-cloths or sour towels are neither neat nor wholesome, and are a most fertile source of germs, often breeding disease and death.

After each dish-washing, the dish-cloth, towels, and mops should be thoroughly washed in hot water with plenty of soap, well rinsed, and hung to dry either upon a line out of doors, or a rack made for the purpose near the kitchen range. If care is taken to scrape the dishes clean before washing, and to change the suds as often as it becomes dirty, the towels will not be hard to keep clean. Those used during the week should go into the wash as regularly as other household articles. E. E. K.

RAISIN' BOYS.— "My dear woman," exclaimed the settlement worker, "how can you give your poor baby such things to eat? Here the little thing is only eighteen months old, and you are feeding him as if he were twenty-five years old, and had the stomach of an ostrich."

The mother had just given the little one, weaned some weeks before, his morning meal. It consisted of a cup of coffee, a plate of cucumbers, four cold pancakes, and a slice of watermelon.

"Oh, them victuals is all right," returned the mother, picking up the puny and ailing child. "No," she sighed, "he ain't very well, that 's a fact, but it ain't his food. I ain't never had no luck raisin' boys, anyway."— *Will Carleton, in Every Where.*

NERVOUS CHILDREN.

An increased tendency to nervous disorders in childhood is a characteristic of the present age. Children now suffer from various symptoms which formerly were uncommon except in advanced life or among confirmed invalids.

Some of the symptoms thus observed are extreme exhaustion after slight overexertion, neuralgic pains in the head or back, a tendency to hysteria, and, on the other hand, an abnormal craving for excitement.

Parents of children who suffer in this way from "nervous" symptoms should look the matter squarely in the face, and ask themselves if they are not in part to blame.

One of the common mistakes of parents is that of allowing their children to share in the pastimes and pleasures of their elders; pastimes and pleasures which in many cases are of too stimulating a character for a child's more susceptible nervous organization. The fact that this is done out of affection for the children, and from a desire for their companionship, does not render it less harmful.

Again, children are too frequently granted the things for which they ask or cry, without regard to the wisdom of their desires. It is a mistake to suppose that the will-power of a child is weakened by denying him that which gives him momentary pleasure.

The tendency toward making children prominent in the household, while not to be condemned altogether, may easily be carried to excess. A child, even at an early age, should be allowed to play and to spend some time in amusing himself. When the bed hour comes, he should be put to bed; and it is best that this should be done without rocking or walking. The hours of sleep should be long.

If any unusual or unnatural habits are developed by the child, the physician should examine him carefully. In nearly every case some local irritation will be found, the relief of which will remedy the evil. The child's clothing should fit loosely.

The hysterical nature of the child is developed by "showing him off," or by relating his exploits before him. Constant scolding tends to make him less tractable.

Out-of-door air is necessary to the child's health. Play in the open air supplies the physical wants of a child better than the restraints of carpet and furniture.— *Youth's Companion.*

HOW TO PUNISH CHILDREN.

Punishment, like reward, must be adapted to the feelings and pleasures of the child, and therefore few absolute rules can be laid down for its regulation. For bold-spirited children, restraint in a closet may be useful, but for a timid child it will be hurtful. A child who likes eating may be punished through his stomach; one who is anxious to possess may be denied the object of his wishes; one who is selfish and quarrelsome may be obliged to play alone, and not permitted the advantages of uniting with the companions to whom he has behaved badly.

But whatever the kind of punishment, it must be administered as an act of justice and necessity, not as the effect of revenge or anger. Otherwise the child believes himself punished because his nurse or mother is cross, not because they have found it necessary to restrain his evil disposition.

The incessant scoldings and upbraidings usually heard among persons who, from ignorance or disinclination, are unfit to bring up children, are very injurious. The little ones may hear the everlasting phrases, "Don't do so!" "Let that alone!" "Be quiet!" "Don't make such a noise!" "How tiresome you are!" "I never saw such a child in my life!" "I'll tell your mama!" but they soon cease to regard them, and by such a means the habit of disobedience is early taught and confirmed.

IF I KNEW.

If I knew the box where the smiles were kept,
No matter how large the key
Or strong the bolt, I would try so hard,
'T would open, I know, for me.
Then over the land and the sea, broadcast,
I 'd scatter the smiles to play,
That the children's faces might hold them fast
For many and many a day

If I knew a box that was large enough
To hold all the frowns I meet,
I would like to gather them, every one,
From nursery, school, and street,
Then folding and holding, I 'd pack them in,
And turning the monster key,
I 'd hire a giant to drop the box
To the depths of the deep, deep sea.

— *Sel*

THE PINEAPPLE.—The sugar-loaf Havana pineapples, which reach here about the first of June, are the best pineapples for canning. In preparing them, a silver knife and fork should always be used, as the corrosive acid which the pineapple contains acts upon steel, and imparts an unpleasant flavor to the fruit. It is this same corrosive property that makes pineapple juice a valuable remedy for diphtheria. It will often cut out the diphtheritic mucus when nothing else is able to dislodge it.

An interesting fact relative to the pineapple is that it is a species of air-plant, its nearest relative, botanically considered, being the Tillandsia, or long gray moss, that veils most of the forests of the South from Florida to the Dismal Swamp of Virginia.

A very pretty way to serve pineapple is to cut the fruit into cubes or slices, always removing the core, which is both hard and indigestible, and sprinkle with a half cup of orange juice. Set on the ice until thoroughly chilled. Then sift over it four tablespoonfuls of sugar, pile in a glass dish, and serve.— *Sel.*

THE ADVANTAGE OF OUTDOOR TRAINING. — A lady of wealth and influence, noted for model specimens of children, was asked by a friend and mother, "Why are my children sickly and croupy, and yours always free from such conditions?" The reply was: "You rear your children indoors, I rear mine out; yours are educated to be waited on by your servants, I discipline mine to wait upon themselves; my children are early to bed, you give parties for yours with late hours, and allow them to attend parties and keep late hours from home, fashionably dressed; my children have plain, wholesome food, adapted to their years, yours eat sweetmeats, rich and highly seasoned dishes, and are overfed generally; I teach mine to love nature and to feel that there is nothing arrayed so finely as the lily of the field, the bees and the butterflies; that there is nothing so mean as a lie, nor anything so miserable as disobedience; that it is a disgrace to be sick, and that good health, good teeth, and good temper come from plain food, proper clothing, plenty of sleep, and being good."— *Sel.*

NUTTOSE, AND SOME RECIPES FOR ITS USE.

THIS is a pure product of nuts. It is intended as a substitute for meat, which it completely replaces dietetically, having nearly twice the nutritive value, while it furnishes the same elements and in a form much more digestible, and wholly free from the objectionable features of meat. Nuttose may be prepared and served in the same manner as the various forms of flesh food. It so perfectly resembles meat in appearance and flavor, as well as nutritive properties, that many persons find it difficult to distinguish the difference. The following are a few recipes for the use of this new article of food: —

Stewed Nuttose with Tomato.— Stew the nuttose; and season with salt and a cupful of strained stewed tomato to the pint of nuttose.

Potato Stew with Nuttose.— Prepare and stew the nuttose, and when nearly done, add some thinly sliced potatoes, and cook together until the potatoes are tender. There should be enough liquor in the nuttose so that additional liquid will not be needed for the potatoes. Season with salt and serve.

Nuttose Hash.— Chop cold boiled potatoes and nuttose, equal parts. Put into a saucepan just enough of the liquor obtained from stewing nuttose to moisten well the chopped foods, heat thoroughly, tossing and turning until equally hot throughout, and serve. Salt for seasoning should be added to the liquid before introducing the chopped foods. A little chopped celery may be used with the potato if preferred. The stewed nuttose should be served separately.

Nuttose with Green Vegetables.— Green peas, wax beans, beet greens, shelled beans, and tomatoes are all excellent cooked with nuttose. Add the nuttose in about the proportion of two thick slices of nuttose, cut into small pieces, to one pint of shelled peas or one pound of canned peas. Cook together until the vegetables are done, and serve without other seasoning than a little salt.

Nuttose Sandwich.— Slices of nuttose placed between thinly sliced white or graham bread, biscuit, or wafers, spread with nut butter, make a most excellent sandwich.

Nuttose with Lettuce.— Thinly slice the nuttose, and cut or chop into small pieces. Arrange the lettuce in a salad bowl, the larger leaves around the edge, the light ones in the center. Fill the center and interstices between the leaves with the prepared nuttose, cover with any preferred dressing, and serve.

E. E. K.

THE USE OF ANTISEPTICS AND DISINFECTANTS IN TYPHOID-FEVER NURSING.

An antiseptic is an agent which prevents putrefaction. A disinfectant destroys infecting material. As typhoid fever arises from germs which cause putrefaction, it is important to destroy the microbes which give rise to the disease as well as to prevent the putrefaction which furnishes the material for them to live on. It has already been shown that all cavities and orifices of the body are liable to become breeding-places for disease-producing germs, as well as centers from which the poisons of disease may enter the circulation. Therefore all the orifices of the body which can be reached directly, as the mouth, nose, ears, and rectum, should be kept cleansed with some mild antiseptic solution, as hydrozone and saturated solution of boracic acid; listerine, one part in four; or, when there is nothing better at hand, a simple solution of baking-soda, a teaspoonful to a pint of water. Equal parts of strained lemon-juice and glycerine mixed with three to four times as much water will also tend to keep the parts clean and to prevent putrefaction. Any other strained fruit juice, if not too sweet, will answer for cleansing the mouth. The fresh juice of pineapple is very good for this purpose. It is also very important, as has already been remarked, to keep the surfaces whole, and the mucous membranes and the skin moist and flexible. This may be done by keeping the parts well oiled with some mild unguent, like vaseline.

As the principal development of the typhoid microbe occurs in the lower part of the small intestine, it is important to use every measure to lessen the growth in the bowels of the poisons upon which it feeds. Years ago, when the old idea of quelling fever by depletion, through bleeding and blistering, held sway, from twenty-five to thirty per cent. of typhoid-fever cases were lost. Later, under mild purging, more careful dieting, and good nursing, the mortality was reduced to forty per cent., while under the use of cold water treatment to allay the fever, it was still further reduced to seven per cent. At present, aided by the careful and judicious use of antiseptics, the mortality bids fair to be brought to one or two per cent. Of course, in order to obtain such favorable results, the patient must have the benefit of water treatment to keep down the temperature, as well as careful diet and scrupulous cleanliness. It is indeed a satisfaction to know that every year we are becoming more able both to prevent and treat disease in a rational manner.

The administration of internal antiseptic remedies should be in the hands of a competent physician, though much can be done to keep the alimentary canal clean and to prevent morbid material from accumulating, by lavage of the stomach, copious enemata to the bowels, and regulation of the diet. The nurse's use of disinfectants applies especially to the patient's surroundings. The typhoid-fever infection is in severe cases found in all the excretions and secretions of the body; but the principal danger is from the bowel discharges.

When the patient becomes unconscious, and the discharges from the bowels and bladder involuntary, the bedding and clothing of the patient are likely to become soiled by them. If these are carelessly spilled on the carpets or rugs or on the floor, and allowed to dry, the air of the room soon becomes filled with the dried fecal matter, and then not only are all the family in danger of the infection, but the patient is constantly reinfected by taking again into his body the germ-laden excretions which fill the air of his room. One of the most important parts of fever nursing is to prevent outside articles from becoming soiled, and if this does occur, to see that the foul matter does not dry upon them. No carpet should be used in a fever patient's room, and any

rug or mat which becomes soiled should at once be either washed and disinfected, or burned. Bedding and clothing should be immediately removed, and put into some disinfectant solution. A soiled sheet should never be covered with a clean one. The less the foul matter is allowed to spread, the easier will it be to destroy the germs and prevent the spread of the disorder.

Typhoid germs will multiply outside the body wherever there is sufficient organic matter for them to feed on, and the temperature is suitable for their growth. Cold does not affect their vitality; in fact, it rather preserves it, as they may be kept alive in ice indefinitely. They cannot, however, withstand the action of heat. Indeed heat, fresh air, and sunlight are among the most powerful disinfectants.

Four parts of boiling water to one of fecal matter will destroy the typhoid-fever microbe, but the safest way is to receive the discharges on sawdust, and burn them at once. After the fire has done its work, we may feel safe about the germs, and need not fear that we shall ever drink them in our water-supply or swallow them with our food.

If the discharges are to be emptied into sewers, they should be received into vessels in which is a solution of carbolic acid of the strength of five parts of the acid to one hundred of water, or else a solution of bichlorid of mercury, at least one part to five hundred of water. The carbolic acid solution is best for clothing, as it does not discolor or stain the linen as the bichlorid does. After immersion in either of these solutions for three or four hours, wring the clothes out with a wringer; then put into a boiler and boil for twenty minutes or half an hour. When there are blood-stains, they may be washed out by first stirring the garment in cold water with a stick, after which the soiled water should be carefully drained off into another vessel containing a strong solution of the disinfectant. This should be allowed to stand for several hours before being emptied into the drain or pit.

A saturated solution of copperas has also moderate disinfecting properties. Chlorid of lime is another substance which may be used as a disinfectant for discharges. It gives off chlorin, the disinfecting agent, most easily by being mixed with equal parts of hydrochloric or nitrous acid. The acid should be diluted with three or four parts of water before mixing with the lime. The chlorid of lime may also be used by simply mixing with water to the consistency of a thin paste. Quicklime may be used for the same purpose, but it soon loses its disinfecting properties when exposed to the moisture of the air, and slacked lime is a very poor disinfectant.

Whatever disinfectant is used, a portion should always be kept in the vessels into which the discharges from the bowels and bladder are received. These should not be emptied at once, but set away in a tightly covered vessel for at least four or six hours, to give the disinfectant time to destroy the infection. After they have been poured into the sewer-pipe, it should be well flushed, and some of the disinfecting solution turned into the drain. To keep the waste-pipes from getting foul, and to cut off the slime accumulated on the inside, a strong solution of sal soda or concentrated lye, three or four ounces to a gallon of boiling water, should be poured boiling hot into the drain two or three times a day. This will cleanse the inside of the pipes, and give the disinfectant solution a chance to reach the germs, and thus prevent infection from this source. If neglected, the foul matter will dry around the top, and above the point of flushing it will soon break up into fine, germ-laden dust, and infect the air of the whole dwelling. In the country, where there is no sewerage system, the discharges should never be deposited in the closet vault used by the family. Even with the best disinfecting of the discharges, we are never sure that the disease-producing microbes are all destroyed; and though only a few escape in each pail of discharges, the vault will soon be infected. The location of the out-house is often above that of the well; and if there is much wet weather, the vault is likely to drain into the well. This is indeed repulsive to think of, yet it is unfortunately the sad condition of many an otherwise healthful country home. The proximity of the well and the vault and the free communication between them is largely accountable for the fact that typhoid fever in the country is more apt to infect the whole family than in the city. Some member perhaps chances to take the fever while away from home, and comes sick with it into the family. With proper sanitary attention and the disinfecting of all discharges, the other members need not become infected. But these preventive measures being neglected, the whole family are soon ill, and death is very likely to result to one or more of the members. This is no fancy picture, invented to frighten people and lead them to be more careful, but, unfortunately, a plain statement of facts, a counterpart to which may be found in almost every farming community.

As before stated, the best measure for disposing of typhoid discharges is to burn them, even after they have been disinfected; but if this is impracti-

cable, they should be buried at some distance from the house, in a place where there can be no possibility of the excreta defiling the water-supply of either man or beast. They should never be deposited on the surface or buried in any ground sloping toward the family water-supply, be it either well or spring. To bury the discharges, dig a pit about four feet deep and two or three feet in diameter; in the bottom of this put from two to six inches of either copperas or quicklime, and every day cover the discharges there deposited with the same. When it is filled up to within eighteen inches of the top, cover six inches with the lime or copperas, and then fill up with earth, and dig a fresh pit. It may seem that this is a great deal of care to exercise in this matter, but it will involve much less real expense and work than if one, two, three, or more members of the family become ill, and have to be nursed for weeks or even months, to say nothing of the doctor's bill. And when it is remembered that the life of a father, mother, or some other member of the family may be sacrificed for the lack of such sanitary care, it does not seem a great task.

All food coming from the sick-room should be burned, and all dishes and silver used there should be at once covered with boiling water, and never washed with those used by the family. Those caring for the sick should never handle food or drink that they themselves are to use, or prepare it for any one else, without thoroughly washing the hands and changing the outside garments. Many an epidemic of fever has been traced to a dairy where the milking was done by some one with hands soiled with typhoid excreta, or the milk-can washed with water infected by the same poison; as typhoid germs grow very rapidly in milk, and without causing any change in the appearance of the fluid perceptible to the senses. Too much care cannot be exercised in this respect; and unless it is an absolute necessity, the one caring for the patient should not cook or handle the food for the rest of the family. The neighbors in the country, who are so well-meaning, and so ready to visit the sick, might be a great help if they would prepare the food for the afflicted in their own homes, and send it to them, so as to leave the well members free to care for the sick.

The room of a patient sick with a contagious disease should contain no upholstered furniture, no curtains which cannot be washed, and no carpet. When the room is vacated, either by the patient's getting well or by his death, both it and all the furniture should be thoroughly cleansed. Any brass or metal fixtures, as door handles, lamp trimmings, and the brass fixtures of metal bed-frames, should be thoroughly washed with the hot five-per-cent. carbolic solution, and all the wood-work and walls gone over with a swab of the same, or with the one-to-one-thousand bichlorid solution. All bedding should be ripped, and the contents thoroughly cleansed and disinfected. It is preferable that the mattress be of some cheap material, such as wood-shavings, husks, or straw, which may be burned; but if the under mattress be made of hair or some other expensive material, and has been protected by a rubber sheet or oilcloth, it may be disinfected by dry heat, or, better still, by a thorough steaming. The ticks of both the pillows and the bed should be washed and disinfected as before directed for the linen and clothing. If there is paper on the walls, it ought to be scraped off, the walls disinfected, and fresh paper put on. The wood-work should be freshly painted or varnished.

In case of death from typhoid fever, there is no danger from the body, provided proper sanitary precautions are taken. The corpse should be washed in some disinfectant solution, and all its orifices bound up with disinfected cloths. The casket should have a glass cover tightly fitted, which should not be opened to show the remains. If it is intended to transport the body any distance, the casket should be placed in a box packed around with sawdust which has been soaked in the bichlorid solution, one to one thousand parts, before mentioned.

While antiseptics and disinfectants, when used properly, are of great value in both the treatment and the prevention of disease, as many people use them, they only beget a false security, often leading to reckless exposure to the contagion.

It is sometimes advised to fumigate with sulphur for the purpose of disinfecting the room, carpets, curtains, bedding, and the like, but this is, at best, a very uncertain method of cleansing after contagion, and is not safe unless there is thorough cleansing and disinfecting done after the fumigation, as there is no evidence that sulphur will kill typhoid germs, and the burning of it usually afflicts the family far more than it does the disease-producing germs. Cleanliness is, after all, the chief reliance of the sanitarian, both in curing and preventing disease.

Too much care cannot be exercised in preventing contamination of the necessaries of life, such as air, water, food, and milk; for in this age, when there is centralization in everything, so many get their water, milk, and food supply from one source, that infection of the mountain stream above the town water-reservoir may mean sickness to hundreds and death

to scores. One case of fever at the dairy farm may infect all the milk of some city dealer, and it is impossible to compute the amount of sickness and the number of deaths thus due to some one's coming in contact with the sick and the milk at the same time.

The most important precautions in regard to infection to be observed in nursing typhoid fever may be summed up as follows : —

1. Do not forget that heat is one of the best and most useful disinfectants, and that it may be used to destroy germs in food, drink, or on clothing.

2. When typhoid fever is in the family, see to it that all food is well cooked, and kept carefully covered afterward.

3. Always remember that the safest way is to destroy by fire all dirt from the sick-room that is combustible, as all dust, especially that from the sick-room, contains germs more or less disease-producing, and disease germs are only properly disposed of when they are cremated.

4. Never disturb the dust and scatter it into the air by the ordinary means of sweeping, but carefully wipe it off the floor and furniture with a damp cloth, frequently washing the cloth out in the bichlorid solution. When a room is freed from dust by this method, it is made clean, while by any of the dry manners of sweeping the dust is only redistributed; and when thus scattered into the air, the patient is compelled to take it into the body with every breath he inhales.

5. The care about the discharges of the typhoid-fever patient should be kept up until all danger from the contagion is over. To be on the safe side, it is best to disinfect until after the temperature has been normal, and the discharges from the bowels natural, for at least ten days. When so much is at stake, it is better to be overcareful than to let any infecting material escape through carelessness.

6. Remember that all chemical disinfectants are very poisonous. Always be careful to label them, and put away under lock and key where no other medicines are kept. Be sure that they are never left for a moment within the reach of children.

SPECIAL CAUSES OF SIMPLE FEVER IN CHILDREN.

Worms get more blame than they deserve for causing fevers and other disorders of childhood. In many cases the symptoms are due to other causes. Still worms are not a myth, and are sometimes the source of attacks of fever or other ailments. The worms most common in children are the round and pin worms. Their ova are taken into the body with the drinking-water and from dirt swallowed by the child from the floor or ground containing some fou matter in which the ova are found. They may be taken in unclean milk, from particles of barnyard manure getting into it. Sterilizing the milk, boiling the water, and seeing to it that the child has a clean place in which to play will prevent the disorder by keeping the worms from getting into the intestines. After they are once there, they must be gotten out by giving them something that will make them sick. The treatment for worms will be considered in another paper, so here I will simply add that the only sure symptoms of worms is the finding of them in the stools, and that the secretions of a healthy digestive tract will usually destroy the ova of these troublesome parasites.

Local irritation is often a predisposing cause of simple fever. The excitement of the sexual organs arising from secret vice is sometimes the cause of fever in the young; eye-strain due to defective vision sometimes causes sickness at the stomach, vomiting, and fever whenever the child tries to study. This may often be remedied by properly adjusted glasses. In such cases a specialist ought to be consulted and the cause of the disturbance removed.

There are two diseases quite frequent in early childhood which often begin insidiously. These are tuberculosis and rheumatism. One of the first positive symptoms is the continuous moderate rise of temperature. It is not a simple, but a specific, fever which marks the outset of these serious and often fatal disorders; but it is so often mistaken for such that it is well to mention it in this connection. The steady, daily continuance of temperature rise, with increase in the height of the fever, should lead a mother or nurse to suspect something more than a transient cause which can easily be removed, and should lead to consulting a physician.

GOOD HEALTH
J. H. KELLOGG, M. D., EDITOR.
BATTLE CREEK, MICHIGAN.

CONDIMENTS.

By condiments are meant all substances added to food for the mere purpose of rendering it more palatable, but possessing no positive nutritive value in themselves. Mustard, vinegar, pepper, cinnamon, and various other spices are included in this category, together with salt, although the last-named article is by some held to be of the nature of a food, and supposed to supply some want in the body.

Mustard, pepper, pepper-sauce, cinnamon, cloves, cardamoms, and similar substances are of an irritating, stimulating character, and work a twofold injury upon the stomach. By contact, they irritate the mucous membrane, causing congestion and diminished secretion of gastric juice, when taken in any but very small quantities. This fact was demonstrated by the observations of Dr. Beaumont upon St. Martin. After several years' careful study of the relations of various foods, drinks, etc., to the stomach, Dr. Beaumont stated, in summing up his experiments, that "stimulating condiments are injurious to the healthy stomach." He often saw congestion produced in the mucous membrane of St. Martin's stomach by his eating food containing mustard, pepper, and similar condiments.

When taken in quantities so small as to occasion no considerable irritation of the mucous membrane, condiments may still work injury by their stimulating effects, when long continued. The stomach being at first excited to more than natural activity, afterward suffers from reaction, and is left in an inert, diseased state, incapable of secreting sufficient gastric juice to supply the needs of the system in digesting food. This final result is often averted for some time by increasing the quantity of the artificial stimulus; but nature gives way at last, and chronic disease is the result.

In experiments conducted in the Laboratory of Hygiene connected with the Battle Creek Sanitarium, we have found that the use of condiments does not increase the flow of either saliva or gastric juice, but causes an outpouring of a great quantity of protective mucus. When this becomes habitual, the individual is the subject of gastric catarrh, a disorder by no means easily cured. The writer quite agrees with the conclusions of the small boy who, having tasted horseradish for the first time, spat it out, remarking to his mother, "Mama, I think I won't eat that till it gets cold." Substances which are hot when they are cold are not fit to be eaten. The irritating and astringent properties of certain vegetable substances were doubtless put into them as warnings against their use by human beings.

In Mexico, where pepper, mustard, and other condiments are probably used more freely than in any other part of the world, gastric catarrh is an almost universal disease.

In the case of salt, there are several objections to be urged, which are at least cogent against its excessive use; and by excessive use is meant a quantity which causes thirst either at or after meals, occasioned by the feverish state of the stomach induced by the caustic properties of the saline element. According to Debove, physiological experiments have shown that salt, when taken in considerable quantities, interferes with the digestion of albumin. This statement agrees with the writer's own laboratory experiments, as well as with the experience of sailors, who, when making free use of salt meat, suffer from scurvy and a long list of symptoms indicating malnutrition and tissue starvation. Experimental evidence shows that human beings, as well as animals of all classes, live and thrive as well without salt as with it, other conditions being equally favorable. This statement is made with a full knowledge of counter arguments and experiments, but not without abundant testimony to support the position taken.

The author does not, except in rare instances,

advise the entire discontinuance of the use of salt; nevertheless, he believes that it may be greatly reduced in quantity by all who use it, without detriment, and with real benefit. Leriche and others have shown that salt, even in so small a proportion as one per cent., diminishes both the amount and the efficiency of the hydrochloric acid of the gastric juice, and thus gives rise to fermentation, one of the most common symptoms of indigestion, and a cause of many other morbid conditions.

Salted food is very hard of digestion; and when it is used for a long time, the stomach often fails to perform its functions. A piece of fresh fish which will digest well in one hour and a half, requires four hours after salting, according to Dr. Beaumont. — *J. H. Kellogg, M. D., in "The Stomach: Its Disorders and How to Cure Them."*

Milk as a Medium of Disease. — At a time like the present, when medical men in all parts of the world are considering, more and more, prophylaxis rather than cure, is it not well to combine in concentrating our energies on some of those causes of disease which enter our very homes, and even our own bodies?

Milk is an almost indispensable article of food, especially for children, and yet all scientific men know that it is an excellent medium for the growth of micro-organisms of every description. Many dairy cows are tuberculous. Epidemics of scarlet fever, diphtheria, and typhoid fever, traceable without a doubt to milk, are common. Shall we, the guardians of the public health, be silent? or shall we, by precept and example, urge upon the laity the necessity of boiling milk and cream before using them as food? We look hopefully for the day to come when all milk shall be sterilized in dairies, and delivered in sealed bottles.

Chloroform Anesthesia Dangerous to Meat-Eaters. — Some time ago Dr. Lauder Brunton called attention to the fact that death from chloroform anesthesia is probably due, not to the chloroform itself, but to the fact that chloroform arrests the elimination of tissue poisons, and that death is directly the result of the action of these poisons rather than of the chloroform. Dr. Brunton cited the fact that death from chloroform anesthesia is very rare in India, while it is becoming more and more common in England, which fact he attributes to the increasing use of meat as an article of diet in Great Britain.

Chloroform has long been a popular anesthetic in Edinburgh, but recently deaths from its use in that city have been very frequent. It is also noticed that gout is becoming very common. Both these circumstances are doubtless due to the increased consumption of meat resulting from the large importation of low-priced refrigerator meat.

Transmission of Tuberculosis by Meat. — In 1890 a commission was appointed to investigate this important subject. The commissioners arrived at the following interesting conclusions: —

The flesh of animals suffering from tuberculosis in an advanced stage is absolutely unfit for food, even for animals.

The flesh of animals in which the disease is limited to certain viscera is not itself infectious, but frequently it becomes highly infectious by contact with the knife used to remove the diseased tissues.

Healthy meat is sometimes infected by smearings from a knife previously employed in tubercular cases.

Such infectious matter, when rolled up inside "a roll of meat," *is not destroyed by roasting, baking,* or *boiling.*

Hard Work Healthful. — In these days of nervous exhaustion and premature break-down in health, conditions which are coming to be exceedingly common, there is a growing fear and dread of work. If the busy man finds himself ill, it is because he has worked too hard. If the society woman has a nervous headache, it is the result of "too hard work," — shopping, or some other light occupation. Thousands of persons drop out of important business and official positions, suffering from conditions which are supposed to be due to overwork. It is the opinion of the writer that a very small proportion of these persons are really overworked. The brain and nerves will bear an enormous amount of work, provided the rest of the body is kept in good condition.

Dr. Pye Smith maintains that "excessive eating is an abuse that tends to the injury of brain-workers more than any other cause.

"Many active brain-workers have suddenly broken down and fancied that it was due to brain fatigue, when as a matter of fact, it was due to overstuffing of their stomachs. The furnace connected with the mental machine became clogged with ashes and carbon in various shapes and forms, and, as a result, disease came; and before the case was fully appreciated, a demoralized condition of the nervous system was manifested, and the prosaic cause for the collapse was suppressed under the euphemistic 'mental overwork.'"

SCHOOL HYGIENE.[1]

So many questions have been handed in recently in relation to the habits of school-children and the hygiene of the schoolroom that we will devote our "Chats" this month exclusively to the consideration of this important and practical subject. The fact that all the children in most civilized countries are expected, or even compelled, to spend from five to fifteen years in the schoolroom, is sufficient evidence of the importance of school environment as relating to the mental and moral development of children.

That there is something wrong in the schoolroom is evident from the fact that the majority of school-children who have been long at school are pale, hollow-eyed, and have a more or less weakened and deteriorated appearance, and the longer the child remains in school, the greater is the evidence of injury presented by him.

Some years ago I was called to examine the students of a college, and in seventy-one out of seventy-four young women I found curvature of the spine, and not a few of them had floating kidneys, prolapsed stomachs, and various other physical deformities more or less grave in character. Similar examinations have been made in English schools with like results. The development of eye disease in the schoolroom is made evident by the increasing number of children found wearing glasses as the examination passes from the lower to the higher grades. Every year a multitude of school cripples are turned loose upon the world, provided with well-earned diplomas, but deprived of constitutional vigor, and hampered by dyspepsia, neurasthenia, weak lungs, weak backs, hollow chests, flabby muscles, and the various other elements of weakness which go to make up a feeble constitution. There is no question deserving more earnest attention from parents and educators than that of the physical influence of school-life upon the child.

PHYSICAL CULTURE IN THE SCHOOLROOM.— Should not teachers in all public schools give specific daily instruction in physical culture, correct breathing, sitting, standing, and walking?

Ans.— Certainly. And it is not only by verbal instruction, but by practise in breathing, correct standing and proper walking, that the deteriorating and deforming influence of school-life through continual sitting in the schoolroom may be counteracted. The position in which a boy sits, stands, and walks constitutes a mold in which he grows; his bones and muscles adapt themselves to that shape as he grows up.

By exercises which will extend the arms as in swimming,— movements in which the arms are raised and stretched out and thrown backward, so as to bring the chest upward and forward,— the tendency to spinal curvature may be counteracted. If such exercises were taken every day, and their use begun in childhood, spinal curvatures, flat chests, round shoulders, and similar deformities would soon disappear. I think no person should be allowed to teach school who is not competent to give proper instruction in sitting, standing, and walking, and to lead the pupils in proper exercises. It ought to be obligatory upon every teacher that he shall teach physical culture in connection with other branches. By spending six weeks at the Chautauqua School of Physical Culture a teacher can learn more upon this subject than he had ever dreamed of before. Under Drs. Seaver and Anderson he can get all the instruction in this direction which is really necessary; and by the practise of the principles there learned, the bad habits of school-children in sitting, standing, and walking, may be entirely corrected.

[1] From a lecture given in the Sanitarium parlors, Aug. 25, 1896.

TIME REQUIRED FOR SCHOOLROOM EXERCISE.— How much time should be given to daily exercise?

Ans.— It is astonishing how much can be accomplished in a short time, if it is properly used. The pupils might caper around in an aimless way, or jump up and down in a corner, and get some good out of even that sort of exercise, because it would send the blood coursing through the veins, and stimulate the lungs to activity, and so it would be better than nothing; but if the teacher knows how to make the most of the time, five minutes after each recitation employed in exercise would be sufficient to accomplish what is absolutely required.

But for proper, all-round development of the children, there ought to be a gymnasium in every school, in which exercises should be taken for at least half an hour every day. This should form a part of the regular school work, for there is mental training in muscular exercises; there is training of the nerve-centers, of the most important kind.

PHYSICAL APPEARANCE.— Should not pupils be instructed daily in reference to their physical appearance and personal bearing?

Ans.— Most certainly. A little girl once finished her evening prayer by saying, "O Lord, make us very stylish!" She had heard her parents talking about being stylish, like their neighbors, and she wanted the Lord to make the whole family stylish. And that is just what the Lord did when he made man. I imagine that if Adam and Eve could stand up here before you, you would see the most stylish-looking couple you ever looked upon. I do not think you would see Adam going bent over, with his chin sticking out and his chest hollow, but that he would move with a dignity and a majesty that would awe into submission every beast that lives.

THE SANITARY INSPECTION OF SCHOOLS.— Should not a public school board have a department of health, with a competent physician to visit all the schools under such board, inspecting pupils individually as to their physical condition, and giving proper directions to the parents how to protect the health of their children?

Ans.— Certainly. Every school ought to have a doctor connected with it. Every school board ought to have a doctor on it; and it ought also to have as many women as men on it. It is absurd to have a school board composed only of men, perhaps most of them men who have no children of their own,— men who know nothing about children, and often those who care nothing about them. If the board is made up of seven persons, three of them should be women, and at least one a physician. The doctor would stand by the women, because he knows they understand the needs of children.

The schoolroom should be visited by the physician regularly every week, so that the condition of the room and of the children may be thoroughly understood. All the children in every school should be examined at least once a year in reference to the condition of their eyes and their ears. Children are often greatly hindered in the effort to obtain an education by becoming short-sighted by reason of eye-strain or some other cause, when they might be relieved by the use of properly adjusted glasses. Children are often considered dull and stupid because, being hard of hearing, they do not readily understand what is said to them. Many maladies which ultimately destroy the sight or hearing may be cured, or at least prevented from advancing farther, if discovered in time, and subjected to the proper treatment.

HOW TO IMPROVE THE CONDITION OF SCHOOL-CHILDREN.— How would you prevent the pale face, hollow chest, and limp walk so much in evidence among pupils of the public schools?

Ans.— I would prevent it by proper gymnastic exercises, by marching drills, etc. It is sometimes necessary to see that the children are properly fed. This is one of the greatest difficulties connected with the proper development of children. Teachers do not have the co-operation of the parents in this respect. Good brains cannot possibly be made out of arithmetics and geographies. Children must have some other food; books furnish the mental gymnastics, but not the brains. Brains are concocted in the kitchen. The brain is made out of what the child eats; if he has good wholesome food, he will have a good brain. If a child's brain is made from cheese, fried potatoes, deviled crabs, Welsh rarebit, mince pies, fried sausages, coffee, and all that sort of abominable foods, he cannot have a sound, healthy mind. There is no use in trying to get anything out of such a child by drilling; you cannot get out of any one what is not there. Pale faces are due to impoverished diet. Children should be fed with plenty of good, substantial, wholesome food. Great good may be accomplished by means of parents' meetings, at which parents, teachers, and members of the school board can meet together and discuss all the practical questions which bear upon the physical, mental, and moral life of the child, both at home and in the school.

THE MENTAL INFLUENCE OF DIET. — What influence does diet have upon the mind?

Ans. — There is a very old adage which says, "As a man thinketh, so is he." There is an old German saying, "As a man eateth, so is he." Both are perfectly true. A man is as he thinks, and he is as he eats. I propose to put these proverbs together, making a new proverb, "As a man eateth, so he thinketh." The brain is made up of what we eat, and the mind is to such a degree the product of the brain that it is controlled by it; hence a bad brain makes bad thoughts; an excited, irritated brain gives rise to exciting, irritating thoughts. The poor dyspeptic who has a sour stomach has a sour brain; he thinks sour things, and does sour things. He may not be to blame for the sourness of his words and actions, but he is to blame for making himself sour by a bad diet.

SCHOOL BATH-ROOMS. — Should public schools have a bath department for the benefit of pupils?

Ans. — There should be a bath-room connected with every public school. I would have a swimming-pool also for the use of the pupils. Every boy and girl should be taught to swim. It is one of the most important things they can do. It is astonishing how soon young children will learn to swim.

I once made the experiment of putting a boy scarcely a year old in a large tub of water with an inflated rubber ring passed about his neck to prevent his sinking. The little fellow immediately began to execute movements with his arms and legs precisely like those made by a dog in swimming. He swam quickly from one end of the tub to the other and back again, enjoying the sport immensely.

Swimming is one of the best means of correcting the bad effects of incorrect sitting attitudes. Swimming is a sort of flying. The movements of swimming are different from those of walking or of any other exercise, and are especially well calculated to develop the chest and correct the tendency to spinal curvature and round shoulders.

A bath-room is absolutely essential for the city school. Many families do not have the advantages of bathing facilities at home; hence the opportunity for bathing should be furnished the children at school.

There is no means that I know of by which the brain and nervous system may be so wonderfully stimulated as by the cool or cold bath. The child who is regularly submitted to a daily cool bath is almost perfectly protected against colds, catarrhs, and other pulmonary affections; since these diseases are due to a low state of vital resistance, and to the inability of the body to adjust itself to changes of temperature as well as to defend itself against the germs which are continually attacking it through the nose and throat.

One of the best means of maintaining a high state of bodily resistance is the cool bath. When a boy comes out of the bath, he feels like a cleaner and a better boy; he feels more manly, and holds his head a little higher than before. A man once came into the free baths connected with our medical mission in Chicago, who was so completely covered with dirt that it was impossible to tell whether he was a negro or a white man. He was covered with vermin of every description. The attendants burned his entire outfit of old clothes, and gave him a thorough bath and a suit of clean clothes. He was found to have a remarkably white skin, and proved to be an accomplished scholar, a graduate of both Harvard and Yale universities, and possessed of all the culture wealth could secure for him; but he had never been taught proper cleanliness; and he had lost self-respect, and had drifted down into the gutter. He felt so wonderfully helped and elevated by his bath that he declared he was going to turn over a new leaf.

One of the best means of cultivating a boy's self-respect is to keep him clean. I think no child should be allowed to attend a school unless he is clean. It is not safe to send your child to school when you don't know but he is going to sit beside a boy who is dirty. How dare a person who keeps his children clean, send them to a promiscuously attended public school, where they must mingle with children from the lowest tenements and the filthiest homes, unwashed and unkempt?

MOUTH BREATHING. — What is the cure for children's habitually keeping the mouth open?

Ans. — That is a practical question. It is a common thing to see children going about with their mouths open, and it gives them a very offensive appearance. But the only way in which some of the poor little creatures can breathe, especially when lying down, is through their mouths, because they have nasal catarrh. They sleep with the mouth open, and they get so in the habit of it that they let the mouth hang open when they are awake. This is the common result of neglected nasal difficulties. Now the first thing to be done is to send such a child to a specialist, and have the nose investigated. Find out what is the matter, and then take measures

to have the difficulty corrected. If it is simply a habit, it may be cured by merely tying the child's chin up at night.

THE SIGNIFICANCE OF FACIAL EXPRESSION.— Give some hints on how to smile and laugh, and on the general expression of the countenance.

Ans.— I am sure that if I should try to smile when asked to do so, I should make a very poor face of it. I do not think one can smile to order. To try to teach a child how to smile by telling him to smile this way or that, would be futile, because one cannot smile naturally when he smiles consciously. If a person would smile naturally, he must smile from within, and not from without,— he must smile automatically.

Do not try to teach a child to laugh. I think, however, that it is a good thing to teach a child how not to laugh. Self-consciousness is, to my mind, unquestionably one of the worst of all the baneful things that tend to damage character. Children should be trained to be natural, but you cannot accomplish this by saying to them, "Now be perfectly natural." You must so interest the child, so direct his mind and concentrate his attention upon that which is natural and beautiful, that he will do the thing required of him in a natural way. In this way you can teach him to be natural, but not otherwise. Make the child perfectly happy, so that, being so perfectly absorbed in the beautiful atmosphere that you have created about him, he forgets himself, and then he acts naturally; he will then smile and laugh naturally, and be a natural child.

It is important for every teacher to keep constantly in mind the fact that the face is a mirror of the mind. The child whose face is blank and expressionless has an inactive, dormant mind. The child whose face wears a sullen expression has a sullen character. He is doubtless a damaged child. The success of the teacher in character-building, in the unfolding and development of desirable qualities of mind and heart in the child, can be readily seen by the expression upon the faces of his pupils.

COLD LUNCHES.— Is the practise of taking cold lunches to school a healthful one?

Ans.— Cold food is wholesome if it is the right kind of food; but if it is unwholesome food, it is less likely to be digested when cold than when warm. Perfectly wholesome foods, such as fruits and grains, are healthful when taken cold, or at the ordinary temperature of a living-room.

FOODS FOR STUDENTS.— Are there special foods suited more than others to form the diet of students and pupils?

Ans.— Most certainly there are. Those foods are best suited to the diet of pupils and students in school which are most easily digested, which are digested in the shortest space of time,— those foods which contain the most nutriment, and have the greatest ease of digestibility. Such foods as grains, particularly rice, apples, dry foods, fruits of various kinds, and milk, are pre-eminently most digestible and nourishing.

School-children ought especially to have an abundance of fruit. Fruits aid the activity of the kidneys and bowels, and are the most wholesome of all foods. Nuts may also be taken with advantage, but neither nuts nor fruits should be eaten between meals. The old idea that meats, and especially fish, are particularly serviceable as brain foods was long ago exploded. A young man once asked Artemus Ward how much fish he ought to take per day to properly nourish his brain. The famous wit replied that a small whale would probably be equal to his necessities.

THE SCHOOL YEAR.— Would it not be better to have the school year include three short terms rather than two long ones, as at present?

Ans.— I think the school year should last the whole year round. I think the child should go to school every day of its life. I do not believe in long vacations which give time for children's brains to grow up to weeds. The little brain which has been carefully cultivated during nine months of the year, loses ground during the vacation; and a month is lost in starting in again in the fall, while the pupil is recovering what he has lost. The school must be attractive to the pupil. That is the right kind of a school in which the children want to go to school, and do not tire of going, because they find it the happiest place on earth. If the child does not like the school, and does not want to go there, he should not be compelled to go. If my child should say to me, "I don't like to go to that school; I am so tired of it," I would take him right out of the school. The teacher of such a school does not know how to train the mind of a child. A child cannot learn properly unless it is happy while learning. In order to receive benefit, the child must have its heart full of joy, and be interested and happy in what it is doing, and the school must make him so if it is a good school, combining wholesome development with recreation, and creating the thirst for knowledge which it is a pleasure to appease by study.

RELIEF DEPARTMENT.

[THIS department has been organized in the interest of two classes: —

1. Young orphan children, and
2. The worthy sick poor.

The purposes of this department, as regards these two classes, are as follows: —

1. To obtain intelligence respecting young and friendless orphan children, and to find suitable homes for them.
2. To obtain information respecting persons in indigent or very limited circumstances who are suffering from serious, though curable, maladies, but are unable to obtain the skilled medical attention which their cases may require, and to secure for them an opportunity to obtain relief by visiting the Sanitarium Hospital. The generous policy of the managers of the Medical and Surgical Sanitarium has provided in the Hospital connected with this institution a number of beds, in which suitable cases are treated without charge for the medical services rendered. Hundreds have already enjoyed the advantages of this beneficent work, and it is hoped that many thousands more may participate in these advantages. Cases belonging to either class may be reported in writing to the editor of this journal.

It should be plainly stated and clearly understood that neither orphan children nor sick persons should be sent to the Sanitarium or to Battle Creek with the expectation of being received by us, unless previous arrangement has been made by correspondence or otherwise, as it is not infrequently the case that our accommodations are filled to their utmost capacity, and hence additional cases cannot be received until special provision has been made.

Persons desiring further information concerning cases mentioned in this department, or wishing to present cases for notice in these columns, should address their communications to the editor, Dr. J. H. Kellogg, Battle Creek, Mich.

☞He wishes especially to state that those who apply for children will be expected to accompany their applications by satisfactory letters of introduction or recommendation.]

No. 342 is a young girl sixteen years of age, who is in need of a home. She has blue eyes and light hair, has had good care and training, and has always lived in the country. Her mother has tried to keep the family together, but on account of failing health is not longer able to do so. Good homes have been found for the other children in the family. Is there not a home near one of our schools that will open its doors to this girl, where she can have the opportunity to get an education, and thus prepare herself for future usefulness?

No. 351 is a boy ten years of age living in Pennsylvania. The father died, leaving the mother with five children to care for. Living in a large city, the mother finds it hard to train her boy without a father's guidance. Will not some Christian father and mother living in the country give him the surroundings of a good home? He has blue eyes and light hair, and is in good health.

No. 356 is a little boy seven years old living in Michigan. He has blue eyes and dark hair. He has not been allowed to run the streets, and had good care while his mother lived. His father cannot give him proper care and training, as he is away from home all day. Will not some good home open its doors and receive him, thus giving him the influence of Christian surroundings?

No. 365.— Here is a boy ten years old living in Indiana. He is very much in need of a good home and a mother's care. He has dark eyes and hair, and is in good health. His father has to work out by the day, and cannot give him proper training. No doubt some home would be brightened by his presence, and that with the influence of Christian surroundings, he would prove a blessing to those who would thus open their hearts to receive him.

No 366 is a girl ten years of age, with blue eyes and dark hair. She is said to have an amiable disposition, and has had good training. Her father is dead, and the mother having to work away from home all day, the child is thus left alone. The mother is anxious to have her placed in a good Christian home, where she will have proper care and training. She is at present living in Pennsylvania.

No. 367.— Here is a bright active boy seven years of age, who is in need of a good home. He has been well cared for, but his mother having to work out cannot properly train him. He has blue eyes and light hair and has a pleasant disposition. He is living in Michigan.

Nos. 376 and 377 are two little girls aged twelve and nine years respectively, with black eyes and hair. The mother has tried to keep the family together, but as she is in very poor health she can no longer support them. These children are said to be easily controlled, and no doubt would brighten and cheer some home. They are now living in Nebraska.

Nos. 378 and 379 are two bright fatherless little boys, aged six and three years respectively, living in Wisconsin. Their mother is so situated that she cannot possibly care for them and support them, and is anxious to have them placed in good Christian homes. They have blue eyes and light hair.

No. 380 is an orphan girl ten years of age living in Massachusetts. She has blue eyes and brown hair, and is large and strong for her age. She has a very affectionate disposition, being very fond of children and pets. She has been living with an elderly lady who has cared for her since her mother's

death, but she is not able to provide for her longer. No doubt with a kind but firm hand to guide her and the surroundings of a Christian home she will grow up to be a useful woman.

No. 381 is a little girl nearly six years old living in Wisconsin. Her mother is dead and her father has deserted her. Her aunt with whom she has been staying, is not situated so that she can keep her longer, and thus she is in need of an immediate home. She has blue eyes and light hair and is said to be bright and well behaved. Is there not some home that will open its doors and give this poor child a mother's love and care?

We are receiving a large number of letters form mothers who have been left in destitute circumstances with from one to five children to support, making application to have their little ones received into the Haskell Home, and asking that they themselves be employed in some of the institutions here.

Some of these mothers could find employment where they are if temporary homes could be found for their children. In some instances the mothers are able to pay something for their support. Are there not Christian homes that would take in one or more of these children, and thus help relieve their overburdened mothers?

From a little girl whom we placed in a home in South Dakota we received the following letter:—

I am one of the little girls that you found a home for with Mrs. ——. I like my home real well. I have a missionary garden, a bean patch three by one and one-half rods, and a row of onions two and one-half rods long. My little sister is five years old. She also has a missionary garden consisting of a bean patch twelve by six feet, and eight hills of corn. We do all the work ourselves.

From the family who adopted the two little boys advertised as Nos. 325 and 326 we have received the following cheerful words:—

One week ago to-night our dear little boys came to us. They are nice, bright little fellows. They have a large place in our hearts already. It seems as though we had invited angels to our home, and we are so happy and thankful. It is our earnes prayer that we may have wisdom and strength to train these little ones for God.

The little girl advertised as No. 376 has also reached her new home in Minnesota. Some kind friends took her as far as Chicago, and put her on board the train en route for the northern part of Minnesota, to which point she traveled alone. Her new mother writes as follows:—

The little girl arrived here safe last Monday. I am well pleased with the child. I think you could not have found one that suited me better if you had looked the world over. I already love her as one of my own. She says she wants to be one of Jesus' little ones.

The State Public School of Coldwater, Mich., is now receiving children under two years of age, and has some fine baby boys for indenture and adoption. Any person wishing to add a baby boy or girl to their household should correspond with the State Public School, or call and see the babies. Address, A. J. Murray, Superintendent, Coldwater, Mich.

Persons making application for children advertised in this department, are requested to send with their applications the names and addresses of two or more persons as reference. If possible, these should be known, either personally or by reputation, to some member of the Board of Trustees.

Visiting Days at the Haskell Home.—Persons intending to visit the Haskell Home will please note that the visiting days are Sundays and Wednesdays, from 4 to 6 P. M.

CLOTHING FOR THE POOR.

The call for clothing of all kinds and the numerous offers to supply assistance of this sort, have led us to organize a Clothing Department to receive and properly distribute new or partly worn garments which can be utilized for the relief of the very poor. In connection with this work it is very important that a few points should be kept in mind and carefully observed:—

1. Clothes that are so badly worn that repairs will cost more in money or labor than the garment is worth, will of course be of no service. Garments that are old, though faded, or which may be easily repaired by sewing up seams, or made presentable by a few stitches judiciously taken at some point in which the fabric is nearly worn through, may be utilized to most excellent advantage. But garments so badly worn that they need extensive patching, or clothes which have become much soiled and grimy by long use in some dirty occupation, should find their way to the rag bag instead of the missionary box.

2. Freight must always be prepaid. It costs as much to send 25 pounds or any amount less than 100 pounds as to send the full 100 pounds; consequently it would be well for those who think of sending clothes to be used in this department, to put their contributions together in one shipment, so as to get the benefit of the 100-pound rates. *We are obliged to ask that freight should be prepaid as a means of preventing loss to the work in the payment of freight upon useless packages.*

3. Clothes that have been worn by patients suffering from any contagious disease—such as typhoid fever, erysipelas, consumption, and skin disorders of all sorts, as well as scarlet fever, measles, mumps, diphtheria, and smallpox—should not be sent. Infected clothes may be rendered safe by disinfection, but we cannot trust to the proper disinfection of such garments by those sending them, who, in the majority of cases, are quite inexperienced in such work; neither should those who unpack the clothes be exposed to the risk of contamination while preparing them for disinfection at this end of the line. Such clothes should, as a rule, be destroyed. If they are not destroyed, almost infinite pains is required to render their use perfectly safe.

4. All articles received here are carefully assorted and classified, and are then placed as called for, where they will do the most good.

5. Clothing intended for the Chicago mission should be sent to Medical Missionary College Settlement, 744 47th St., Chicago, Ill.

LITERARY NOTICES.

CURTIS'S CONSTITUTIONAL HISTORY.—By George Ticknor Curtis. In two volumes. Edited by Joseph Culbertson Clayton. 8vo, cloth, uncut edges and gilt top. Harper & Brothers, publishers, Franklin Square, New York.

George Ticknor Curtis's "Constitutional History of the United States" first appeared in 1854, and at once became a standard authority. In 1889 Mr. Curtis issued a revised edition in one volume; and, in continuation of the work originally published, a second volume was announced as in course of preparation, the period covered in this projected second volume being from the adoption of the Constitution to the close of the Civil War. During twenty years this labor had occupied Mr. Curtis. After his death, in March, 1894, a large quantity of manuscript relating to the proposed second volume was found among his papers, and this material was placed in the hands of Mr. Joseph Culbertson Clayton, by whom the volume has been prepared for publication. Its appendix contains detached writings of Mr. Curtis cognate to the main work; also historical documents, an annotated copy of the Constitution, and notes by the editor.

THE *Scientific American* has reached the mature age of fifty years. It is therefore with commendable pride that its editors and proprietors have prepared a special Anniversary Number, with four times the usual number of pages, to celebrate the occasion. This number contains reviews of the progress made in the last fifty years in the sciences and the arts, gives historical sketches of some of the most notable inventions made during this period, and is filled with interesting illustrations. Among the subjects treated are: "The Transatlantic Steamship," "Naval and Coast Defense," "Railroads and Bridges," "The Sewing-Machine," "Photography," "The Phonograph, Telegraph, and Telephone," "Iron and Steel," "Physics and Chemistry," "Progress of Printing," "The Bicycle," "Electrical Engineering," "Telescopes," "Ocean Telegraphy," "Distinguished Living Inventors" (portraits), "Shipyards of the United States." A large group of distinguished inventors, reproduced from an old steel engraving, is also presented. The Anniversary Number is provided with a characteristic cover, and is printed in a style fully up to the regular issues of the paper. It will doubtless be generally preserved for future reference. A very large edition of this interesting number is being issued. All articles have been contributed by specialists, and the number is of great value as a work of reference. In size, this issue is equivalent to an ordinary-sized book of 442 pages. Subscription price, $3 per year, or for the special number, 10 cents a copy. Munn & Co. Publishers, New York.

THE British National Portrait Gallery has been recently housed in fine quarters through the liberality of William Henry Alexander. Cosmo Monkhouse makes it the occasion for describing some of its noted portraits in the September *Scribner's*. Frank French also advocates the beautifying of country roads by the artistic arrangement of shade-trees and the ornamentation of front yards.

THE *Child-Garden* of story, song, and play is the children's own kindergarten magazine and the mother's brave nursery helper. At an average expense of 8 2-3 cents per month is given a 32-page budget of all that is crisp, fresh, and sweet in current kindergarten life. *Child-Garden* is the children's mascot, and charms them into the fairyland of work, play, and good behavior through its beautiful pages. Every number gives the mother a key to the month's work in the kindergarten adapted to home use. *Child Garden* is $1 a year; with the *Kindergarten Magazine* $3, which is a slight expense for 1200 pages of the choicest of kindergarten literature. Year begins in December. F. M. Harley Pub. Co., 87 Washington St., Chicago.

WOMEN'S interests are all well looked after, as usual, in the August issue of *Table Talk*. The culinary and household topics have much space devoted to them, the Housekeeper's Inquiry Department being especially full of good and seasonable recipes. The leading article, "Friends in Council," by Mrs. Burton Kingsland, is the first of a series giving many valuable points on economical and up-to-date entertaining and serving. Other articles of interest are "The Linen Chest;" "The Modern Wedding;" "Children; Their Amusements and Fashions;" "Seventeenth Century Dinner Etiquette;" "Novelties and Entertainments;" "A Bicycle Luncheon;" "New Menus for August," etc. Any of the readers of this magazine who desire a sample copy may send their names to Table Talk Publishing Co., Philadelphia, and receive one, free.

PUBLISHERS' DEPARTMENT.

SPECIAL OFFER TO NEW SUBSCRIBERS.—As an inducement to new subscribers, and to compete with the hard times, we propose to send the remaining numbers of GOOD HEALTH for 1896 free to every subscriber whose name is received before Jan. 1, 1897. Beginning with the present number, GOOD HEALTH will devote considerable space each month to the consideration of the important subject of School Hygiene, a topic of growing interest among parents as well as educators. We expect to receive many important contributions upon this theme from persons who can speak with authority in relation to it.

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THE present number is a special issue of the journal. It will be noticed that considerable space is given in the business columns to the representation of Battle Creek and its interests. There is no town in the State of Michigan, and few elsewhere, more enterprising than Battle Creek. There are very few cities in the world more beautifully located, and none the natural location and surroundings of which are more salubrious. With a population of about twenty thousand, the death-rate is frequently as low as seven per thousand, which is less than that of any other city with which we are acquainted. It would certainly be very hard to find a more peaceful, law-abiding, and intelligent community than Battle Creek. Its great manufacturing interests, the Sanitarium, and the large publishing-house, the most complete in the State, have brought it to the attention of people in every part of the United States, and have made the name familiar even in many remote quarters of the globe.

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THE department of "Chats" in the present number is wholly devoted to the discussion of school hygiene, a subject of growing interest, not only among doctors, but among parents and all who have the responsibility of rearing and training children. There is a great and popular demand for information upon this subject, and the managers of the journal have determined to devote considerable space in each number hereafter to the consideration of this important theme. Teachers and others interested in the subject are invited to contribute their thoughts and experiences.

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A LARGE number of extra copies of this issue of the journal will be printed for special distribution. The leading article for this month is one in which school-teachers should be especially interested. It dwells particularly upon a special phase of school hygiene in which every teacher and every parent ought to be interested. The facts presented are comparatively new, and are the result of original studies on the part of the author. Their importance cannot be overestimated.

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THE thanks of the publishers are due to Mr. S. Sherin, of St. Paul, Minn., for his suggestion of the publication of this special number, and to his energetic activity must be attributed the success of the effort.

WE are indebted to Mr. James C. Bartholf, of the Battle Creek Sanitarium, for the live description of the institution, which appears in the special department published in this number. Mr. Bartholf has won many encomiums for the courteous and intelligent manner in which he presents the Sanitarium and its numerous departments to the multitudes of persons who throng the institution as its guests or as visitors.

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THE summer of 1896 will be remembered by the guests of the Sanitarium as a very delightful season. The cool nights, breezy days, abundance of sunshine, and sufficient rain to keep the trees, lawns, and flower-beds in a moist and flourishing condition, have made the surroundings most delightful. The conditions for the cultivation of health have been as perfect as could be desired.

The season has been a remarkably healthy one. No case of acute illness has occurred, and the instances have been very rare indeed in which patients have not shown decided symptoms of improvement within a few days after arriving at the institution; indeed, there have been many cases in which improvement has been secured which seemed scarcely less than marvelous. Patients frequently astonish themselves by gaining in weight at the rate of a pound a day for a week or two in succession. One patient carried off a prize by gaining ten pounds in weight in less than one week, after having previously gained a pound a day for two weeks.

The diet, regimen, and treatment of patients are carefully adapted to each individual case, so that the patient who, like Cassius, has "a lean and hungry look," shall add as rapidly as possible to his store of adipose tissue; while the one who, through sedentary habits, by the excessive gratification of appetite, or, possibly, by heredity, has acquired an excess of fat, receives such treatment, and is placed upon such a regimen, as will reduce his weight as rapidly as can be done with safety and with permanent results. It is a common thing to find two patients congratulating each other — one, that he has gained ten pounds within a couple of weeks; the other, that he has lost as much during the same time.

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SCORES of the Sanitarium patients have been enjoying a good time at the Sanitarium villa at Lake Goguac. This is a beautiful little sheet of water dotted with islands, surrounded by woods and pebbly shores, and traversed by beautiful little steamers, sailboats, and other craft. All the Sanitarium patients participate in a lively picnic here once in two weeks, which is invariably a very enjoyable affair.

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THE Sanitarium has had the pleasure of entertaining among its guests this summer, the Rev. Myron J. Reed, of Denver, Colo. Mr. Reed makes things lively wherever he is, and has made sunshine for a great many people during his stay at the Sanitarium. Everybody hopes he will come again.

MR. W. K. KELLOGG, manager of the Good Health Pub. Co., who has been spending two or three months in Europe, taking a much-needed rest, expects to be home early in September. The large corps of workers connected with the Good Health Publishing Company will be glad to welcome him back.

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DR. A. B. OLSEN, who has recently returned from a lecturing tour in the Southern States, reports that the Southern people are greatly interested in the subject of hygiene; that they listen eagerly, and are ready to make a practical application of the principles. We should be glad to see twenty or more lecturers devoting their whole time to the Southern part of the United States. We know of no more intelligent or appreciative class of people anywhere than the educated class of the South.

* * *

DR. W. H. RILEY, the newly elected superintendent of the sanitarium at Boulder, Colo., reports that the institution is now nearly full of patients. We predict for this new enterprise a grand success. There are a large number of persons in the East suffering from pulmonary tuberculosis and other maladies which it is difficult — even impossible — to cure without a change of climate. The Colorado Sanitarium at Boulder offers advantages such as are afforded by no other institution in the world for the treatment of such cases. The corps of physicians, managers, and well-trained nurses with which the institution is equipped, together with the admirable facilities which have been provided, regardless of expense, and the fortunate and remarkably salubrious location, afford attractions which cannot be matched in any other establishment in the world for cases requiring the benefit of a high, dry atmosphere. The excellent train-service on the leading railroads passing through Colorado, and the quick time (less than thirty-six hours) with which points in Colorado may now be reached from Chicago, renders the distance a matter of small consequence.

We are constantly recommending patients to avail themselves of the advantages afforded by the Boulder Sanitarium, and we have yet to hear the first word of complaint or the first expression of disappointment. The uniform testimony has been that the highest expectations have been more than met. For circulars, it is only necessary to address Dr. W. H. Riley, Boulder, Colo., or Colorado Sanitarium. We hope to place before our readers at an early date an illustrated article setting forth in greater detail the advantages of this institution and the beauty of its surroundings.

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WE are glad to hear from our friends at St. Helena, Cal., that the sanitarium located at that place is prospering. By the last report the number of patients was greater than at any previous time during the present season. Numerous improvements have been recently made in connection with the institution, which will be greatly appreciated.

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DR. A. N. LOPER and wife, of the Nebraska Sanitarium, located at Lincoln, Neb., recently spent a week at the Battle Creek Sanitarium for rest and other advantages. Dr. Loper and his faithful colleagues have made a gratifying success of the work at Lincoln. The work has already grown to proportions far beyond the expectations of its most sanguine friends.

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DR. L. J. BELKNAP, the superintendent of the Portland (Oregon) Sanitarium, writes that his hands are more than full of work, and that he greatly needs another physician and more nurses to assist him. Such reports are gratifying.

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OUR friend, Dr. Salmans, of Silao, Mexico, writes us that he is building a hospital there. Dr. Salmans is one of the pluckiest men we have ever met. Though his hands are full of work as a Methodist presiding elder, he has nevertheless found time to obtain a medical education, and has built up an extensive medical practise, through which he has been able to support three dispensaries, and is now undertaking to build a hospital. To this institution only small contributions have been made. The doctor's burdens are heavy, and somebody who has five hundred or a thousand dollars to spare ought to give him a lift. We do not know of any place where a better investment could be made.

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MR. D. T. JONES reports that good progress is being made in the construction of the sanitarium at Guadalajara, Old Mexico. It is hoped that the institution will be completed in time to accommodate patients during the coming winter.

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DR. P. S. KELLOGG, who recently went from this country to Honolulu to engage in medical missionary work, reports that his hands are already full of business, and that he has leased a good building in which he has begun sanitarian work in good earnest. The work bids fair to be self-supporting from the start.

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OUR friend, Dr. Braucht, who has engaged in self-supporting missionary work in Samoa, reports that the work has developed to such an extent that a sanitarium building has become necessary. Dr. M. G. Kellogg is now spending a short time with him, assisting in the work of erecting a sanitarium.

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RECENT advices from our friends in Australia announce the beginning of a sanitarium in the vicinity of Melbourne. A building has been leased, and placed in charge of A. W. Semmens and wife.

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THE Cape Town Sanitarium is now nearly ready for dedication. Mr. and Mrs. Druillard left this country recently to take charge of the work there as matron and steward. Mr. J. J. Wessels, one of the chief contributors to the enterprise, will probably act as business manager.

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THE students of the Medical Missionary College have been especially favored, during the last few months, by a course of lectures delivered by Professor A. B. Prescott,

professor of chemistry in the University of Michigan. Professor Prescott kindly donated his services in giving this course of lectures, through his interest in the cause of missions which is represented by the college.

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NUMEROUS lines of investigation are in progress in the Sanitarium Laboratory of Hygiene. During the last few weeks the regular force have enjoyed the assistance of Professor Novy of the University of Michigan, who has been aiding in carrying forward special lines of original investigation which, it is hoped, will develop many important facts relating to the bacteriology of the stomach.

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MR. F. F. BURDICK, of the Medical Missionary College, is spending the summer in Pennsylvania, conducting a health-missionary canvassing campaign, assisted by about a dozen students from the Medical Missionary College. He reports encouraging prospects.

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THE editor recently had the pleasure of attending the annual meeting of the American Educational Association held at Buffalo, which was indeed a great gathering. Twelve or fifteen thousand persons were present, and the building in which the meeting was to be held not proving large enough, two or three halls were required, in addition, to accommodate the immense concourse of people in attendance at the evening sessions. On the second day of the session, the editor gave, by request, an address before the newly organized department of Physical Culture, presided over by Miss Anna Morris, of national reputation as a teacher of physical culture and expression. Miss Morris has certainly done a grand work in the organization of this new department, which was added to the several departments of the association at her suggestion; and she is to be congratulated on the success achieved at this first meeting. The sessions were all very largely attended by attentive listeners. It is an omen for good that so large a number of teachers are becoming interested in the physical side of child life.

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THE canning-plant which has been put in operation by the Sanitarium Health Food Company the present season has been unexpectedly successful in putting up a great quantity of fine goods. Especial attention has been given to the canning of sweet wrinkled peas, of which more than fifty thousand cans have been put up, also a fine variety of tomatoes. Only the very choicest goods are canned. The farm products are brought directly from the fields to the factory, and put up while they are fresh, and before they have had time to lose any of the delicate flavors which nature puts into them to render them tempting to the palate and to aid the digestive organs in the process of converting them into healthy blood and sound tissues. It is safe to say that no such canned goods as have been put up by the Sanitarium Health Food Company can be purchased anywhere else. A large quantity of these goods will be used at the Sanitarium; but a few hundred cases are offered for sale at market prices. No salicylic acid or other preservative, no coloring matters, and no injurious substances of any sort whatever are used in these goods. For prices, address, Sanitarium Health Food Company, Battle Creek, Mich.

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MR. BARTON HUFF, in New York; Mr. Dodson, in Chicago; and other agents in different parts of the United States, are doing a lively business in Battle Creek Sanitarium Health Foods, which are being shipped to various points by the car-load. Within the past few weeks Mr. Huff has ordered more than eight car-loads of these goods for the Eastern market alone. It is indeed a great satisfaction to know that these foods are being so extensively introduced, for every package of granola, granose, caramel-cereal, or other of these excellent health foods must be looked upon as a sort of missionary agent, as it displaces other foods of a less wholesome character. No foods can possibly be found which are purer or more wholesome in character than the twin foods, granola and granose. Thousands have been cured of dyspepsia and all attendant ills by the use of these foods. Granose is wonderfully efficacious in the cure of constipation and those forms of indigestion due to insufficient mastication. If heated just before eating, this food is crisp and delicious. The necessity of the process of heating arises from the fact that it rapidly absorbs moisture from the air, being highly hydroscopic.

One of the managers of the Sanitarium has made a little computation from which he shows, on very good ground, that at the present time more than twenty thousand people are using caramel-cereal. It is a great satisfaction to those engaged in this business to feel that through their efforts so large a number of people have been turned from the error of their ways in the use of tea and coffee. The Health Food Company is rushing its business vigorously, and hopes to be able to announce within a year from the present time that at least one hundred thousand people are regularly using these wholesome products.

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POOR ECONOMY.— The secretary of the State Board of Health of Michigan has been obliged to announce that important phases of the work of the board are suspended for lack of appropriation. The appropriation made by the State to the board of health has always been a very parsimonious one.

The secretary has always been underpaid, and for many years has been obliged to work for an exceedingly small salary in order to save enough money to pay the postage on documents sent out to health officers and others telling how to prevent typhoid fever, diphtheria, and other preventable maladies. Dr. Baker is an enthusiast in preventive medicine, and he has made the sacrifice, though his salary has not been sufficient to provide his family with all the comforts of life, as he devotes his time wholly to the work of the board and the service of the people of Michigan — a work which has resulted, as has clearly been shown by statistics, in the saving of many thousands of lives.

Enormous sums of money have been spent in providing for the comfort and pleasure of the citizens of Michigan, a tithe of which, if devoted to the more necessary work of

mproving the sanitary conditions of the State, and instructing the people how to keep well, and how to suppress epidemics of disease, would not only add enormously to the extension of human life by preventing sickness and the losses incident to disease and death, but also to the wealth of the State.

At the present time the funds in the treasury of the board are so small that it is impossible to pay the postage (twenty-one cents) on the annual report, which the secretary has prepared with very great care; so that any one who wants a report must send the twenty-one cents for postage. This report has formerly been distributed to health officers and others co-operating with the board, but this year any one who wants it must send for it. No one who is familiar with these reports will fail to do this; yet at the same time he should try to influence the representative of his district to see that at the next session of the legislature, proper provision is made for the work of this most important of all the State boards, but the one of all which is most poorly provided for.

We copy the following from a circular recently sent out by the secretary, which presents a state of things of which every good citizen should be ashamed: —

"From time to time, additional work has been required to be done by the State Board of Health, and for many years no additional appropriation has been made. The appropriations aggregate six thousand dollars a year. Act 146, Laws of 1895, required the board annually to send to the schoolteachers throughout the State data and statements to enable them to teach the modes by which the most dangerous diseases are spread, and the best measures for the restriction and prevention of those diseases. The board has done this for the school year 1895–96; but in doing so has been obliged to stop work done under other laws. It is now time to begin the work for the school year 1896–97, but there is no money available to the board for that purpose. As there was no appropriation for complying with Act 146, Laws of 1895, the State Board of Health asked the Board of State Auditors to allow the bill for the expenses on account of that law; this the Board of Auditors has declined to do. This means that the school law and some other laws cannot be fulfilled, because the six thousand dollars' appropriations for the use of the State Board of Health are almost exhausted. The board will be unable to pay the postage on the Twenty-second Annual Report, the latest and one of the most complete yet prepared for distribution. HENRY B. BAKER, *Secretary*."

"*Office of the Secretary of the State Board of Health,*

"*Lansing, Michigan, July 11, 1896.*"

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GOOD NEWS FROM SOUTH DAKOTA.— The glorious results of this season's harvest of golden grain will pour a stream of sound money into the pockets of every Dakota farmer.

South Dakota has thousands of acres of choice farming and ranch land lying east of the Missouri river, and within one day's ride from Chicago or Milwaukee, which can now be bought reasonably cheap, but which before the end of another year may be advanced in price.

The stock-raising industry in South Dakota is profitable, and Eastern capital is now being invested in cattle- and sheep-growing in that State.

Diversified farming, the growing of live stock, and the products of the dairy, are placing South Dakota foremost in the ranks of the successful Western States.

Those desiring full information on the subject, and particularly those who wish to seek a new home or purchase land, are requested to correspond with Harry Mercer, Michigan Passenger Agent, 7 Fort street W., Detroit, Mich.

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THE manufacturers of the Cyclone Washer, Messrs. Coon Bros., are evidently meeting with great success in the manufacture of their very useful invention. Their business has attained such proportions that they have found it necessary to erect a large, commodious building for the manufacture of their washers, hundreds of which they are sending out every month to all parts of the United States. That the Cyclone Washer greatly lessens the labor of washing-day and may be considered one of the most successful of the numerous devices for accomplishing this purpose, is attested by hundreds of grateful housewives. We have every reason to believe that the machine is all that it is claimed to be by the manufacturers. Coon Bros., Battle Creek, Michigan.

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TAKE YOUR VACATION NOW. — Go to picturesque Mackinac Island, via the D. & C. (Coast Line). It costs only $13.50 from Detroit, $15.50 from Toledo, $18 from Cleveland for the round trip, including meals and berths. Tickets good for sixty days, bicycles carried free. One thousand miles of lake and river riding on new modern steel steamers for the above rates. Send 2c. for illustrated pamphlets. Address A. A. Schantz, G. P. A., Detroit, Mich.

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THREE FOR A DOLLAR! — Three what? Three charmingly executed posters in colors, drawn by W. W. Denslow, Ethel Reed, and Ray Brown, will be sent free of postage to any address on receipt of one dollar. All who are afflicted with the "poster craze" will immediately embrace this rare opportunity, as but a limited number of the posters will be issued. The scarcity of a good thing enhances its value. Address Geo. H. Heafford, General Passenger Agent of the Chicago, Milwaukee & St. Paul Railway, Old Colony Building, Chicago, Ill.

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THE following institutions are conducted under the same general management as the Sanitarium at Battle Creek, Mich., which has long been known as the most thoroughly equipped sanitary establishment in the United States. The same rational and physiological principles relative to the treatment of disease are recognized at these institutions as at the Battle Creek Sanitarium, and they are conducted on the same general plan. Both medical and surgical cases are received at all of them. Each one possesses special advantages due to locality or other characteristic features.

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ST. HELENA, CAL.

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IRVING E. KECK, Business Manager.

THIS institution is beautifully located at the head of the Napa Valley. It is a fine large building, with excellent appointments, and all facilities required for the treatment of chronic invalids of all classes. It has also a record for a large amount of successful surgical work. There are several able physicians connected with the institution. The scenery is delightful, the climate salubrious; the water supply, which is furnished by mountain springs, is pure and abundant. Hundreds of cases of diseases generally considered incurable have been successfully treated at this excellent institution during the twenty years of its existence.

CHICAGO SANITARIUM,

28 COLLEGE PLACE, CHICAGO, ILL.

THIS institution is a branch of the Battle Creek (Mich.) Sanitarium. It is favorably located near Lake Michigan, in the southern portion of the city, close to Cottage Grove avenue, and facing the old Baptist University grounds. A few patients are accommodated. Facilities are afforded for hydrotherapy, and the application of massage, electricity, Swedish movements, and other rational measures of treatment.

NEBRASKA SANITARIUM,

COLLEGE VIEW (LINCOLN), NEB.

A. R. HENRY, President.
A. N. LOPER, M. D., Superintendent.

COLLEGE VIEW is a thriving village located in the suburbs of Lincoln, with which it is connected by an electric railway. College View is the seat of Union College, one of the leading educational institutions of the West. The Sanitarium has a beautiful location, facing the spacious college grounds, and gives its guests the advantages of a quiet, homelike place, combined with appropriate and thoroughly rational treatment. It has a full equipment of excellent nurses, and has already won for itself an enviable reputation in the West.

PORTLAND SANITARIUM,

PORTLAND, ORE.

L. J. BELKNAP, M. D., Superintendent.

THIS institution is beautifully located in the center of the city, in a fine building with spacious grounds; and although it has been in operation scarcely more than a year, it already has a good patronage, and has evidently entered upon a successful career. Facilities are provided for the dietetic and medical treatment of chronic ailments of all kinds. The advantages for treatment include, in addition to various forms of hydrotherapy, electric-light baths, and apparatus for the application of electricity in its various useful forms, manual Swedish movements and massage.

COLORADO SANITARIUM,

BOULDER, COLO.

O. G. PLACE, M. D., Superintendent.

THIS institution is located on a beautiful site of one hundred acres, including a fine mountain peak, and commanding extensive landscape views which, for variety and beauty, can hardly be equaled. The site adjoins the thriving city of Boulder, and is about one hour's ride by rail from Denver, the streets and principal buildings of which are easily discernible from the peaks around Boulder. The equipment consists of a large building especially erected for the purpose, two fine cottages, and every appliance for the application of hydrotherapy, and for the special treatment of pulmonary ailments, to be found in the best establishments of like character. Particular attention is given to the dietetic treatment of patients, and to systematic exercise, in addition to the special treatment for specific ailments. The altitude is between five and six thousand feet, just that which has been determined to be the best for pulmonary troubles. Though but a few months have elapsed since the work of this institution was fairly begun, a large number of persons suffering from pulmonary tuberculosis have already been cured, and are now rejoicing in sound health. The rational hygienic treatment, with the climatic advantages, has proved effective in the cure of cases which, without the combined advantages of these superior measures, must certainly have succumbed to the disease.

GUADALAJARA SANITARIUM,

STATE OF JALISCO, MEXICO.

D. T. JONES, Superintendent.

ADDIE C. JOHNSON, M. D., J. H. NEALL, M. D., } Physicians.

THIS institution, established in 1894, is the first and still the only one of the kind in Mexico. It affords, in addition to the unsurpassed climatic advantages of the region in which it is located, facilities for the employment of hydrotherapy, electricity, massage, manual Swedish movements, and dietetics, in the treatment of all forms of chronic disease. The altitude is the same as that of Denver,—from five to six thousand feet. Guadalajara has the advantage of a climate more nearly uniform than any other with which we are acquainted. Located in the tropics, it enjoys almost perpetual sunshine, while its altitude is such as to prevent excessive heat. There is probably no better place on earth for a pulmonary invalid. It is only necessary that the advantages of this institution should become known to secure for it extensive patronage.

INSTITUTE SANITARE,

BASEL, SWITZERLAND.

THIS institution affords the only place in Europe where patients can receive the advantages of a thoroughly hygienic diet, baths, electricity, Swedish movements, massage, and various other methods of treatment, applied after the manner and in accordance with the same principles which govern the Battle Creek Sanitarium and its several branches. The physicians are persons who have received a thorough training in the institution at Battle Creek. Terms are moderate. No better place for sick persons or semi-invalids abroad than the Institute Sanitare.

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A VISIT TO THE BATTLE CREEK SANITARIUM.

A SOJOURN in Battle Creek without a visit to the Sanitarium is like the tragedy of Hamlet with Hamlet left out, or a visit to the national capital without seeing the noble and historic structure where our nation's laws are made.

The Sanitarium is easily accessible from the various depots and hotels of the city, either by street-car or carriage. As the visitor nears the institution, the large fountain playing just in front of the main entrance,— all these combine to produce a scene of ideal beauty and an environment at once helpful, restful, and inspiriting.

Having entered the business office and expressed to the clerk a desire to "look over" the institution, our visitor is informed that the regular visiting hours are 10 A. M. and 4 P. M. He is then ushered into

View of the Front Drive, Looking North from Main Entrance.

he is impressed with the beauty of both the surroundings and the architecture of the place. Perfectly kept lawns, artistically designed flower-gardens, beautiful potted plants, bordering and festooning the spacious verandas of the buildings, a generous growth of tropical foliage, huge banana trees, and century plants, splendid palms, cacti, etc., tastefully arranged among our own native trees, the rustic summer-house standing near the driveway, and the reception-room, where he awaits the coming of an escort.

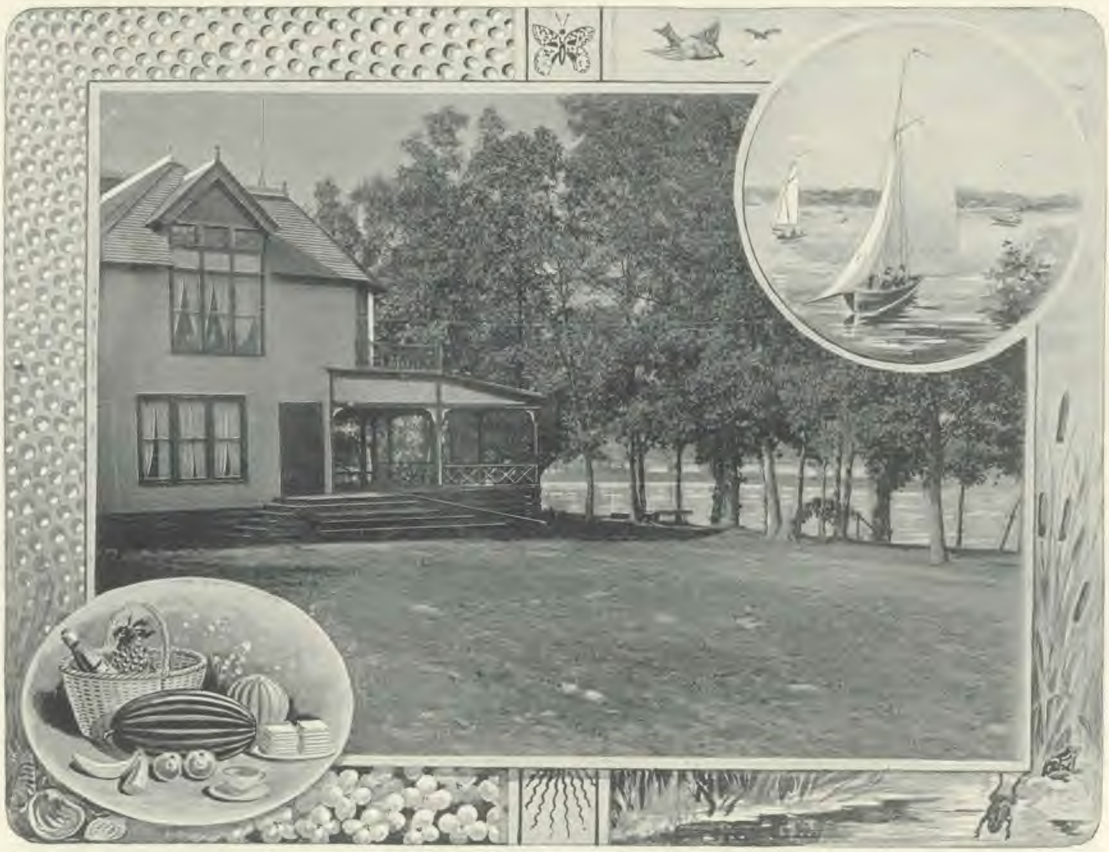
A Bird's-eye View of the City.— The visitor is first invited to pass down the main hall to the elevator, which he takes, and soon finds himself on the roof of the main building, from which he obtains a bird's-eye view, not only of the veritable little village that makes up this mammoth institution, but also of the entire city of Battle Creek, and

a far-reaching landscape, which is rarely excelled for beauty.

Immediately across the way he sees the buildings of Battle Creek College, a flourishing educational institution surrounded by a large campus and beautiful grounds. Over the right wing of the main college building, half a mile in the distance, he sees another beautiful structure, which is pointed out to him as the Haskell Home for orphan children, one of the many philanthropic enterprises which have grown out of the Sanitarium, itself one of the most beneficent and wide-spread philanthropies in the country. A visitor to the orphans' home finds that from eighty to one hundred orphan children are there given a home.

Across the valley toward the left will be noticed the water-tower at Lake Goguac, from which the city of Battle Creek obtains its water-supply. This lake is one of the most beautiful sheets of water in Southern Michigan. A street-car line runs to the lake directly from the Sanitarium. At the lake the Sanitarium maintains extensive grounds and a beautiful villa for the entertainment and pleasure of its guests, and also a large dairy and vegetable farm. Every few weeks during the summer season the management of the institution take all their guests out to the villa for a day's picnic. These occasions are regarded by those who have participated in them as the very acme of perfection in the way of an outing for invalids.

Coming nearer, and fixing our vision upon the more immediate "Sanitarium village," the most prominent object to attract attention is the huge smoke-stack rearing its imposing head from the heating-plant and power-house, from which heat, light, and machine power are supplied to the entire institution by the huge boilers, great dynamos, and engines required for this work. Just to the left is another large five-story building, the Nurses' Dormitory, just to the west of which are located the steam laundry building, and the bread bakery building. Still farther west is the old main building, a modest frame structure which was the original Sanitarium building, having been opened for the purpose of a health institution just thirty years ago this present month, at which time it was situated at the south



The Sanitarium Lakeside Resort.

end of the present main building, facing on Washington street. Immediately adjoining this building to the south is the pumping station, in which the machinery seems ever busy bringing forth from the depths of an artesian well reaching two hundred feet below the surface, the purest and best of water from the solid sandstone rock. Repeated examinations have shown this water to be absolutely free from germs. Yet even this splendid product of Dame Nature is not regarded by the managing physicians as sufficiently wholesome for the use of their patients. According to their decree, even this water must needs be subjected to the process of distillation before it can be used for drinking purposes.

Just beyond the driveway, and connected with the main building, is the large natatorium, which is free to guests, and is in operation summer and winter. Across the street north, and opposite the main building, is the Hospital, an imposing structure five stories high and 100 x 60 feet in extent. A few rods from this, to the north, is the main factory of the Sanitarium Health Food Co. In addition to the buildings named, there are about twenty cottages which, scattered over the twelve acres constituting the site upon which this great establishment is planted, form the Sanitarium village.

Passing from the roof, the escort explains that the main building is six stories high, 312 feet in length, with a rear extension of 100 feet, and has a capacity for three hundred guests; while the accessory buildings afford accommodations for more than seven hundred additional persons, making a total family during the busy part of the season of more than one thousand individuals.

Having thus obtained something of a bird's-eye view of the Sanitarium and its environments, the visitor is given an opportunity to make an inspection of its inner workings, and learn something as to the career of a patient in the institution while making his progress from sickness to health. Accordingly, the next point of interest visited will be the laboratories.

The Laboratories.— The first one we enter is the dietetic, or stomach, laboratory. Here it is explained that the Sanitarium has a regular system or series of scientific tests, by means of which the exact physical condition of each patient is ascertained before any remedial measures are employed in his behalf. These tests are in addition to the physical examination made by the physician in charge of the case. Probably the most important of all the tests made is the stomach test.

The next morning after the patient has arrived and become comfortably settled, if he is a sufferer from indigestion, he is given the privilege of enjoying a test breakfast, which consists of a measured amount of granose, water, and salt. This is retained in the stomach for an hour, and then by means of a stomach-tube is easily removed, and brought into the laboratory, where it is placed in a sort of filter. The clear fluid passes through this into receivers below. The fluid thus obtained is then subjected to fifty-two different chemical combinations and analyses. It will readily be seen that after such a thorough investigation, a report of which is made to the physician in charge of the case, he has very definite data upon which to base his prescription for such medication as may be necessary, or for treatment in the bath, electrical, massage, and other departments of the institution, and especially for diet.

A portion of the stomach fluid is then taken into the bacteriological laboratory, immediately adjoining, and here an extensive and thorough line of experimentation is carried on to ascertain whether or not the stomach under examination is infected with germs. To demonstrate its actual condition in this regard, a portion of the stomach fluid is placed in some media in which any germs that it may contain will be reproduced. These "cultures," as they are called, are allowed to stand from twenty-four to forty-eight hours, when, if germs be present in the stomach fluid, there will result an enormous reproduction of germ life, one germ sometimes producing millions. Some patients, as the result of this experiment, learn for the first time that they are "millionaires." Germs are of many varieties, colors, and dispositions. Some indicate their presence by the formation of gases; while others cause a discoloration of the media in which they subsist, and still others produce the liquefaction of such substances. By means of these experiments the physician is enabled to know what remedies are necessary to eradicate these multifarious pests, and to alleviate the numerous stomach disorders that result from their presence.

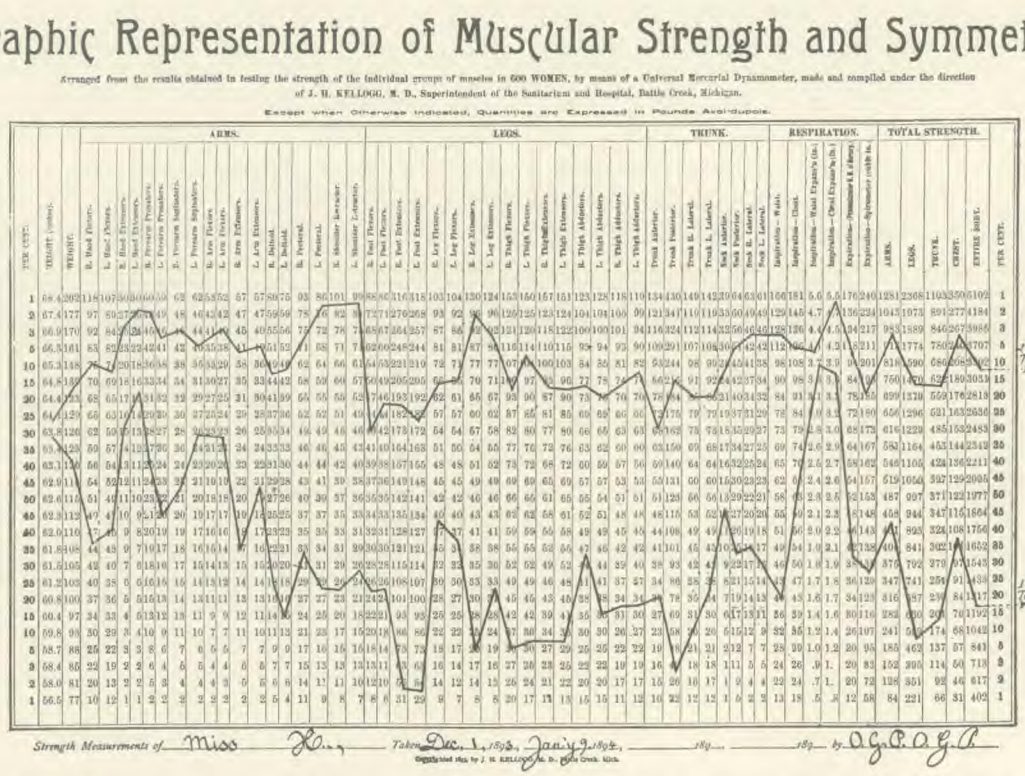
Another test is that of the blood. The physician gently punctures the finger of the patient, and removes a drop of his blood, which is taken to the laboratory, where it is thoroughly examined under the microscope, and otherwise, for the purpose of ascertaining whether it is in a healthy condition, and performing its proper functions in the system.

From the bacteriological laboratory we pass into the general working chemical laboratory, and from that into the urinary laboratory, where numerous

tests are made to ascertain whether the organs of the urinary system are performing their functions properly.

The next point of interest to be visited is the Manual Swedish Movement room, in which are found apparatus and appliances for strength, lung, and other tests. Here we find a strength-testing apparatus which has met with so much favor from experts in the line of physical culture that it is now in use at the United States Military Academy, at West Point, is for learning the lung strength, for which purpose a pneumatometer is used. In addition to these tests, numerous measurements are taken to ascertain the height, the reach, the chest and abdominal expansion, etc. It will therefore be seen that the first important thing done for the benefit of the patient is to ascertain just what is the matter with him.

Manual Swedish Movement Department.—Not the least important of the remedial agents utilized by the institution are those connected with the



The above is a representation of the improvement in strength and muscular symmetry made by a young woman as the result of six weeks' training and treatment.

at Yale University, and many other prominent educational institutions. By means of straps, levers, and the adjustment of the machine in various ways, twenty-four different groups of muscles can be tested. Every newly arrived patient who has strength enough to be about, is given the strength test, and complete and accurate records are made of the results shown. Based upon this test, a regular prescription for work and exercise in the gymnasium is made out, with a view to building up and perfecting a symmetrical development of the entire muscular system.

The next test given is for the purpose of ascertaining the capacity of the lungs in cubic inches, which is made by the use of the spirometer. Another test physical culture department. Nearly all patients who resort to the institution are more or less enfeebled in their muscular mechanism, and not infrequently there are entire groups of muscles which they have completely lost the power to move or exercise. Especially is this true of those suffering from paralysis, rheumatism, chronic constipation, etc. The purpose of the manual Swedish movements is to restore these dormant and inactive muscles to the performance of their proper functions by means of manual manipulation of the muscles, ligaments, and bones of the body. Patients who have lost their ability to walk and the use of various members of their body, are not infrequently entirely

restored to a normal condition within a few weeks or months by the methods used in this room.

Mechanical Swedish Movement Department. — The institution also provides a mechanical Swedish movement room, which is the next to be visited, where some of the same results are obtained by the use of machinery. Upon entering this department, the visitor is quite surprised at the general hubbub, noise, and roar that meets his ears. He has not been in the room long, however, before he is fully convinced of the efficiency of the appliances therein contained for the re-establishing of the active circulation of the blood and the ultimate revivifying of the muscular forces.

Immediately adjoining the mechanical Swedish movement room is one containing machinery and appliances especially for the treatment of women, and for remedying the prolapse of various organs. These machines are also utilized by men when afflicted with prolapse of the stomach. The machines are so adjusted and so operated that the patient is placed in a position whereby the prolapsed organ is restored to its proper location in the body. Other machines in this room are for the purpose of overcoming curvature of the spine, and various other bone and muscular deformities.

The Gymnasium. — The next point of interest is the gymnasium. Here, as explained to the visitor, are numerous and complete appliances by the aid of which patients can carry out the prescriptions given them for training and exercise, all of which is done under the direction of competent instructors. Each morning at 7 : 30, shortly before breakfast, is conducted a Delsarte breathing exercise, which helps materially to sharpen the appetite.

The Gymnasium.

At 9 o'clock each morning, just after breakfast, begins a half-hour dumb-bell and marching drill, in which all the patients who are not confined to their rooms take part with great zest and enthusiasm.

Again at 4 o'clock in the afternoon, immediately after the dinner hour, the patients convene in the gymnasium for another breathing exercise, which helps materially in settling the appetizing dinner which has just been partaken of. At 6 : 30 in the evening occurs an Indian-club drill and marching exercise.

The gymnasium has recently been materially enlarged by an extension of forty-five feet, just beyond which is the newly constructed chapel, soon to be dedicated. Beneath the chapel, which adjoins the gymnasium on the east, is a large room which is being fitted up for a library and reading-room for the nurses and medical students.

The Dining-Room.— Entering the main corridor from the gymnasium, and passing just to the left, the dining-room is entered. During all seasons of the year this room is generously provided with potted flowers and tropical plants, and presents an inviting appearance which commands the admiration of all who enter it.

Electrical Departments.— Passing from the dining-room toward the office, the first object of interest is the static electric machine, the largest machine of its kind in the world, which was built especially for the Sanitarium. Here electricity is generated by means of huge revolving glass wheels. The patients sit adjacent to it upon an insulated platform, and the electricity is conducted to them by means of an electrical wind, controlled by a wand manipulated by a competent physician who has charge of the machine.

Adjacent to this room is the consulting office of the superintendent, and on the opposite side of the hall is the men's electrical department, where various kinds of electricity are applied to the different parts of the body through the medium of sponge electrodes, manipulated by skilled attendants.

Offices.— On either side of the hall leading to the business office, are the pharmacy and offices of different specialists. Continuing the journey, beyond the clerk's desk, we come, on the left, to the business offices, where a large force of clerks and bookkeepers are constantly on duty. Just beyond is the chaplain's office, opposite which is the post-office and sanitary supply department, where patients not infrequently gather in large numbers, anxiously waiting for "a letter from home." Here also are kept in stock a full line of sanitary supplies for both ladies and gentlemen, stationery, health books, health under-garments, dress patterns, daily newspapers, etc.

Parlors.— Continuing his course, the visitor notices on the left the bright, cheerful, airy reception-room, opposite which is the writing-room. Both these apartments are connected with and open into the beautifully appointed and amply lighted main parlor. This is the gathering-place for the large family of patients constantly enjoying the hospitality of the Sanitarium.

Morning prayers are held in this room each day at 7 : 45, just before the breakfast hour. The parlor is also frequently the scene of delightful social, literary, and musical entertainments. Twice each week, on Tuesday and Thursday evenings, Dr. Kellogg here delivers lectures on various health topics to the patients. Other lectures are also frequently given by different members of the medical staff.

Bath Departments. — The visitor finds it convenient to visit next the men's bath-rooms, which are on the first floor, in the rear, just opposite the main entrance. The ladies' bath departments occupy the same position in the second story. On entering the bath-rooms, he sees straight before him a series of three archways, through which the various main departments of the extensive bath compartments are entered. That into which he is first ushered is devoted to the dressing- and cooling-rooms. The men's bath departments have accommodations for about seventy-five persons at one time ; the ladies' departments are nearly twice as large, as there is always a preponderance of lady guests in the institution.

At the north end of the dressing-room the visitor enters the electrical department, where all forms of electrical baths are administered. Here may be seen numerous patients, either enjoying the luxury of an electric bath, their bodies drinking in, as it were, the life-giving electric current, or on comfortable cots receiving the application of electricity through sponge electrodes. Here, as elsewhere through the various departments of the bath-room, and in fact the entire institution, the visitor is impressed with the uniform courtesy, kindness, and careful attention given to each patient by the various nurses and attendants.

Passing from this room, he enters the electric-light bath and Russian bath department. The electric-light bath is one of the most novel and unique therapeutic means found in the institution. It consists of a cabinet, sometimes made upright, and sometimes horizontal. The cabinet is lined with mirrors from which jut out numerous incandescent electric lights, which are reflected by the mirrors from side to side in such a manner that the effect is greatly multiplied. In the upright cabinet the patient sits surrounded by these luminous sources of radiant heat. In the horizontal bath he lies upon a movable table, the top of which is made of plate glass and below which is placed a series of lamps, so he is completely surrounded with luminous rays.

Adjacent to the electric-light bath department is the Russian bath department, fitted up with marble

walls, shampoo slabs, hot and cold sprays, etc. It is one of the most elegant and complete Russian baths to be found anywhere. The Turkish bath is also adjacent to the electric-light bath department; but since the latter has been introduced, the Turkish bath is but little patronized, the electric-light bath being pronounced superior, since vigorous perspiration may be produced without the necessity of breathing warm air, the air surrounding the patient being of the same temperature as that of the room, notwithstanding he may be perspiring vigorously under the cogent influence of radiant heat radiating from incandescent filaments.

In another part of the bath department the visitor notices numerous attendants going into and out of small apartments in which various kinds of massage and other treatments are given. He then wends his way past private rooms for various kinds of water treatments, to the spray and douche room. Here he finds probably the finest and most elaborate apparatus yet devised, by means of which not only the heat but the pressure of the water may be accurately regulated, and by a simple movement of a lever, alternating currents of hot and cold be applied by the attendant. After the patient has enjoyed the deliciously exhilarating sensation resulting from the well-tempered spray succeeding his treatment, he passes into an adjoining room, where he is thoroughly rubbed down and made ready to don his street costume.

The Swimming-Bath.— Just to the rear of the bath-rooms, in a building especially equipped for this purpose, is the natatorium, where patients can enjoy at any time of the year all the delights of a splendid plunge and swim. Skilled instructors are also present to teach all who desire to learn, the important but much-neglected art of swimming.

The Nurses' Dormitory.— Going into the outer air from the natatorium, passing the Annex, or old main building, the pumping station and laundry buildings, a walk is taken to the nurses' dormitory. In the basement of this building are extensive dining-rooms, with accommodations for from five to six hundred persons. As the institution constantly has on its pay-roll the names of from six to seven hundred people, one can readily see that the dining-room at the dormitory is always well patronized. Of course some of the employees live in their own homes.

Going to the second floor, and passing out through the hall, one notices on the right the reception-room and on the left the assembly-hall, where morning prayers are held for the family each day at 6 : 40, immediately after breakfast. In this room the workers also assemble for various religious, literary, and social entertainments during the week. The assembly-room, as well as some other rooms in this building, are used as recitation and lecture-rooms in connection with the medical missionary training-school for nurses, which is conducted in connection with the Sanitarium, and is the largest training-school for nurses in the world. The enrollment in this school each year varies from three to four hundred. All the nurses employed in the institution take a regular course of study in everything pertaining to the art of scientific nursing. As the name of the institution implies, every nurse joining this school does so with the purpose in view of devoting his life to medical missionary work, under the supervision of some regularly established medical missionary board, either in the large cities of our own country or in foreign lands. Many of those who have graduated from this institution are already engaged in this noble work in various parts of the world.

There is also conducted under the same general management as the Sanitarium, a well-equipped medical college, which is known as the American Medical Missionary College. This institution was incorporated under the laws of the State of Illinois July —, 1895. At its opening forty students matriculated. These have recently concluded their first year's work, and have made very gratifying advancement in their studies. The college numbers among its staff of lecturers not only several of the able physicians connected with the Sanitarium, but also some of America's most noted specialists in various lines. Another large class will enter the institution at the opening of the next college year in October. The course prescribed requires four years for its completion. The most scientific studies are conducted in the Sanitarium laboratories and a portion of the Battle Creek College, which has been set apart for this purpose, although the college proper is located in the city of Chicago, where clinical and other medical instruction is given. It is rare indeed that young men and women studying medicine are favored with such exceptional opportunities for the practical study of all forms of disease and the application of rational methods for their cure as are enjoyed by the students of the American Medical Missionary College.

Creamery.— Just to the rear of the dormitory is the Sanitarium creamery, where are received each day from fifteen hundred to three thousand quarts of milk, the quantity varying with the season of the

year. Here sterilized butter is manufactured for the special use of the Sanitarium tables. When the milk is first brought in, it is run through a regular "separator," after which the cream is sterilized by being placed in huge cans in which the temperature is raised by means of steam to 180° F., thus destroying any dangerous germ life that may be contained therein. After being thus separated from the milk, and sterilized, the cream is placed in long cans which are immersed in tanks filled with ice. After a few hours comes the churning. It would be a delight to any dairy expert to notice the care and scrupulous cleanliness preserved in this creamery. It is safe to say that the butter here produced is the purest and sweetest that can possibly be made.

Power-House.— Just across the drive-way from the creamery is the power-house, previously pointed out when our visitor was taking his bird's-eye view from the top of the main building. An interesting feature of the power-house is the eight huge furnaces wherein crude oil is made use of as fuel. An idea of the cost of maintaining the institution may be obtained when it is stated that, even in the summer-time, it is necessary to use twelve hundred gallons of oil per day in order to furnish heat, light, and power to the institution. During the winter months between four and five thousand gallons of oil are required daily.

Greenhouses.— Between the power-house and the Sanitarium main building are located the extensive floral conservatories of the institution. They are drawn upon at all seasons of the year, especially during the winter months, for flowers to enliven the rooms of guests, as well as the parlors, dining-room, and other public rooms.

The Cooking-School.— The Hospital building is the next point of interest to the visitor. Entering the basement, he is first shown into the cooking-school department, where he is charmed with the perfection of equipment, and the neatness, order, and cleanliness which he notices on every hand. Here he finds thirty-five little experimental kitchens, in each of which is cosily arranged a complete outfit of kitchen furniture, such as gas stove, oven, kettles, oatmeal boilers, spoons, knives, forks, etc. The cooking-school was established especially for the instruction of the members of the Nurses' Training-School, who are given the benefit of a thorough course, both of theoretical instruction in the school and of practical work in the Hospital kitchens connected therewith. In this department may also be seen several cabinets containing cooking utensils and various kinds of foods, not only such as are in common use, but also many used in foreign lands and in olden times. Neither in this school nor in the Hospital kitchens are used animal fats, such as lard or suet, saleratus, soda, or baking-powder. The instruction given is purely in the line of scientific hygienic cookery.

Connected with the cooking-school is a dining-room, pleasantly lighted and well-equipped, where the regular Hospital patients take their meals after they have become sufficiently convalescent to leave their rooms.

The Hospital.— There are in the Hospital twenty endowed beds, the endowment of each being two hundred dollars a year, which pays the board of the patient at four dollars a week, the institution furnishing the surgery, medical treatment, and care entirely free of charge. Fully one half of the hundreds of important operations annually performed in this Hospital are of this class. The endowments are provided by various church and State societies, and by private individuals charitably disposed. Were the usual fees charged in all these cases, the income of the institution would amount to more than one hundred thousand dollars a year. Thousands of dollars are spent annually by the institution in the support of this charity work.

Taking the elevator, the escort shows the way to the surgical ward, which is located on the fifth floor. The first room of interest is the disinfecting-room, where all who have occasion to enter the operating-room on operating-days disinfect their hands by washing them in bichlorid of mercury. Here also they dampen their hair before entering the room. Then comes the wardrobe. Here also all who have occasion to enter the operating-room upon such days place over their other garments a long white robe, which is tightly fastened, and over their shoes cloth sandals. The hair is wrapped about with sterilized cheese-cloth. The purpose of these precautions is to prevent the spread in the operating-room of any germs that may be lurking about them.

The visitor is then shown into the anesthetic-rooms, where he notices tables on rollers. On these the patient about to submit to an operation is placed to receive the anesthetic. Everything being arranged in the operating-room, the surgeon and his assistants at hand, together with a trained corps of the most skilled nurses which the institution affords, the patient is wheeled into the operating-room and gently lifted from the anesthetic table onto the operating-table. The framework of the operating-table is iron, and the body of it plate glass. The operation being performed, the patient is lifted on

to the bandaging-table, upon which he is removed to his room in the ward.

Another table in the operating-room bears the sponges; still another, the instruments; and still another, bandages and supplies of various sorts. All the tables are constructed of glass and iron, so as to be germ proof. On the further side of the room may be seen the instrument cases, which contain between five and six thousand dollars' worth of instruments. Immediately adjoining one of these is a tall iron rack on which are suspended jars full of various antiseptic and other solutions ready for immediate use, if needed during an operation.

A few feet beyond are the disinfecting-urns, in which the surgeon frequently bathes his hands during the operation, to prevent the spread of any germs with which his hands may come in contact in performing the operation. There will also be noticed near the heating coils a steam fixture, which injects steam into the room just before operations begin, for the purpose of causing any germs that may be in motion in the air to absorb moisture and thus settle to the floor.

On one side of the operating-room is the gallery, to which admission is given only to the immediate friends or relatives of the patient having an operation, and to visiting physicians and surgeons. There is stationed on each operating-day in the gallery a stenographic reporter, who takes down everything the surgeon says during the operation and an account of every circumstance which occurs, so that a complete record of each case is kept.

The operating corps consists of the surgeon and two or three assistants, together with about twelve expert nurses and three or four physicians skilled in the administration of anesthetics. In the performance of their work, the nurses are drilled to a military precision by means of rehearsals, in which all the details of the operation are gone over by the aid of a dummy patient and a sham operation, so that as each operation advances, they know how to provide the operating surgeon with just such instruments and appliances as he may need, without his giving them special instruction.

The most scrupulous care is taken to render the operating-room thoroughly aseptic and antiseptic. The great value of the extreme care taken in this regard is abundantly demonstrated by the remarkably low death-rate which the Hospital records show, the Hospital enjoying in this respect a better standing than any other in the world.

Leaving the operating-room, the sterilizing-room is then entered. Here is seen a huge retort that reminds one not a little of a Krupp gun. This is used for the purpose of sterilizing the linen used by all patients in the Hospital, also pillow-cases, etc., used upon their beds. The sterilizing is accomplished by placing the goods in the retort, closing the door, making the chamber thoroughly air-tight, and forcing steam into and through the goods under high pressure. This thoroughly and completely puts to rout any germs that may be hiding in the various fabrics.

Adjoining the sterilizing-room is another in which is a receiver from the distilling-apparatus, which is located in the attic above. Thus all the water that is used for any purpose whatever in the Hospital building is first made thoroughly free from germs.

On the floor below the surgical ward there is, in addition to the rooms for patients, a very pleasant reception-room, always provided generously with the most beautiful flowers, where patients are frequently to be found in their wheel-chairs, enjoying the flowers and the sunshine. It is needless to say that this room is but little used in summer, as patients can then be wheeled out upon the spacious verandas and lawns surrounding the buildings.

Taking the elevator, the visitor soon reaches the main floor of the Hospital building. On the left of the main hall is the Hospital parlor. In this room on each day at 12 : 30 is held a brief prayer service for the benefit of such patients in the Hospital as are able to leave their rooms. Not infrequently this room may be seen almost completely filled with wheel-chairs bearing convalescent patients. This is also used as a lecture-room in connection with the Nurses' Training-School, and contains a large library, under the care of a librarian, which is especially provided for the use of nurses and medical students.

On the opposite side of the hall are the business offices of the Good Health Publishing Co., where are to be found busily employed a large corps of clerks, stenographers, and bookkeepers.

The Health Food and Canning Factories.—Bidding farewell to the Hospital building, the journey is continued, and soon the main building of the Sanitarium Food Co. is reached. Here taking the elevator, a descent is made to the basement floor, where are the engines and machinery for the manufacture of Granose, Granola, and other special cereal foods produced by this company. All the wheat and other grains used in the manufacture of these foods are thoroughly purified by elaborate machinery before entering upon the various processes through which they pass.

On the second floor of the bakery are located the pearling machines, also the cracker-making machinery, and two large "Ferris-wheel" revolving ovens. After the crackers are baked, they are put into a cracker conveyor, which carries them to any part of the building desired. Granola and Granose, two important foods which have found their way into many American homes, are manufactured here. This company has recently begun the manufacture of graham flour, corn-meal, corn grits, crystal wheat, and various other cereal breakfast grains, which are subjected to the most thorough purifying processes.

The visitor again takes the elevator and ascends to the third story, where he sees a large company of young ladies busily engaged in packing in cartoons the various foods manufactured, and men at work packing the cartoons into boxes for shipment to every part of the world.

Besides this main building, the Sanitarium Food Co. has three other factories, one heretofore mentioned, just in the rear of the Sanitarium, also another factory near the Michigan Central railroad tracks where the Caramel-Cereal is produced. A few rods from this building is another large building, which has been recently equipped and set in operation as a canning-factory, where are produced various kinds of the choicest cann fruits and vegetables, in quantities sufficient not only to supply the growing needs of the Sanitarium, but also for others who appreciate pure foods.

Thus having visited the various points of interest in and about the institution, our visitor completes his circuit by returning to the reception-room in the main building. To say that he often expresses surprise as he progresses on his tour of inspection is putting it but mildly. Nearly every one rounds out his trip by expressing most profuse thanks for the opportunity just afforded him of looking over the institution, and not infrequently it is said, "I knew there was a Sanitarium in Battle Creek, but I had no idea that it was such a mammoth institution as I have seen. I am perfectly amazed at the completeness of its equipment, and the thoroughness with which its various methods and appliances are utilized for the care and cure of the sick."

A Wheel-Chair Social on the Lawn.

Battle Creek, Michigan.

JEFFERSON ST., LOOKING SOUTH.

BATTLE CREEK, Calhoun County, Michigan, is a city of about 20,000 population, situated at the confluence of the Battle Creek with the Kalamazoo River. It is 165 miles east of Chicago, 120 miles west of Detroit, and 62 miles east of Lake Michigan, on the main lines of the Michigan Central, the Grand Trunk, and the Cincinnati, Jackson, & Mackinaw railways. It is surrounded by one of the richest agricultural and fruit-raising districts in Michigan. Cherries, apples, pears, plums, and peaches are produced in great abundance, and of the finest quality.

Battle Creek was first settled in 1831, and for over fifty years has steadily grown both in population and as a commercial and industrial center. The fine water-power here makes it a very desirable center for industries of various kinds. It has four flouring-mills, with a capacity for 550 barrels per day ; and two large threshing machine-manufactories.

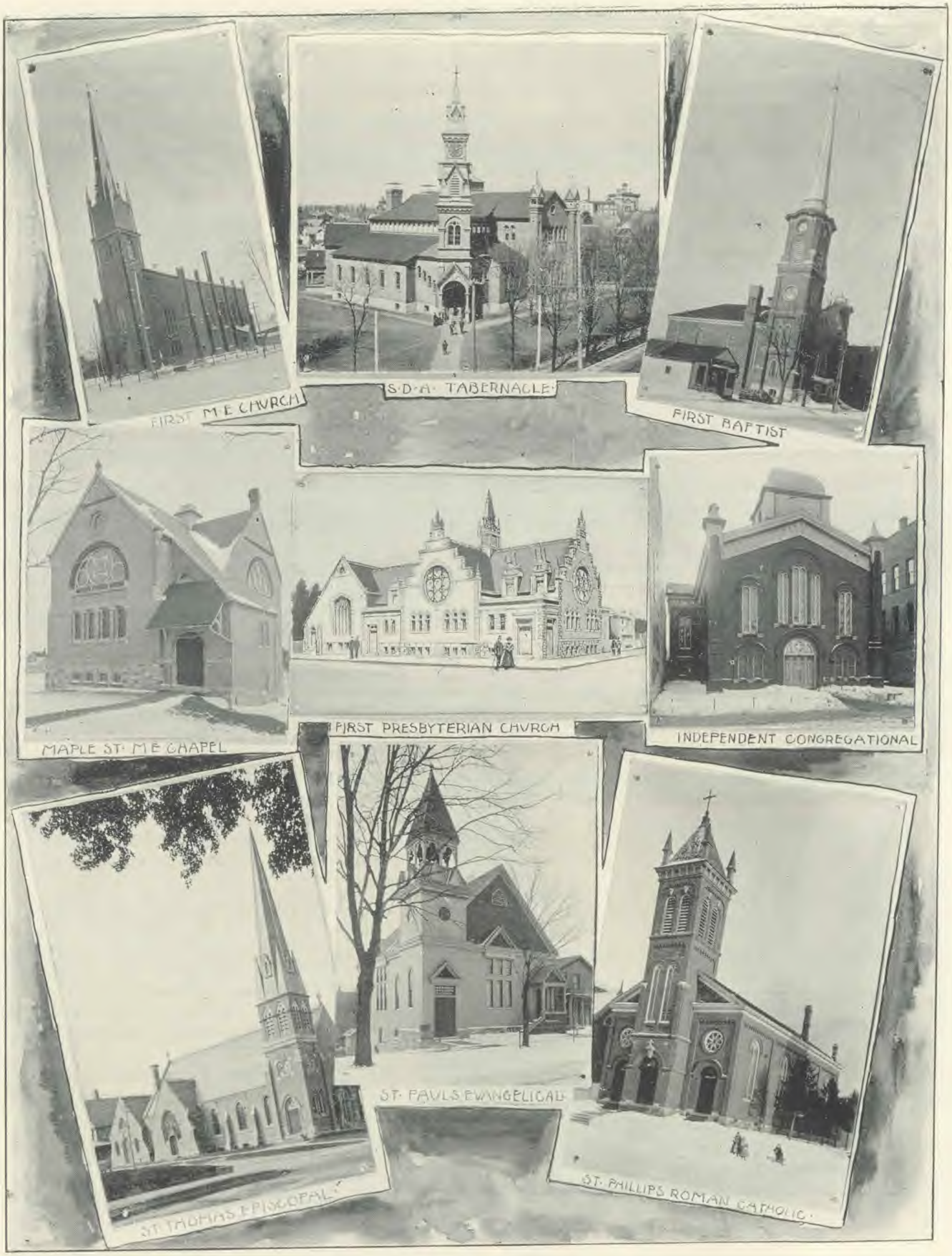
The Advance Thresher Company was organized in 1886. It has always been an important factor in Battle Creek's growth and prosperity. In point of value of its annual product, it stands second in the United States. The plant covers thirty-five acres in the western part of the city, alongside the tracks of both the Grand Trunk and the Michigan Central railways. Mr. A. W. Wright, of Alma, Mich., president of the company, is widely known because of his great executive ability as well as for his large-hearted philanthropy. Mr. S. O. Bush is vice-president ; Mr. B. T. Skinner, treasurer ; and Mr. James Green, general manager. See their advertisement for further particulars.

The Nichols & Shepard Company, the other thresher manufactory, is located in the eastern part of the city. This is a great industrial concern and has always been prosperous. It is managed by the Hon. E. C. Nichols and David Shepard, both of whom are men of excellent business ability and large experience, Mr. Shepard being one of the original founders of this great industry.

MAIN ST , LOOKING WEST.

The Duplex Printing Company is another very important industry of the city. This company manufactures the Cox perfecting and stop cylinder press. This press prints on flat beds with ordinary type 3500 to 4000 papers per hour. (See their advertisement.) Mr. Jos. L. Cox, the inventor, though still a young man, has attained a national reputation.

The Battle Creek Steam Pump Company was incorporated in 1873, and has kept pace with the growth of the city. This company employs a large number of men, and has a fine business. Mr. Edward C. Hinman is its secretary and treasurer as well as general manager. He is a cultivated gentleman, and possesses rare executive ability.


FIRST M·E CHURCH
S·D·A· TABERNACLE
FIRST BAPTIST
MAPLE ST· M·E CHAPEL
FIRST PRESBYTERIAN CHURCH
INDEPENDENT CONGREGATIONAL
ST· THOMAS EPISCOPAL
ST· PAULS EVANGELICAL
ST· PHILLIPS ROMAN CATHOLIC·

Among other well-known and rising Battle Creek institutions, is the Ellis Publishing Company. This house established its headquarters here some three years ago, and began the publication of business college text-books and appliances. Their "leader" is the well-known Actual Business System of Business Training, a new method of commercial teaching which has lately come into great prominence in educational circles. The rise of this business house is a fine illustration of American pluck and enterprise. Although it began doing business less than four years ago, it is now one of the best-known firms in its line in the United States.

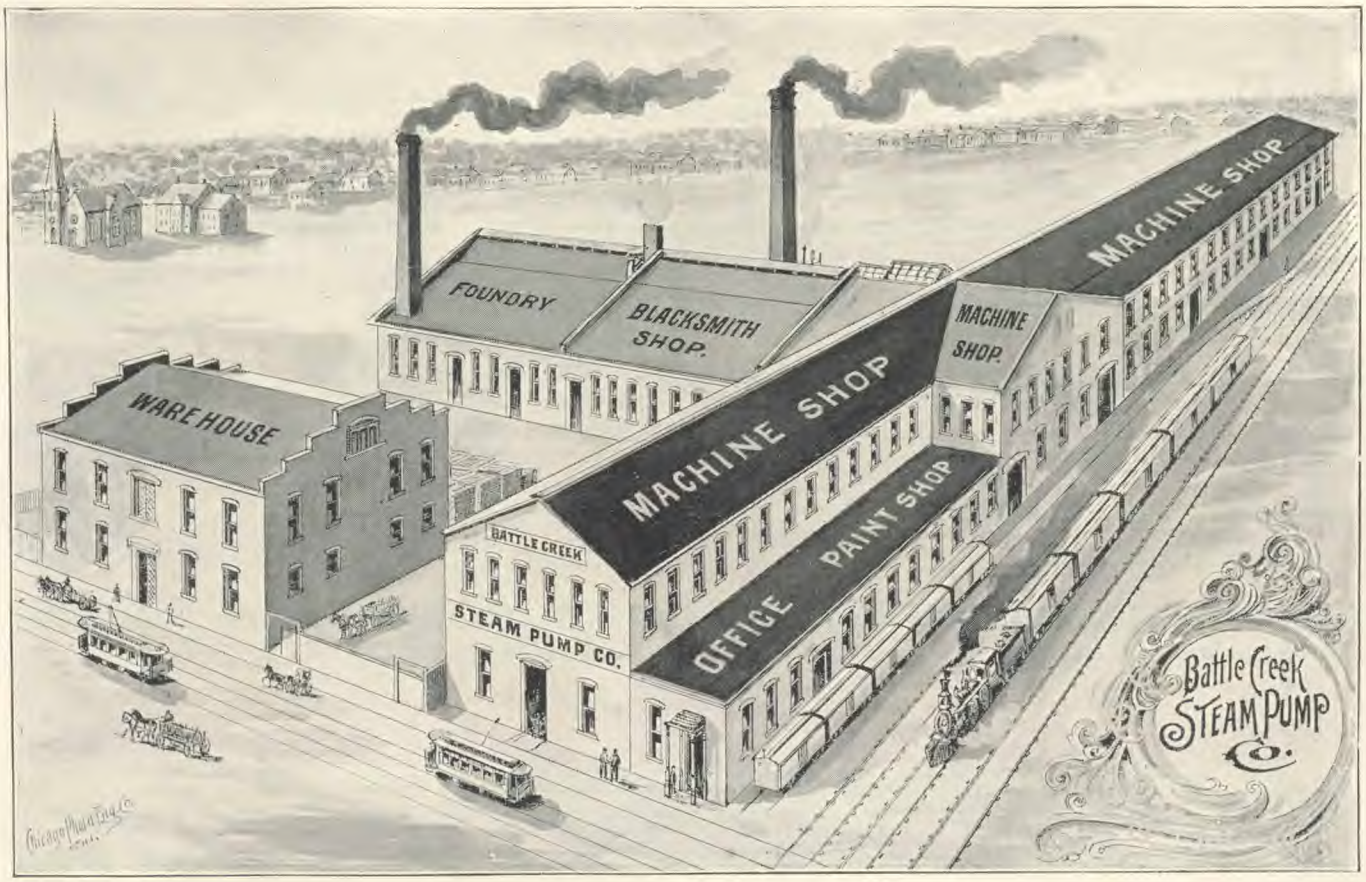
There are several other manufacturing firms in the city, besides the extensive repair shops of the Grand Trunk Railway, in all employing about 2500 men.

The city has a Board of Trade, composed of representative men. This organization does much to enhance all the commercial and industrial interests of Battle Creek. There is also a Board of Public Works, an appointive body, which has charge of all public improvements, such as the water-works system and sewers. The mayor is an ex-officio member of this board.

There are four banks, an opera-house with 1200 seats, nine churches, and two daily papers, the *Journal* and the *Moon*. The city is well lighted with electricity and gas. It has a fine electric system of street-cars connecting the several parts of the city, and also extending to Lake Goguac, a beautiful body of water about two miles distant. This lake is the source of the city's water supply. Here a stand pipe 132 feet high and steam pumping-works are established, to force the water to all parts of the city. The Fire Department is one of the institutions in which Battle Creek citizens have cause to feel pride. Having the most improved appliances, it is well equipped to battle with fire.

But Battle Creek's chief attraction is its great Sanitarium, which has given the city a world-wide reputation as a health resort. A description of this wonderful institution will be found elsewhere in this issue of GOOD HEALTH.

The educational facilities of the city are as fine as any in the country. Here is situated the Battle Creek College with its extensive buildings and elegant equipment; and the city High School is reputed for its high standard. The system of graded schools is kept at the highest mark of progressive education.



Battle Creek SANITARIUM Health Foods.

GRANOSE cures dyspepsia and constipation. Requires no cooking.

GRANOLA, a delicious, digestible, fattening food, ready to eat at once.

CARAMEL-CEREAL, a delicious, wholesome beverage.

BATTLE CREEK SANITARIUM BREAKFAST FOOD, a physiological mixture of choicest grains, especially prepared. Best of all uncooked cereal preparations.

GERMLESS OATS (Sanitarium brand).

GERMLESS WHEAT GRITS.
GERMLESS CORN GRITS.
CRYSTAL WHEAT, sterilized, ready cooked.
GLUTEN PREPARATIONS.
DIABETIC FOODS.

A large variety of crackers and biscuit and other wholesome preparations.

SUPERIOR CANNED GOODS, WARRANTED PURE.

SWEET WRINKLED PEAS, TOMATOES, AND FRUITS.

Send for catalogue and price list. Send 25 cents for package of samples.

BATTLE CREEK SANITARIUM HEALTH FOOD CO., = = Battle Creek, Mich.

NEW FOOD SPECIALTIES

NUTTOSE, a pure product of nuts. Used in every way like meat, and a perfect substitute for fish, flesh, and fowl, both in taste and nutrient properties.

BROMOSE. Makes fat and blood. Cures constipation and most forms of indigestion. A delicious nut product.

NUT CHEESE. Another pure product of nuts. Resembles cheese in appearance. Delicious, delicate in flavor, highly nourishing. Makes fat and blood. A toothsome delicacy.

LAC VEGETAL. A vegetable substitute for milk. Prepared from nuts. A perfect food in itself. Added to cow's milk, renders it more digestible.

Send 25 cents for package of samples.

Address, for circulars and price list, **SANITAS FOOD CO., Battle Creek, Mich.**

TEN LECTURES ON

NASAL CATARRH

Its Nature, Causes, Prevention, and Cure.

This admirable little treatise is written so plainly and simply that a child can understand it, yet contains all that is latest and freshest in the medical world in relation to this dread disease—the very cream of scientific investigation. Emphatically a book for the people.

Agents will find this an easy book to sell. In fact, it will sell itself.

Contains 120 pages, 11 Cuts, and 7 Colored Plates. **Stiff Covers, 75 cents.**

GOOD HEALTH PUB. CO., Battle Creek, Mich.

W. C. GAGE & SONS
THE PRINTERS

BATTLE CREEK, MICH.,
Make a Specialty of

LARGE CONTRACTS.

COMPLETE EQUIPMENT.

Electrotyping and Engraving of all Kinds.

First-Class Work in Every Department.

Those having at any time attended Prof. Magner's classes or having copies of his book, are requested to send their address to him as below. He has something of interest to send them.

D. MAGNER, Battle Creek, Mich.

Agents Wanted for a new household article.

EVERY FAMILY WANTS IT.

Send stamp for full particulars. **Large Profits.**

R. E. HART & CO., 40 Lincoln St., Battle Creek, Mich

MARR & DUFF,

Headquarters for

Staple Dry Goods
AND NOTIONS.

Our Specialty is Our Cloaks—

For Ladies, Misses, Children, also House wrappers. The largest and most complete line in the city is at

MARR & DUFF'S,
40 AND 42 W. MAIN ST.

FOR FALL AND WINTER

We have prepared a most attractive line of

Men's, Boy's, and Children's Clothing, Furnishing Goods, Hats, Caps, Gloves, and Mittens,

which in every particular sustains our well-merited reputation. We are, as we always have been, A REPRESENTATIVE HOUSE, studying the wants of the trade. All we ask is an opportunity of convincing you.

M. MAAS, - 3 W. Main St.

Duplex Printing Press Company.

CAPITAL, $300,000.

Manufacturers of
PRINTING PRESSES.

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SOUTH MCCAMLY, CORNER HOUSTON ST.
TELEPHONE 148.

AMBERG & MURPHY,

Wholesale and Retail Drugs, Chemicals, Perfumes, Sundries, Rubber Goods.

NO. 5 EAST MAIN ST.

Chas. F. Bock & Son,

Headquarters for the Leading Stoves in America.

Garland, Red Cross, Round Oak. Magee, and Steel Ranges, Mantels,

GRATES, AND TILE HARDWARE.

18 West Main St.

L. W. ROBINSON,

Dry Goods.

33 AND 35 W. MAIN ST.

H. T. HARVEY, D. D. S.

Gold Crown and Bridge Work, Regulating Irregular Teeth, Making Obturator Plates for Cleft Palates, and Gold Filling a Specialty.

Suite 1, 2, 3 Trump Building, 35 West Main Street, BATTLE CREEK, MICH.
Telephone, Office 202; Residence, 202, 3 rings.

THE

Palace Laundry

of Battle Creek, Mich., is the Finest and Best Equipped Laundry in the City.

Is the best place to leave your laundry while stopping in the city. We do laundry work for guests of the Sanitarium.

LAUNDRY,
33 EAST MAIN STREET.
TELEPHONE 22.

SANITARIUM LIVERY,

S. I. ABBEY, Prop'r.

169 Champion Street, South Side. Telephone 11.

Battle Creek, Mich.

First-Class Outfits,

SINGLE OR DOUBLE,

At Reasonable Rates.

H. A. PRESTON,

Boots, Shoes, and Rubbers.

Fine Goods a Specialty.

No. 7 E. Main St., Battle Creek, Mich.

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For Grammar and High Schools and Academies. Used in hundreds of leading schools.

It cannot be adequately described; you must see it.

Nothing else like it; nothing else equals it.

As Cheap as the Text-book Method and a thousand times more practical.

Send for descriptive catalogue containing full particulars.

Address
ELLIS PUB. CO.,
San Francisco, Cal. *Battle Creek, Mich.*

Mason, Rathbun & Co.,

Dealers in

LUMBER, LATH, AND *SHINGLES.*

OFFICE and YARD,
102 South Jefferson St.

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TITUS & HICKS,

Merchant Millers,

We make a specialty of GRAHAM, WHOLE-WHEAT, SANITARY FLOUR, and WHEAT GERM GRITS made from the choicest MICHIGAN WHITE WHEAT.

Mail orders solicited and satisfaction guaranteed.

TITUS & HICKS, Battle Creek, Mich.

ARTHUR D. SMITH,
FINE CLOTHING AND GENTS FURNISHING GOODS
16 W. MAIN ST., - BATTLE CREEK, MICH.

RUEL M. SPEER
Dentist Fine Crown and Bridge Work a Specialty.
49 & 51 West Main St., - BATTLE CREEK, MICHIGAN.

POPULAR MEDICAL WORKS.

The Home Hand-Book of Domestic Hygiene and Rational Medicine,

the most popular medical treatise ever published; 1700 pages; prices:—

Muslin, Richly Embossed in Jet and Gold,	$4.50
Half Buffing, Marbled Edges,	5.00
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Full Morocco, Royal Edition,	9.00

Ladies' Guide,

a work which has saved the lives of hundreds of women, and the health of thousands. Ought to be in the hands of every young woman, and every wise mother; 700 pages, prices:—

Cloth, Embossed in Jet and Gold,	$3.00
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MODERN MEDICINE PUB. CO., Battle Creek, Mich.

Man, the Masterpiece,

a work which deals with the practical questions upon which every young man ought to be informed, concerning himself. Special chapters devoted to sexual physiology. A work which ought to be in the hands of every young man; 600 pages; prices:—

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MODERN MEDICINE PUB. CO., Battle Creek, Mich.

Good Health,

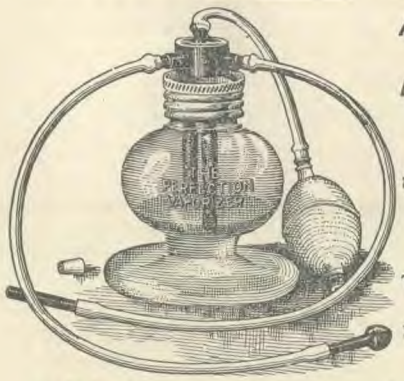
a family health magazine, every number of which is worth many times the subscription price. Every intelligent mother needs this journal to enable her to keep abreast of the progress of the age in domestic hygiene, child culture, and all that pertains to the health of the home.

Price, ... $1.00 a year.

Address

GOOD HEALTH PUB. CO., Battle Creek, Mich.

Perfection Vaporizer,



A New Instrument which has no Equal as a Means of Applying Medicaments to the Nose, Throat, and Lungs.

The PERFECTION VAPORIZER has the following advantages over all others:—

1. It furnishes a continuous stream of medicated air, without the necessity of continuously working the bulb.
2. By its aid, medicated air may be introduced into the nasal cavity with sufficient force to cause it to enter the ears, frontal sinuses, and other connecting cavities.
3. It permits thorough treatment of the cavities of the nose and throat at the same time, and so economizes time.
4. It is strong, does not upset easily, is durable and efficient. It embodies all the good qualities of any other volatilizer or vaporizer in addition to the above.

The Perfection Vaporizer is indispensable in the successful treatment of COLDS, BRONCHITIS, NASAL and THROAT CATARRH, diseases of the EARS, and in all other affections of the nose, throat and lungs.

PRICE, $3.

Modern Medicine Company,
Battle Creek, Mich.

THE CYCLONE WASHER

Stands Without a Rival.

Gives more satisfactory results with less expenditure of energy than any other washing machine. **Buy a "Cyclone" and save your strength,** is what the people say. We give the following from among the testimonials we are receiving daily.

TERRA CEIA, FLA., Jan. 29, 1896.

CYCLONE WASHER CO.,

I received the washer some time ago, and to say that I am pleased with it is too tame. I am perfectly delighted with it. Have shown it to several, and they are all pleased with the work and talk of buying one. Shall begin for orders and will want a dozen in a few days.

Yours truly,
MRS. E. A. LENNARD.

BATTLE CREEK, MICH.,

MESSRS. COON BROS.,

Gentlemen: It gives me pleasure to add one more to your list of testimonials for the "Cyclone Washer." We have one in our family, and do not see how we could get along without it. The washing, instead of a drudgery, has become a mere pastime. It ought to be in every family.

Sincerely,
FRANK ARMSTRONG.

MANUFACTURED BY **COON BROS.,**
20 HANOVER STREET,
BATTLE CREEK, MICH.

Agents Wanted Everywhere.

The New Crusade.

(FORMERLY THE "MOTHERS' FRIEND.")

A Monthly Periodical Issued in the Interest of the Home and Society.

EDITED BY MARY WOOD-ALLEN, M. D.

The success of the "Mother's Friend" in the first year of its existence, induces the publishers to **enlarge its size and broaden its scope.**

While continuing to emphasize the educational phase of Purity Work, it will also discuss the Rescue Work, the questions of legislation in behalf of morality, and all topics of health and heredity.

It will aim to present in a plain and practical way, an answer to the many moral problems that are continually presenting themselves to parents, and are not treated in other periodicals.

The **NEW CRUSADE** will wage a peaceful war against all forms of evil, and strengthen the good name which it has earned as the "Mother's Friend."

Send for circular concerning **club rates and advantages secured** to those who desire to club with other periodicals.

Personal problems can be presented to the editor, and if of general interest, will be answered through the publication.

Single Copy, 5 cts.
Subscription, 50 cts. per Year.

For sample copy or further particulars, address the publishers,

WOOD-ALLEN PUBLISHING CO.,
ANN ARBOR, MICH.

CARAMEL CEREAL.

A MOST delicious substitute for the Coffee Bean, and contains none of its harmful properties.

Progressive physicians have, for many years, recognized the fact that tea and coffee are responsible for indigestion, impoverished blood, starved nerves, bad complexion, facial eruptions, and other ailments, and consequently have felt the necessity of a substitute which would be **agreeable,** and at the same time **reliable.** This exigency has been met by **Caramel-Cereal. Caramel-Cereal** is prepared from wheat by a process which develops from the grain an aroma and a flavor closely resembling those of genuine Mocha or Java.

Caramel-Cereal has been used for over twenty years at the **Battle Creek Sanitarium,** and the demand has increased daily until the sale is enormous.

Try it, and you will always use it.

Price 15 cents per pound package in handsome carton.

MANUFACTURED BY

Battle Creek Sanitarium Health Food Co.,
Battle Creek, Mich.

THE attention of those contemplating a visit to Europe is respectfully invited to the

INSTITUT SANITAIRE,

BASLE, SWITZERLAND.

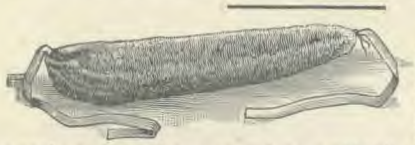
This establishment, organized and conducted on the same principles as the Battle Creek (Mich.) Sanitarium, offers to the public what cannot elsewhere be found in Europe,—a combination and skilful application of the latest developments in the use of rational remedies.

Switzerland is annually visited by thousands for its unrivaled scenery and health-restoring climate; other places for their baths; but the popular resorts do not combine the advantages of climate and ordinary baths, with **strictly hygienic diet, massage, mechanical exercise, electricity,** and the **skilful application of the most approved hydropathic appliances,** and other natural remedies.

The **INSTITUT SANITAIRE** is conducted by those who received special preparation for this work in the Battle Creek Sanitarium. Treatments are administered by trained attendants under the direct supervision of a physician. Hygienic board and Sanitarium Health Foods are provided. Terms moderate. For particulars address,

INSTITUT SANITAIRE,
48 WEIHERWEG, BASLE, SWITZERLAND.

A Natural Flesh Brush



This is the product of an Egyptian plant called the Loofah, or dish-rag gourd, which grows along the Nile. It excels every other natural or artificial product for use as a flesh brush. Conveniently arranged with tapes, as shown in the cut, it can be applied to every part of the body. It will last indefinitely.

SEND FOR CATALOGUE.

SANITARY AND ELECTRICAL SUPPLY CO., BATTLE CREEK, MICH.

Cannon-Ball Massage

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FINISHED,
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The Cushion Frame Bicycle gives . . . . . .

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EASTERN BRANCH,
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GRAND TRUNK RAILWAY SYSTEM

(CHICAGO AND GRAND TRUNK DIVISION.)

Time Table, in Effect March 20, 1896.

GOING EAST. *Read down.*					STATIONS.	GOING WEST. *Read up.*				
10 Mail Ex.	4 L'v'd Ex.	6 All. Ex.	42 Mixd Tr'n.	2 Pt. H Pass		11 Mail Ex.	1 Day Ex.	3 R'd L'v'd	23 B. C. Pass.	5 P'tic Ex.
a m	p m	p m				p m	p m	p m		a m
9.00	3.10	8.15	a m	.....	.....D. Chicago. A.....	6.45	1.50	9.10	.....	6.30
11.25	5.05	10.30	6.00	.....	.....Valparaiso.....	5.05	11.35	7.10	.....	4.30
p m										
1.05	6.30	12.00	10.05	.....	.....South Bend.....	3.10	10.15	5.44	.....	3.07
1.46	7.12	12.45	12.40	.....	.....Cassopolis.....	2.15	9.40	5.13	.....	2.25
2.33	.....	1.33	3.42	.....	.....Schoolcraft.....	1.20	.....	.....	.....	.....
2.44	7.55	1.48	4.50	a m	.....Vicksburg.....	1.10	8.52	.....	p m	1.30
3.30	8.30	2.40	6.20	7.00	.....Battle Creek.....	12.15	8.15	8.55	9.35	12.50
4.33	9.26	3.25	.....	7.47	.....Charlotte.....	11.14	7.23	9.07	8.40	11.55
5.10	9.55	4.00	.....	8.20	.....Lansing.....	10.40	6.55	9.40	8.00	11.25
6.30	10.45	5.03	.....	9.30	.....Durand.....	9.35	6.05	1.55	6.50	10.25
7.30	11.17	5.40	.....	10.05	.....Flint.....	8.35	5.35	1.28	5.47	9.30
8.15	11.50	6.15	.....	10.43	.....Lapeer.....	7.49	5.02	1.00	5.10	9.05
8.42	a m	6.35	.....	11.06	.....Imlay City.....	7.28	.....	.....	4.48	.....
9.50	1.00	7.30	.....	12.05	.....Tunnel.....	6.50	3.5	11.55	3.50	7.55
	p m					a m	a m	a m	p m	p m
9.25	.....	.....	.....	.....	.....Detroit.....	.....	.....	10.40	4.05	8.00
	a m	p m					p m			p m
.....	8.15	5.25	.....	.....	.....Toronto.....	.....	9.20	.....	.....	1.00
	p m	a m					a m			
.....	8.15	7.25	.....	.....	.....Montreal.....	.....	9.15	.....	.....	.....
	a m	p m					a m			
.....	8.12	7.15	.....	.....	.....Boston.....	.....	8.30	.....	.....	.....
	a m	p m					p m	a m		p m
.....	7.50	4.25	.....	.....	.....Susp'n Bridge.....	.....	10.15	7.05	.....	2.05
	a m	p m								p m
.....	7.00	5.40	.....	.....	.....Buffalo.....	.....	.....	.....	.....	1.00
	p m	a m					a m	p m		p m
.....	8.53	8.03	.....	.....	.....New York.....	.....	8.15	6.10	.....	9.00
		a m								p m
.....	.....	10.20	.....	.....	.....Boston.....	.....	.....	.....	.....	7.00

Trains No. 1, 3, 4, 6, run daily; Nos. 10, 11, 2, 23, 42, daily except Sunday.

All meals will be served on through trains in Chicago and Grand Trunk dining cars.

Valparaiso Accommodation daily except Sunday.

Way freights leave Nichols eastward 7:15 a. m.; from Battle Creek westward 7:05 a. m.

† Stop only on signal.

A. R. Mc INTYRE, *Asst. Supt., Battle Creek.*

A. S. PARKER, *Pass. Agent, Battle Creek.*

MICHIGAN CENTRAL

"The Niagara Falls Route."

Corrected June 21, 1896.

EAST.	*Night Express.	†Detroit Accom.	†Mail & Express.	*N. Y. & Bos. Spl.	*Eastern Express.		*Atl'ntic Express.
STATIONS.							
Chicago.....	pm 9.40		am 6.50	am 10.30	pm 3.00		pm 11 30
Michigan City.	11.25		8.48	pm 12.08	4.50		am 1.14
Niles.....	am 12.33		10.15	1.00	5.55		2.25
Kalamazoo....	2.10	am 7.20	11.52	2.08	7.16		4.32
Battle Creek...	2.55	8.10	pm 12.50	2.42	7.55		4.53
Jackson.....	4.30	10.00	2.35	4.05	9.20		6.30
Ann Arbor.....	5.40	11.05	3.47	4.58	10.17		7.35
Detroit.....	7.10	pm 12.20	5.30	6.00	11.20		9.00
Buffalo.....				am 12.10	am 6.45		pm 5.30
Rochester.....				3.00	9.55		8.40
Syracuse.....				5.00	pm 12.15		10.45
New York.....				pm 1.45	8.45		am 7.00
Boston.....				3.00	11.35		10.45
WEST	*Night Express.	*N.Y.Bos. &Mich.Sp.	†Mail & Express.	*N.Shore Limited.	*Weste'n Express.	†Kalam. Accom.	*Pacific Express.
STATIONS.							
Boston.....		am 10.30		pm 2.00	pm 3.00		pm 7.15
New York.....		pm 1.00		4.30	6.00		9.15
Syracuse.....		8.30		11.30	am 2.15		am 7.20
Rochester.....		10.37		am 1.20	4.10		9.55
Buffalo.....		11.45		2.20	5.20		pm 3 25
Detroit.....	pm 8.30	am 6.30	am 7.15	8.30	pm 12.55	pm 4.45	11.05
Ann Arbor.....	10.10	7.35	8.58	9.25	1.55	5.55	am 12.15
Jackson.....	11.30	8.35	10.43	10.30	2.57	7.35	1.25
Battle Creek...	am 12.45	9.48	pm 12.15	11.40	4.14	9.11	2.55
Kalamazoo....	1.35	10.27	1.07	pm 12.17	4.52	10.00	3.40
Niles.....	3.30	11.48	3.10	1.45	6.27		5.03
Michigan City.	4.35	pm 12.50	4.32	2.45	7.25		6.01
Chicago.....	6.30	2.40	6.35	4.30	9.05		7.50

*Daily. †Daily except Sunday.

Kalamazoo accommodation train goes west at 8.05 a.m daily except Sunday.
Jackson " " " east at 7.27 p.m. " "

Trains on Battle Creek Division depart at 8.10 a. m. and 4.35 p. m., and arrive at 12.25 p. m. and 6.35 p. m. daily except Sunday.

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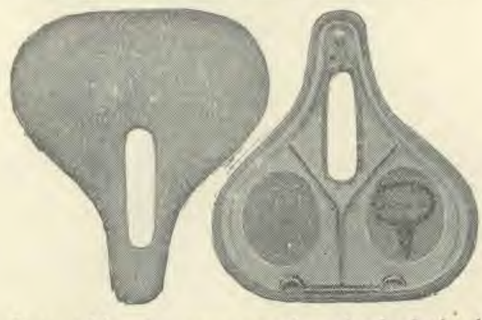

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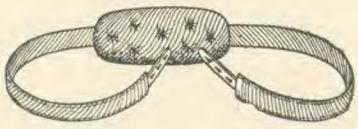
The "Natural Abdominal Supporter"

Especially designed for persons of both sexes who are suffering from prolapse of the bowels or stomach, floating kidney, and other abdominal or pelvic displacements. The "Natural Abdominal Supporter" is more

Efficient, Comfortable, and Convenient



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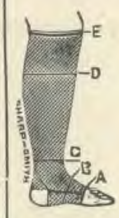

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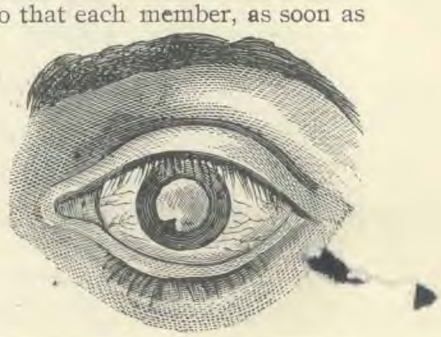

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THE publishers of MODERN MEDICINE will issue each month during the year 1896, under the above title, a brochure on some practical medical topic. The first number consists of a paper by Dr. J. H. Kellogg, entitled, **"What is the Matter with the American Stomach?"** which presents the results of new and interesting inquiries respecting the morbid conditions of the stomach, and their causes.

The following additional numbers are already in preparation:—

"The Liver: Its Diseases and Modern Methods of Treatment," by Dujardin-Beaumetz.

"Auto-Intoxication and Its Relations to Diet and Therapeutics," by Bouchard and Rogers.

"The Importance of Intestinal Asepsis and Antisepsis in Abdominal Surgery."

"Scoliosis: Its Etiology, and Rational Treatment by Massage, Swedish Movements, Gymnastics, and Electricity," by Dr. T. J. Hartelius, Director of the Central Institute of Gymnastics, Stockholm, Sweden.

"Diabetes: Its Causes and Successful Modes of Treatment."

"Enteroptosis, or Dislocation of the Abdominal Viscera and Its Relation to Neurasthenia, Indigestion, Constipation, Rheumatism, Bright's Disease, and other Chronic Maladies; Its Cause and Rational Methods of Cure," by Trastour, Glenard, and others.

"The Value of Strength Tests in the Prescription of Exercise, and a Comparative Study of the Strength of Individual Groups of Muscles, and of Homologous Muscles, in Men and in Women," by J. H. Kellogg, M. D.

Several of these brochures will be good-sized pamphlets, any one of which will be well worth the price charged for the entire series.

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