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GOOD HEALTH

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Lessons from the Gorilla.
The Rapid Increase of Disease among Animals.
A Comparison of the Food Value of Plants and Animals as Food Producers.
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G.W.B.

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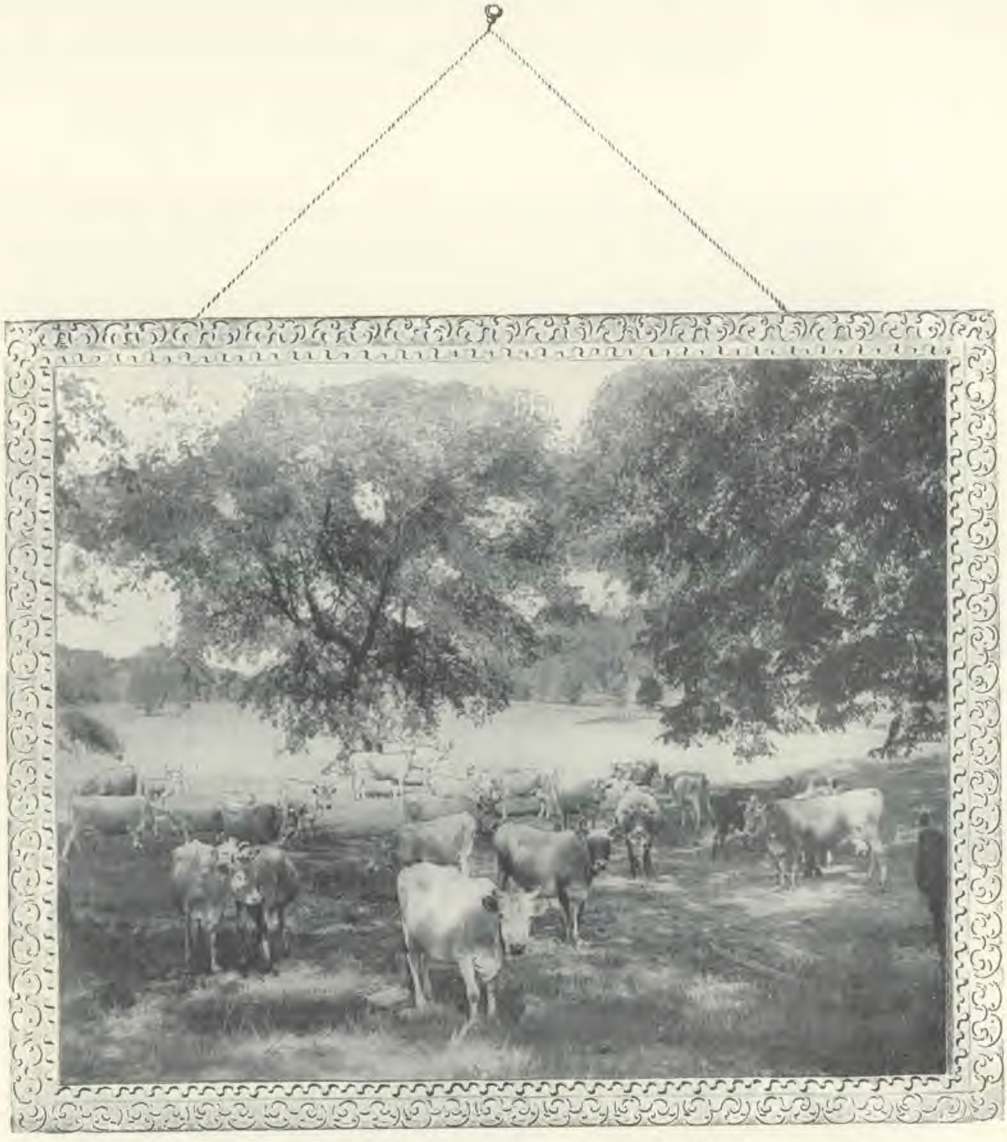

"TAKE NOT THE LIFE YE CAN NOT GIVE."

GOOD HEALTH

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LESSONS FROM THE GORILLA.

BY REV. WM. PENN ALCOTT.

THERE are three groups of the anthropoid, or manlike apes,— the gibbons, the orangs, and the troglodytes, including under this last name the chimpanzee and the gorilla. All these apes are destitute of tails. The gibbons are found in Siam, Cochin China, and the large islands to the southeast. The largest of them scarcely exceed forty inches in height, and they are least like man of all their family.

Orangs inhabit the dense forests upon the lower, damper lands of Borneo and Sumatra. They are more robust and intelligent than the gibbons, and both their character and dwelling places are indicated in the full name, orang-outang, which means "man of the woods." They are animals of extreme agility, of prodigious strength, and in height sometimes approach five feet.

But it is in the third class that we find the greatest approximation to man. Of the chimpanzee and the gorilla it is difficult to say which more nearly resembles us. The former in intelligence and capacity for taming is superior, as it is in some anatomical details. But so much may be said for the gorilla that the best scientific authority is divided between the two. In works upon natural history, students will find full accounts of the structure and habits of all these apes. Only a brief view of the peculiarities of one species is permitted by our space and purpose.

Both chimpanzees and gorillas are found in western equatorial Africa, in Guinea, Kongo, and so far as the forests extend toward the interior. Chimpanzees sometimes attain five feet in height, gorillas often six or eight inches more; but the latter are far heavier, stouter, and more muscular. The gorilla's life is more confined to the ground, though he ventures upon the larger limbs to seek his food, which is fruit and nuts, with some kindred vegetable substances. This, indeed, is the natural diet of all these apes, unless under domestication they learn to be somewhat omnivorous. Probably they would thrive better in captivity if they were fed only upon their natural food. Such young orangs and chimpanzees as have been tamed, have none of them lived long, usually dying from pulmonary affections, frequently consumption in a very human and pitiful form. An unsuitable diet, lack of exercise and fresh air, with the depressing influence of captivity, may account for their premature end.

The gorilla, then, like the others, is a vegetarian. Dr. L. J. Sanford says: "Such food seems quite insufficient for so large and powerful an animal." Figuier speaks in a similar way: "Notwithstanding its powerful canine teeth and its extraordinary strength, the gorilla is really

an exclusively frugivorous animal." "*Notwithstanding!*" How strange that scientists should forget that the strongest animals are nourished by aliment in its fresher and purer form. Having noted the strength of the horse, the ox, the elephant, the orang, and the chimpanzee, can these zoölogists be surprised at the prodigious power of an animal which feeds on the best food God has made — the very cream of cream — fruits, nuts, and oxygen!

A tremendous, almost bell-shaped chest, largest where fashion makes it smallest, with thirteen ribs, and altogether, though the pelvis is large, forming the most of the trunk, is immediately observed in the skeleton of this ape. Immense breathing capacity is plainly indicated, doubtless one secret of a strength that when aroused can twist gun barrels as if willow, and, with ease, break trees three or four inches in diameter. The shoulders are very broad and massive, being often three feet across in the males, while the height of the animal is never much more than five and one-half feet, usually less, and the body is comparatively short, like the lower limbs.

The whole skeleton suggests physical strength, as if a giant had been shortened, broadened, condensed. Compared with ours, the width of the frame is remarkable. The legs are wide apart and bowed out. All the bones are massive and heavy. The jaws are so strong that they can crush a gun barrel; and a certain very hard-shelled nut is favorite food. Of two lower maxillaries which could be weighed, the gorilla's marked ten ounces, the man's two and one-half. Great crests and ridges of bone add strength to the skull, and afford attachment to massive muscles.

The canine teeth are immense, protruding from the jaw an inch or more, while the other teeth are powerful. These canines, which are so prominent in all the apes, are of great use in opening nuts and hard-skinned fruits, as well as in attack and defense. They are as long as in many large carnivora — some tigers, for example, as the writer has ascertained by comparing the teeth of more than a dozen specimens in the museums of Boston and Cambridge with those of other animals. The canines of one tiger I measured were but one inch and an eighth in length, though I believe this less than the average of adult males. These teeth in gorillas are much broadened at the base, and usually worn down, if not broken, by hard use.

Very long arms are characteristic of all the apes. In this respect, the gorilla's exceed the chimpanzee's, reaching below the knee, and stretching from seven to nine feet.

These long upper limbs must be of great service in gathering food from the trees, and the needs of the heavier animal might develop greater length and so they would be no proof of inferiority to the lighter chimpanzee.

The toe of the lower extremity is very large and strong, and stands out at an angle of sixty degrees, causing the appearance almost of a double foot. There is great prehensile power in these feet (they grasp limbs as our hands do), so that the higher apes having four hands with opposable thumbs were very appropriately called *quadrumana*, four handed, in distinction from man, who is termed *bimana*, two handed. Thus the error was long ago refuted of attributing man's superiority to the possession of an opposable thumb.

But such feet, or posterior hands, are not well suited to walking erect, and this is not the habit of the anthropoid apes. Only in great excitement, only occasionally, do they thus walk, standing awkwardly, moving with no firmness of tread

or position. It is still an undecided question which can walk as we do with greater ease or less difficulty,— the chimpanzee or the gorilla.

Does a diet of fruits and nuts render men mild, gentle, weak, forceless? This is sometimes argued or assumed. But there are facts on the other side. Unquestionably, diet has some effect upon the disposition, as all who have kept dogs know. But that what we term "a mild diet" will altogether of itself banish force and passion, and even savagery, is not true. If travelers inform us aright, the gorilla is a very ferocious animal, delighting to shed blood for the mere sake of killing. It is claimed that he will lurk in the thick boughs, and as the careless negro passes beneath, grasp his neck with his mighty foot, and throw him dead upon the ground. Or with one swift stroke of the same awful limb he will disembowel a man or some large animal, not to feed his hunger, but in pure savagery.

An illustration not yet in the books was given in the New York *Sun* a few years since. Soon after the Civil War, Capt. Jack Benton went to Africa to collect animals for menageries. One morning, with only a light rifle, he came upon a gorilla which, fortunately for him, was occupied with the attempt to make himself appear sweet and attractive to a companion, smaller but "equally ferocious looking." This gorilla courtship was suddenly interrupted by a dull boom! boom! from far away in the forest — the terrible battle call of a full-grown gorilla, the cry sent out when he is about to fight to the death for a mate.

Both these combatants, which soon met, were giants. The newcomer was an old warrior with the scars of many battles upon him. Broken teeth and great gaps in his jaws were conspicuous. The other was in the full strength of early apehood. The conflict which followed, ending in the death of the veteran, is graphically described, but I will quote from it only enough for my point, — that vegetarians can be cruel and mad, and fight to the death on occasions. There are those who seem to feel that a warrior, one who can *murder* his enemy, is the highest type of man! Heroism, courage, power, are shown only in bloody conflicts! The gorilla may be a man and brother for such. Let us see what fruits and nuts can do in this line:—

"Neither of the big animals wasted time in preliminaries; they had worked themselves up into such an insanity of rage that only killing would satisfy. Each advanced on his hind legs until within six feet of the other. Then the younger gorilla began to fight. Stepping forward with marvelous quickness for such an ungainly animal, he struck a flail-like blow with his huge paw. But the old gorilla had been in too many death grapples to be caught so early in the fight. Even as the big arm swung around, he sprang forward, coming in close, so as to miss the full force of the swing. The next instant he had swung his own arm around the younger gorilla's neck, encircling it with four feet of steel muscles, and holding his enemy's head stiff upright, so that he could not bring the terrible teeth into play.

"Then the old gorilla opened his heavy jaws, and getting a firm grip on the right shoulder of the younger gorilla, held on like a bulldog, tearing his way through the knotted muscle and sinews and shoulder blade of his opponent. At the same time the left arm of the old fighter wrapped itself about the younger gorilla in a rib-breaking grip.

"It was only for an instant, however, that things looked so desperate for the younger fighter. The first gorilla's splendid fighting ability and tremendous strength showed themselves. Whirling up his left

arm he fastened his long fingers about his antagonist's throat, and tried to break his grip and shove his head back. At first the only effect of this was to make the old fellow tighten his grip on the other's shoulder. Then the younger gorilla put forth all his strength. I could see the muscles of his arm, shoulders, and back gather themselves into big knots and bunch up as if they would break through the skin. The murderous, deep set eyes started forward until they were level with the cheek bones.

"A last desperate effort and the big head went back, the tightly closed jaws of the old gorilla tearing out flesh and sinews as they were shoved away, but not ungripped. Then the old fighter's right arm slowly and reluctantly uncoiled from the other's neck. The younger gorilla had broken the death grip. Both big fighters were momentarily free, and stepped back to regain breath."

Soon the conflict was renewed, with the advantage on the side of the younger animal. We add a portion of what remains:—

"If the old gorilla could force the other's head back, he would be free, and might perhaps break his enemy's neck. Each of the huge fighters seemed to know this, and put forth all of his giant strength. Back, shoulders, arms, and neck were called into play, the heavy muscles rippling up and gathering into big knots. The snarling growls which had marked the beginning of the fight had died away. Each animal was silent. A stillness seemed to have fallen on the whole jungle, and the crackling of the twigs and dry leaves seemed unnaturally loud as the two gigantic fighters came to the supreme struggle.

"For what was probably half a minute, but seemed an hour, the two semihuman shapes stood there putting forth every energy. At last the younger fighter's face was within two inches of his opponent's head. The younger gorilla made a supreme effort, twisted his head suddenly, and before his opponent could dodge, had fastened his teeth in a death grip on the throat of the veteran fighter.

"The veteran was borne backward, carrying his foe down with him. Unless he could loosen the grip on his throat he was doomed, and the old fighter knew it. Over and over on the ground the two huge apes rolled, fighting desperately, but without sound, save for the shrill hissing of their breath as it was forced from their heaving chests. The veteran of many a hard-fought jungle battle knew his own end had come."

The chimpanzee, when full grown, though less powerful, is capable, like the orang, of becoming a very fierce and dangerous assailant.

When the Roman soldiers in the early ages of the empire subsisted on the fruits of the earth, they were the most cruel of foes, fiercer than evening wolves. The bloody wars of the ancient monarchies were generally waged by vegetarians. Or, to come nearer to our own day, blood-cruelty has often prevailed among fruit and vegetable feeders in the Pacific Islands.

May I add my own experience. Brought up a non-flesh eater, the son of a vegetarian, I have always had a quick temper to contend with, and long after childhood, have had frequent occasion to repent of my sins in this respect.

Disuse of flesh in no sense emasculates human character. Vegetarianism alone will not make saints of us. Yet the other extreme is equally untrue, that diet has *no* influence on character, and that healthful food is of no advantage in our struggles with temper and passion and other sins.

A single case, in the Agassiz Museum of Comparative Anatomy, at Cambridge, contains eleven beautifully mounted skeletons in a row, and in the following order:

two gibbons, two chimpanzees, an orang, a gorilla, followed by five from as many human races. Next to the gorilla comes the Kaffir, then the Australian, Mongolian, Sioux, Caucasian. The gorilla's skeleton is fully as tall as the Kaffir's beside it, and vastly stronger, but the superiority of the man's, in the skull and in the fineness and spirituality, so to speak, of its structure, is evident at a glance. The Kaffirs are savages, yet far above the gorilla. They are men!

Emphasis upon brain and mind and spirit is found in our very skeleton, and distinguishes it widely from any ape's. In all apes the osteological union of skull and spinal column prevents the natural carrying of a level head. That crowning member inclines decidedly downward, beastwise, and, owing to the immense muscular development of the shoulders, the neck is eclipsed, and the head seems between the shoulders, not above them and distinct from them, as in man.

The human head is adapted to the brain, which in the lowest savages is usually twice as large as in any ape. The brain of "Mr. Crowley," a very intelligent chimpanzee kept for over four years in the New York Zoölogical Gardens, weighed 440 grams, while that of the average human male weighs 1,400 grams, and one of the smallest on record — that of a Bushwoman — was variously estimated at from 771 to 871 grams, nearly double the gifted ape's!

True, a gorilla's head is larger than a man's, but this is due to bony and muscular developments which give power to the ponderous and protruding jaws. A man's skull is thin and smooth, and his maxillary bones are comparatively small. God meant his brain to rule, not canine teeth or heavy jaws. All that brain means, or should mean, is to characterize and distinguish him. When we compare the skeleton of a gorilla with the skeleton of a man, we can hardly fail to be deeply impressed with a sense of our own spiritual calling.

THE RAPID INCREASE OF DISEASE AMONG ANIMALS.

BY J. H. KELLOGG, M. D.

THAT disease is rapidly increasing among animals is a clearly recognized fact. It is only comparatively recently that hog cholera, swine plague, and other epidemic diseases have come to be recognized as of sufficient importance to require governmental attention and the co-operation of different communities in stamping out these maladies. The rapid spread of tuberculosis among cattle is also a recently recognized fact. Within late years it is not uncommon to hear of the destruction of entire herds of extremely valuable cattle by this disease. The occurrence of hog cholera has come to be so common and the extended epidemics so frequent that it has been sought to combat the disease by vaccination, just the same as smallpox in human beings is combated. It has been found possible by this means to save alive eighty per cent of animals exposed. Inoculation with the poison produced by hog cholera, if the dose is small, makes the animal slightly sick, but not sick enough to destroy its life, and when the animal recovers, it is found to be able to resist the germs which give rise to the disease, at least for a certain length of time.

Numerous other diseases from which animals suffer, many of which are mentioned elsewhere, have been likewise increasing. This is the natural result of the association of animals with man, and the herding together of enormous numbers of animals under unnatural conditions.

The same condition which produces deterioration of the human constitution, when brought to bear upon animals, even in lesser degree, produces likewise a physical deterioration which renders them subject to disease, and favors the extension of infectious maladies from one to another. In numerous instances, as pointed out elsewhere, human beings and the lower animals co-operate in the development of parasites, as in the case of the trichina and the tapeworm. A man with a tapeworm daily discharges from his body many thousands of tapeworm eggs, which often find their way directly into the streams and other bodies of water from which cattle and other animals drink. These infected animals are in turn consumed by human beings, and so the parasite is passed around. One single measly ox or pig may be the means of lodging tapeworms in the alimentary canal of many scores of human beings. The frequency of disease in lower animals at the present time is such that it is no exaggeration to say that no person can safely make use of flesh as an article of food without first requiring a careful medical examination of the animal, while still alive, from which the flesh is to be taken, and a careful expert examination, including microscopical investigation of the flesh, after the death of the animal; the flesh must then be eaten at once, before decomposition has begun, in order that it may be free from ptomains.

Few will care to go to the pains, trouble, and expense thus to insure themselves against the danger of contracting disease through the eating of the flesh of diseased animals. Evidently the proper remedy is to discard the use of flesh food altogether, and instead to use the pure heaven-given food upon which man and animals together were by nature intended to subsist.

Thorough Cooking No Protection against Diseased Meat.

The notion that thorough cooking is a complete protection against injury through the use of the flesh of diseased animals, though widely prevalent, is wholly erroneous, and has doubtless often led to grave injury and great suffering, if not fatal sickness. Cooking will destroy both animal and vegetable parasites which are dangerous to human life, but the most thorough cooking will not destroy bacterial poisons. The fever and other symptoms and ultimate death resulting from microbic infection of the body such as gives rise to various infections and contagious diseases, are not the direct result of the germs infecting the body, but of the poisons which they produce. Each germ produces its own subtle and marvelously potent toxin. These toxins, even in very minute doses, are capable of reproducing in an animal into which they may be injected, the same symptoms of the disease which are rife when the animal is inoculated with the original germs from which the poisons are derived.

This is true even when the greatest care is taken to avoid infection of the body with the germs. A sufficient dose of these poisons will produce death. As before intimated, the poisons are active even in very minute doses. The presence of these poisons has been demonstrated very clearly, not only with reference to maladies from which human beings suffer, but with reference to the diseases of animals as well, as in tuberculosis, hog cholera, and various other diseases prevailing among warm-blooded animals and even

shellfish. Oysters, because of the presence of this poison, as shown by Brieger, may give rise to symptoms of very violent poisoning. Urticaria following the use of shellfish is produced in this way. In Russia, cases of death are reported from the use of canned sturgeon, even though the canned fish is found to be entirely free from bacteria or any evidence whatever of decomposition. The symptoms are doubtless the result of poisons present in the flesh which have been produced by some bacterial infection from which the fish was suffering when caught.

These poisons are not affected by boiling. Having a fixed chemical composition, the same as common salt or sugar, they do not undergo any chemical change in the ordinary process of cooking. It is evident, then, that cooking is not a complete safeguard against the use of the flesh of diseased animals. Cooking destroys the germs, but not the poisons which the germs have previously produced, and which are stored in the tissues. The only way to avoid the dangers from the use of flesh food is to avoid flesh food.

It is interesting to note the wide contrast between flesh foods and vegetable foods in this respect. Fruits of all sorts, vegetables, and cereals may be eaten without risk. It is very rare indeed and under very extraordinary conditions that the products of the vegetable kingdom become in any way a menace to health through contamination with parasites or poisons. The few dangers of this sort, as from ergotism, a disease due to infection of the grain with a fungus known as "smut," may be easily recognized and avoided.

A COMPARISON OF THE VALUE OF PLANTS AND ANIMALS AS FOOD PRODUCERS.

BY W. H. RILEY, M. D.,

Superintendent of the Colorado Sanitarium, Boulder, Colo.

IN this brief note I wish to consider the comparative value of plants and animals as food producers, and to call attention to some facts relative to the functions of plants and animals which I think may aid us in deciding what is the proper and natural food for man. It is impossible for one to come to any very intelligent idea as to what is the proper and natural food for man unless he first has a clear-cut and well-defined idea of what a food is, and of its purposes and offices in the body.

All physiologists are agreed that any substance, in order to be a food to the body, must either furnish matter that the body can utilize in the growth and repair of tissue, or else it must furnish energy to the body in such a form that the body can readily get it out of the food and utilize it in the performance of its various functions. Any substance that does not fulfill one or the other of these purposes is not a food, and can not be utilized as such.

Food substances, then, furnish these two things to the body; namely, matter and energy, and this is all they do furnish that the body can in any way utilize in performing its various functions. There is another important point, however, that we must not overlook in our definition of food, and that is, that any article, in order to be a food in the true and best sense, must not contain any deleterious substances. Many articles of diet contain not

only matter and energy that the body can use, but in addition contain substances that are positively poisonous, or at least in some degree harmful. Such articles of diet are not, in the true and scientific sense, foods.

All substances, however, as is well known, are not foods, and all energy that may be stored up in matter in various conditions and forms can not be utilized by the body in the performance of its functions. The matter and energy, therefore, must be of a particular kind and form in order to fulfill the needs of the body and meet the requirements of a food.

In order that matter and energy may be in a condition to be utilized by the body, it is necessary that they both pass through the chemical laboratory of a living vegetable organism. That is to ,say, matter must undergo a certain physical and chemical change in the living cells of plants, and energy also must be put into a certain condition in the plant so that it can be readily utilized in the body of man or other living animals. Of course when one eats flesh foods, the energy and matter in this kind of food have passed through the animal cell as well as the vegetable, but the passage of the food through the animal cell does not in any way improve it or make it a better food for man. The animal does not add any energy or material to food substances that is not given to them by plants.

Let us now consider briefly which class of living organisms, plants or animals, is better suited to produce food for man, and which one nature designed should be used for this purpose.

There are many differences between plants and animals, but perhaps the chief difference is in the use that they make respectively of energy and matter which they have to do with. Plants take matter from the earth, air, and water in a simple, elementary form, and in a condition that animals can not use as food, and unite these elements into new chemical compounds which may be used by animals as food. To build up these simple elements into compounds requires energy. The plant obtains this energy from the sunlight, and stores it up into new chemical compounds in a latent or inactive condition. The plant takes hydrogen, oxygen, nitrogen, carbon, and other chemical elements either in their free state or in a very simple form, and uniting them chemically, forms more complex bodies, such as starch, sugar, albumin, oils, etc. The starch, sugar, albumin, oils, etc., thus formed, contain energy that the simple elements or simple compounds out of which these food elements are made, do not contain.

These changes take place, for the most part at least, in the leaf of the plant. The chlorophyll, or green coloring matter of the leaf, is an active and essential agent in this transformation. Plants which do not have this chlorophyll, or green substance, are not capable of producing this constructive chemical change or of utilizing the energy of the sunlight or matter in its simpler form.

The energy and matter stored in a plant are in a form that can be utilized by the animal. The animal is not capable of using matter in the simple elementary form in which the plant uses it; nor is the animal capable of utilizing in its own body the energy of the sunlight until this energy is first transformed by the plant and stored up in the food. Plants are, therefore, the agents which nature has provided to put energy and matter into such a form and condition that animals and man can utilize them; in other words, to make food for animals; for food is nothing more or less than matter and energy in such a form and condition that animals can utilize them.

This building-up process that we have

been describing, is the chief work, and we might almost say the only work of plants that is of any value to the animal kingdom. The great work of plants is to construct, to build up, to gather in matter and energy, to produce food for the animal kingdom, and especially for man. The amount of this kind of work done by plants, or in other words, the amount of food produced by plants is infinitely greater than that produced by animals. In fact, to tell the real truth about the matter, animals do not produce foods at all. They do not make a single substance in their tissues that man can use as a food but may be found much more abundantly and in a better condition in the vegetable products which the animal eats. There is no chemical element or any food element in the tissues of an ox, sheep, or any other animal used for food but is found in the food produced by plants. In fact, every chemical element and every food element found in the animal must at some time have been in the tissues of the plant or in the foods produced by the plant. The only exception to this may be water and oxygen, but water and oxygen are not formed in the plant or in the animal kingdom. So, in considering the sources and productions of energy-giving foods, oxygen and water do not enter into the question, as they are not formed either in the animal or the vegetable kingdom, at least to any extent.

How great the contrast when we turn to the animal kingdom and consider animals as food producers for man!

The animal can not use matter that is in a simple elementary form as food. It can not take the energy from the sunbeam and transform it and utilize it in its movements or in any other way. The matter that the animal can use in its body must be complex in its make up, and matter that is already highly organized before it enters its body. The animal does not add one single atom to what it takes into its body in the form of food. The constructive processes which were so well carried on in the plant are not continued one step further in the tissues of the ox, the sheep, or any other animal that man may use for food. Neither does the animal add one bit of energy to that in the wheat, corn, or oats it may have eaten to build up its own tissues. Neither the ox, the sheep, nor any other animal can create the smallest bit of energy or one atom of matter. It can change both energy and matter that it takes into its body in the form of oats, corn, grass, etc., but this is all. In fact, the chemical and nutritive processes that take place in the tissues of the animal consist of changes in matter and energy, but these changes are always destructive in character, and not constructive. The process in the animal tissue is always a breaking down and not a building up, the changing of matter from the complex to the more simple form.

It is true that physiology teaches us that there is going on in the animal cell a building-up process along with the breaking-down process, but when the animal is killed, this anabolic process, as it is called, sinks back to the level of dead organic matter. And when we consider the matter from the standpoint of food, and compare the tissue of an animal that is used for food with similar food elements from the vegetable kingdom, the animal tissue does not contain any more energy, any more matter, than the vegetable foods, nor is it from the standpoint of food value any more highly organized.

From what has preceded I think the reader can see that in food-producing plants, such as wheat, corn, oats, etc., the larger amount of material that the plant uses is stored up in the form of food, while a very small percentage of material or energy that enters into the formation of the plant is in any way wasted.

It is directly the opposite, however, with the animal. Only a small part of the matter and energy entering into the body of the ox, sheep, or any other animal used for the food of man, is really stored in the tissues of the animal in the form of food. The animal may be regarded as a machine that is constantly using up energy and material which enter its body in the form of food, but it is only a very small part of this energy and material that the animal takes into its body that is really stored up in its tissue to be used as food again by man or another animal. The animal is constantly losing energy in the form of heat. The temperature of most animals is the same every day in the year, no matter what the temperature of the surrounding atmosphere may be. To maintain this temperature requires the use of a great deal of energy in the form of heat. Energy is also used up by the animal in moving about from one place to another, in all the different motions and actions of the body, in the muscular contractions of the heart in maintaining the circulation, and really in all the various complicated functions of the entire body of the animal.

In order to get the energy for these various uses in the animal body, food substances that the animal may have eaten must be broken down to simpler compounds, the energy in the food must be abstracted, and used in these various channels, while the matter that is left after the energy is taken out of it, is eliminated by the various eliminative organs, and passed out of the body as waste matter. The amount of energy and matter stored in the tissues of the animal that may be used as food for man is infinitely small when compared with the amount of energy and matter that enters into the body of the animal in the form of food.

More than this, the nutritive value of the flesh of the animal is, weight for weight, very much less than the nutritive value of many foods found in the vegetable kingdom. For instance, the nutritive value of meat is given by most physiologists and chemists as from nineteen to twenty per cent, the greater part of the meat being water. The nutritive value of the cereals, peas, beans, and the various nuts ranges all the way from eighty-five to ninety-five per cent. Again, the food produced by the plant is pure, and free from poisons and all deleterious substances; whereas the food produced by the animal always contains broken-down matter which has been formed in its tissues, and is of no use to the animal in which it was formed nor to man as food, but acts as an irritant, and to a greater or less degree as a poison to the human body.

When the plant has finished its work of building up matter and storing energy in the form of starch, sugar, oils, and albumin, there is nothing in the form of waste matter in the kernel of corn, the kernel of wheat, the nut, or the apple, in which these various food elements are abundantly found.

It seems to the writer that nature offers us some valuable lessons and suggestions as to whether or not we should obtain our food from the vegetable or the animal kingdom. It is very evident to the writer that the place of the animal in nature's economy is not that of furnishing food to man. It is entirely contrary to the ways and methods of nature to do so much work with so little return as she must do in order to produce food for man from the animal kingdom. A large amount of energy and matter is wasted in the tissue of the ox, sheep, etc., in order to furnish a small amount of food of an inferior quality for man. On the other hand, in the vegetable kingdom the plant that produces food, utilizes the greater part of the matter and energy

that it absorbs in producing food for man and other animals.

The vegetable kingdom is the natural source of food for man, and food-plants are pre-eminently the food producers. The functions of animals are not designed to store energy in the form of food, and their place in nature is not that of food producers for man; when used in this way, nature is perverted, and her forces are put to an extravagant and wasteful use to satisfy a depraved and pampered appetite.

It is well to study nature's plans and purposes in selecting our diet. Nature's ways are always God's ways, and God's ways are always right and best. All arguments which nature and science offer us in regard to the diet question compel us to conclude that the natural source of food for man is the vegetable and not the animal kingdom.

To summarize the important points that we have attempted to bring out in this article, we may make the following comparative statements relative to food of vegetable and animal origin:—

PLANTS AND FOODS FROM THE VEGETABLE KINGDOM.	ANIMALS AND FOODS FROM THE ANIMAL KINGDOM.
1. Plants are food producers. They manufacture food out of substances which are not food for man and animals.	1. Animals are not food producers, but food consumers. They do not manufacture foods out of substances which are not food for man.
2. Plants build up highly complex food substances out of simple elements, and store up energy.	2. Animals break down highly organized food substances into simple elements, and liberate energy.
3. Nature teaches us that the natural source of food is the vegetable kingdom.	3. It is contrary to nature's plans for man to get his food from the animal kingdom.
4. Man can not live without the vegetable kingdom to furnish food.	4. The animal kingdom is not necessary to furnish food for man.
5. Food products from the vegetable kingdom contain all the chemical elements that are found in the body.	5. Food products from the animal kingdom do not contain any chemical elements but are found in foods of plant origin.
6. Food substances produced by plants contain, more abundantly than animals, all the food elements which are necessary for the nourishment of the body, such as starches, sugars, albumins, oils, salts, etc.	6. Food substances produced by animals do not contain any food elements that are not found in foods of vegetable origin. In fact, one important class of foods, carbohydrates, represented by starch and sugars, is largely absent from flesh foods.
7. Food elements from the vegetable kingdom are free from poisons and waste substances.	7. Food elements from the animal kingdom always contain waste matter, which, to a greater or less degree, is harmful.
8. Albumins and fats of the vegetable kingdom, when properly cooked and properly prepared, are more easily digested than albumins and fats of the animal kingdom.	8. Albumins and fats of the animal kingdom, as usually prepared for food, are not so easily digested as albumins and fats of the vegetable kingdom.
9. Foods of vegetable origin are for the most part free from disease, which if present, is readily detected.	9. Foods of animal origin are very likely to be diseased, and the disease of animals is not always easily detected.
10. Thousands of individuals who have discarded the use of flesh foods have experienced a marked improvement in health, strength, and vigor.	10. It is an established fact that the use of animal foods produces many diseases, such as rheumatism, gout, diseases of the kidneys, cancer, tuberculosis, etc.

YE can tell
That which slavery is too well,
For its very name has grown
To an echo of your own.

'T is to be a slave in soul
And to hold no strong control
Over your own wills, but be
All that others make of ye.

— *Shelley.*

DISEASES OF ANIMALS USED AS FOOD.

BY J. H. KELLOGG, M. D.

THOSE whose acquaintance with the ox, the sheep, the pig, and the various animals used as food, is confined to their contact with these creatures at the dinner table, will be greatly surprised to learn that cows, sheep, pigs, goats, and even fowls are to a very large degree subject to the same maladies which prevail among human beings. The flesh of all warm-blooded animals is practically alike; the life functions are essentially identical. Heredity and environment have, to a certain degree, rendered each of these classes of animals immune, or refractory, to certain maladies, either wholly or in part, while the constitutional peculiarity of each class makes them especially susceptible to some other diseases. There are also some maladies to which these animals are subject which are unknown among human beings, but in general it may be said that the diseases from which man suffers, the animals upon which he subsists also suffer, and that man is himself subject to the maladies from which these animals suffer.

FIG. 1. APPARENTLY HEALTHY MILCH COW — LUNGS FULL OF TUBERCLE GERMS.

This article will be devoted to a brief resumé of the diseases to which animals commonly used as food by man are subject, with a few illustrations showing the effects of the maladies considered.

Tuberculosis.

It has been clearly shown by the most painstaking and long-continued researches that tuberculosis is a disease common to almost all classes of lower animals. It was once supposed that carnivorous animals were exempt from this disease, but the post-mortem statistics gathered at the New York Zoological Collection have shown that while vegetable-eating animals are more subject to this disease than carnivorous animals, all classes suffer; even lions, which are the most hardy of the carnivorous beasts, not infrequently succumbing to the insidious but destructive effects of the tubercle bacillus.

Professor Law asserts that while cattle are the most susceptible to this disease, chickens, guinea pigs, rabbits, swine, and goats almost as readily fall victims to the tubercular infection. Dogs, cats, sheep, and horses are not exempt, but less susceptible, perhaps because of the large amount of out-of-door life and active exercise which they enjoy; while deer, elks, gazelles, antelopes, apes, birds, and even rats and mice are likewise subject to the disease. The great frequency of this disease is shown by statistics gathered at the abattoirs of various cities. For example, in Paris, six per cent of all the cattle slaughtered were found to be suffering from tuberculosis; in Holland, twenty per cent; in Pomerania and Bomberg, fifty per cent; in Hanover, from sixty to seventy per cent; in Leipsic, twenty per cent; in Edinburgh, twenty-six per cent; in Baltimore, three and five-tenths per cent. Professor Law reports that while visiting and investigating dairy herds in New York he found the propor-

1. Tuberculous liver from an apparently healthy cow.

2. Tuberculous abscess in lung of cow. The animal appeared healthy.

3. Trichinæ in Pork.

4. Measly Beef.

5. Scrofulous lymph gland from a milch cow.

6. Healthy Beef.

7. Beefsteak from an animal sick with fever.

8. Beefsteak from a jaundiced animal.

tion of tuberculous cattle to be from five to ninety-eight per cent. Figure 1 represents an apparently healthy milch cow.

This disease affects cattle in very much the same way that it does human beings. The lungs, lymphatic glands, intestines, liver, and all parts of the body are involved. It is a surprising fact that while animals may appear to be in a perfectly healthy condition, fat and sleek, and while in the case of milch cows the amount of milk may not be diminished, the most intense infection of the internal organs may be present. Fig. 2 represents a cow the lungs of which were almost entirely filled with tuberculous masses. Fig. 3 shows the appearance of the inside of the chest after the lungs were removed. The writer was shown a similar case by the health officer of Portland, when visiting that city some years ago. The animal's flesh was exposed for sale in the markets, but was discovered by the health officer before it was distributed. The pleura lining the chest cavity was literally covered with tubercular masses. Fig. 5 of the colored plate shows a tubercular gland; Figs. 1 and 2, respectively, the appearance of the liver and the lung when attacked by this disease.

Butchers generally remove the tuberculous masses from the carcass, so that the remaining portion of the flesh may give no indication of the presence of the disease, yet it has been shown that tubercu-

FIG. 2. A HANDSOME COW, WEIGHT 1,400 LBS.—LUNGS BADLY DISEASED WITH TUBERCULOSIS.

losis may be induced in guinea pigs by injecting into them the juice obtained from the lean tissue of a tuberculous animal. Ordinary cooking, as, for example, in the broiling of steak, does not kill the parasite. Martin found that even when cooked at a temperature of 212°, the tubercular germs are not certainly killed, while Toussaint determined that in the interior of an ordinary broiled steak which reached a temperature of from 163° to 176° during the cooking, tubercle germs still survived, and were capable of producing disease.

It is true that the tubercle bacillus is killed at a lower temperature when isolated, but when imbedded in a mass of meat, it is protected to such a degree that a prolonged boiling is necessary to destroy the parasite, and even that boiling has no effect upon the poisons

FIG. 3. A CHOICE RIB ROAST FOUND BY INSPECTOR IN AN OPEN MARKET, EXPOSED FOR SALE. LARGE MASSES OF TUBERCLES PLAINLY VISIBLE.

produced by the germ, which, when present in the flesh, as Professor Law has shown, are capable of producing a deleterious influence in the human body. The contact of these tuberculous animals with human beings is in the highest degree dangerous, as well as the consumption of their flesh.

Galtier has determined that the tubercular germ survives indefinitely in springs and ponds at the ordinary temperature, so that drinking troughs, stables, and everything, in fact, with which the diseased animals may come in contact, are a constant menace to those who care for the animals, as well as to healthy animals.

It is manifest that rare steaks, scraped beef, meat juice, and similar preparations of meat are absolutely unsafe, and must be a most prolific cause of the increasing prevalence of tuberculosis among human beings. It is well to keep constantly in mind the fact that even in new countries like the United States, on an average of about one seventh of all human beings die of tuberculosis, while nearly one half of the population suffer from this disease in some form during the course of their lives, as shown by post-mortem examinations. In the older countries the proportion is even greater. Statistics obtained in Vienna show that eighty-five per cent of the people suffer from this disease.

Among the American Indians, who are fed very largely on meat, consuming a large portion of the whole carcass without cooking, fifty per cent of all the deaths, according to Dr. Holder, are due to tuberculosis. This is true at least among the Indians at Green Bay, Wis., Tulalip, Wash., and Shoshone, Nev., while at Lower Brule, S. D., sixty per cent of the Sioux Indians under twenty-one years of age are suffering from tuberculosis of the lymphatic glands. Among the Indians at Crow Creek, S. D., who number about twelve hundred, four per cent die annually from consumption and scrofula. At the present death rate this Indian community will be extinct in less than twenty years. It is a noticeable fact that in the extreme northern portion of Norway and Sweden, and in Lapland, Finland, the Hudson Bay region, Iceland, Newfoundland, and the Scottish Hebrides, where domestic animals are not found, tuberculosis is comparatively rare among human beings.

In cows, the lungs and the lymphatic glands are most commonly infected with this disease, while pigs suffer chiefly through infection of the lymphatic tract, being greatly subject to indigestion, as the natural result of their gross feeding.

Butchers sometimes contract tuberculosis in handling the flesh of tuberculous animals. Veterinary surgeons often suffer in the same way from wounds received in making post-mortem examinations. Pfeiffer tells of a veterinarian by the name of Moses, a man of good constitution, who was wounded in the thumb while examining the carcass of a tuberculous cow. The wound healed, but the germs had been introduced, and after an insidious development of several months, the disease appeared in the man's lungs, bacilli were found in his sputum, and in two and a half years from the time the infection occurred, he was dead. The post-mortem examination revealed tuberculosis in the joint of the wounded thumb, and extensive tubercular disease of the lungs.

The researches of Law and others have shown that at least one in every fifty cattle slaughtered in the United States is tubercular. Hence those who eat beef may count upon it as certain that on an average at least every fiftieth beefsteak is tubercular. Tuberculosis of the bowels, which is rapidly increasing in the United States, is directly traceable to the use of food containing tubercular germs.

Anthrax.

This extremely deadly disease attacks both animals and man, in the latter the infection being very tenacious. The soil becomes infected with the bacilli of the disease, which apparently thrive and multiply, surviving indefinitely. The germs are rapidly diffused through the body from the seat of infection. Every organ of the body may within a short time become infected by the parasites. Recovery is rare in cattle, sheep, and horses. In man the mortality is from seventy to eighty per cent. Infection may occur through the lungs or through the alimentary canal. In man it most often occurs through the skin. It occurs especially in wool sorters, rag pickers, and persons who are brought in contact with animals suffering from this disease, or with their hides. There is reason to believe also that the disease is communicated by flies and mosquitoes. Dogs may communicate the infection by licking some abraded portion of the body with the tongue after gnawing the bone of an animal dead from anthrax. It is true that the parasites are destroyed by a boiling temperature and by long pickling in salt, but sausage and other preparations of swine's flesh are often eaten without cooking. Indeed, this is an especially important point, since it is well known that hogs frequently suffer a long time with anthrax without the fact being very apparent, as they are much less likely to die from it than most other animals.

This disease has become increasingly frequent in Continental countries. In Russia, in one district, Novgorod, in four years fifty-six thousand horses, cattle, and sheep and five hundred and twenty-eight men died from it.

Foot-and-Mouth Disease.

This disease, also known as aphthous fever, eczema epizootica, and epizootic aphtha, not only infects cattle, swine, sheep, and goats, but also dogs, cats, rabbits, fowls, and likewise human beings.

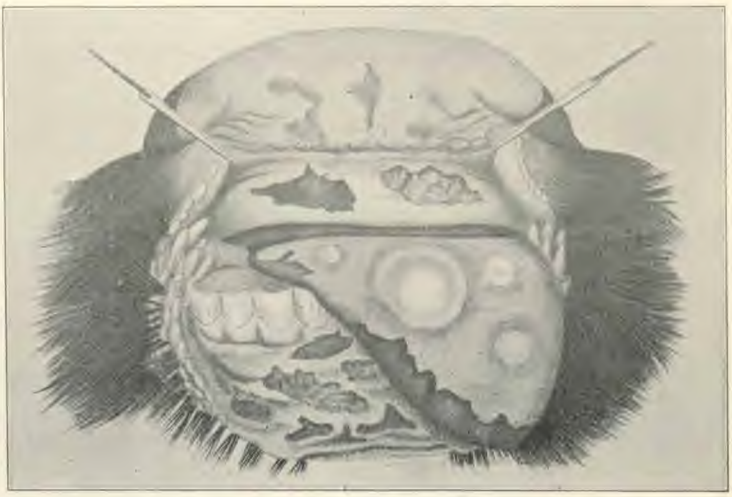


FIG. 4. TONGUE OF A COW WITH FOOT-AND-MOUTH DISEASE.

In Fig. 4 is shown the appearance of the tongue and mouth of an animal suffering with this dreadful disease. The disease is communicated through the milk and feet of animals and the virus deposited in stables which have been occupied by infected animals. Human beings are most likely to become infected through the use of the milk of diseased animals. Infants are particularly liable to suffer on this account. The disease may also be communicated by butter, cheese, and buttermilk. Butter and cheese are more likely to extend the disease than milk, for the reason that they

FIG. 5. A STEER WITH ACTINOMYCOSIS; AFTERWARD CURED AND SOLD AS BEEF.

are always eaten raw. The disease may evidently be communicated by the use of raw meat.

The symptoms in man are essentially the same as those in the lower animals. Terrible ulceration of the mouth, with swelling of the tongue and mucous membrane, is the leading symptom. The extent to which this disease prevails among animals, and the rapid rate at which it is increasing, may be judged by the fact that in Germany there occurred in 1888 more than eighty thousand cases; in 1889, more than five hundred thousand cases; in 1890, more than eight hundred thousand cases, and in 1892 more than four million cases. The disease is extremely fatal in animals, but, fortunately, less fatal in man. It is a most disgusting and painful malady, and one of the penalties which human beings pay for consuming the flesh of the lower animals.

FIG. 6. LUMPY JAW (ACTINOMYCOSIS).

Actinomycosis — Lumpy-Jaw Disease.

The characteristics of this disease are swelling in the lower part of the face, and enlargement of the jaw and tongue, as shown in Figs. 5 and 6. The disease is due to a parasite known as the "Ray fungus" (Fig. 12, Plate I).

A study of the natural history of the parasite shows that it frequently develops upon grain, upon straw, and other vegetable substances. Invasion of the body sometimes takes place through decayed teeth (Fig. 7) or a diseased tonsil, but infection has also occurred through swallowing infected grains, and especially through diseased animals. A few years ago one of the employees of the Chicago stock yards died of this disease. He contracted it from one of the infected animals with which he had come in contact during his years of service there.

The parasite, when once introduced into the system, is conveyed throughout the body by means of the blood vessels and the liver; the kidneys and even the brain finally become infected. While the disease remains confined to the external parts, it may be exterminated by removal of the diseased structures through surgical procedure, but when it has invaded the interior of the body, cure is impossible.

The beginning of this disease is so insidious that it is likely to pass undiscovered for many years. When the lungs are infected, the disease is likely to be confounded with consumption or some other chronic bronchial infection.

Texas Fever.

This disease, so exceedingly fatal to animals, has a very strange history. It is directly due to a peculiar parasite which

FIG. 7. JAWBONE OF A COW SUFFERING FROM LUMPY JAW.

Fig. 1. Bacteria of pneumonia in cattle.

Fig. 2. Micrococci of suppuration, inflammation, & pyæmia.

Fig. 3. Bacilli of tetanus or lockjaw.

Fig. 4. Streptococcus—produces inflammation of the lining membranes.

Fig. 5. Bacilli of black quarter (Symptomatic Anthrax).

Fig. 6. Bacilli of tuberculosis—appearing as small straight rods within the cells of a tubercular nodule.

Fig. 7. Bacilli of anthrax from the blood of a diseased cow.

Fig. 8. a. Egg of beef tapeworm.

b. Egg of pork tapeworm.

Fig. 9. Tick—carrier of the parasite of Texas fever.

Fig. 10. Parasite of Texas fever within the red blood corpuscle.

Fig. 11. Fowl cholera showing destruction of blood corpuscles by bacteria.

Fig. 12. Fungus of lumpy jaw or Actinomycosis.

Fig. 13. Cancerous tissue.

PLATE I.—Germs Which Prey upon Animals Consumed as Food.

infests the blood, and entering the red blood corpuscles, preys upon them. and destroys them. The parasite is not a germ or a vegetable organism, but belongs to the family of protozoa, and is akin to the malarial parasite. It multiplies very rapidly in animals, and destroys in a short time an enormous number of red corpuscles (Fig. 10, Plate I). The parasite is exceedingly minute. The corpuscles of a cow's blood are one five-thousandth of an inch in diameter. The parasite is less than one tenth the diameter of the corpuscle, or perhaps one fifty-thousandth of an inch in diameter.

So rapid is the development of these organisms that one fifth of all the blood contained in the body of a steer weighing half a ton may be abstracted in twenty-four hours. As the result of the abstraction of blood, the bile ducts become choked, fatty degeneration of the liver takes place, the temperature becomes very high, 107°, the urine is bloody, delirium and stupor occur, the body rapidly wastes, and death may result within three days, or, in cases which progress more slowly, may be delayed for several weeks.

A curious fact has been discovered,—that the parasite is introduced into the blood of the diseased animal by means of small creatures allied to the acarus scabiei, or itch mite, the so-called "cattle tick" (Fig. 9, Plate I). Just how the tick introduces the parasite is not perhaps fully understood, but the method may be very similar to that by which certain varieties of microbes introduce malarial parasites into the blood of human beings.

Texas fever is not directly traceable to human beings, but the flesh of such animals, which without rigid sanitary inspection may frequently be exposed for sale in the public meat shops, is filled with toxic substances and enormous quantities of wastes and excrementitious poisons which give to the flesh the dark red hue shown in Fig. 7 of the colored plate, unless the disease has continued for some time, so that a large amount of blood has been destroyed, in which case the flesh will have a light color because of the destruction of the red corpuscles.

Trichinosis.

This disease is due to a parasite, the so-called "trichinæ spiralis." The parasite was first discovered by medical students in making human dissections, and was regarded as a dissecting-room curiosity. An outbreak of sickness after a public dinner where ham was largely consumed, led to an investigation, which showed the bodies of the victims to be swarming with those parasites; an examination of a portion of the pork which had not been consumed, showed it to contain the parasites in a living form.

Careful investigation has gradually revealed the whole life-history of this parasite. It is taken into the body in the flesh of swine or other animals, either in the free or encysted state. The small organisms rapidly develop in the intestine and give birth to numerous young, it having been proved that a single worm may give birth to a thousand young ones. These young worms rapidly penetrate the walls of the intestine and enter the blood, and are carried by it to the muscles, among the fibers of which they may imbed themselves, curl up, and become encysted (Fig. 3, colored plate); thus they may remain during the whole life of the person. During the first few days after infection, no peculiar symptoms may be noticed, but later, when the young worms begin to penetrate the intestine, a severe diarrhea and symptoms closely resembling those of typhoid fever may occur. When the parasites reach the muscles, severe muscular pains and spasms may occur, together with fever, resembling spinal meningitis. Cases of trichinosis have been

mistaken for cholera, cholera morbus, and ordinary diarrhea, as well as spinal meningitis and typhoid fever. It is probable that very few cases of this disease are recognized as such.

If the patient survives the acute attack, the living worms which remain in the muscles may for many years give rise to pains resembling muscular rheumatism. An eminent German authority asserts that so-called chronic muscular rheumatism is generally due to the presence of these parasites in the muscles. The writer, when a medical student in the Bellevue Medical College, observed these parasites in a subject which he was dissecting; calling the attention of the demonstrator, Professor Janeway, he was told that careful record has shown that one out of seventeen of all the subjects dissected in the Hospital was found infected in this way.

An examination of hogs made by government inspectors and others has shown that two and five-tenths per cent of all hogs slaughtered in this country are infected with this parasite. From the foregoing it appears that human beings are more frequently infected with trichinosis than are hogs. What can be the reason? — Evidently because there are more men who eat hogs than hogs that eat men. Men eat hogs as a delicacy, whereas hogs can be induced to eat men only when exceedingly hungry. Which of the two shows the better taste?

Trichinosis is generally contracted from the use of infected pork, but it may be communicated by other animals as well as the hog. Any animal which eats dead animals is likely to be infected with this disease, hence chickens and fish have been found to harbor these parasites. Rats, especially, suffer from the parasite because of the frequency with which they visit deadhouses. It is probable that hogs contract the parasites from rats. So the natural history of the word is this: A rat has trichinæ and dies. A hog eats the rat and gets trichinæ. The hog dies. A man eats the hog and gets trichinæ. The man dies. A rat eats the man, and gets trichinæ, and passes it on to another hog. Thus one scavenger eats another, and passes the parasite along.

The parasites seem to be very widespread. They have been found in Chinese pigs, in the flesh of wild hogs of Syria, also in hogs from South America, and in the native hogs of India, as well as those of the lower parts of the United States and Europe.

Mark Belfield reports finding eight cases of hogs infected with trichinæ in one hundred cases of spasms examined. The Massachusetts State Board of Health reports the proportion of trichinæ-infected hogs as twelve and five tenths for Boston, thirteen for the entire State.

It is evident that the only safety from trichinæ is to be found in the entire disuse of pork, an article as unfit for consumption to-day as it was when the ancient Israelites were forbidden by Jehovah to make use of hoggish food.

BE not much troubled about many things,
Fear often hath no whit of substance in it,
And lives but just a minute;
While from the very snow the wheat-blade springs,
And light is like a flower
That bursts in full leaf from the darkest hour.
And He who made the night,
Made, too, the flowery sweetness of the light.
Be it thy task, through his good grace, to win it.

— *Alice Cary.*

THE TAPEWORM.

BY J. H. KELLOGG, M. D.

THE long, jointed form of this curious creature has been made familiar to the public through the exhibitions of street fakirs, who, quick to recognize the opportunity for money-getting, have seized upon the increasing prevalence of the parasite as an opportunity for a golden harvest through the sale of remedies claimed to possess the power of expelling these unwelcome lodgers from the intestines of their unwilling hosts. The tapeworm, like the young man who goes West to "grow up with the country," pre-empts a home, and when once it gets possession, is, like the squatter, hard to expel. The tapeworm really has some excuse for the reluctance with which it leaves its host, from the fact that at its entrance the door was wide open for its admission, that it was cordially, though it may be unwittingly, received.

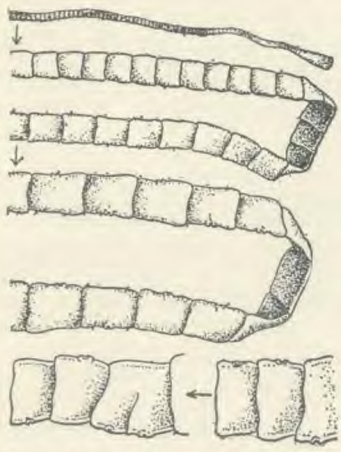


FIG. 1. SEVERAL PORTIONS OF AN ADULT BEEF-MEASLE TAPEWORM.

The tapeworm family numbers many different species, of which nearly a dozen have been found in the intestines of human beings. This curious creature exists in three forms,— the egg, the larva, and the adult worm. The egg of the beef tapeworm is shown in Fig. 8, *a*, Plate I. In the larva state the creature appears in the form of a bladder worm, and looks a little like a Scotch bagpipe. Sections of the adult tapeworm are shown in Fig. 1. The head of a tapeworm, considerably magnified, is pictured in Fig. 2, while Fig. 3 gives the appearance of a single segment pressed between two pieces of glass and considerably magnified.

FIG. 2. HEAD OF BEEF-MEASLE TAPEWORM.

The adult tapeworm is regarded by zoologists as a community, rather than a distinct individual. Each segment is really a single bisexual individual, producing eggs at an enormous rate. The creature is purely parasitic, depending wholly upon its host for sustenance, as it has not the slightest trace of a stomach or a digestive apparatus. Its organization is extremely simple, and the several segments depend so little upon one another that they are able to retain their life for some time after separation.

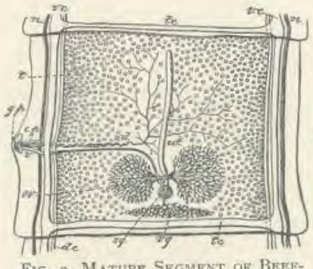


FIG. 3. MATURE SEGMENT OF BEEF-MEASLE TAPEWORM.

The life-history of a tapeworm is exceedingly interesting. According to Stiles, who has written a very elaborate account of these curious creatures in a paper entitled "The Inspection of Meats for Animal Parasites," published by the United States Department of Agriculture, Bulletin No. 19, the history of the tapeworm, as worked out by Leuckart, starting with the adult tapeworm, is as follows: The

eggs, after being discharged by the worm, are passed with the excreta, or the segments containing eggs break loose from the tapeworm and either wander out of the intestine of their own accord or are passed with the excreta. In either case the eggs become scattered upon the ground or in water, and reach the cattle through their drinking water or with the fodder. When whole segments (generally several together) are passed, these crawl around on the ground or herbage, and cattle by swallowing them may become infected with numerous eggs at the same time. Upon arriving in the stomach, the eggshells are destroyed; the embryo then bores its way through the intestinal walls with the aid of its six minute hooks, and wanders to the muscles, where it comes to rest; or, if it bores into a blood vessel, it may be carried with the blood to any organ of the body. When the embryo comes to rest, it loses its hooks, and, increasing in size, develops into a small, round bladder worm. The head of the future tapeworm is then developed in an invagination of the cyst wall, and the complete organism (Fig. 4) thus formed is known as a *cysticercus*, or bladder worm. During its development the cyst pushes the tissues of the host aside to make room for itself, and an outer cyst, made up of connective tissue of the host, is formed around it. The entire time consumed in the development of the cysticercus from the embryo is variously estimated at from seven to eighteen weeks.

FIG. 4. PORK-MEASLE BLADDER WORM.

Fig. 5 represents the cysts or larvæ of the worm as seen in meat. These cysts may be found in all parts of an infected animal, but are especially abundant in the muscles. They are frequently found in the heart, in the tongue, and also in the lymphatic glands, the lungs, the liver, and the brain. These cysts may vary in size from one sixth of an inch in diameter to the size of a pea. Fig. 6 shows a section of beef tongue filled with cysts. They appear as small white specks in the infected flesh, but may easily be overlooked if careful search is not made.

Flesh containing these cysts is called "measly," hence the terms "measly beef" and "measly pork." The flesh of dead animals may also be "measly" (Fig. 4, colored plate). Of the ten or twelve species of tapeworm infecting the human intestine, the beef measle, or tapeworm, is the most common; the pork tapeworm, or measle, next most common. The bladder worm, giving rise to several species of tapeworm, however, is found in the flesh of other animals. A very large worm, *bothriocephalus*, which grows to a length of more than thirty feet, is introduced into the human alimentary canal through eating fish, as many species of fish, especially the perch, the common pike, and various members of the salmon family, are infected by the larvæ of this tapeworm. The larvæ of the same tapeworm are found in the shellfish; and other species, which are rare in man, but very common in rats, develop in certain insects. A curious species of tapeworm, which sometimes occurs in man, but is more at home in the alimentary canal of the dog or the cat, develops its larva stage in the lice and fleas of dogs. Man shares with several other mammals and birds the honor of acting as host for a peculiar tapeworm closely resembling the beef-measle tapeworm.

FIG. 5. A PIECE OF MEAT INFECTED WITH PORK-MEASLES.

The measle tapeworm is a very uncom-

FIG. 6. SECTION OF THE TONGUE OF A BEEF INFECTED WITH BEEF-MEASLES.

fortable sort of lodger, not infrequently producing most disagreeable symptoms, especially the following: "Itching at the extremities of the intestinal canal, and various dyspeptic symptoms; uncomfortable sensations in the abdomen, uneasiness, fullness or emptiness, sensation of movement attributed to the movements of the parasite, colicky pains; disordered appetite, at times deficient, at other times craving; paleness, and discoloration around the eyes; fetid breath; sometimes emaciation; dull headache; buzzing in the ears; twitching of the face; dizziness; often the uncomfortable feelings in the intestine are increased by fasting and relieved after a hearty meal; fainting, chorea, epileptic fits."

FIG. 7. PORTION OF HOG'S LIVER INFECTED WITH ECHINOCOCCUS HYDATID.

None of the symptoms, however, indicate certainly the presence of the tapeworm without the finding of the eggs or segments of the worms in the stools, the bed, or the clothing of the patient. The eggs can be discovered only by a careful microscopical examination. Many thousands of persons are perhaps unwittingly suffering from the presence of tapeworm, attributing to almost any but the right cause the miseries which they endure. According to Virchow, statistics obtained a few years ago from post-mortem examinations made in Berlin showed that one out of every thirty-one persons was infected with this parasite. By a careful system of meat inspection, the number of cases of tapeworm infection has been reduced in Berlin to one in two hundred and eighty. In this country the tapeworm is perhaps not so often encountered, but its frequency is unquestionably increasing at a rapid rate in all countries. For example, in France, in 1865, tapeworm was found in patients applying for treatment at the hospitals in only one in five thousand. In 1890 the number was fifteen in one thousand; in other words, the occurrence of tapeworm had increased in frequency seventy-five times in twenty-five years.

The attention given to this subject during recent years has led to a careful inspection of animals, and the publication of statistics which are sufficiently alarming to lead anyone, on becoming acquainted with the facts, to dismiss meats of all sorts, at least pork, at once and forever from his bill of fare.

Examinations made at different slaughter-houses in Germany showed bladder worm to be present in some places in the proportion of four per cent of all hogs slaughtered, but the hogs imported from Russia, Russian Poland, Bohemia, and Siberia were found in some instances infected to the extent of fifty per cent.

A curious fact which has become known in comparatively recent years is that while the ox and the pig act as an intermediary host for the development of the larva or bladder-worm stage of the tape-

worm of man, the latter himself sometimes acts as the intermediary host for the development of a tapeworm the final host of which is usually a dog or a wolf. This bladder worm may infect all portions of the body of man, just as bladder worms may be found in any part of a measly ox or pig. These bladder worms are known as *hydatids*. They very commonly infect the liver (Fig. 7), and are also found in the lungs. They may give rise to enormous cysts, which contain many secondary or daughter cysts (Fig. 8). Cattle, hogs, and sheep, as well as man, are infected with these cysts, or hydatids. In human beings, hydatids may develop rapidly or slowly. These have sometimes been known to exist in man for thirty years or more, but in fifty per cent of infected cases, death occurs within five years, this form of infection being very much more fatal than that in which man becomes the host of the adult tapeworm. Blindness is sometimes the result of the development of a hydatid cyst in the eye. The writer saw a case of this sort some years ago in a great eye hospital at Moorfields, London.

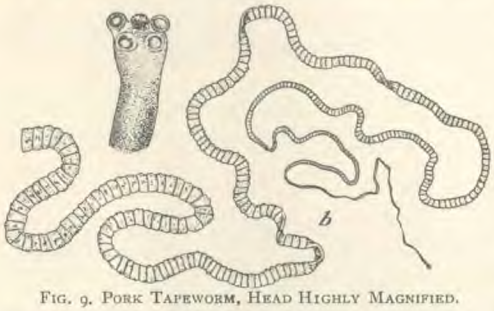


FIG. 9. PORK TAPEWORM, HEAD HIGHLY MAGNIFIED.

Man probably obtains the infection from dogs, by swallowing the eggs, and by contact with these animals, the bodies of which become infected from their own fecal matters. Dogs are infected by eating the flesh of infected cattle and hogs. Wheeler, who examined two thousand hogs in New Orleans, found the liver infected in one case in twenty. In Iceland it is rare to find a cow ten years old that is not infected, and in certain districts every sheep over three years old is infected with this parasite. In India, according to Neumann, seventy per cent of all the cattle are infected. Reports from Griefswald, Germany, showed that more than sixty-four per cent of the cattle were infected, and more than one half of the hogs.

FIG. 8. HYDATID BROOD CAPSULE.

Hydatid disease in human beings is becoming especially common in Iceland and Australia. Three thousand cases of the disease have been reported from Australia alone in twenty years. In Iceland the proportion of persons infected has been estimated at as high as sixteen and two-thirds per cent, or one sixth the entire population. This form of tapeworm infection is evidently increasing rapidly, and will continue to increase so long as slaughterhouses exist, for dogs are infected through visits to slaughterhouses, where they are fed upon the offal of infected animals. So long as dogs are fed upon meat they will remain a source of this most dangerous infection, for by contact with the animal, the hand may be infected, and thus the eggs be transferred to the mouth.

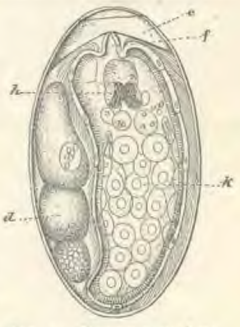


FIG. 10. EGG OF THE COMMON LIVER FLUKE.

Man may also become the intermediary host of the pork tapeworm through self-infection. A person who is the host of an adult measly-pork tapeworm may acci-

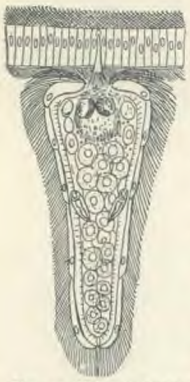


FIG. 11. EMBRYO OF THE COMMON LIVER FLUKE BORING INTO A SNAIL.

dentally bring to his mouth some of the eggs (Fig. 8, *b*, Plate I), which are cast off by the alimentary canal. The fingers are very likely to become infected by the itching about the anus, which is constantly present. Infection may also occur through regurgitation of the intestinal contents into the stomach. The shells of the eggs thus brought into the stomach are dissolved by the gastric juice, and the young parasite thus set free, quickly bores its way through the mucous membrane into the blood vessels, and is then carried to the liver or other parts, where it develops in the manner previously described. From this fact it appears that the *tænia solium*, or pork tapeworm (Fig. 9), is a much more dangerous lodger than the beef tapeworm, the larva stage of which does not develop in human beings.

From the facts presented in the foregoing paragraphs it appears that men, dogs, hogs, and cattle are associated in the development of the tapeworm parasite, their bodies serving as incubators and lodgments for this strange creature, which in the adult stage fastens itself to the intestinal wall and grows at the rate of from one to four inches a day through the absorption of food stuffs which the body has prepared for its own sustenance, but of which it is deprived by this voracious robber. A man possessed of a parasite may be properly compared to a fish-hatching establishment. He is discharging from his body many thousands of animals, and these in turn may also infect many hundreds of human beings. Tapeworm infection may be regarded as one of the minor penalties which nature inflicts upon man for the physiological crime of flesh eating. But the facts presented are sufficiently cogent, it would seem, to persuade the most ardent lover of juicy beefsteaks that there is a better way in diet. Abstainers from flesh foods may congratulate themselves that no tapeworm or other parasite capable of developing in human bodies has ever been discovered in fruits, nuts, or other natural foods.

FIG. 13. A YOUNG LIVER FLUKE.

Flukes.

Flukes, or flatworms, are curious parasitic animals found in cattle, sheep, and swine. More than a dozen different species of flukes are found among our domestic animals. Three of these have also been found in man, while they are not directly transmitted from animals to man. Fifteen different kinds of flukes have been found in cattle, five in sheep, three in hogs. The most common location of these parasites in animals is the muscles and the liver.

FIG. 12. REDIA, CONTAINING GERMINAL CELLS OF THE LIVER FLUKE.

The life-history of the fluke is exceedingly interesting. The worm is a hermaphrodite which produces from thirty-five to forty-five thousand eggs. The eggs (Fig. 10) are discharged from the alimentary canal with the fecal matter, and when dropped in marshes or washed into pools by the rain, undergo incubation during a period lasting from ten days to three months, according to the temperature. When fully developed under the influence of light or exposure to cold, the egg-capsule bursts, and the young larva escapes. A strange instinct leads the infant parasite in the search of a humble host, which it finds in the body of a snail, into which it bores its way (Fig.

11). After about two weeks the young larva, having developed into the form shown in Fig. 12, starts again on its journeys, traveling about through the body of the snail until it finds the liver. Here a further development takes place which culminates in one of the most remarkable of biological phenomena. This imperfectly developed organism proves to be a sort of living incubator, and after ten or twelve weeks gives birth to fifteen or

FIG. 15. MALE AND FEMALE SPECIMENS OF THE HUMAN BLOOD FLUKE.

twenty minute liver flukes looking very much like tadpoles (Fig. 13). The enormous extent to which these creatures may multiply may be seen by a little computation. An adult fluke may produce as many as forty-five thousand eggs. Each of these eggs may produce eight larvæ, and each larva twenty distinct young individuals, each of which may develop into a mature fluke, making a total of 7,200,000 new individuals produced by each adult fluke.

It is known that the fluke is parasitic in twenty-five or more domestic or wild animals, hence is widely dispersed, and the collecting of domestic animals in pastures and meadows, which favors the development of the larvæ of the parasite, is encouraging their multiplication to an enormous extent.

Fig. 14 shows the internal anatomy of the lancet fluke, a species found in man, cattle, sheep, and swine. Fig. 15 represents the human blood fluke. The eggs of this curious creature are passed in the urine. Its life-history after leaving the body is doubtless similar to that of other flukes.

FIG. 14. THE LANCET FLUKE.

Seventy-five per cent of the sheep slaughtered at Catania, Sicily, were found to be infected with blood flukes. The blood fluke gives rise to a most distressing disease of the bladder and associated organs. While flukes are not often derived directly from the bodies of infected animals, the association of man with animals, growing out of the use of animals as food, is doubtless a means of increasing the liability to infection, and the presence of flukes in an animal's body unquestionably in many cases gives rise to diseased conditions which render it unfit for food.

TALK happiness: the world is sad enough
Without your woes. No path is wholly rough.
Look for the places that are smooth and clear,
And speak of those to rest the weary ear
Of earth, so hurt by one continuous strain
Of human discontent and grief and pain.

Talk faith: the world is better off without
Your uttered ignorance and morbid doubt.
If you have faith in God, or man, or self,
Say so. If not, push back upon the shelf
Of silence all your doubts till faith shall come;
No one will grieve because your lips are dumb.

Talk health: the never-changing tale
Of fatal malady is worn and stale.
You can not interest, nor charm, nor please,
By harping on that minor chord, disease.
Say you are well, or all is well with you,
And God will hear your words, and make them true.

—*Ella Wheeler Wilcox.*

MEAT EATING A CAUSE OF CANCER.

BY J. H. KELLOGG, M. D.

THE rapid extension of cancer within the last few years has attracted the attention of the medical profession in all civilized countries. Dr. Roswell Park, of Buffalo, recently made the statement, in a paper read before a medical society, that if the death-rate from cancer increases during the next ten years as rapidly as it has within the last ten, in the year 1909 there will be more deaths in the State of New York from cancer than from consumption, smallpox, and typhoid fever combined. When it is recalled that at the present time the death-rate from consumption in New York is one person in every seven, or more than from any other known disease, the awful slaughter which already results from cancer, and which is likely to increase enormously, will be readily appreciated. Dr. S. G. Burkholder, V. S., Inspector of Meat in the Veterinary College of Chicago, in an exceedingly valuable paper on the subject of meat inspection, called attention to the frequency with which cancer occurs in the lower animals, and pointed to the probability that this is one of the sources of the growing frequency of the disease among human beings.

That cancer is an infectious disease has been proved. It is undoubtedly a parasitic malady. Whether the parasite belongs to the animal or the vegetable kingdom has not been thoroughly determined.

Certain persons seem by heredity to be subject to infection by this disease, while others become vulnerable through erroneous habits of life. It has long been recognized that cancer seldom appears in persons who abstain from the use of flesh food. It is very rare among the vegetarian natives of India. A physician who practiced for many years among the natives of the Tierras Calientes, or the coast region of Mexico, who subsist almost wholly upon tropical fruits and other vegetable products, said he never saw a case of cancer in his whole experience among these people. In England the frequency of cancer has increased parallel with the increase of flesh eating.

Cancer is one of the most incurable, malignant, and fatal of diseases. Its rapid increase renders highly important a recognition of the danger of infection from the use of infected animals. It is not simply the cancer itself that concerns us in this matter, but all the flesh of the animal afflicted with this disease, as it has been shown that in this, as well as other parasitic maladies, the whole body is affected with the poison produced by the parasite, which prepares the way for the further extension of the disease. A healthy man will not contract cancer even if inoculated with cancer-juice, but in a man who already has a cancer in some portion of his body, other foci of disease may be produced by inoculation, thus demonstrating that the tissues have lost their power to defend themselves against the encroachments of this much-to-be-dreaded parasite.

Dr. Burkholder calls attention to the fact that American cattle are subject to angry-looking tumors growing about the eye, and says: "These tumors grow very rapidly, involving the surrounding tissues, filling the orbit, and finally destroying the eye. This growth presents the histological picture of a true epithelioma [cancer], and presents the usual disseminating characteristics. The neighboring lymphatics are invariably involved, showing its progressive and metastatic nature. It is undoubtedly a true cancerous growth."

W. Roger Williams, an eminent English physician, and a recognized authority

on cancer, states, in the "Twentieth Century Practice of Medicine," as follows:—

"From returns collected . . . it appears that of 194 cancer patients, 123 had been moderate eaters, 59 small eaters, and 12 large eaters. With regard to meat, 99 had been moderate, 78 small, and 16 large eaters. There was not a single strict vegetarian among them, and only a few had been great eaters of vegetables.

"That cancer is less prevalent in vegetarian than in flesh-eating communities is generally believed, and the following considerations are favorable to this belief:—

"In Ireland, where a large proportion live chiefly on vegetable diet, the prevalence of cancer . . . is much less than in either of the sister countries.

"Beneke's statistics show that cancer is rare in prisons, where but little animal food is allowed, and hard work exacted. The experience of those engaged in workhouses, lunatic asylums, and similar institutions, where very little meat is allowed, is of like import. The comparative rarity of the disease among the intemperate is also noteworthy in this connection, for persons of drunken and dissolute habits are seldom affected.

"The remarkable fact that in New Zealand and New South Wales men are more liable to cancer than women, is probably due, as MacDonald believes, to their gluttonous habits in respect to meat eating. 'Meat for breakfast, lunch, dinner, tea, and supper, just like the porridge pot in Scotland.'

"The greater prevalence of cancer in rural than in urban districts, and, in the latter, its greater incidence in those localities where the well-to-do and easy-going reside, rather than among the poor and working classes, points to the same conclusion. It is, however, certain that vegetarians are not completely exempt.

"The alleged immunity of savages, and the great prevalence of the disease in all civilized communities, is probably largely attributable to the influence of diet. At any rate, it is certain that savages are, as a rule, less well fed than are the members of modern communities.

"Leblanc and others believe that carnivorous animals are more prone to develop malignant disease than herbivora."

Williams speaks again as follows:—

"Probably no single factor is more potent in determining the outbreak of cancer in the predisposed than high feeding. There can be no doubt that the greed for food manifested by modern communities is altogether out of proportion to their present requirements. Many indications point to the gluttonous consumption of meat, which is such a characteristic feature of the age, as likely to be specially harmful in this respect.

"Statistics show that the consumption of meat has for many years been increasing by leaps and bounds, and it has now reached the total of one hundred and thirty-one pounds per head per year, which is more than double what it was half a century ago, when the conditions of life were more compatible with high feeding."

The author adds in a footnote that in the Middle Ages, when cancer was almost unknown, a man was considered in easy circumstances who could procure fresh meat once a week. In the British workhouses, in which cancer seldom appears *de novo*, the meat allowance is not very much greater.

Rayer states that "carnivorous animals are more prone to malignant disease [cancer] than herbivorous." "Dogs are far more frequently affected than any others," while the monkey, which sticks to the original bill of fare of the human family, rarely suffers from this disease. Cadiot and Rogers report thirty-nine cases of malignant tumor in dogs. Malignant

disease has also been reported in the kangaroo (Eve), in a plover, in a sheep (Sharp), in a cow (Cooper), in a rat (Shattock).

Malignant growths also affect the vegetable kingdom, trees and other plants, but these growths are probably of different character from those which affect human beings. That carnivorous animals are more subject to cancer than the herbivorous is the natural result of the infection to which they are subjected by the use of vegetable-eating animals as food. Human beings who eat flesh are in precisely the same position. It is probable, also, that the use of flesh food, by contaminating the body with waste animal matters, and by lowering the vital resistance, increases the liability to cancer as well as other forms of disease.

Dr. Johnson, Government Meat Inspector, and Dr. Loeb, Professor of Pathology in the Chicago Polyclinic, in a recent article in the *Journal of Comparative Medicine and Veterinary Archives*, report forty-nine cases of cancer observed in one year in the Chicago stock yards. These authors state that one or two cases of cancer were found every year in cattle of a certain ranch in Wyoming.

Cancer has been shown by Davidson, in his "Geographical Pathology," to be distinctly a disease of civilization. Davidson affirms that it is entirely absent in East Central Africa, the Färöe Islands, the Gold Coast, Guiana, Iceland, Jamaica, Mauritius, New Caledonia, and Persia. Its presence in Abyssinia is doubtful.

Carefully collected statistics in different civilized countries, quoted by G. Betton Massey, M. D., of Philadelphia, in a paper published in the *American Journal of Medical Sciences* for February, 1900, show that the number of deaths from cancer has in thirty-one years doubled in Wales; in twenty years, cancer increased more than fifty per cent in Scotland and Ireland. In America the ratio of deaths from cancer has doubled in New York within twenty-eight years. In Boston, from 1863 to 1887, the cancer mortality nearly tripled, while in San Francisco the number of deaths from cancer increased in thirty-two years prior to 1898 from 16.5 in 100,000 to 103.6, or more than 600 per cent. These are facts which challenge the attention of every intelligent man.

As bearing upon this subject, Williams points to the fact that cancer hardly ever occurs in animals in a state of nature. It is only in domesticated animals that this disease is found, and then chiefly when they are kept in confinement under artificial conditions.

G. Betton Massey concludes from carefully prepared statistics that there are to be found in the United States at the present time no fewer than one hundred thousand persons suffering from cancer. Of these half die every year, and an equal number take their place, as the average duration of the disease is two years.

Dr. Park has shown that the number of persons who die of cancer annually in the State of New York has doubled within the last ten years.

According to Dr. Snow, an eminent English physician, cancer is often confounded with actinomycosis, a parasitic disease which frequently occurs in cattle, and which, like cancer, may be communicated to man under favorable conditions.

MM. Verneuil, of Paris, and Roux, of Lausanne, a few years ago announced the view that the free use of pork is, if not the direct cause of cancer, at least a very important factor in the causation of this disease. M. Verneuil has long been convinced that the free use of meat is a cause of cancer, and he has more recently observed that orthodox Jews, who adhere closely to the laws of Moses, rarely, if ever, suffer from this disease. M. Roux has confirmed these observations.

SENSIBLE STREET DRESS.

BY DINAH STURGIS.

IT ought to be enough in this enlightened age to say that a feature of dress is in itself good or bad, to secure its adoption or exclusion. But this is only the theory. In practice the majority of women still feel the oppression of that intangible Juggernaut, fashion, and wear a great many things that are ridiculous or worse, because they are called fashionable, and fail to take advantage of many admirable features of dress because they have not been declared to be "the style."

It is an especial comfort, therefore, to come across fashions that are admirable from all points of view, because it is certain that many women will adopt them with resulting benefit who would not have the strength of mind to wear the garments unless labeled "fashionable." This season, fashion really is outdoing herself in introducing styles that are handsome, and also compatible with health and comfort.

Take for a single example the full-length outer garment which is being shown by women's tailors in a variety of models for autumn and winter wear. It is a mystery why any article of dress so wholly sensible as the long cloak should ever have been allowed to go out of fashion for the street. But at least we can be thankful that it has been reinstated.

Most women suffer for want of out-of-door air and exercise and direct sunshine. This is particularly true of women who live in centers of population where they can go out of doors only by going upon much frequented streets, and must make a special toilet before doing so.

Many a woman who could and would take the time for an airing if she could leave her work and at once step out of doors, and on coming in, immediately resume it again, fails to take the fresh-air recess because it requires so much time and strength to change her dress, adjust complicated belts and neckwear, and otherwise prepare a toilet which can be worn on parade with a short jacket turned away at the neck, that the very thought of going out wearies her; it takes all the time she has to spare for an airing to get ready to take it, and to undress afterward. If women could get ready to go out as men can, simply by putting on a hat and coat, the fresh-air outing would not as now be so dearly bought in time and trouble as to make the effort necessary seem out of all proportion to the good effects. Indeed, it is probable that the walk taken by a wearied woman burdened with clothing does her positive harm.

As most women dress at present, their house gowns are usually not suitable for the street, and their tailored street frocks can be kept in good condition only by removing them when in the house. The business woman finds it very difficult to select a gown which is faultless in taste for the street, that can be kept in good condition despite the chalk deposits in the teacher's routine, the counter scourings of the shop clerk, and other concomitants of daily labor outside one's own domicile.

To solve this series of problems, fashion now offers the long garment. Probably she offers it for its novelty after long disuse. Also it is doubtless again presented because its long unbroken lines are so very generally becoming, setting off the well-proportioned figure, and concealing the defects of the ill-proportioned one instead of putting them into sharp relief, as do short jackets. But whatever

the reasons animating fashion, all women, whether strong-minded or weak-minded, may profit by the fact of the long garment's being greatly in vogue. There are long garments, and long garments, however. There are long, all-enveloping garments that have trains; but these magnificent evening wraps, made of superb brocades, are not walking garments, and those who do not wish them or can not have them, are in no way deprived of the positive benefits of the long street cloak. The walking dress for the street is cut by good New York tailors this season three full inches from the floor all around when finished. For a storm dress, the skirt is made four full inches from the floor. The long cloak to walk in should be at least three inches from the ground in order that it need not be lifted in stepping off the curb.

The material should be varied to fit the circumstances, keeping, however, under all circumstances to a fabric that is light weight enough to make walking a pleasure instead of a tiresome task. A garment warm enough to drive in is much too heavy to walk in. Melton and beaver are too heavy for full-length walking cloaks. Broadcloths, Venetians, cheviots, tweeds, homespuns, worsteds, and similar warm but comparatively light-weight materials are all good, but each one has its especial merit. Broadcloths make handsome coats; they do not hold their own, however, as well as Venetian for general wear. For a combination fair-weather and wet-weather coat, the real water-shedding, actually waterproof "cover" cloths of England, manufactured for riding coats and to be had in this country of first-class dealers in tailors' supplies, are perfect. Such material is, however, expensive, and the woman of moderate means finds it easier and better to have a cheaper grade of fabric for pleasant weather and a special rain garment.

A long cloak to walk in should have for warmth an interlining over the upper portion, as do men's top coats, when it is to be worn where the weather is continuously cold, but in localities like New York City, where really cold weather is intermittent, even in January, it is better to have the street cloak made comfortable to walk in on moderate days, and to add extra warmth for colder days by putting on a knitted wool or well-perforated chamois bodice under the cloak. Furs are usually too warm to walk briskly in.

To make a walking cloak practically and not merely theoretically correct, the skirt portion should be wide enough to accommodate the length of lower limb and the manner of walking of its wearer. If it is to be worn over a woolly surfaced dress, the entire lining of the outer garment should be one or another of the satin or silk or cotton serge fabrics that have a smooth, slippery surface; a long garment that clings to the dress or in any way "binds," annihilates all comfort in walking.

The long cloak illustrated is but one of many models. It shows the modish London cover-coat sleeve running into the neck, and a good effect in trimming that can be copied, modified, replaced by something different, or omitted outright. The model is a very dark blue-gray, almost a black, Venetian cloth, the surface of which, like all Venetians, is slightly mottled and woolly, although smooth and plain in effect. The rolling collar and revers are faced with pearl cloth, and overlaid with a very dark blue panne, outlined with a shaped strap of the cloth that is built up entirely of minute circles of the cloth cut out by machinery and applied by hand. The buttons are made, by hand, of the cloth over cords, with applied pyramids of the tiny bits of cloth. The lining is a very dark blue satin. This is an expensive coat, but the essen-

tial features, which are the lines of the garment, and not its trimming, could be copied inexpensively in cloth, using a second cloth or velvet for facing the revers and collar. Or the same cloth may be used for the collar, and the revers decorated only with stitching.

While on the subject of easily donned street attire, it may be added that in warmer weather, light-weight and delightfully cool cover cloaks made from silks of soft texture are worn by skillful Parisiennes. These cloaks make it possible to wear much thinner frocks on the street than can be worn with good taste unless covered, and yet give one the appearance of being carefully gowned, while yet thoroughly comfortable.

To make a modish toilet for the street with the long cloak, the hat must suit the garment as well as the face and head and complexion of the wearer. With a rough Scotch suiting coat, a picture hat of velvet would be absurd on the artistic side, even if picture hats were not absurd things to walk in, which they are. The hat for the conservative lines of the long utility cloak should be a turban, beret, or some other of the close-fitting shapes. The modish hats for the street this winter all have a draped effect of an East India turban trend, such trimmings as there are giving no chance for the wind to wreck them. The hat in the illustration is of a very dark shade of blue velvet draped in folds, with a pompon effect at the side in velvet chrysanthemums. For a hat to wear in all weathers the same effect could be had in cloth or in felt, modifying the outline to suit the contour of the head,—viewed, please, from all four sides, not only from the front,—while the color should suit the coat and the complexion.

A Handsome and Useful Outer Garment.

The joy of walking in garments that do not weight one down and do not need to be held up and that leave the hands free, is something that only the woman who wears them, fully knows; and to be able to have the comfort, and yet feel that one is quite *à la mode* is a condition that many women have not dreamed to be possible. It is easily possible, however, to any woman, to every woman, who will take advantage of existing conditions.

Especially is the long street garment a boon to the woman unbecomingly stout who has not will enough to rid herself of her burden of excess flesh, and for this cause thinks she can not show herself in public in a short skirt. Under a garment with unbroken lines from neck to foot, the shortened dress skirt is unnoticeable, and the long lines of the cloak prevent its reduction in length of skirt being unbecoming. The long cloak is undoubtedly a blessing.

DISEASES FROM THE USE OF FISH.

BY J. H. KELLOGG, M. D.

IT is commonly supposed that the flesh of fishes is somehow more wholesome and more easily digestible than that of warm-blooded animals. This widespread error has been frequently exposed by scientific men, but the public is very slow in getting hold of the facts. The eminent Dujardin-Beaumetz, of Paris, for many years before his death refrained from the use of fish of all kinds, and prohibited its use by his patients, especially those suffering from dilatation of the stomach, diseases of the liver and the kidneys, and from rheumatism. There are probably few eaters of fish who would care to eat a cat or a dog or any other carnivorous animal, yet it requires but a moment's reflection to develop the fact that the fish, like the cat, the dog, and the wolf, is a carnivorous creature. When a man goes fishing, he provides himself with worms, small minnows, flies or other insects, or something which looks like them. No one ever heard of a boy's going fishing with apples, bits of bread, potatoes, turnips, or other vegetable substances for bait. In the words of an English wag,—

"A certain man caught a fish with a worm
That did eat of a king;
Then did eat of the fish
That did eat of the worm."—

To which we might add,—

Thus in eating the fish
He ate also the worm,
And in eating the worm
He ate also the king.

Most fish are scavengers, and omnivorous. They consume greedily all sorts of animal and sometimes also vegetable refuse which they find in the water. Big fish devour small fish in great quantities, often eating those of their own species. It is for this reason that the fish has such a strong "fishy" odor; it becomes a "double distilled extract" of fish, so to speak, just as the flesh of a carnivorous animal has a distinctly strong and unpleasant odor.

Numerous facts have recently appeared which show conclusively that fish are a prolific source of disease among human beings. For example, the trichina, a parasite most frequently found in pork, has been found in fish in the harbors of some of our larger seaport cities. In these instances, the fish doubtless contracted disease by feeding upon garbage which was dumped into the sea. About a dozen years ago a distinguished naturalist announced that he had been able to identify more than seventeen different kinds of parasites in the bodies of fish inhabiting the waters of New York Harbor. Epidemics prevail among fish as well as among human beings. Some years ago the coast of South Carolina was covered to a depth of several feet in places by dead fish which had been washed upon the shore. For some weeks the inhabitants of that portion of the country were threatened with a pestilence from the

enormous quantities of poisonous gases thrown off by the bodies of these decomposing fish. Thousands of cartloads were hauled into the interior to be used as fertilizer, a very proper use for dead fish, certainly much more appropriate than to bury the creature in a human stomach.

Within a few years a large number of cases of poisoning, nearly one half of which have proved fatal, have been reported from different parts of Russia. In eleven cases reported by Arustamov, five died. Germs resembling the typhoid fever germ were found in the fish and in the viscera of the dead persons.

Sieber reported cases of fish-poisoning in which the fish were obtained from a pond. Numbers of dead fish were discovered in the pond, and the germs obtained from them were found to be fatal not only to fish but to guinea pigs, frogs, rabbits, and mice.

"Barbencholera," which occurs in Germany, has been found to be due to the use of barbels sick from some infectious disease. The diseases of fish are not so well understood as those of warm-blooded animals, but the popular notion that fish are less likely to disease than are warm-blooded animals is certainly an error.

The symptoms of fish-poisoning are chiefly vomiting, nausea, purging, and symptoms which clearly resemble those of cholera morbus. In many cases a rash occurs. Several poisons are found in diseased fish and in those which have undergone putrefactive changes. One of these is named *ptomatropin*. This is so highly toxic that less than one fortieth of a grain will kill a full-grown man, a toxic power greater than that of any known drug.

Fish, then, under any conditions, is an unsafe and dangerous article of diet.

THE DRUMMER AND THE DIETARY.

BY EUGENE CHRISTIAN.

AWAY back in Colonial times when there was to be a public sale, some "wag" was sent about the village beating a drum, crying out the character of the goods to be sold and the place of sale. This gentleman gradually extended his itinerary to neighboring towns, carrying, in addition to his drum, hand bills and a painted banner. He was called a drummer. Finally private parties began to employ him. He grew in importance. He left off "spieling." He abandoned the drum, the hand bills, and banner, and went into the fight with nothing but a photograph of his goods and a stock of talk. From this somewhat humble origin has evolved the drummer of to-day, whose name is the only relic left of his infancy, and who visits all the larger cities of the civilized world with samples of his wares, and who, by the wand of his genius, directs millions upon millions of dollars' worth of merchandise from one market to another.

The drummer is to-day one of the most important factors in trade. Nearly every order is won on the mental battlefield. Never yet was mortal merchant known really to be in want of anything. Orders needed are withheld, it seems, just to give the drummer mental calisthenics. He must meet and deal diplomatically with the shrewdest business men in the land at one end of the market, and a competing world at the other. How he shall qualify himself or keep himself in condition to meet these strenuous requirements is now the object of our inquiry.

Every traveling man of wide experience knows that while prices, transportation, etc., are the governing factors in many sales, yet it is not from items so governed that the true worth of a drummer is reckoned. The great majority of the world's specialties and profit-earning merchandise is shifted from market to market and daily changed from place to place by the personality, the diplomacy, the artful and mental accomplishments of the drummer, and it is upon the value of these that his income and claim to supremacy must rest. It can be truly said of the drummer, as of the author, that his laurels are won entirely in the domain of the intellectual. Every order-book is a record of mental battles where the brain was the only weapon. It would seem, therefore, that the most important study that could engage the attention of the traveling man would be how to feed, nurture, and cultivate, how so to care for this weapon that it would do the most effective work.

The process by which food is converted into blood, muscle, and brain is practically the same in all animals, man included. Valuable lessons, therefore, might be learned by close observance of facts reflected from this field.

Were a traveling man to see a customer of his training a deerhound for a test-race where a keen sense of smell, speed, endurance, and general intelligence were the prerequisites of victory, and were he to see him feed this animal all the meat it would eat, then coax it to take some moldy cheese, pie, ice cream, and tobacco juice, if he did not call him a fool, it would be because he expected to sell him a bill of goods. Were he to observe another man getting his Hamiltonian ready for a big derby to be run next day, and notice a huge Hamburger steak, some mustard, vinegar, goose livers, Chili concarme, and a lot of other hot stuff stirred into its oats, along with a gallon of beer, a gill of gin, and this potpourri capped off with a wisp of tobacco and a stein of black coffee, how much money do you suppose he would put on this horse next day?

Were a shrewd, observing drummer to see an antelope bounding over the plains thirty feet at a jump, covering a distance of twenty miles and return before the sun was fairly up, for its morning drink of clear mountain water, and at the same time see a cinnamon bear that had eaten a jack rabbit for breakfast, attempt to run or cut a caper, I wonder if he would think that in all probability diet had something to do with the strength, agility, fleetness, intelligence, disposition, or bodily attractiveness of the two animals. I wonder if he would not be inclined to sit him calmly down and seriously reason something after this fashion: —

"If the process of converting food into blood, muscle, and brain is about the same in all animals, then the pronounced differences existing between flesh-eating and non-flesh-eating animals must be largely influenced by the kind of food upon which each class subsists.

"I've heard that a dog can't be made to exhibit much affection or intelligence so long as he is fed on meat. I wonder why.

"I have also noticed that flesh-eating animals emit a bad odor, are ugly and vicious. They are at war with every other living thing, hence everything is their enemy; they are sluggish and stupid, both physically and mentally. On the other hand, the non-flesh-eating animals have no offensive odor; they are usually gentle, affectionate, strong, agile, attractive in physique, and especially bright mentally.

"I remember now having once heard a dog trainer tell a lady never to feed meat to her pet dog, that it would make him sluggish and cross. I wonder if it has the same effect on people. If not, why not?

"Can it be that the kind of food upon which animals live, shapes to a large extent their physical, moral, and intellectual differences? It really seems to be true. If it is, then, would I not be a much superior man, both mentally and physically, and far more able to cope with the difficult and diplomatic problems that arise almost daily in my profession, if I should live upon a perfectly natural and clean diet of cereals, fruits, nuts, and vegetables?"

It seems that every traveling man, from his wide and advantageous range of observation and experience, would at some time stop and reason with himself soberly, seriously, and conscientiously along these lines.

From nearly twenty years' experience as a drummer, the writer feels qualified to answer the imaginary soliloquy, which, condensed into the fewest words possible, is as follows:—

From experience I am fully convinced that the sentiments are softened and civilized, that the brain is bettered and brightened, that the muscles are made healthier and harder, by subsisting upon a clean, natural diet. The corpse of any thing is not clean. It should be interred in the ground, not in the stomach of the living.

A brain clouded and soaked with stimulants and narcotics, such as coffee, tea, cocoa, beer, liquors, wines, and tobacco, can not possibly possess the strength, the keen creative force, necessary to meet the requirements of the successful drummer. A stomach filled with the decaying corpse of another animal, vinegar, hot sauces, greasy gravies, rich pastries, cheese, and ice cream can not supply the muscles and brain with the kind of force they must spend in the great forum of trade. All these things are stupefying embargoes that hang with a sullen weight upon the physical frame and intellectual faculties of men, and keep them from performing what they would or could if fed on a simple and natural diet.

They have been handed to us through the long shadows of the centuries, and represent the same mistakes that have characterized man's struggles and advancement from barbarism to the present period of enlightenment. That a civilization will appear in the near future that will look back on the dietary of to-day as closely linked to the crude carnivora and cannibal, there is little doubt.

PATIENCE WITH THE LOVE.

THEY are such tiny feet;
They have gone such a little way to meet
The years that are required to break
Their steps to evenness, and make
Them go more sure and slow.

They are such little hands,
Be kind. Things are so new, and life but stands
A step beyond the doorway. All around, new day
has found
Such tempting things to shine upon, and so
The hands are tempted hard, you know.

They are such young, new lives.
Surely their newness shrives
Them well of many sins. They see so much
That, being mortal, they would touch,
That if they reach,
We must not chide, but teach.

They are such fond, clear eyes
That widen to surprise
At every turn; they are so often held
To sun or showers,—showers soon dispelled
By looking in our face;
Love asks for such, much grace.

They are such fair, frail gifts;
Uncertain as the rifts
Of light that lie along the sky—
They may not be here by and by;
Give them not love, but more—above
And harder—patience with the love.

— *George Kringle.*

COLDS.

BY FREDERICK M. ROSSITER, M. D.

COLDS are indications on the dial of health of a lowered vitality. An individual who literally puts on airs, carelessly or otherwise, and contracts a cold, pays the penalty for his folly at once. This is a time when sentence against an evil work is not delayed, but is promptly executed, with the promise of "more to follow" if the delinquent does not mend his ways.

A cold, whether it be "in the head," in the throat, or "on the lungs," is a congestion of the mucous membrane of these parts, due to a sudden chilling of the skin, either general or local. Because of the exhaustion of the nerve centers, the skin fails to react, and the equilibrium of the circulation is broken, so that one part contains too little blood, while some other part has too much. That region of the body in which there is the least resistance suffers. This is usually some part of the mucous membrane

Perfection of health depends upon perfection of circulation. The blood is the great stream of life flowing through every portion of the body, purifying, cleansing, restoring, scattering, and distributing healing elements everywhere. Any interference with this healing stream interferes with the function and structure of the various tissues, and this puts one in a position of *dis-ease*, for in sickness there is an absence of ease.

Colds are the earliest and the simplest manifestation of disease, and are a warning that more severe measures will soon follow if the health is not cared for, and the body put in a proper state of resistance.

The healthy body is always in a state of defense, and is prepared to resist any attack from without. Disease can begin its devastation only when the vital resistance is lowered.

Colds go hand in hand with exhaustion of the vital forces, and are followed quickly by pneumonia, pleurisy, attacks of gastrointestinal indigestion, diseases of the kidneys, the liver, the pelvic organs, and the nerves.

The most intimate relation exists between the skin and the mucous membranes, or the internal skin. The skin is so exceedingly sensitive that the slightest change in the surrounding temperature affects it, and if it has not been properly educated or prepared to meet all these changes, impressions of cold are communicated to internal organs which are more poorly prepared to resist cold than the skin itself, and consequently are congested with blood which should be circulating freely in the skin. If the blood is forced out of one part, extra burdens are thrust upon other parts.

Normally, if the skin is subjected to a lowering of temperature, the news is at once telegraphed to the heat-regulating centers in the brain, where orders are immediately given to burn more fuel and create more heat, and the blood rushes more rapidly to the parts attacked, overcoming the influence of the cold. More heat is produced in the body as the external temperature falls; at the same time the skin contracts sufficiently to prevent loss of heat from its surface. When the surrounding temperature is raised, less heat is produced, and sufficient heat is lost from the skin to maintain the normal bodily temperature. One's susceptibility to "catching cold" is in direct proportion to the disturbed relations between the skin and the heat-regulating mechanism.

There are many conditions that render

one susceptible to colds. Persons who have engaged in vigorous exercise, perspiring freely, even saturating the garments next to the skin, and who then remain inactive, sitting down or standing in the cold or wind, have a good opportunity to "catch a cold." The exposure of a small portion of the body, like the back of the neck, the surface between the shoulders, or the chest, to a "blade of cold air" from a keyhole, a window crack, or a window let down from above, is a frequent cause of colds. If we could become as accustomed to "facing the wind" with the back of the neck as we do with the face, we should not be afraid of drafts. Who ever thinks of contracting a cold because a wind strikes him in the face! Yet every part can be made to resist cold just as well as the face. Low shoes in cold weather, thin soles, chilling of the ankles, and wet feet come in for a good share in the responsibility of giving colds.

An inactive skin — which may be the result of lack of exercise, lack of "cutaneous gymnastics," uncleanliness, the absorption of poisons paralyzing the nerve endings and preventing the transmission of proper impulses to the heat-regulating centers, too much clothing, and sitting in overheated and poorly ventilated rooms — offers many inviting temptations to a "cold."

Overwork and lack of sleep reduce the vitality in an astonishingly short time, and render one peculiarly susceptible to colds. Indulging too freely in a hearty dinner may be followed by a cold. Those who habitually have cold hands and feet easily take cold. Muffling the neck in winter is an injurious practice, for it causes relaxation of the skin. The garments about the throat are moistened by perspiration, the evaporation of which chills the skin, and a cold is often the sequence, frequently developing into the most aggravated and serious type. The free use of alcoholic beverages paralyzes the vasomotor mechanism of the skin, by which action one becomes peculiarly susceptible to colds of various types.

THE TREATMENT OF COLDS.

1. *Preventive.* — The normal body automatically resists cold in any form, and we voluntarily take shelter from cold, or otherwise instinctively attempt to protect the body from it. By preventive measures a more normal and healthful action of the reflex centers is produced, and these are ever on the alert to maintain an equilibrium of all forces in the body.

Any measure that builds up the system and increases the vital resistance will increase the natural defenses of the body against cold in the same manner that any disease is successfully defeated.

Sufficient refreshing sleep, wholesome food, and an active condition of the eliminative organs will insure against colds.

The most effective, inexpensive, easily applied, within-the-reach-of-all measure as a preventive against cold and for maintaining the integrity of the skin, is the cold plunge, or the cold sponge, or the shower bath taken upon rising in the morning. Of all tonics, medical or otherwise, this one is unexcelled and unequaled. It can be had without money and without price. Just as the morning shower rejuvenates and refreshes all nature, so the morning bath invigorates the body. The morning cold bath imparts a new fragrance, a delicious aroma to life, just as decidedly as a cool shower intensifies the sweetness of the flowers.

No elaborate appliance or costly shower apparatus, not even a bath tub, is necessary in order that one may enjoy this luxury. A basin, a quart of cold water, and a rough towel will give perfect results.

Those who systematically engage in this form of "cutaneous gymnastics" will not

feel the necessity of burdening the body with extra layers of garments as the cold weather comes on.

General.— A cold should be taken in hand at once, and summarily dealt with. It is no trivial matter, and therefore to be neglected. It is very frequently the forerunner of tuberculosis, pneumonia, pleurisy, chronic catarrh, rheumatism, and other diseases.

When we speak of "breaking up a cold" we mean, physiologically, that the circulatory equilibrium of the blood must be re-established. But a cold can not be "broken up" after twenty-four or thirty-six hours. It then runs a definite course, but may be mitigated in its results by proper treatment.

The various measures that may be employed in the beginning of a cold to re-establish the disturbed circulation are the following, which may be adapted to the needs and surroundings of the patient: *a.* Go to bed and remain there twenty-four hours; this is simple, but effectual. *b.* Take vigorous exercise, as a long walk, a bicycle ride, a run, or stand in the fresh air and take one hundred deep inspirations, rising on tiptoe each time. All these forms of exercise should be followed by a cold shower bath or a cold sponge with vigorous friction. *c.* If taken in time, a cold may be broken up by the copious drinking of either hot or cold water. Several glasses should be taken in succession. This treatment is re-enforced by going to bed. *d.* A very effectual way of dealing with a cold is to take a hot foot bath, apply fomentations to the spine, and a cold compress to the head and neck, continuing the treatment until free perspiration is induced. One must then be wrapped in a sheet and put to bed. This treatment may be made more thorough by preceding it with a thorough hot enema. *e.* The hot and cold spray with considerable pressure is also an excellent treatment. The cold wet-sheet pack continued to the point of perspiration or the hot blanket pack are favorite measures for combating an inflammation of the mucous membrane.

Local.— If the cold is in the head, the congestion may be relieved by applying cold compresses to the neck fifteen or twenty minutes at a time with a cold compress on the head at the same time, or an ice-bag at the base of the brain. Dashes of cold water in the face give some relief.

If the cold is in the throat, the cold compress just referred to may be employed, alternating with fomentations once in two hours. A cold compress of cheese cloth covered with flannel should be put on at night.

For a cold on the lungs or for bronchitis the chest pack should be employed. (See Midsummer Number of GOOD HEALTH.)

Local applications in the form of sprays and inhalations are useful adjuncts in the treatment of colds. Menthol, camphor, and eucalyptus are three excellent preparations, and all can be administered in the form of sprays, by inhalers, vaporizers, and nebulizers. Vaporizers and inhalers can be conveniently carried in the pocket, and used with little trouble.

In order to make menthol or camphor effectual in the treatment of colds, it should be used quite constantly for from ten to twenty minutes, and the treatment repeated at least once in two hours.

APPETIZING WINTER DISHES.

BY EVORA BUCKNUM.

NUT AND OLIVE SANDWICHES. — Prepare peanut butter as for bread, and mix with it an equal bulk of chopped ripe olives. Spread between

NUT AND OLIVE SANDWICHES.

split and toasted granose biscuit or thin slices of whole-wheat bread.

If we ever ate ham sandwiches, we might be reminded of them when we taste this combination.

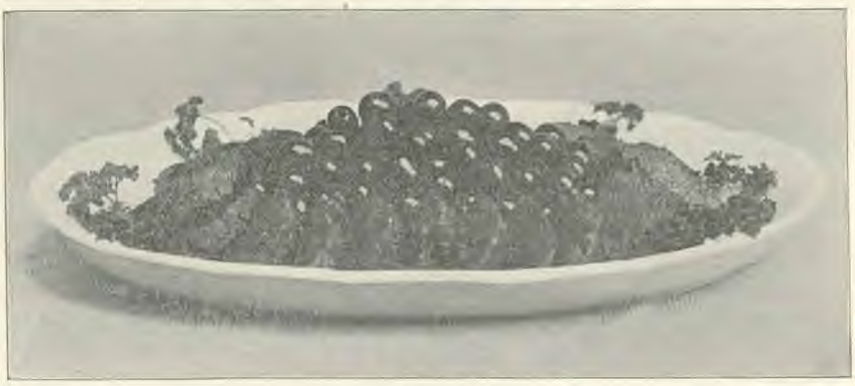
Endive was used for garnishing the sandwiches in the illustration.

Protose Steak in Tomato with Ripe Olives.— Pour enough strained stewed tomato, into which a little salt has been sprinkled, over the bottom of a granite pan to cover it well. Lay three-fourths inch slices of protose in the tomato, and heat all in a moderate oven until the protose has absorbed the tomato.

This is one of the best combinations we have found for protose. It requires no other accompaniment, but is very delightful served with ripe olives, as in the illustration.

Poached Eggs with Ripe Olives.— Nicely poached eggs, either hard or soft (some can digest hard eggs, well masticated, better than soft ones), with ripe olives, make a palatable and wholesome combination. They may be served with Sauce Imperial (page 579, October GOOD HEALTH) or some other tomato sauce, if desired.

Garnish with parsley, chervil, or endive. I use a steam egg poacher for poaching eggs. It leaves them in perfect shape, and does not waste any of the egg.



PROTOSE STEAK IN TOMATO.

When I wish them soft or jellied, I have the lower part of the poacher one third full of boiling water, then set it off from the fire and put the eggs in, covering them and leaving them six minutes. Sometimes it is necessary to heat the water a little more to get the right result, but usually they are just right in the six minutes off from the fire.

Poached Eggs with Ripe Olives.

Gluten Olive Omelet.— For the omelet, use one tablespoonful each of 20% gluten and ice water to every two eggs (a little more salt will be required than for a plain egg omelet). Serve with olives alone, or with olives in tomato sauce, or with cream sauce.

For the tomato sauce, heat in strained stewed tomato (until the tomato is somewhat thickened) ripe olives cut in halves. The tomato will require very little, if any, salt with the salted olives. The halves of olives may be laid around the upper edge of the omelet after it is folded, or around it, on the platter, in the sauce; or the olives may be left whole, as in the illustration, and the sauce alone poured around the omelet.

A dainty garnish of green adds to the effect. The gluten gives a little more substance and nutritive value to the omelet.

Ripe olives are a very desirable fruit. In them we have fat in a perfect emulsion. Green olives are as objectionable as green apples.

For table use, the olives may be freshened a little by pouring boiling water over them and allowing them to stand in it for a short time.

A surprisingly delightful dish is —

Soft Poached Eggs on Protose Steak.— Cut one-half inch slices from a pound can of protose. Heat in a quick oven until delicately browned, but not dried, and slip carefully on to each round slice an egg poached so that the white is just jellied. Sprinkle with salt, garnish, and serve.

A garnish of toast points, with the green, as in the picture, is very suitable.

A nourishing and dainty dish, suitable for dessert, luncheon, or for the sick, is —

Lemon Egg Cream.— Sprinkle a trifle

Gluten Olive Omelet.

of salt into the white of an egg, in a bowl, and beat with a revolving egg beater to a very stiff froth, then add a tablespoonful of sugar and beat until smooth and creamy. Remove the egg beater, chop in lightly two teaspoonfuls of lemon juice, and remove one third of the beaten white to a cold plate. Add the yolk and another teaspoonful of lemon juice to the white remaining in the bowl, chop them in lightly and quickly, not mixing them very thoroughly. Pour this yolk mixture into a cold glass, and on top of it lay the white which was taken out. Serve at once.

Soft Poached Eggs on Protose Steak.

These creams may be varied in many ways. The white may be left all together with the yolk and two tablespoonfuls of red raspberry or strawberry juice added instead of the lemon. In that case, only one or two teaspoonfuls of sugar will be required in the white.

Since so many find in eggs their first substitute for meat, it seems important to serve them in a variety of attractive ways.

English Walnut and Legume Roast with Dressing (Mrs. F. J. Devereaux).—One cup of lentil pulp, one cup of pulp of dried green peas (about one-half cup of each before cooking), one cup of chopped English walnut meats, salt and sage.

Lemon Egg Cream.

Dressing: Steam eight good-sized slices of zwieback for ten minutes, add a half cup of hot cream or water, with sage and salt. Mix and add one beaten egg. Put a layer of the nut mixture into a brick-shaped bread tin. Make a roll of the dressing, and place it lengthwise of the tin, on top of the nut mixture, then cover it over the top and sides with some of the nut mixture, pressing it down well and leaving the loaf flat on the top. Bake, covered, in a pan of water for one and one half or two hours. The following is a suitable sauce:—

Brown Onion Sauce.—Two tablespoonfuls nut oil, two of white flour, one of browned flour No. 3, two cups water, two onions, salt.

Heat the oil, but do not brown. Add the flour, rub smooth; add the water, stirring smooth. Add the onions, sliced, simmer half an hour; strain, add water till thick as cream, salt to taste, serve.

WATER CONTAMINATION IN THE KITCHEN.

BY DAVID PAULSON, M. D.

WELL water is frequently contaminated because it percolates through infected soil; thus multitudes contract typhoid fever and other serious maladies.

Another more common source of water contamination is from various drugs, such as tea and coffee, which the cook persists in adding to the water in the kitchen. A beverage that can compel a nerve to say that it is rested when it is tired, that can chase away the necessity for sleep when it still exists, that can produce trembling nerves at an age when they ought to be firm and steady; in other words, that can cause an apparent felicity which does not exist, is insidiously creating a craving for that form of water contamination which the brewery has made so popular.

The organic impurities that the water takes up from the soil, the drugs that are added to it in the kitchen by the cook, or the alcoholic liquors that are produced in it at the brewery do not in any sense improve its value as a universal beverage for man; they are surely but slowly paving the way for that other form of water contamination that is practiced so profitably by the patent-medicine man, who has discovered the art of adding two or three cents' worth of some vile-smelling, ill-tasting, colored solution to a bottleful of water, and then sells the same for a dollar.

Water is valuable to the human system just to the extent that it is nothing but water, and it is harmful just to the degree that it contains in solution various substances that either irritate, stimulate, or anesthetize the nerves and other tissues.

A PUDDING AND A CAKE FOR THE HOLIDAYS.

BY EVORA BUCKNUM.

AMERICAN PLUM PUDDING.— One pound (five cups) of very dry bread crumbs, one pound (two and one-half cups) of grated carrot, one and one-half cups of molasses or one and one-fourth of sugar, two teaspoonfuls of salt, one pound each of raisins and figs, cut with the shears, one-half pound currants, well washed, one-fourth pound citron, sliced, two to four cups of boiling water.

Mix all well together. Put into a large pudding mold or into small individual ones, well oiled, and steam for from four to six hours.

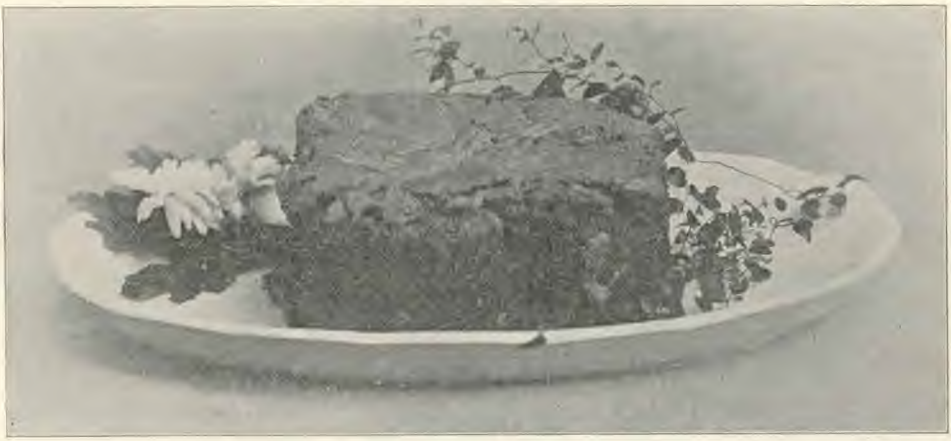
Serve with a sauce which intensifies rather than obscures the flavors of the fruits.

One of my always-to-be-remembered early experiences in teaching was that of serving a lemon sauce with steamed fig pudding. In watching the faces of different ones as the pudding was passed, I saw that it did not meet their favor. Finally one lady, braver than the others, said, "The pudding is nice, and the sauce is nice, but the tart of the lemon destroys the flavor of the fig." And it did. The pudding, when served with the lemon sauce, might as well have been bread-crumbs and molasses so far as the flavor was concerned.

Honey slightly diluted with water, a sugar syrup delicately flavored with vanilla, or malt honey is suitable.

To those who are just breaking off from wine and brandy sauces, the orange sauce will be acceptable: —

Orange Sauce. — Flavor one cup of granulated sugar with the lightly scored rind of four or five oranges. Add to it the juice of the oranges, one cupful, and let the syrup just boil up over the fire. Strain, and add a trifle of salt.



PEANUT POUND CAKE.

Peanut Pound Cake. — Three large or four small eggs, a scant cup of granulated sugar, one tablespoonful of lemon juice, one tablespoonful of ice water, one cup of sifted nut meal, one-half cup of finely chopped or ground citron, one-half to two-thirds cup pastry flour, sifted once before measuring, salt.

Have all the ingredients as nearly ice-cold as possible. Sift the sugar; sift the flour twice, and leave it in the sifter. Beat the yolks of the eggs in a cake bowl with a revolving egg beater, adding the sugar gradually. When stiff, add part of the water and more sugar. Beat. Add more water, sugar, and half the lemon juice, until all the sugar is in. Stir into this mixture half the nut meal, a good pinch of salt, and the citron. Rest the egg beater on a quart measure or any convenient dish by the side of the bowl, and let it drain while beating the whites of the eggs. Beat the whites of the eggs to a moderately stiff froth, with a pinch of salt. Add the remainder of the lemon juice, and beat until dry and feathery. Slide the beaten whites on to the yolk mixture, sprinkle part of the nut meal over them, and sift on a little flour. Chop in lightly, dipping from the bottom with a large spoon three times. Add more meal and flour; chop; continue this until the flour is all in. Take care not to mix too much. The mixture must not get soft. If a streak of flour or a particle of the white of the egg shows when in the pan, it will do no harm.

Put into a pan at once, and bake slowly in an oven that bakes well from the bottom (the top grate of a gasoline oven is preferable), until it stops singing or does not stick to a broom splint, — from one to one and one-half hours, according to the oven. Handle carefully when taking from the oven. If a gasoline oven is used, the fire may be turned off, and the cake allowed to cool in the oven.

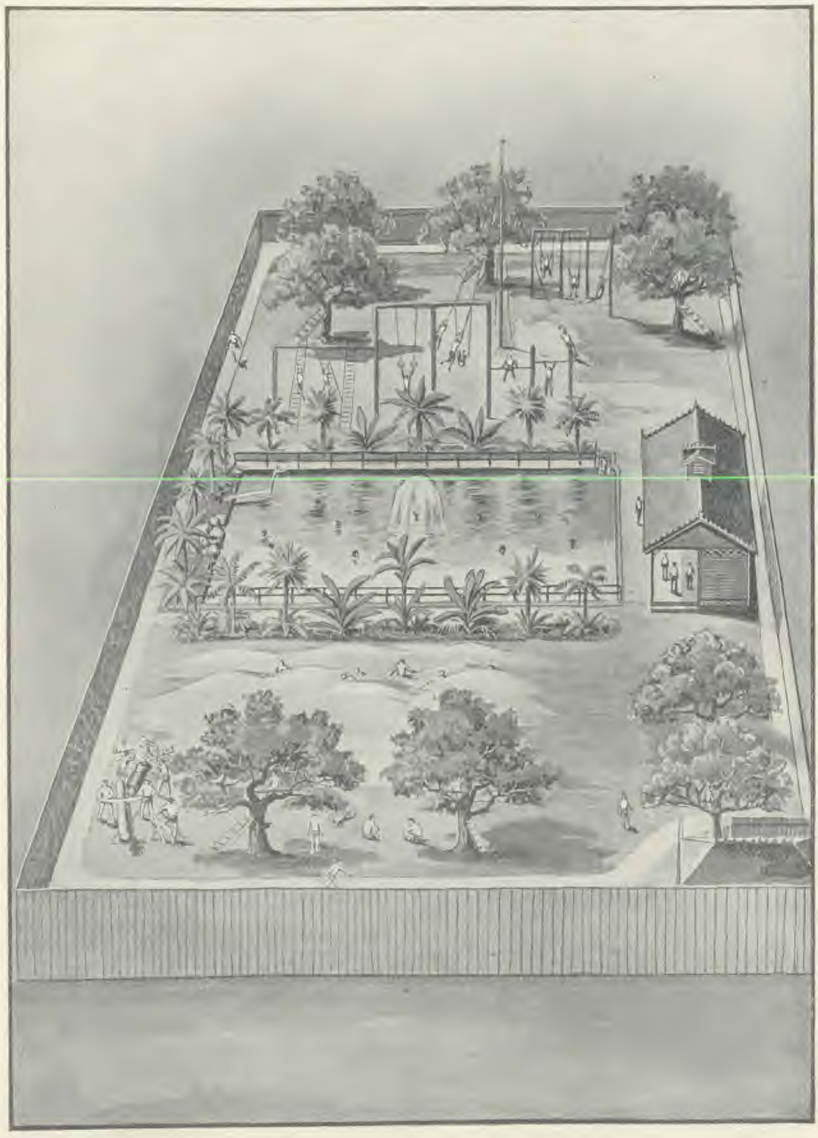
It will be an advantage if the cake is put together in a cool room. The quantity of flour will vary with the brand. When just the right quantity is used, the cake will almost melt in the mouth. Do not use spring-wheat flour.

To my mind, icings on cakes are entirely out of place. It is adding an excessive sweetness to something already sweet enough. A rich, fine-flavored cake is much more palatable without the icing. I am glad to see that now in the finest establishments very few of the cakes are iced.

THE OPEN-AIR GYMNASIUM.

BY MARY HENRY ROSSITER.

I USED to think, having been a patient there, that the Battle Creek Sanitarium, for an institution, left nothing to be desired. But now, since the establishment of the outdoor gymnasium, I wonder how we ever existed without it. I wonder, too, that every sanitarium does not have one like it instantly. Think of it! here in one inclosure are all the prime requisites for health-getting and -keeping except two—sleep and food; and after you are done with the gymnasium, you do not need a tonic to give you an appetite, or a dose of poison to make you go to sleep.



Let me describe to you this very latest addition to the facilities of the Sanitarium. First, there is a high board fence — this is so the curious can not see you, also so that you can make at least a partial return to nature in the matter of dress. The suits worn in the outdoor gymnasium leave bare arms and legs exposed to the life-giving rays of the sun. Then there is a smooth gravel path next to the fence, inside, and all the way around. You may walk, or run, or wheel around this track, and when you have scored ten times, you have made a mile. Under an apple tree in one corner are a huge log of wood and several shining axes for the benefit of those who would emulate Gladstone's famous method of getting exercise. There is a sawbuck, too, and a saw, and already a pile of sawdust.

Near by is a most captivating heap of sand, white and clean and warm. If you are at all esthetic, you will certainly prefer a dry slippery sand bath to a sticky mud one. On another side of this shady Arcadia for invalids is the gymnasium proper. Here you may do whatever your strength permits,— swing around a pole on ropes, walk the ladder, pitch quoits, or sit on a bench and bask in the sun, while the others show you what you are coming to.

But the glory of the gymnasium, after all, is the swimming pool. This is the very next thing to a lake or the ocean. A

fountain is to play in the middle of the pool, and the water is heated by steam in cool weather, to keep it at a temperature of 75°. A convenient and artistic bath-house has been erected, where suits are kept, and attendants provided to furnish all the appurtenances of an elegant bath. So, after you have worked until you are in a perspiration and all the activities of your body have been stimulated, you may take a dip or a swim in this clear, pure water, under the blue sky, and come out feeling like a new person all over. There will be no more trouble about eating granose or digesting anything they will let you eat at the Sanitarium. You will have gastric juice and spirits and energy to spare. The blood in your body has rushed to the skin to defend the interests of your whole system — and with half your blood in the skin, you need not worry about congested brain, or liver, or any other organ.

The indoor gymnasium and the indoor swimming pool have always been a great attraction at the Sanitarium, and will still have an interest and value of their own, especially in the winter, but there is no estimating the added charm and benefit attaching to this last device of the managers of the institution for the comfort and well-being of their guests.

THE ONWARD MARCH OF DRUNKENNESS.

A REMARKABLE article, entitled "Alcoholism," appeared in *Le Figaro*, a leading daily newspaper of Paris, France, in May, 1899. It occupied the leading position on the first page, and its serious and alarming utterances are the more significant in view of the usually careless and flippant attitude of the French people toward evils of this character. We make the following quotation, translated especially for GOOD HEALTH: —

"I am going to be very immoral today. When you tell drinkers that they are shortening their lives, they answer you readily, 'Short and sweet.' Well, I admit the saying. I should not go so far as to say that I admire it. I know some more noble, but I admit it. Only, this device the drinker of alcohol has no right to apply to himself. His device — and he ought to wear it upon his head — is, 'Short and sour.'

"The proof is that in every country the number of suicides increases with the consumption of alcohol.

"The proof is that it is the same way with insanity. From 1861 to 1865, 14,983 lunatics were entered in the public asylums of France. Twenty years after, there were entered more than 57,000 in the same space of time, and one may see upon the registers of the asylum of Sainte Anne what was the part played by alcoholism in this frightful increase. The lion's part, you may be sure, and the victims, if they had been in a condition to think of such a thing, no longer would have said, 'Short and sweet.' Ah, no! They had passed through too many delusions, too much anguish, too much horror, before becoming completely insane. Their device, indeed, should have been, 'Short and horrible.'

"The proof is that it is with criminality as with insanity and suicide. It varies with the consumption of alcohol. Dr. Sérieux, of the insane asylums of the Seine, has made investigations with regard to convicts, from the viewpoint of alcoholism. He has found: Of those sent back for a second offense, 78 out of 100 were drinkers; of those condemned for assault and battery, 88 out of 100, etc. In Germany 60 out of 100 crimes in general have been committed under the influence of drink. Do you believe se-

riously that all these people experienced great joy in strangling their mistresses or in crippling their comrades? Do you believe that the guillotine or the prison does not more than compensate for the pleasure of the crime, if pleasure there be? There is not a man condemned to death, or a convict, who would say, in looking back upon his life, 'Short and sweet.'

"The proof is that the French workman, who was formerly so intelligent and so skillful, who was in reality one of the ornaments of France, is fast losing his industrial value in the districts where he drinks. He is unlearning. He has no longer either ambition or will. He is falling from one generation to another from the rank of foreman to that of simple laboring man, knowingly and voluntarily, without even trying to struggle. We know that Normandy is one of the provinces of France where there is the most drinking. A cotton manufacturer of Rouen said to Dr. Brunon that he had at the present time much difficulty to find young men willing to learn the delicate parts of the trade. They are not capable of the least initiative, he said. The slightest responsibility is too heavy for them. They prefer pushing a wheelbarrow in a mill to handling a trade. The intellectual standard is lowering rapidly, like the standard of height.

"The people are more or less given to drinking throughout Normandy, the women as well as the men, and the children like their parents. They drag the children to drink, from the cradle. They give them brandy in their nursing bottles. They give them soup flavored with brandy, and cognac with their coffee. This is true with regard to girls as well as boys. In a number of districts the women are more drunken than the men.

"You should see them coming out of the saloons of Rouen, Monday evening. The father, the mother, the children, friends, supporting one another, dragging one another, and staggering all together.

"One can not imagine, without having seen it, what a laboring man's home becomes when the mother drinks. I have lived in a village, two hours' ride from Paris, where half the population of both sexes was addicted to drink. My neighbors on the right fought like dogs. The husband had his face plowed by his wife's finger nails. The woman never touched the broom or did a stroke of cooking. There were three children, three poor little ones, dirty and almost naked, who never had anything to eat but bread and a little cold meat. All that the father earned went to the saloon, and the mother was too shaky on her legs to do anything at all.

"What an enduring race these Normans are not to have yet disappeared! But that will hardly be slow to come. Already they cite a canton of the Orne where the council of revision did not find one single recruit having the required height. In the next generation they will all be Tom Thumbs, and the end of the race will be near."

A NOTED GUEST'S IMPRESSIONS OF THE BATTLE CREEK SANITARIUM.

THE wife of Dr. C. K. Adams, president of the Wisconsin State University, after spending the summer at the Battle Creek Sanitarium, gave the following spontaneous expression of her experiences and convictions with regard to this famous institution. We quote from the Wisconsin *State Journal:*—

"I am so often asked what it is that makes the power and influence of this institution. I am constrained to use your columns to reply. I do so the more gladly as two branches of the work are already established in your city.

"I confess at the outset the impossibility of describing successfully the place or the work. It has so many sides, it appeals to so many different points of view, the same side seeming often so very unattractive to one and so attractive to another, whoever attempts to describe must do so simply from the point of view of the writer.

"To tell of externals is easy — the large building where several hundred guests find room; where the baths are located, and where the physicians' offices are found; the ample grounds that surround the building, with their well-kept lawns, their stately trees, their chairs and benches occupied at all hours of the day and evening, their palms and blooming plants, all making a picture pleasant to contemplate. Opposite this are the two fine college buildings where the students receive their instruction. In the rear, and fronting another avenue, is the large dormitory, with ample accommodations for three hundred young women nurses; and across the street the well-appointed Hospital with every modern appliance. Add to these buildings twenty or more cottages, all filled at this season, and one receives at least some idea of the magnitude of the work, for there are here at the present time, numbers equal to the population of a good-sized New England village. So much for the outside, the visible, the external.

"The equipment is the best; this finds first place in the corps of able physicians, trained not only in the finest schools of this country, but in Europe, and bringing to their work a spirit of unsparing devotion that has won for it the reputation it deserves, and accomplished the marvelous cures that bring to the work its highest praise.

"The baths and laboratories are perfect in scientific detail and modern method, and although the building is simple in furnishing, and in no place profuse in adornment, no expense is spared in the facilities for treatment—these are unrivaled. There is another agency that must not be overlooked, since it counts so much in the success of the institution. Not more remarkable is the power to heal than the ability to train the workers who come here, and upon whom the Sanitarium sets the seal of a consecration that is at once the comfort and the joy of all who come under its self-sacrificial and divine ministry.

"It may be said that no one asks to enter here as a worker who is not imbued with the true missionary spirit, who does not desire to do the work as called of God, and who is not ready to go wherever he commands. Admitting this, there still remains the completeness of the touch put upon the student trained here, and those who are studying the so-called higher education could but rejoice to know how the results are obtained that are here exemplified in the daily service. These men and women may not always express themselves in smooth-sounding phrases or finished rhetoric, but they are filled with a knowledge born of the heart and sanctified by love. Truly, to be a Battle Creek nurse is to wear a badge of honor, though the bearer is all unconscious of it and even unaware of its existence. Can this be said of all of them? you will ask. That would be too much to claim where so many hundred are enrolled; but an observation of over five months leads me to say that the number of whom it can not be said is so small as not to deserve mention. The large majority represent to a sick room, to a suffering body and a tired

soul, a blessing no money can purchase. It may be said in passing that the health of this small army of toilers, busy night and day, is not the least of the many witnesses to the claim made here for the benefits of pure food and simple living.

"And now I come to the possession most difficult to convey to another — I doubt if it can be conveyed. It must be felt, known, realized. Once felt it can never be forgotten. To describe it is impossible. Some would name it godliness; others, a deep, persuasive spirituality. It permeates the work and the workers. It is free from cant, sham, pretense — it is real and vital as a breath from heaven. And by whatever name it is called, it is the nearest life-giving evidence of the spirit of Christ I have ever seen. The world exists only as a place to serve him; the things that pertain to the world are only of worth as they contribute to this service. Money is never regarded as a possession only as it advances some good and makes holier some toil. Many illustrations of this might be cited, but if any were told, the Power that makes it possible whispers of the silence in which all is done which is too sacred to invade. It is this same Power that makes it easy to spend long months here in the presence of sickness and suffering and yet know a cheerfulness and serenity not surpassed in the world where life knows only health and activity.

"Even in this crowded season, when hundreds are here seeking healing and help, when every room is filled, every cottage occupied, there is still a summer restfulness and, for some, a summer holiday. Pain is relieved, health returns, energy increases, life looks fairer, brighter, happier. No one denies that remedies are used. Much stress is put upon the three great remedies,— the baths, the diet, and the out-of-door life,— but behind them is another and a greater, in which all these seem to move. As I have watched sufferers come and go, and often where the going seemed little less than a miracle, I have seemed to see less the visible appliances and to feel more the invisible Strength that directs them; for certainly it is manifest of every toiler here, from the highest to the lowliest, that they labor as those sent of Him in whom they trust, and on whom they lean. And this, I believe, is the secret of the success of this institution and of its branches now found in nearly every quarter of the world."

TOBACCO AND MY CHILD.

UNDER this suggestive title Mr. J. W. Yeisley has presented many phases of the tobacco evil in a booklet from which we quote the following medical testimony as to the relation between tobacco and disease: —

"Dr. Trask said he could specify on good medical authority more than fifty diseases that spring from this vile narcotic, or which are greatly intensified by its use. Another writer claims eighty diseases.

"Dr. Richardson, an eminent English physician, in his book, 'Diseases of Modern Life,' says: 'Smoking produces disturbances in the blood, causing undue fluidity and change in the corpuscles; in the stomach, giving rise to debility, nausea, and in extreme cases, vomiting; in the mucous membrane of the mouth, causing enlargement and soreness of the tonsils, smoker's sore throat, etc.; in the heart, producing debility of that organ, and irregular action; in the bronchial surface of the lungs, when that is already irritable, sustaining irritation and increas-

ing cough; in the organs of sense, causing in the extreme degree, dilatation of the pupils of the eye, confusion of vision, bright lines, luminous or cobweb specks, and long retention of images on the retina; with other and analogous symptoms affecting the ear; *viz.*, inability to define sounds clearly, and the occurrence of a sharp ringing sound, like a whistle or a bell; in the brain, impairing the activity of that organ; in the volitional and in the sympathetic or organic nerves, leading in time to paralysis.'

"Says Dr. Marsh: 'This does not leave very much of a man except his hair and his bones.'

"Dr. Moiselli, of Turin, gives elaborate statistics to prove that since 1827, suicides have increased in all civilized countries from forty-eight to one hundred and fifty per each million of inhabitants; and their increase is much in accordance with the increase in the use of tobacco.

"Dr. Cole: 'Tobacco is more deadly to life than alcohol; the latter is doing a greater injury to the innocent portion of the public, but the former is more deadly on its own victims. While the fire of alcohol burns with a mighty blaze, tobacco burns long and deep in the fountain of life. The one soon exhausts itself; the other stealthily eats away by imperceptible degrees the cords of life of its victim until in time he dies in his sleep or falls dead in the street.'

"Dr. T. F. Allen, in an essay on 'The Effects of the Abuse of Tobacco,' read before the American Institute of Homeopathy, in June, 1884, says: 'Much less is known or has been reported concerning the action of tobacco on the ear than on the eye. Sufficient, however, is known to enable us to state that two distinct affections are produced,—one, an impairment of the auditory nerve, recognized by a roaring sound and diminished acuteness of hearing; . . . the other, a chance catarrhal inflammation of the middle ear, associated with angina of the throat. The mucous membrane of the Eustachian tube becomes swollen, and the tube closed; the drum becomes red, thickened, and retracted. With these catarrhal symptoms is noticed roaring in the ears.'

"*Indigestion.*— Eminent medical men unite in testifying that the use of tobacco is one of the chief causes of this fearful disease. Yet, notwithstanding this, how many men excuse their filthy habit by claiming that it aids their digestive organs.

"Dr. Prout: 'The severe and peculiar dyspeptic symptoms sometimes produced by inveterate snuff-taking are well known, and I have more than once seen such cases terminate fatally with malignant disease of the stomach and liver.'

"Dr. J. C. Warren: 'Tobacco impairs the natural taste and relish for food, lessens the appetite, and weakens the power of the stomach.'"

THE REASON WHY.

THE purpose of this paper is to answer, in a brief and simple manner, a large number of questions which are daily asked, demanding a reason for various characteristic features of the system of regimen and health culture represented by the Battle Creek Sanitarium and its branches in various parts of the world.

First of all, the writer desires to state that the methods and practices pursued in these institutions do not rest upon empirical grounds. Their claim for confidence

rests, first, upon well-established physiological facts, the outgrowth of extended laboratory research and investigation by numerous well-known observers in various parts of the world; and secondly, upon the provings of intelligent and carefully controlled experience, the winnowed results of which have been accumulating for nearly a century, but have crystallized into practical and proved facts especially within the last quarter of a century.

The ideas which are briefly outlined in this paper are not presented as altogether unique. But a small part, in fact, of the system of regimen and treatment which is coming to be familiarly known to the public as the "Battle Creek Idea" can be claimed to have originated in Battle Creek. Indeed, the chief merit claimed for it is, not that it is unique or novel, or in any sense a new departure, but rather, like the Brook Farm experiment of Hawthorne, Emerson, Alcott, Thoreau, and their colleagues, "an effort to return to nature."

The Mystery of Healing.

In these days, when prophets of healing are rising in all directions, and crying, "Lo, here, and lo, there," when mind healers, faith healers, layers on of hands, magnetic healers, are, along with patent-medicine venders and the purveyors of magnetic insoles, electric hairbrushes, and mineral water, savory and unsavory, fattening upon the gullibility of the public in matters which pertain to health-getting, it is essential that the invalid should obtain, if possible, a clearly defined idea of the nature of the healing process and how the work of curing the sick man is carried on. The brief space allowed here will permit us only to say that the fundamental principle recognized by the Battle Creek Sanitarium is that expressed by Dietl, the pupil of the famous German pathologist, Rokitansky: "Nature alone can cure; this is the highest law of practical medicine, and the one to which we must adhere. . . . Nature creates and maintains; she must therefore be able to cure."

Physiological Remedies.

The most important measures which can be employed in dealing with the sick may be said to be baths, exercise, and diet. The chronic invalid can be made well only by being reconstructed. The sick man must be transformed into a healthy man by a process of gradual change. Little by little the old tissues must be torn down and new tissues built in their place. By means of exercise the movement of the blood is accelerated and the old diseased tissues are broken down and carried out of the body. Exercise always diminishes weight. Warm baths increase the elimination of waste substances, and cold baths stimulate the destruction of tissues, increase the activity of the heart and of all the tissues, encourage the formation of the digestive fluids, and increase the appetite for food. A dietary consisting of pure food substances of a character to be easily digested and assimilated is the proper material with which to construct a new and healthy body. Thus baths, exercise, and a natural dietary constitute a therapeutic trio, each member of which is a complement to the others.

Health-getting, for the chronic invalid, is simply a matter of training, of health culture under favorable conditions, which include the discarding of all disease-producing habits, such as the use of tobacco, tea, coffee, and all irritating, indigestible, and disease-producing foods.

A Natural Bill of Fare.

The printed bill of fare excludes meats, mustard, pepper, and other irritating condiments, tea and coffee, pickles, spices, animal fats, ice cream, baking-powder breads, cheese, and all articles of food known to be unwholesome, indigestible, and productive of disease, and here are a few of the reasons why:—

Condiments, such as mustard, pepper, capsicum, etc., cause blistering and inflammation of the skin when applied to it; when applied to the stomach, they produce similar irritation, and their habitual use brings on gastric and intestinal catarrh. In those parts of Old Mexico where peppers are freely used, chronic gastritis is almost universal. This the writer knows from personal observation, as well as from the testimony of intelligent American physicians who have practiced medicine in the Mexican Republic for many years. The idea that pepper and similar substances aid digestion, is entirely an error.

Pickles, being hardened by the action of acetic acid, salt, perhaps with the addition of alcohol, become almost absolutely indigestible, and when taken into the stomach, resist the action of the gastric juice much as do sawdust or pebbles, and become a source of great irritation and even of inflammation and chronic disease. Green olives, brandied peaches, and even preserves must be put in the same category. Salads in which vinegar is used, sauerkraut, and other fermented foods are unwholesome for the well, and must be excluded from the invalid's bill of fare. Fresh, crisp cucumbers are not unwholesome for persons whose digestive organs are in a fair condition. Lemon juice should be substituted for vinegar.

Animal fats, together with olive oil and other separated or non-emulsified fats, when mixed with starch, as buttered toast, pie crust, griddle cakes, doughnuts, rich cake, Saratoga chips, fried bread, fried mush, baked, boiled, and mashed potatoes, prevent the action of the saliva upon the starch. Fats also hinder the action of the gastric juice upon the albumins, and, as shown by Pawlow, diminish the formation of the gastric juice, and in this way give rise to biliousness, so-called torpid liver, and other digestive disturbances. Fats are easily digested and assimilated only when taken in the form of natural emulsion, as in cream, in nuts, or nut preparations. Butter, unless made from sterilized milk, contains germs in great quantities; even the germs of tuberculosis and typhoid fever have been found in butter which had been made several weeks.

Nut butter made without the roasting of nuts is in every way superior to animal fat, and contains no germs.

Flesh foods of all sorts, including red meats, fish, fowl, oysters, clams, lobsters, etc., are excluded from the standard Sanitarium bill of fare for several excellent reasons: —

1. The great majority of invalids are suffering the consequences of flesh eating. Rheumatism, gout, certain forms of Bright's disease, gallstone, renal calculi (stone in the kidney), many forms of neurasthenia, migraine or headache, and many other maladies belonging to a class which has been aptly designated as "meat-eater's disorders," or maladies which are due to the accumulation of uric acid in the body, are encouraged by flesh eating, not only through the uric acid contained in flesh food, but as a result of the formation of uric acid from these substances in the body itself.

2. Persons suffering from gastric disorders have either hyperpepsia or hypopepsia: Those who have hypopepsia have not the ability to digest flesh food because of the deficiency of gastric juice, the element essential for the digestion of this class of food substances. In cases of hyperpepsia, as shown by Pawlow and numerous other investigators, an excessive production of hydrochloric acid is increased by the use of flesh food. In both hyperpepsia and hypopepsia, meat should be discarded. In cases of dilatation of the stomach, in which the chief inconveniences are the outgrowth of too long retention of foods in the stomach,

meats, as well as cheese, and in many cases even milk and eggs, must be avoided, because of the putrefaction of these substances in the dilated or pouched stomach, giving rise to the formation of poisons, which, when absorbed into the blood, give rise to sick headache, palpitation of the heart, biliousness, and even degeneration of the kidneys or Bright's disease, and inflammation with cirrhosis and atrophy of the liver. Persons suffering from cancer must discard the use of flesh food, as there is strong evidence of a connection between cancer and flesh eating.

A Fruit Diet.

A fruit diet is of the highest value in cases of chronic disease, especially when the stomach is infected with germs. Germs will not grow in fruit juices. Even cholera and typhoid fever germs succumb in a short time to the influence of the juices of such fruits as the orange, the lemon, the apple, and the strawberry. A fruit diet is the best means of disinfecting the stomach and the alimentary canal in general. An exclusive fruit dietary for three or four days is sometimes advantageous. In other cases a fruit breakfast, a fruit supper, and a mixed diet for dinner is a practical plan. Fresh ripe fruits are somewhat more effective than stewed fruits for the destruction of germs.

In a fruit diet, the use of the skins and seeds of fruits should be carefully avoided. Fruits with hard flesh must be carefully masticated, and, for most persons, should be cooked either by baking or stewing. The majority of dyspeptics must avoid the use of fruits and vegetables at the same meal. Strong acid fruits interfere with the digestion of starch in the stomach, and hence should be eaten at the close of the meal. In the use of melons, the pulp should be rejected; the juice only should be swallowed. Fruits, with the exception of the banana and the olive, contain but very little nutrient material, consisting chiefly of water; they tax the digestive organs but very little, hence may be taken when other foods can not be eaten. Fruit juices are especially valuable as restoratives, being quickly assimilated, and not taxing the digestive organs.

Vegetables.

Vegetables, such as cabbage, greens, celery, turnips, carrots, spinach, beets, string beans, cauliflower, and, in general, foods consisting of roots, stems, other than the seeds or fruits of plants, are difficult of digestion because of the large amount of woody matter which they contain; they must be avoided by persons suffering from hypopepsia and dilatation of the stomach because of the feeble muscular activity of the stomach in these diseases. In hyperpepsia coarse vegetables give rise to ulcer of the stomach, gastritis, intestinal catarrh. Coarse vegetables must be avoided because of the irritation which they produce. In some cases it is found necessary to avoid the use of the potato, especially sweet potatoes, though often ordinary baked potatoes may be eaten, but they should be thoroughly baked. Corn pulp and purées of peas, beans, and lentils may also he used. The hulls of peas and beans must be excluded. The woody skins of these seeds are sometimes retained in the stomach for many hours in cases of hypopepsia and dilatation of the stomach, and are the chief cause of flatulency and other discomforts, which are avoided by the use of legumes.

Cane Sugar Is Unwholesome.

The acid of fruits is not neutralized by the addition of cane sugar. The use of cane sugar with acid fruits is objectionable. It is better to combine acid with sweet fruits, or to avoid acid fruits altogether. Dried fruits, such as figs, are rendered most digestible by steaming.

Cane sugar is not digested in the stomach; it gives rise to fermentation and acidity, and is often a source of irritation. Its use is unnecessary, as starch, which constitutes about fifty per cent of food of vegetable origin, is wholly converted into sugar by the process of digestion.

The writer has met many cases of grave stomach disorder in which evidently the chief cause was the free use of sugar, either in the form of candy, or in connection with the use of coffee, oatmeal mush or other so-called "breakfast foods." According to these observations, three ounces of sugar taken in connection with a full meal would produce in the stomach a solution of sufficient strength to give rise to a decided gastric irritation. The free use of sugar continued for the same length of time gives rise to gastric catarrh.

The sugars to which the stomach is naturally adapted, are milk sugar, or the sugar which is normally found in milk, malt sugar, which is produced by the action of the saliva upon starch, and fruit sugar, or levulose, the sweet element of fruits, also found in honey. Fruit sugar in the form of sweet fruits, as raisins, figs, prunes, and malt sugar, may be produced artificially by the action of vegetable diastase upon starch, and, as far as possible, should be used as a substitute for cane sugar.

Dextrinized Foods.

By this is meant cereals which have been cooked at a temperature of 320° or above. They are much more easily digestible than the ordinary cereals. In the process of digestion, starch is converted into fruit sugar, passing through some thirty different stages. Ordinary cooking or boiling starch converts it into paste; this renders its digestion in the stomach possible if it is retained there for a sufficient length of time. The saliva can not act upon raw starch. A more prolonged cooking, at a higher temperature, produces a higher form of dextrin, which is soluble, and which is more easily acted upon by the saliva. Cooking at a temperature of 320° produces achroödextrin, which is rapidly converted into malt sugar when brought in contact with the saliva. Malt sugar, while passing through the mucous membrane of the intestine, is converted into fruit sugar, in which form it is absorbed into the blood. The purpose of cooking should be to bring the starch as nearly as possible into the form of sugar, so as to tax the digestive organs as little as possible. The use of foods thus dextrinized by cooking at a dry heat of 320° is especially necessary in cases of hyperpepsia, in which the period of starch digestion in the stomach is very short, instead of continuing thirty or forty minutes, as in the normal stomach. The following foods are dextrinized cereals, which are both more palatable and more digestible, even for the well: Roasted rice, granose flakes, toasted granose cakes, granola, zwieback, crystal wheat, toasted wheat wafers. Granola, crystal wheat, and browned rice are served as moist cooked grains, and should take the place of oatmeal, cracked wheat, and other mushes.

Predigested Foods.

In certain extreme cases, starch digestion is so deficient that this element of food must be not only dextrinized but converted into maltose by predigestion by diastase. This predigestion of cereal foods does not weaken the digestive organs, but aids them by bringing cereal preparations as nearly as possible to the condition of well-ripened fruits. Chemical changes which take place in the process of ripening, and those which may be produced by cooking, are almost identical in character, as regards the changes effected in the starch, the only difference being that under the influence of sunlight the digestion of starch is made more complete

than it is possible to be made by any process of cooking or artificial digestion. The following are the principal malted foods: Grānut, Sanitas food, bromose, malted nuts, nuttola, and malt honey. These preparations may be used in many cases in which cane sugar can not be at all employed.

Tea and Coffee.

Tea and coffee are discarded from the Sanitarium bill of fare because they are poisons, mild intoxicants, and capable of producing decidedly injurious effects upon the nervous system, and are, to a high degree, detrimental to digestion. The digestion of starch ceases entirely in the presence of tea or coffee. Tea is, on the whole, more detrimental to starch digestion than coffee, but both are in the highest degree objectionable. They interfere with the action of the salivary glands by rinsing the food down before it has been properly insalivated. They dilute the gastric juice and prevent the action of the saliva upon the starch both in the mouth and in the stomach. Sir Wm. Roberts showed that *tea and coffee interfere with the digestion of albumin*, and that their total effect is to delay or prevent digestion.

Two meals a day are to be preferred. Mr. Gillespie and other authorities declare that food taken with a mixed meal remains in the stomach seven or eight hours. The stomach should be allowed an hour to rest after a meal is digested, before another meal is taken; and, as at least three or four hours should elapse before retiring, after the last meal, it requires very little computation to show that it is impossible to eat more than twice a day and comply with physiological requirements. Two meals a day has been the general custom of the world from the earliest period; 8 A. M. and 3 P. M. are convenient hours. While getting accustomed to this plan, one may eat a little fruit at midday and in the evening to relieve the sensation of hunger. Many persons are now adopting the "no-breakfast plan" with benefit; but the no-supper plan is preferable, in that it admits of sound sleep, a clean tongue, sweet breath, and a good appetite for breakfast, with power to digest and assimilate it.

Dry Foods.

Dry foods are, for the majority of gastric disorders, preferable to soft or fluid foods for the reason that they secure thorough mastication and insalivation, which are essential to good digestion. Soft foods are not retained in the mouth a sufficient length of time to call forth the secretion of a sufficient amount of saliva. Experiments of the writer, made several years ago, show that moist foods and liquids stimulate the salivary glands very slightly or not at all, while dry foods cause an abundant flow of saliva, amounting to even twice the weight of the food chewed. It is not necessary that the food should be hard, but it must be dry. Zwieback, toasted granose cakes, toasted wheat wafers, granose flakes, well-baked "sticks," are especially to be commended as dry foods.

Iced drinks, fruit ices, and ice cream are objectionable, for the reason that they chill the stomach, delay the formation of the gastric juice and the action of the digestive fluids. A glass of ice water, iced tea, or the same quantity of ice cream may lower the temperature of the stomach sufficiently to prevent digestion in the stomach for an hour or more. In the meantime fermentation takes place, giving rise to acidity, flatulence, and a variety of other disturbances.

Milk and milk products are objectionable for persons suffering from biliousness or dilatation of the stomach, as shown by Glenard, an eminent French physician who has given the subject extensive study. The writer's observations are entirely in harmony with this view. That milk

causes biliousness is a matter of common experience. Cream may be used by persons who can not use milk. Buttermilk or kumyss are preferable to sweet milk. It is unsafe to use milk which has not first been boiled or heated for fifteen minutes at 160°.

Cheese is decidedly more unwholesome than milk, for the reason that in the process of "ripening," the germs multiply so that every particle of cheese is swarming with multitudes of them. When taken into the stomach, these various molds, or germs, present may set up changes in other food substances present. These germs, when colonized in the stomach, give rise to catarrh and various fermentative and putrefactive changes.

Exercise.

Systematic exercise of some sort is required as an essential feature in the Sanitarium system of treatment. The undue fatigue and soreness which are produced, rapidly disappear when exercise is taken systematically. By means of exercise, nerves are strengthened, and the tissue changes necessary for a thoroughgoing cure are encouraged.

The muscles must be exercised to work off the old man and create an appetite for new material in the shape of food out of which the new man is to be built. Exercise must be carefully graduated and perfectly adapted to the individual's muscular strength, and especially directed in such a way as to develop the weak muscles and correct deformities. For feeble persons who are not able to exercise sufficiently to obtain the physiological effects desired, massage, Swedish movements, and mechanical exercises are employed. For more robust persons, walking, horseback riding, rowing, bicycle riding, and especially swimming are commended.

Of particular value as a means of stimulating the healing powers within the body and building up strong, disease-resisting tissues is out-of-door life and exposure to the sun. Such exposure as results in tanning or browning of the skin of the whole surface of the body, or the greater part of it, produces the best effects. This is one of the great advantages of out-of-door gymnasia, the sun bath, and of sea bathing.

The breathing exercises before breakfast prepare the stomach and liver for the digestion of the coming meal. After-dinner exercises aid the stomach in its digestive work, relieving heaviness and other discomforts. The gymnasium work prescribed to be taken at other times has for its purpose the general improvement of the system and the correction of various deformities, such as round shoulders, flat chests, weak abdominal muscles, spinal curvatures of various sorts, weak carriage in walking, malpositions in sitting, etc. Persons who have very feeble abdominal muscles or prolapsed viscera should wear an abdominal supporter while taking exercise, until the muscles have been developed.

Hydrotherapy.

Hydrotherapy is chiefly relied upon as a means of stimulating the vital activities necessary for the curative process. When cold applications are suitably applied, every bodily function will be stimulated. By hot applications properly applied, excessive action may be controlled, pains relieved, and blood diverted from congested parts. By various other applications, most powerfully sedative, alterative, and restorative effects may be produced. Scientific hydrotherapy affords the most direct and the most rapid means of influencing the great functions of life, the circulation of the blood, the process of respiration, the action of the brain and nerves, the function of the liver, kidneys, stomach, and bowels. There is no means by which the various bodily functions may be so perfectly and so quickly con-

trolled as by hydriatic measures applied with intelligence and skill.

Cold applications, suitably managed, are essential to the production of strong and lasting tonic effects, so that, almost without exception, the physician aims to accustom the patient as rapidly as possible to the use of cold water by carefully graduated and progressive measures which constitute what might be termed a hydriatic ladder up which patients climb.

Exact Physical Examinations.

These are necessary in the scientific treatment of chronic invalids for the reason that the powerful physiological agents employed in the rational method have a positive and known value, and are capable of producing positive and definite results when intelligently employed. Repeated examinations are essential for determining the progress patients make under treatment, and the indications for any changes of prescription.

The Sanitarium method is thoroughly scientific, and can not be carried on successfully without the information to be obtained through well-equipped laboratories and especially trained chemists, bacteriologists, and other experts in laboratory methods, as well as physicians, nurses, and attendants who have made a special, exhaustive study of hydriatic and other physiological measures of treatment, and are thoroughly familiar with the technique as well as the general principles of hydriatic treatment. With these in hand, and the thorough co-operation of the patient, all curable maladies are curable by persevering effort. The list of so-called incurable diseases has been largely diminished by the success obtained in the treatment of many maladies which had proved utterly intractable to ordinary remedies. Even incurable cases are not entirely hopeless, for, in a great majority of cases, the disease can be arrested, or the rate of progress greatly lessened, and distressing symptoms may be wonderfully ameliorated, if not wholly controlled.

The Battle Creek Sanitarium.

This institution, which has been the nursery for the ideas set forth in the foregoing pages, and has come to be recognized the world over as the mother of sanitariums, represents a new departure in the treatment of the sick. For the first time in the history of medicine, the promoters of the Battle Creek Sanitarium undertook to bring together under one roof all rational and scientific remedies for disease, to place these various means, hydriatic, kinesipathic, electrotherapeutic, dietetic, physical, chemical, medicinal, and mechanical, in charge of thoroughly trained scientific physicians, and to supplement the ordinary means of diagnostic research with complete laboratories for microscopical, chemical, and physiological investigation in which cases of disease might be studied in the most elaborate manner, and original researches undertaken for the purpose of eliciting new and useful information from nature's storehouse.

The Battle Creek Sanitarium is not a hospital, neither is it what the public understands by a sanitarium or sanatorium,— which is a sort of medical boarding house,— neither is it a headquarters for faddists and cranks. It is in no sense a commercial or mercenary enterprise. It is the center of a reform movement the essential feature of which is to return to nature and to seek for those paths which lead men to harmony with nature and with Heaven. The movement which centers here in this institution has become world-wide, and is making progress everywhere among intelligent and reasoning people of all classes. The various branch establishments located in different parts of this country and other countries are organized on the same plans.

EDITORIAL.

THE INCREASE OF DISEASE.

THE alarming increase of disease among human beings has led to a careful scrutiny of the causes of disease by sanitarians and physicians of civilized countries, and within the last ten years numerous interesting and startling facts have been brought forward, some of them certainly throwing great light upon questions which have previously been more or less obscure. One of the comparatively recent results of the energetic search for the causes of the increasing prevalence of vital diseases among human beings is the close relation between diseased animals and similar diseases in human beings. A number of maladies the origin of which has been regarded as obscure, or which were attributed to entirely different causes, have within the last ten years been proved to be due to flesh eating.

It was formerly supposed that the cooking of flesh was sufficient to purge it of any infection and to render its use safe, even if the animal was known to have been subject to some disease when killed. But it is now known that cooking, even when performed in the most thorough manner, is by no means a protection against injury from the use of the flesh of diseased animals, and it has been clearly shown by Professor Haig, of England, and others, that the free use of the flesh of the healthiest animals may become a most prolific cause of grave if not incurable chronic disease. Epilepsy, migraine or nervous headache, rheumatism, and neurasthenia or nervous exhaustion have been traced directly to this cause, and a host of other maladies are likewise attributed to the common practice of flesh eating.

The marked tendency which exists in this country and in most other civilized countries in the direction of increased consumption of flesh food, renders this question one of great importance. In France the average consumption of meat per capita has increased three times within the last century, and in England meat consumption has increased four hundred per cent. The consumption of flesh in Australia, where meat is very cheap, is still greater than in England. In this country, flesh eating is also rapidly on the increase. One cause of this may be the extensive use of mushes, sweets, candies, etc., which has given rise to an almost universal farinaceous dyspepsia, a form of digestive disorder for which flesh food gives immediate temporary relief, but only at the expense of producing another grave chronic disorder less immediately distressing, but in the end much more destructive of life and comfort, and much more difficult to cure.

In order to set this question before the readers of this magazine in its proper proportions, the editors have devoted a large part of this month's issue to a consideration of the diseases which arise from the use of flesh food and the diseases to which animals are subject. The increasing interest in this subject is securing for it a weight and recognition among sanitarians.

At a recent meeting of the Michigan State Medical Society, a committee was appointed to lay before the State legislature the importance of taking immediate steps to protect the people of Michigan from the use of the flesh of diseased animals, by providing a proper inspection service and prohibiting the exposure of carcasses of diseased animals for sale as food. At the present time careful inspection is made of all animals which are slaughtered in this country for export to foreign countries, but American sovereigns are almost wholly unprotected.

PIG INSPECTION AT A CHICAGO SLAUGHTERHOUSE.

W. E. Howe, V. S., D. V. M., writing the editor of a veterinary journal of his experience as an inspector of one of the great abattoirs in Chicago, gives some details which ought to be of practical interest to lovers of swine's flesh. We quote the following from the Doctor's own words in a description of the things which came under his observation as an inspector:—

"The diseases most frequently found by the inspector are hog cholera, swine plague, tuberculosis, metritis, peritonitis, pleurisy, pneumonia, bruises, tumors, nephritis; hogs are also found that have died just previously to the time of slaughter. . . .

"One difficult point, ofttimes, is to be able to say absolutely whether a hog has died a short time before it was stuck and scalded, or whether it was poorly stuck so it did not bleed well, and consequently fell into the tub alive, and was drowned while being scalded. In both cases, when the animal reaches the inspector it will show that it has not bled out well. In both cases the lungs, kidneys, and liver will be full of blood. If the hog was poorly stuck, and dropped into the scalding tub alive, there would still be the peristaltic action of the bowels, some twitching of the muscles, and possibly some beating of the heart, while in a dead hog these would be absent. Sometimes in cases it is difficult to make a clear distinction. If they are permitted to hang in the cooler for a few days, the dead one will show signs of decomposition. The dead hogs are always condemned, no matter how well they may appear after they are dressed and hung in the cooler. The hogs frequently die from exhaustion, heat, and asphyxiation. In these cases we should have in the flesh a large amount of the waste matters of the body which have not been thrown off, and being full of blood, putrefaction soon starts; consequently, the flesh would be filled with the ptomains of putrefaction, which are putrescin and cadaverin. These ptomains are capable of producing inflammation and necrosis (gangrene). Cadaverin is one of the substances which can set up suppuration in the absence of bacteria. In Asiatic cholera the necrosis of the intestinal epithelium and the muscular spasm are thought to be due to this same product."

Apropos of the foregoing it may be interesting to call attention to the method by which the inspection is made. The inspector sits upon a bench alongside the dressers. The pigs, suspended by the hind legs from the traveling chains overhead, are passed by the inspector at the rate of more than seven hundred an hour, or nearly twelve a minute, or one every five seconds. During this brief interval the inspector must examine the animal internally and externally; he must examine its skin, the lining membranes of the body, the viscera, the heart, lungs, stomach, liver, intestines, etc.; he must note the color of the flesh, whether or not white specks are present, indicating measles, or red specks, indicating swine plague or some other disease, and he must be on the lookout for tubercular deposits, evidences of internal abscesses, chronic inflammation, degenerations, etc. It is of course impossible for him to make all these observations accurately, and consequently he catches but a small proportion of the diseased animals which pass before him. It is, in fact, as the inspector admitted, next to impossible to determine in all cases whether the animals which are rapidly switching by him have been slaughtered in the regular fashion, whether they died in the pen shortly before killing time, or whether they were drowned in the scalding vat.

The same inspector before quoted, mentions the difficulty of recognizing, in the short time they are under observation, the cases of animals affected with hog cholera when killed. The animals are generally picked out by the presence of red spots. These spots may be no larger than a pinhead, and sometimes are almost altogether absent, so that the animal may easily pass by without being recognized. Even the intestines, as the inspector stated, "may not attract any particular attention."

Swine plague, another disease to which hogs are subject, produces an appearance so

entirely similar to that produced by hog cholera that it is impossible to distinguish one from the other "in the short space of time allowed for examination."

The danger to which the public is exposed from the use of these disease-ridden animals may be better appreciated when the fact is made known that the hog-cholera bacillus gives rise to the production of ptomains and other poisonous substances. Two of these have been thoroughly studied and named, respectively, *sucholotoxin* and *suchoalbumin*. These are very deadly poisons, and produce death with the symptoms of hog cholera when introduced into the body of an animal. No one can estimate how many cases of sudden sickness and even death may be due to the use of the flesh of animals in which these poisons were present.

The same is true with reference to tuberculosis, which is very common in hogs. The lungs are not so often affected as the intestines, as this disease originates in indigestion, to which hogs are exceedingly subject because of their sedentary life and their miscellaneous diet. The flesh of a tuberculous pig contains a poisonous substance, tuberculin, which, when the flesh is eaten, may be sufficient to produce deadly effects in certain cases. In many persons, tubercle germs may be retained in the tissues in a latent form for many years. The resistance of the body is sufficient to hold the disease in check, so that it makes no progress. If such a person eats the flesh of a tuberculous animal, even though it may be thoroughly cooked, the poison reduces the resisting power of the body, quickens the activity of the tubercle germs, the disease becomes rapidly diffused throughout the body, and the patient dies from acute tubercular infection.

No orthodox Jew would think of eating the regular butcher's meat which is exposed for sale in the markets. Flesh for his consumption must be obtained from animals which have been carefully inspected before death and minutely examined after death by a competent officer especially appointed for the purpose. An official who acted in this capacity for many years, stated to the writer some years ago that on an average he found it necessary to reject nineteen out of twenty animals which came under his observation. The Jew considers one animal in twenty fit for him to eat. The Christians devour the other nineteen, and suffer the horrible consequences which must naturally follow when one makes his stomach a burying ground for the carcasses of diseased and unclean creatures.

DISEASE IN THE USE OF OYSTERS.

THE oyster is thought by many people to be one of the most innocent of foods. Raw oysters, stewed oysters, oyster broths, and other preparations of oysters are not infrequently recommended by physicians for the use of persons whose stomachs are supposed to be too delicate to digest ordinary food. This popular opinion, however, has not the slightest foundation in fact. Beaumont's experiments showed that stewed oysters are difficult of digestion, remaining in the stomach for several hours, whereas boiled rice leaves the stomach within an hour and a half; stewed or cooked fruit, such as baked sweet apples, in a somewhat longer time.

The idea that the oyster aids digestion by virtue of its own gastric secretions is a most ridiculous and fanciful theory, the falsity of which was easily shown some time ago by physicians who made the experiment of chopping up an oyster and putting it in a glass vessel in a place having the same temperature as the interior of the body, *i. e.*, about 100°. The only change which occurred in the oyster was that putrefaction very quickly set in. There was no indication of any digestive change whatever. Several cases of intense poisoning from the use of oysters have come under the writer's personal observation. In one case, a young man who had eaten oysters in the evening at a city restaurant, came into the Sanitarium about midnight. He felt as if his intestines were tied in knots; he looked very pale, and vomited and purged

violently. He thought he was going to die, and he certainly had a good prospect of a funeral before him, but vigorous treatment saved his life. He attributed his sickness to the oysters. A few of the oysters were obtained, and some of the juice was injected beneath the skin of a strong, healthy cat. Within a few hours the animal was dead, exhibiting the same symptoms as those which the young man had suffered.

An eminent Chicago surgeon several years ago lost his life through the same cause. After eating a few oysters, he was seized with a terrible intestinal pain, obstruction resulted, and death occurred, notwithstanding the abdomen was opened, and every effort made to remove the obstruction.

Oysters thrive and grow fat in water charged with organic matter; the fatter the oyster, the more dangerous. One cubic centimeter of oyster juice produced in an agar culture showed 1,500,000 colonies of bacilli. It is very probable that these shellfish become infected in the fattening ponds or reserves, which convey microbes and dejecta of all kinds; and those who partake of oysters that have been subjected to such contamination are exposed to the gravest danger of infection.

The oyster is fond of the typhoid bacillus, which lives readily in oyster juice. The typhoid bacillus will live in a salt solution five months. Giaxa observed that it is not affected by freezing, nor after nine days in sea water, followed by twenty-five days in sterilized water. It would thus seem probable that when the oyster is deposited either for fattening or storage in some handy or convenient place situated within the area contaminated by the sewage outfall, some more or less gross particles of excrementitious matters are taken into the cavity of the shell and become lodged in the folds of the creature within, and that these particles are swallowed bodily by whomever eats the oyster in question.

WHEREIN THE MEAT EATER EXCELS THE VEGETARIAN.

A CORRESPONDENT sends us a clipping from the New York *Herald*, in which are ventilated the views of a certain Dr. Jenkins, of Chicago, who maintains that Americans must use meat because they have intestines like dogs, hogs, cats, and beasts of prey. He grants that nations that have continued to subsist upon the natural diet for man, such as the Chinese, the Hindus, the natives of the Andes of South America, are able to thrive upon a non-flesh dietary, but explains this fact by the assertion that these nations have small intestines two or three times as long as those of Americans and other flesh-eating nations. In other words, the Doctor insists that there are two varieties of the human race,—the carnivorous and the non-carnivorous,—the distinction between the two being the difference in the length of the small intestine.

The Doctor seems to forget that men have teeth, as well as small intestines. Every anatomist knows that the development of the digestive organs of animals is harmonious; that is, an animal that has intestines adapted to the digestion of vegetable food, has also teeth adapted to the mastication of such food, while an animal the intestines of which are adapted to the digestion of flesh food, has teeth and prehensile organs adapted to tearing and chewing raw flesh. If the American has become carnivorous by the long-continued use of flesh food, this fact ought to be apparent in the development of carnivorous teeth as well as in the shortening of the alimentary canal, if it were true that the alimentary canal has been shortened to such an enormous extent as claimed by Dr. Jenkins.

Human teeth are radically different from those of carnivorous animals. The movements of the jaw in man are as free as in the ape, the sloth, and other animals which subsist upon a non-flesh diet. The sacculated colon of man shows as clearly that his diet is naturally vegetable in character as the smooth colon of the lion indicates the carnivorous

character of its diet. If the human intestine has shortened to the alarming extent claimed by Dr. Jenkins, we certainly ought to find the American colon smooth, like that of a dog, rather than sacculated, as in the gorilla, the chimpanzee, and other fruit-and-nut-eating animals.

But no responsible anatomist would dare to claim any such astonishing abbreviation of the small intestine in the English, German, and other meat-eating races. A few years ago a European anatomist claimed to have noticed a slight difference in the length of the small intestine between the vegetarian peasants of southern Russia and the pork-loving Germans whose anatomy he had studied. But his statements have not been confirmed by the observations of other reliable authorities, and even if true, the difference noted was not sufficiently great to establish a strong basis for a classification as claimed by Dr. Jenkins. His statements are simply absurd and preposterous, and, as we have pointed out, are disproved by the fact that other cognate differences between the carnivorous and non-flesh-eating animals, which should have made their appearance simultaneously with the development of a carnivorous small intestine, are not in evidence.

Americans are certainly degenerate enough, and are deteriorating at a rapid rate, but we are not yet become tigers, dogs, or pigs; and if it should ultimately be proved that our small intestines have shrunk a little because of too concentrated a diet, the use of superfine flour, and an enormous quantity of cane sugar, butter, lard, and oleomargarine, let us not labor for additional development along this line and aspire to the prognathism of the pig or the enormous canine development of the lion. Rather let us seek to arrest the shriveling of our alimentary canals by returning to the original and natural bill of fare which God gave to Adam,— the fare which imparted to our hearty ancestors their marvelous endurance, and to which our Simian relatives and a large proportion of the human race still adhere.

By the way, we have a better theory to suggest to Dr. Jenkins to account for the shrunken condition of the American small intestine. If his statement be true, may the cause not be the enormous consumption of tea by English and American people? Tea contains tannin in large quantities. The astringent properties of tannin are well known. The average doctor, probably even Dr. Jenkins, is acquainted with the fact that tannic acid has great power to subdue an obstreperous and excited small intestine. On many occasions when the alimentary canal has under provocation of some sort seemed disposed to elongate itself beyond the normal limits, a vigorous application of tannin at both extremities has brought the overambitious organ to terms. As we think of it, we feel more and more persuaded that if the American intestine is too short, the fact must be attributed to tea and coffee swallowing rather than to the consumption of beefsteak, bacon, Bologna sausage, and *pâté de foie gras*.

To be really serious, however, we do not take any stock in this notion. It is purely a fancy, born of roast goose and deviled lobster. The average American intestines, big and little, have had no chance to shrivel up. They are stretched to their full capacity every day,— generally three times a day,— and as every experienced practitioner knows, are suffering more from overstretching than from any other cause. The true inwardness of the American's love for meat is not that the intestine is too short, but that he has spoiled his digestion by the use of condiments, griddle cakes, baking-powder biscuit, half-cooked cereals in the form of mushes and breakfast dishes, mince pie, and brandy sauces. He has made a garbage box of his stomach, and because it collapses under such rude treatment, and fails to digest a dinner which would require for its disposal the fourteen-stomach-power digestion of a woodchuck, he takes refuge in beefsteak and substances which dissolve easily in the stomach, but work subtle mischief in lowering the resistance of the body, disturbing the finer processes of nutrition and tissue change, and laying the foundation for premature degenerations of various sorts, these resulting in rheumatism, gout, Bright's disease, arteriosclerosis, and sundry other grave maladies.

Finally, let us query, Wherein does the meat eater excel the vegetarian?

Not in endurance, as is proved by the porters of Smyrna and Constantinople, the runners of the Andes, India, and China, and the experience of hunters, who withhold meat from their dogs in order that they may have good wind. In pedestrian matches, and latterly in bicycle races and other tests of endurance, the vegetarians have come to the front, and have been carrying off the prizes.

Not in strength, for the vegetarian animals are admittedly the toughest, the strongest, and the fleetest; witness the elephant, the hippopotamus, the rhinoceros, the American bison, and that marvelous creature, the real king of the forest, the gorilla.

Not in power to endure hardship and to resist disease; witness the endurance and the comparative immunity to grave injury from wounds of the Turkish soldiers as compared with the Greeks in the late Turko-Grecian War. Meat may make a fierce soldier, but certainly does not make a healthy or enduring man.

A second-hand garment has less wear in it than a new one; so second-hand food has less energy in it than original and natural food.

The more one studies this question, the deeper becomes the conviction that man was never intended to be a flesh eater, but that his natural diet is fruits, grains, and nuts.

ANSWERS TO CORRESPONDENTS.

Eating before Retiring — Canned Fruit — Thirst — Bovinine — Cure for Dyspepsia.— F. C., Idaho, wishes to know: "1. If one feels faint or hungry at bedtime, is it best to take some liquid, as malted milk, or is a little cooked fruit preferable? 2. Is canned fruit wholesome? 3. Is thirst caused by certain foods a bad indication? 4. Why should prunes to which no sugar has been added, cause thirst? 5. If they do, are they unhealthful? 6. Should the weak or dyspeptic take Bovinine? 7. Is the oil pressed from dried eggs of any benefit to dyspeptics? or the lining from the gizzard of a chicken, crushed to a powder? 8. From examination of one with stomach trouble, can you tell whether or not he is curable, and the length of time required for a cure?"

Ans.— 1. Cooked fruit is preferable, but it is better to take it at six or seven o'clock in the evening, rather than later.

2. Yes, but the less cane sugar it contains, the better. Fruits canned with heavy syrup should be avoided, and it is preferable that no sugar at all be used.

3. When much salt is used, thirst naturally results. When food contains little or no salt and produces thirst, it is an evidence of indigestion.

4. Large quantities of concentrated sweet fruits, as well as salt, may give rise to thirst.

5. It is not easy to see why prunes should produce indigestion, unless taken with bad combinations of some sort. Prunes themselves are certainly not unwholesome, but they are better taken with other fruits, or combined with grains and nuts, than with vegetables, with which they sometimes disagree, especially vegetables of the coarser sort. Prunes, on account of the tough skins, are less digestible than some other articles of food. Persons who have dilated stomachs or who find inconvenience in the use of prunes should remove the skins by rubbing the cooked fruit through a colander.

6. No.

7. The oil contained in eggs is an easily digestible animal fat. It is, however, no more easily digestible than the oil of nuts, and is more digestible when taken in the natural state than when separated. The lining of the gizzard of a chicken acts as a digestive ferment, and in some cases affords temporary relief, but is not a curative.

8. It is usually possible to tell whether or not a case of gastric disorder is curable, but it is by no means easy to determine the length of time required for a cure, as this depends not only upon the patient's co-operation, but upon his constitution.

Pimples.— L. H., Indiana: "1. What can be done for one who lives on fruits, grains, and nuts, and has pimples on the face? 2. Would overeating cause this? 3. Are fruits, especially apples, injurious to the kidneys? 4. What will restore a prolapsed kidney (right) to the normal place? 5. Is daily pain in the bowels caused by indigestion? 6. Should one with weak digestive organs eat beets?"

Ans.— 1. There is probably some digestive fault which must be cured. The general constitution must be improved. One may live upon fruits, grains, and nuts, and yet violate many essential laws of health, and commit gross errors in diet. A warm bath two or three times a week, a cold bath every morning, and perhaps a wet girdle (see Midsummer Number) will be found helpful.

2. Yes.

3. No.

4. The kidney must be put in place, and mechanically held in position by a proper supporter. The Natural Abdominal Supporter is to be recommended.

5. Probably, yes.

6. No.

Soda Crackers and Butter — Fire — Cold Hands — Coated Tongue — Constipation — Eyelids — Cold — Pimples — Teeth — To Increase Flesh — Pillow. — M. M., Illinois: "1. Should soda crackers and butter be avoided? 2. Is there any harm in keeping fire in a sleeping-room at night? 3. What causes cold red hands when one takes plenty of exercise and does not wear tight sleeves? 4. How can the redness be cured? 5. What will make the hands fleshier? 6. What causes coated tongue and a bad taste in the mouth every morning? 7. What will cure obstinate constipation? 8. What can be done for dry, scabby, swollen eyelids? 9. For a constant cold? 10. For pimples? 11. How can tartar be removed from teeth? 12. How may one increase his flesh? 13. Should one who desires to become straight avoid the use of a pillow at night?"

Ans. — 1. Yes.

2. For delicate persons it is better that the temperature of the sleeping-room should not fall below 50°. Persons in robust health may, with proper precautions, indulge in a lower temperature if desirable. Exposure to an overheated atmosphere during sleep at night is extremely debilitating.

3. There is very likely some gastric disorder producing disturbance of the abdominal sympathetic.

4. A very hot hand bath night and morning for five minutes, followed by a dash of cold water.

5. Massage.

6. A coated tongue is caused by indigestion and by a depreciation of the whole system.

7. Chronic constipation is not easily cured. A careful inquiry must be made into the patient's condition, and all the causes must be removed. For specific directions, see "The Stomach," published by the Modern Medicine Publishing Company, Battle Creek, Mich.

8. Bathe the eyes in hot water two or three times a day. An oculist should be consulted.

9. A neutral bath at night, 92° to 95°, for half an hour just before retiring, and a short cold rubbing bath on rising. Live out of doors. Wear linen underclothing.

10. Correct the digestion, build up the general constitution; bathe the face with very hot water two or three times a day. A careful application of a hot solution of bichloride of mercury, 1 — 500, is a very good remedy.

11. By a good dentist, and carefully cleansing the teeth before and after each meal.

12. By eating nut foods and dextrinized cereal food, by moderate exercise and abundance of sleep.

13. Yes, or use a very thin pillow. In addition, abundant vigorous out-of-door exercise should be taken. Swimming is perhaps the best of all exercises for producing a good physique.

Beet Sugar — Evacuation of the Bowels. — W. W. G., Tennessee, asks (1) as to the healthfulness of beet sugar; (2) to what extent it is manufactured; (3) how often the bowels of a healthy person should act.

Ans. — 1. Cane sugar from the beet root is essentially the same as that made from the sugar cane. There is no doubt that the free use of cane sugar of any sort is harmful.

2. From recent statistics it appears that fully one half the world's product of cane sugar is made from the beet root.

3. Once daily.

Grape Sugar. — W. H. G., Florida, asks (1) if one who can not use ordinary sugar can take grape sugar; (2) where it can be obtained.

Ans. — 1. Yes, provided the grape sugar is obtained from fruits in the condition in which it is found in grapes and other sweet fruits, but commercial grape sugar, or glucose, is unfit for food.

2. Maltose is a natural sugar which is equally as wholesome as grape sugar. It can be obtained in the form of meltose, or malt honey, from the Sanitas Nut Food Company, Battle Creek, Mich.

To Promote Growth of Hair. — C. H., New York: "1. A young lady of twenty asks what will make her hair grow. It began falling out after an attack of bronchitis. 2. What can be done for chronic catarrh which does not yield to careful diet and cold baths?"

Ans. — 1. Shampoo the scalp twice a day with the fingers dipped in very cold water.

2. Local treatment may be required, as the use of the Vaporizer or Inhaler, and perhaps the services of a specialist may be needed.

Bananas. — A. L. H., California: "1. Does baking increase the nutritive value of bananas? 2. Are uncooked bananas wholesome? 3. Do they contain bacteria? 4. Are they difficult to digest? 5. What is the chemical composition of the banana?"

Ans. — 1. Yes, if the bananas are green; not otherwise.

2. Yes, if the fruit is perfectly ripe and is well matured before picking.

3. No.

4. Not when perfectly ripe and matured.

5. Its composition is very similar to that of the potato, except that sugar and dextrin take the place of starch.

Weak Shoulders.— W. R., Illinois: "What causes great weakness in the shoulders and chest and a weakening of the voice? This is aggravated by constipation and hard work."

Ans.— Probably spinal exhaustion.

Granulated Eyelids — Sweet Corn and Fruit — Butter.— F. C., Wisconsin: "1. What treatment will cure granulated eyelids. 2. Are hot and cold applications beneficial? 3. Should glasses be worn? 4. Is sweet corn, cooked without milk or cream, and fruit a good combination? 5. Is butter made from roasted peanuts less injurious than dairy butter? 6. Is it better to make butter from raw peanuts? 7. If not, how can they be prepared to keep sweet?"

Ans.— 1. Bathe the eyes with very hot water for five or ten minutes twice daily; consult an oculist.

2. Yes, a short cold application should be made at the end of the hot application.

3. Glasses are often needed in such cases.

4. Yes.

5. Butter sometimes contains disease-germs, such as the tubercle bacillus. In this respect it is inferior to peanut butter. On the other hand, peanuts are rendered difficult of digestion by the roasting process. This difficulty may be very largely obviated by putting a large pan of water in the oven with the peanuts when roasting, so as to prevent roasting and burning of the smaller particles.

6. No.

7. The nuts can be steamed or boiled, then thoroughly dried, and afterward ground into butter. Made in this way the butter will keep for any length of time.

Tumors — Breath.— Mrs. W. C. W., Canada: "1. Will tumors in the nose of an eight-year-old child ever affect her eyesight? 2. Do you advise an operation to remove all the roots? 3. Why should a four-year-old child be short of breath, lose color, and have bloodshot eyes if she falls or hurts herself? 4. What is a remedy? 5. What should an infant who is deprived of its natural food, eat from birth? 6. Do you recommend granose flakes in such a case?"

Ans.— 1. It is quite possible.

2. The operation should be performed in such a way as to effect a radical cure. A specialist (not an advertising quack) should be consulted.

3. The child probably has a weak nervous system.

4. Daily cold bathing, and rubbing with oil should be practiced. See Midsummer Number for description of cold mitten friction and the cold-towel rub.

5 and 6. Malted nuts with the addition of cream is to be recommended. Several cases have been reported to us in which very young infants have been successfully raised from the first on granose flakes and malted nuts.

Acidity of the Stomach.— F. A. R., Ontario: "1. What do you recommend for acidity of the stomach? 2. Do you advise milk for a dyspeptic?"

Ans.— 1. The remedy must be suited to the particular case. Cases in which the acidity is due to fermentation require lavage and careful dietary. Cases in which the acidity results from excessive secretion of hydrochloric acid require special treatment to prevent the formation of excessive acid. Such cases should be treated at a well-regulated sanitarium.

2. Most dyspeptics may profitably avoid the use of milk.

Dyspepsia — Lymph Treatment.— F. G. H., Iowa: "1. Is dyspepsia caused by microbes in the intestine, as asserted by proprietors of a certain dyspepsia cure? 2. What is your opinion of the Roberts-Hawley lymph treatment?"

Ans.— 1. Many of the symptoms accompanying indigestion are the result of the action of germs, but the primary fault is farther back. Germs alone can not cause indigestion. Indigestion is never curable by means of germicides. Such remedies must be used as will aid nature in making a better body.

2. We know nothing about it, but from its name, and on general principles, we do not hesitate to express the opinion that it is probably worthless.

Indigestion — Jaundice — Headache — Complexion.— L. H., Indiana: "1. Are severe pains in the bowels, with gas, an indication of indigestion? 2. What are the symptoms of jaundice? 3. Should one with prolapsed kidney avoid fruits and salts? 4. Does overeating affect the kidneys especially? 5. What should be done when charcoal tablets induce headache? 6. Why should one have a bad complexion when well, and a good one when ill?"

Ans.— 1. Yes.

2. A greenish yellow color of the skin.

3. It is certainly not necessary to avoid the use of fruits. The less salt one takes, the better, whether the kidneys are prolapsed or are in their normal condition.

4. Yes; the liver is affected first, and next the kidneys.

5. Cease to use them. Employ pure charcoal powder instead.

6. We give it up.

Nut Butter — Malarial Districts.— R. A., Arkansas: "1. How can one get rid of the thin husks in making peanut butter? 2. Where can I obtain a book on making nut butter? 3. Can people live in malarial districts and keep well?'

Ans.— 1. By means of a blancher.

2. You can get such help as you may need by addressing the Sanitas Nut Food Company, Battle Creek, Mich.

3. Yes, by taking care to boil the water, and to build up the general health by abundant out-of-door exercise and daily bathing.

Eyes — Water Brash.— W. G. H., West Virginia: "1. What should be done for an eye the nerve of which is wasted? 2. What will relieve water brash?"

Ans.— 1. Nothing can be done; the case is hopeless.

2. A dry dietary; fomentation over the stomach at night, followed by a cold gastric compress, or wet girdle, to be worn during the night.

Inflamed Eyes.— A. B., Ohio: "What treatment will help inflamed eyes, the inflammation being caused by chronic catarrhal trouble?"

Ans.— Bathe the eyes in hot water two or three times a day for five minutes. Apply a solution of boracic acid — two or three grains to the ounce — every three or four hours. Consult an oculist.

Antipyrin.— X. Y. Z., Colorado: "1. What is antipyrin? 2. What injurious effects, if any, will ensue from its use if taken for nervous headache? 3. What would you recommend in its place?"

Ans.— 1. It is a poisonous product from coal-tar. It produces great depression of the heart, and relaxation of the blood vessels in consequence.

2. It is exceedingly poisonous, and when used continuously, produces degeneration of the kidneys, liver, and other organs.

3. Migraine ceases when the causes are removed. It is a sympathetic-nerve disease growing out of indigestion or the accumulation of uric acid in the system. Thorough gastric lavage, or washing of the stomach, administered as soon as the first symptoms are experienced, is generally effective in preventing the complete development of an attack. Fomentation over the stomach, the wet girdle at night, daily cold bathing, cold mitten friction or cold towel rub, wet-sheet pack, etc. (see Midsummer Number), are means by which the system can be so fortified as to prevent the recurrence of an attack.

Nervousness.— Mrs. A. J. L., California: "1. What causes a sensation as of water running through the spine, and aching spots on either side of the spine, at about the waistline? 2. Why should there be an extremely nervous feeling in the limbs at night? 3. What will relieve the aching at the waistline? 4. What the general nervousness?"

Ans.— 1. Neurasthenia; probably there is hyperesthesia of the solar plexus and the lumbar ganglia.

2. This is also due to the causes before mentioned.

3. Large fomentation around the waist, or a hot trunk pack, followed by the wet girdle to be worn during the night.

4. Cold mitten friction (see Midsummer Number) should be applied twice a day. Live out of doors. Probably the use of an abdominal supporter may be necessary.

Tuberculosis.— J. Z., Connecticut: "1. Can tuberculosis be transferred to people using milk from a cow with that disease? 2. Will boiling the milk and the meat in such a case destroy the disease?"

Ans.— 1. Yes, this is a very common way of communicating the disease.

2. Yes, if both are thoroughly cooked, but the poison produced by the tubercular germ will remain in the milk, and mischief may be caused in that way.

Nut Meats.— Mrs. S. L. C., Ohio, asks if hickory-nut meats keep longer if made into meal, and if not, what is the best way.

Ans.— Nuts keep best if left in their natural state, in the shells. Peanut meal may be kept by thoroughly sterilizing and securely bottling.

Mock Turtle Soup — Corn Bread.— A subscriber asks (1) of what mock turtle soup is composed; (2) if it digests easily; (3) if corn bread is indigestible.

Ans.— 1. The head of a dead calf, calves' brains, "the shin of a veal," celery, onions, carrots, turnips, parsnips, mace, cloves, parsley, salt, pepper, walnut catsup, mushroom catsup, tomato catsup, port wine, lemon, eggs, butter,— and any other indigestible odds and ends which may be lying around. Mock turtle soup is evidently a cook's invention for the disposal of offal and scraps and remnants. This soup-stew is rightly named: any intelligent turtle would turn away from such a mess in disgust.

2. No.

3. Made simply, as in the old-fashioned hoecake of the South, corn bread is easily digestible; when made with baking powder or saleratus, it is an excellent dyspepsia-producer.

LITERARY NOTICES.

"Tolstoi, A Man of Peace," by Alice B. Stockham, M. D., is a fascinating study of this great man. Dr. Stockham visited Tolstoi in his own home at Tula, near Moscow, and this book is the crystallization of the experiences and impressions of that visit. The work is illustrated by pictures of Tolstoi, his wife, and by a colored picture of Tolstoi plowing. The book is published by the author.

Our readers will be interested in what the great Russian said to Dr. Stockham about pain:—

"I can understand how pain is silenced by thought. I know this by experience; whenever I have an attack of pain, I put myself in the attitude of non-resistance, and welcome it as a friend. I think at once that it is good, very good, that it is a sign of activity for the establishment of harmony; so the more pain the better. It is an agreement with the adversary; according to the law of agreement, the pain soon subsides. Oh, yes, all pain is a blessing!"

In looking over **"Morton's Elementary Geography,"** we are reminded of the immense advantages little folks of to-day have over the children of twenty years ago. This book is a delight to the eye as well as to the mind. A beautiful United States flag adorns the title page. We are told that "the story of the earth is geography." This simple definition gives the keynote of the work. The book is charmingly illustrated not only by maps but by pictures that can not fail to interest children,— pictures of snow crystals, of boulders, of animals, of harvestings, of beasts, of earthquakes and floods.

The author of "Morton's Elementary Geography" is Eliza H. Morton, member of the National Geographic Society. It is published by Butler, Shelden, and Company, of New York, Philadelphia, Chicago, and Boston.

"Power for Witnessing," by A. F. Ballenger, published by the Pacific Press Publishing Co., of Oakland, Cal., is a plea for diligent doing rather than a discussion of doubtful doctrine. The message of the book is the Spirit's answer to the writer's longing for power to live and work for Christ. Large space is given to the presentation of "first principles," the book being especially adapted to the needs of the common people. Price, 75 cents.

Among the principal illustrated articles of the Magazine Number of the **Outlook** for November are "Up from Slavery," the first installment of an autobiography by Booker T. Washington, with portrait and many other illustrations; "American Educators in China," by George B. Smyth, President of the Anglo-Chinese College; "The Emperor of Austria," by Irenæus Prime-Stevenson, based partly on the recent seventieth birthday celebration of the Emperor; and "Nearer the North Pole," by Sofia Bompiani, an account of the achievement of the Duke of the Abruzzi in reaching a point nearer to the North Pole than man had before attained.

The great Trans-Siberian Railway, described by Henry Norman in his series on "Russia of To-Day," leads the November number of **Scribner's Magazine**. This railway is the commercial and political key to the Far East, and Mr. Norman traveled its entire length so far as completed, to Lake Baikal and beyond. He describes the wonderful industrial possibilities of the country through which he passed, and gives an entirely new idea of Siberia. The article is illustrated throughout with the author's photographs.

Perhaps the most timely article in **McClure's Magazine** for November is "A Woman's Diary of the Siege of Pekin," by Mrs. E. K. Lowry, one of the besieged missionaries in the legations last summer. This vivid narrative by an eyewitness of most of the events described, is sure to command notice at a time when the attention of all the world is turned to the far East. It is, in a true sense, history from original documents.

The wonderful story of the Banza Manteke Church in Central Africa, which is thrillingly told by Rev. Henry Richards in the November number of the **Missionary Review of the World,** is well worthy of a place among the modern miracles of missions. "Mission Work among the Jews" is described and strongly advocated by the editor-in-chief, Dr. Pierson; the doings of "The Boxers in Manchuria" are told by Rev. John Ross, of Mukden; "Problems of Modern Medical Missions" are discussed by Dr. Earnest W. Gurney Masterman, of Syria.

The **American Journal of Nursing** has just been established by the J. B. Lippincott Co., Philadelphia, as the official organ of the Associated Alumnæ of Trained Nurses of the United States.

The monthly contents are varied and interesting, and will be presented in an attractive form. The subscription price is $2.00 per year. The first volume began in October, 1900.

The names of its editors and promoters are a sufficient guarantee of the high professional standing of the journal and that this standing will be maintained and advanced.

Current Literature for November gives a fine picture of Richard le Gallienne for the frontispiece. "The Increase of Suicide," by Reginald A. Shelton, is quoted from the *Nineteenth Century;* and "Microbes: Are They Pathogenic?" by Maurice L. Johnson, from the *Westminster Review.* Space is devoted to "The Anthracite Coal Strike" and to "A Remedy for Trusts."

The **Cosmopolitan** for November is rich in timely and fascinating articles. Among these are "The Galveston Tragedy," by John Fay; "Fishing with a Camera," by Dr. R. W. Shufeldt, U. S. A.; "A Woman's Experience at Cape Nome," by Eleanor B. Caldwell; and "A Problem in Army Transportation," by Capt. A. W. Butt, U. S. V. All of these, and others perhaps equally notable, are handsomely illustrated. Rudyard Kipling has the first number of a story in two parts, "The Way That He Took."

"China's Greatest Curiosity" is the title masking a thoughtful paper by Frederic Poole on the Chinese language, published in **Lippincott's,** November. Other articles are "Footprints of Bryant," and "Stephen Crane's Last 'Great Battle.'"

Ernest Seton-Thompson, the artist, naturalist, and author, is to contribute a series of most interesting articles to the **Ladies' Home Journal.** They may be called an autobiography of the author of "Wild Animals I Have Known," as they will recount his experiences and encounters with all sorts of voracious animals that inhabit the American wilds — the most interesting features of a life filled with exploit and adventure. The articles will be illustrated by Mr. Thompson's own drawings of his friends of forest and plain.

The November number of the **Household** is exceptionally noteworthy. The cover, drawn especially for the *Household,* is executed in two colors, and tells a pleasing story of Colonial days and ways, and is in itself a work of art. The stories are from such well-known writers as Sophie Swett, Will Allan Dromgoole, and J. L. Harbour. There are illustrated articles by Col. T. W. Higginson, Kate Sanborn, and Fannie Bullock Workman, the only woman who has climbed the Himalayas. The Illustrators for the month are Chase Emerson, H. W. Colby, Louis Meynelle, and E. Jepson.

The leading article in the **New England Magazine** for November gives a "Study of Housekeeping in Boston," and is handsomely illustrated. Other illustrated articles are "Home of Sir Philip Sidney," "Tutor Flynt, New England's Earliest Humorist," and "Toronto."

Success for November contains another of the series of prize stories. This one is entitled "In the Last Ditch," and is by Walter Barr. "King Coal and His Realm" is a good feature.

The Interleaved Edition of **"Blakiston's ? Quiz-Compend ? Series"** (published by P. Blakiston's Son & Co., Philadelphia) has been reduced in price to $1.00 net.

"Blakiston's ? Quiz-Compend ? Series" are full sets of notes on the various branches of medicine. With the Interleaved Edition the student is in a position to note with a minimum of labor any detail of method or treatment of the subject which his teacher may prefer or his quiz-master recommend.

Pamphlets Received.

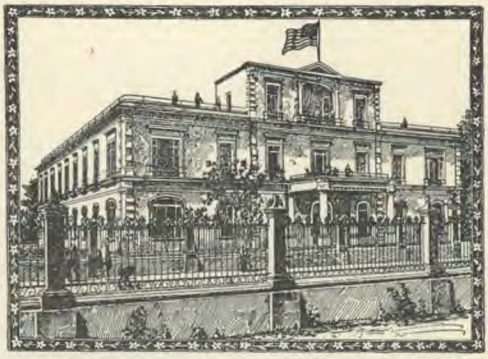
"Corneal Corpuscular Activity," Joseph E. Willetts, M. D., Pittsburg, Pa.

"Man and the Mountain." J. Warren Achorn, M. D., Boston, Mass.

"Degenerative Results of Defective Heredity." Chas. Denison, A. M., M. D., Denver, Colo.

WINTER RESORTS FOR INVALIDS.

COLD weather is not altogether a disadvantage. In fact, the tonic influence of the cold season is needed by the average constitution to counteract the debilitating influence of summer heat and the sedentary habits of our increasing city population. Cold is a tonic, an appetizer, an invigorator, a nerve stimulant, *par excellence*. It is a physiological means by which the activity of all the vital machinery may be quickened. The fires of life burn more brightly, the pulse quickens, the heart beats with greater vigor and firmness, the eye sparkles with a new light; the whole being is lifted to a higher level of existence under the vivifying influence of cold air as well as cold water. Intelligent people make a great mistake in running away from Jack Frost.



GUADALAJARA SANITARIUM, GUADALAJARA, MEXICO.

Nevertheless there are certain persons whose constitutions require protection from the inclement weather of the cold months. Weak hearts and weak nerves, weak or congested lungs, frail constitutions, lacking the ability to respond to the stimulus of cold through being unable to regulate the movements of the vital machinery under the perturbing influence of great extremes of temperature, must be content to live a less intense, less vigorous life, nearer the level of physiological equilibrium. Such would do well to seek a warm or temperate climate for the winter months. In this class must be included not only consumptives, but those who are suffering more or less permanent injury from various pulmonary disorders, acute and chronic, such as pleurisy, bronchitis, influenza, pneumonia; those who have been crippled in heart or joints by uric-acid poisoning, the victims of chronic neuralgia, persons suffering from diabetes, chronic Bright's disease, and the various degenerations of the liver, heart, and spinal cord which lie at the foundation of a considerable number of maladies. Sufferers from various skin disorders, which are especially rife in cold weather, such as eczema, psoriasis, winter pruritus, and dermalgia, need the protection of a balmy and uniform atmosphere. Sufferers from chronic incurable maladies may often greatly lengthen life by such climatic changes from season to season as will secure a favorable environment, even if a cure can not be effected.

The all-important question with these various classes of invalids just at the present time is, Where shall we spend the winter months? The question is by no means easily solved, for the average invalid requires not only a favorable climate, but a suitable home, proper medical care, a dietary adapted to his needs, and not infrequently the systematic application of physiological remedies, such as water, massage, electricity, and medical gymnastics. A few years ago the invalid refugee from northern chilly blasts found himself in some famed resort wholly at the mercy of greedy boarding house or hotel keepers, and not infrequently suffered sufficient injury from the hardships endured and the lack of home com-

forts more than to counteract all the benefits derived from the climatic change.

We are glad to be able to announce to the invalid public that the day is past when such inconveniences are a necessity. The rapid growth and extension of the Battle Creek Sanitarium idea has led to the erection of a multitude of branch institutions which are so situated as to make it possible for invalids of all classes to find climatic conditions exactly suited to their needs while at the same time enjoying the advantages of the most expert medical care and sanitarium treatment and diet.

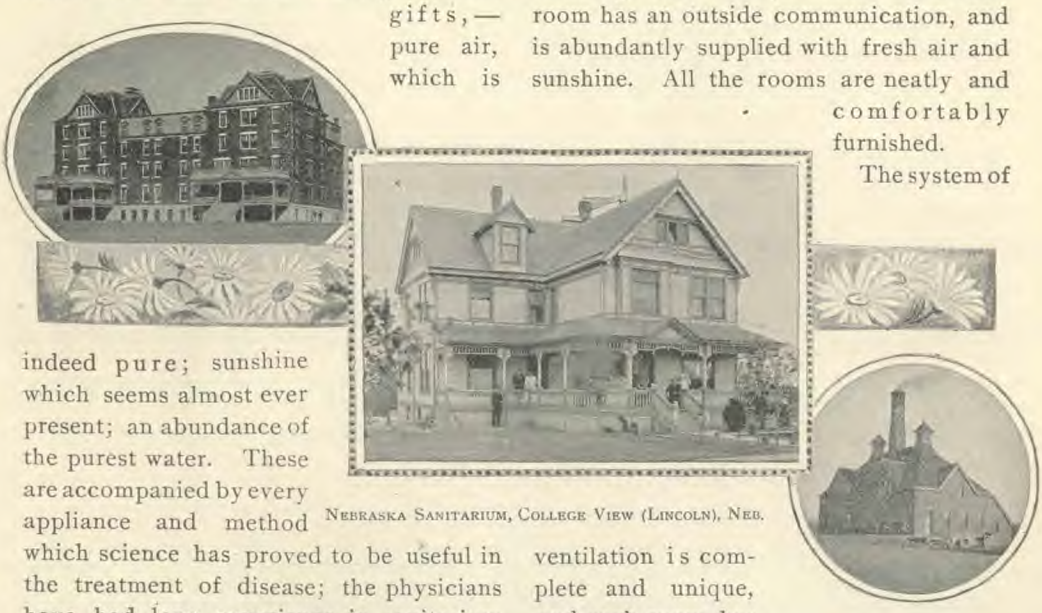
COLORADO SANITARIUM, BOULDER, COLO.

One of these is located in the beautiful and romantic city of Guadalajara, Mexico,— a city which has long been famous for its natural resources, its incomparable climate, its pottery and other manufactures. The Sanitarium is a large, square building, purposely made only two stories high, so that the sunlight and the pure air may have free access to every part of it, flooding its ample center court, its wide corridors, and its comfortable, well-ventilated rooms. Guadalajara has the finest climate in the world. The days are warm and sunny all winter. There is no ice, no snow, no frost. In this garden spot, five thousand feet above the sea-level, are found the most delicious fruits, beautiful scenery, an interesting people.

The Guadalajara Sanitarium provides a comfortable and elegant resort with all the requisites of modern hygienic science for the accommodation of persons in delicate health, or who suffer from chronic diseases difficult to treat at their own homes. In addition to all the rational curative agents offered by modern medical science, special methods are used in the way of diet and prepared foods, varied and careful applications of hot and cold water, of heat, of electricity, of sunlight and electric light, of Swedish movements, massage, and scientifically combined gymnastic exercises.

This climate and this Sanitarium are especially commended to persons suffering from Bright's disease, diabetes, dyspepsia, chronic bronchial and other pulmonary affections. It is a beautiful spot for invalids of all classes.

Another large and flourishing branch of the Battle Creek Sanitarium is located at Boulder, Colo. Here the health-seeker will find nature offering her best gifts,—pure air, which is indeed pure; sunshine which seems almost ever present; an abundance of the purest water. These are accompanied by every appliance and method which science has proved to be useful in the treatment of disease; the physicians have had long experience in sanitarium medical work; the trained nurses are conscientious and attentive even to anticipating the wants of those under their care; the surroundings are cheerful and pleasant, and the daily life of the patient carefully regulated.



Nebraska Sanitarium, College View (Lincoln), Neb.

Mount View Sanitarium, Spokane, Wash.

The Colorado Sanitarium was constructed with special reference to health and comfort. The main building is one hundred and ten feet in length by sixty-six feet in width, with a large wing in the rear.

The corridors of the several buildings are large and sunny. Each individual room has an outside communication, and is abundantly supplied with fresh air and sunshine. All the rooms are neatly and comfortably furnished.

The system of ventilation is complete and unique, and each room has its own independent air-shaft.

The buildings, four in number, are substantially built of brick, and trimmed with the renowned Fort Collins red stone; they are heated by steam, lighted by electricity, supplied with hydraulic elevators and electric call-bells.

One of the unique and attractive features of the place is the location of the kitchen and dining-room, on the top floor of the main building. Surrounding the dining-room and the sun-parlor adjacent, are large windows, which command a magnificent panoramic view of mountains, buttes, cañons, streams, lakes, craggy peaks, gorgeous sunsets, and charming vistas stretching off a distance of thirty or forty miles in some directions. The city of Denver is just visible toward the east, and a dozen or more lesser cities are more clearly seen near by. Few if any spots can be found which present more varied or interesting scenic attractions.

PORTLAND SANITARIUM, PORTLAND, ORE.

In addition to the natural advantages of the location, which are of themselves sufficient to recommend the place to the health-seeker, there is every requisite of a well-equipped and well-regulated sanitarium. The methods of treatment are such as have been thoroughly tried, and have proved their efficiency in thousands of cases of chronic disorders which have been successfully treated in the other institutions established by the same general management.

ST. HELENA SANITARIUM, ST. HELENA, CAL.

The Colorado Sanitarium is excellently suited to the treatment of chronic bronchial, pulmonary, and malarial infections, dyspepsia, Bright's disease, diabetes, and all forms of chronic ailments, as well as surgical cases.

The climate needs no eulogy. Winter brings a cold snap for a few days now and then, but the rest of the time the weather is delightfully mild and sunny. The patients generally go picnicking Christmas and New Year's.

The Nebraska Sanitarium, at College View, Neb., is beautifully situated just out of Lincoln, being reached most conveniently by trolley. from that city. This institution has the advantages of a dry climate and a moderate elevation — 1,500 feet. It is especially beneficial to pulmonary invalids whose diminished lung capacity forbids a higher altitude.

The buildings are provided with modern improvements and perfect sewerage; they are lighted by electricity, heated by steam, and well ventilated. The treatment-rooms are handsomely fitted up with facilities for giving baths of every description, electricity in all forms, massage, and manual Swedish movements. The institution is under the direction of skillful physicians assisted by trained nurses of both sexes. Especial attention is given to the treatment of diseases of the stomach and digestive system, diseases of the eye, ear, nose, throat, and lungs, and women's diseases. The many who need protection from the blizzards and rough winters of Nebraska, Kansas, and western Iowa, and can not go a great

NEW ENGLAND SANITARIUM, SOUTH LANCASTER, MASS.

distance from home, may find a comfortable refuge here.

A branch Sanitarium has recently been established at Spokane, Wash., where is offered a splendid winter climate,— plenty of tonic cold weather, bracing air, and sunshine,— a climate well adapted even to feeble invalids, who may be properly cared for at this institution. The only precaution necessary is to stay indoors upon stormy days.

BATTLE CREEK SANITARIUM, BATTLE CREEK, MICH.

The Portland Sanitarium, at Portland, Ore., is attractively described in the Publisher's Department of this number. As everybody knows, Portland has the advantage of being on the sea-level, where it is kept warm by the Pacific coast. Although rain and snow have their season in Portland, yet there is no severe weather, and Oregonians think they have an ideal climate.

This institution is especially adapted to the treatment of nervous invalids. It affords all the facilities of a modern health resort — the various resources of hydrotherapy, electricity, Swedish movements, gymnastics, medicated inhalations, pneumatic treatments, massage, and diet.

The St. Helena Sanitarium is a splendid institution, ranking next to Battle Creek in age and size. It is so equipped as to make it the best and most complete scientific medical and surgical institution of its class in California, a State which has justly attracted to itself more people in search of health than any other State in the Union. The building is high up on the hillside in the beautiful Napa Valley, among lovely mountain scenes, where a pure atmosphere is assured by the elevation and by natural groves. The climate

CHICAGO BRANCH SANITARIUM, CHICAGO, ILL.

is balmy, dry, and free from malaria. The soil, which overlies red sandstone and porous rock, is very fertile and easily drained. Abundant sunshine, and rain in

INSTITUT SANITAIRE, BASLE, SWITZERLAND.

its season, contribute to make the sanitary conditions perfect at nature's own expense.

There is no zero weather, no snow, and the frosts are slight. Flowers bloom out of doors all winter. Pure water is obtained in abundance from crystal springs, just at the rear of the main building. A perfect sanitary sewerage system conducts all refuse from the place.

The grounds belonging to the Sanitarium comprise about one hundred acres of land, for the most part heavily wooded. A small portion is covered with fruit trees and vineyards, while the few acres immediately surrounding the buildings are laid out in extensive gardens, terraces, well-kept lawns and walks, ornamented with trees, palms, and flowering and foliage plants, which add greatly to the beauty of the place. Above the garden, in the shade of the grove, is located the amusement ground. Here are found the various facilities for out-of-door games and sports, including the croquet grounds, tennis and hand-ball courts.

The same methods of treatment are pursued in this as in the other Sanitariums. The physicians employed are all regular graduates in medicine and follow their profession exclusively. The major portion of the actual work done for the direct alleviation of suffering and treatment of disease is accomplished by the trained nurses. The treatment-rooms have recently been entirely remodeled, and new facilities have been added. Each treatment department is under the supervision of an experienced manager, who has under him trained nurses, and thus all treatments are given in a most thorough and scientific manner.

The successful surgical treatment of hundreds of cases is found upon the records of the institution.

Among the cases successfully treated, chronic disorders of the nervous system are most prominent. Functional derangements, such as nervous prostration, neurasthenia, and nerve exhaustion, together with the milder forms of organic disturbance of the spine, brain, and peripheral nerves, have been treated with the best of results. All the life of the Sanitarium is adapted to the building up and reconstruction of the nervous system.

SKODSBORG SANITARIUM, SKODSBORG, DENMARK.

A small but flourishing institution, very ably managed, is maintained at Los Angeles, perhaps the most noted and popular Mecca for invalids in America, where the winters are warm and delightful, roses bloom perpetually, and the air is fragrant with orange blossoms.

A branch Sanitarium has recently been organized at Oklahoma. It is not yet prepared to receive a large number of invalids, but already a well-equipped treatment-room is in operation, and several competent physicians, assisted by well-trained nurses, are laying the foundation for a fine establishment which will be ready for large business next year.

HONOLULU SANITARIUM, HONOLULU, H. I.

Another new branch, nicely equipped and just getting into running order, is located at Des Moines, Iowa. This institution provides an excellent dietary, good facilities for treatment, and furnishes a splendid winter home for invalids who need protection during the winter months, but can not go far away from home.

The South Lancaster Sanitarium, located near Boston, Mass., affords a safe haven for feeble sufferers from chronic disease who lack the courage or the means required for a long journey to some more favored clime. It is an ideal rural retreat. The drinking water is obtained from a series of springs in neighboring hills, and is of remarkable purity and coolness.

The air is pure and invigorating, the nights are cool and refreshing. Altogether, it is a place peculiarly adapted by nature and art to soothe tired nerves and impart new life and vigor to weary mortals.

The Sanitarium occupies an elevated site, and from its cupola the view stretches away for miles over a vast expanse of diversified scenery.

The building is a handsome modern structure, commodious, cheerful, and supplied with all the necessary facilities for the application of scientific hydrotherapy, electricity in various forms, electric-light baths, massage, and manual Swedish movements by thoroughly trained manipulators, Swedish and other forms of gymnastics, corrective exercises, and gymnastics with special reference to particular diseases, such as indigestion, imperfectly developed lungs, spinal curvatures, pelvic disorders in women, and other maladies which result from a sedentary life or wrong habits of dress.

NEW SOUTH WALES SANITARIUM, SUMMER HILL, N. S. W., AUSTRALIA.

The South Lancaster Sanitarium is well equipped for winter business. Last winter its guests enjoyed greatly the delightful sleighing parties among the varied scenes of the Berkshire Hills.

CLAREMONT SANITARIUM, CAPE TOWN, SOUTH AFRICA.

The Battle Creek Sanitarium, more fully described elsewhere in this number, is everywhere recognized as headquarters for invalids, especially those who have sought a suitable retreat in vain, and the faculty claim better success in the treatment of many classes of disease during the winter months than in other seasons.

The Chicago Branch Sanitarium is thoroughly equipped to come to the rescue of chronic invalids among the millions who dwell about the foot of the Great Lakes, and affords opportunity for securing most efficient medical attention under the care of skilled physicians and nurses.

Travelers abroad may now find branches of the Battle Creek Sanitarium in nearly every part of the civilized world. Its methods and principles are being carried out in many different countries.

The Skodsborg Sanitarium is a most delightful summer resort, and affords also a snug retreat during the long, cold Scandinavian winter. It has most excellent facilities for hygienic care and rational treatment.

European travelers will find the Institut Sanitaire, Basle, Switzerland, a comfortable, well-conducted institution where Americans will feel perfectly at home under the care of American physicians and American trained nurses.

In Germany a splendid little institution has recently been erected at Friedensau.

Travelers in the far East may find Battle Creek Sanitarium representatives with good facilities for the care of invalids at Calcutta, India.

In the Hawaiian Islands, the Honolulu Sanitarium is doing a magnificent work, ministering to the medical needs of the stream of travelers passing through that city, together with the local residents, who have become acquainted with the benefits to be derived from the ministrations of its skilled medical staff.

At Sydney, N. S. W., a splendid Sanitarium work is being conducted in hired buildings. These will soon be replaced by structures which are already begun. The dry, warm atmosphere of Sydney is highly favorable to the treatment of certain classes of chronic ailments which

SAMOA SANITARIUM, APIA, SAMOA.

are not readily cured in an unfavorable environment. Branches of this institution have already been established at Cooranbong, Brisbane, Melbourne, Christchurch, Summer Hill, Gower Creek.

At Cape Town, South Africa, the Battle Creek Sanitarium is represented by a similar institution erected by the generosity of members of the Wessels family.

So the foreign traveler may find at the very ends of the earth, institutions holding aloft the light of reform which has for so many years been shining out from the Battle Creek Sanitarium,—institutions which have been the means of blessing and healing many thousands.

In America, small establishments where treatment may be received are located at the following places: Colorado Springs, Colo.; Toledo and Cleveland, Ohio; Detroit, Mich.; Brooklyn, N. Y.; Moline, Ill.; Madison, Wis.; Nashville, Tenn.; Jackson, Mich.; San Francisco, Cal.; Wheeling, W. Va.

A Sanitarium physician and nurses may also be found at Apia, Samoa, carrying on an unostentatious but efficient and exceedingly successful work.

At Christchurch, New Zealand, a splendid little institution has recently been opened, with physicians and nurses from the Battle Creek Sanitarium. A successful work is in progress.

Good Living and Good Health.

Bishop Potter, says the *Home Journal*, believes in horseback riding, and rides whenever the weather permits. In an address before the students of a theological seminary he said: "There was no gymnasium in the seminary I attended, but during the first two years of my ministry I kept a saddle horse, as I do to-day, and I found that the beneficial effects of keeping a horse were not lessened by the fact that I groomed the animal every day myself. My salary at that time was six hundred dollars a year." Bishop Potter thinks that there is some connection between good living and good health, and told the students this story to illustrate the idea: "A young man was once complaining that he had trouble in writing his sermons. I asked him what he wrote on, and he said: 'That is just the trouble. I board with the senior warden's wife, and you can't write a strong defense of the Christian religion on three doughnuts and a cup of weak tea.'"

Effects of Alcohol on the Mind.

Health gives an interesting abstract from a lecture by Professor Forel, of Switzerland, showing the views upon an important subject of one of the foremost teachers of physiology and psychology. According to Professor Forel, "destruction of the mind is much worse than impairment of the organs of the body. Alcohol affects the mind more than any other organ. All the alcoholic beverages cause more or less disturbance of the mind and of the nervous system, much the same as the blood permeates every organ of the body. That the manifestations of the mind become impaired can be proved by the symptoms of intoxication, and by the effect upon the ethical, the esthetic ideas of the good and beautiful. This injury is not necessarily limited to the regular drunkard, but is common in the moderate drinker, and is seen in this way: He becomes less truthful than he used to be; his interest in the family grows lukewarm; he is careless about the future of the family and the children, and already, at a comparatively young age, shows symptoms of senility; he becomes more irritable; he may often be jealous, always thinks he is right, fights for his rights, and exhibits many other signs of failure."

PUBLISHERS' DEPARTMENT.

IMPRESSIONS OF THREE SANITARIUMS.

THE writer has no business or professional interest in any sanitarium. She has, however, a tremendous interest in health, and a genuine affection for at least one place where she knows it is to be gained. Consequently, being in Portland, Ore., and knowing there was a branch there of the Battle Creek Sanitarium, she looked it up.

Never shall I forget the quaint and romantic impression I carried away from this institution. The building stands back in a spacious, old-fashioned yard surrounded by a fence that is literally covered with English ivy — that beautiful vine that in Eastern States is cherished in pots. The Sanitarium building was originally a very handsome private dwelling and barn. The barn has been connected with the house by a mysterious-looking corridor, and is used for the bath- and treatment-rooms. You would never dream that it had once been a barn.

The metamorphosis of the house itself is fascinating. A cozy grate-fire burns in the former reception-room, and here a group of patients may always be found, sitting about in easy chairs, gazing into the fire, or exchanging reminiscences. The elegant drawing-room is now the gymnasium, and the former conservatories have been turned into medical offices. The present surgical ward on the top floor was once a gay ballroom,— and so it goes all over the building. You are constantly reminded of the grim changes and contrasts of life. You may climb a ladder from the laboratory — a part of the old ballroom — and stand on top of the building, whence in clear weather you may discern the snow-capped mountains many miles in the distance.

This sketch does not occupy itself with details, which may be found elsewhere, but is written to record a greater yet impression,— that the same gentle, wholesome, spiritual atmosphere pervades this place that is so remarkable at Battle Creek. The physicians, the nurses, the helpers, one and all, seem to have but one thought,— to do good and to be good. If I were sick on the Pacific Coast, I should go or be carried straight to the Portland Sanitarium.

The Boulder Sanitarium, at Boulder, Colo., has quite as unique, though a different charm. The building is more conventional, as it must necessarily be to accommodate the large number of patients who seek their lost health through its rational agencies; for at this institution are found not only the wonderful climate, the invigorating sunshine, the balmy air, that have made all Colorado famous as a health resort, but also the sensible and scientific diet, the famous hydrotherapeutic treatments, and all the other rational measures to promote health and to combat disease that distinguish the parent Sanitarium at Battle Creek.

But the impressionist, besides all these, finds his own particular interest at Boulder. As he looks out of the window,—any window in any direction,—his eye is delighted with the wonderful picture of divine handiwork. Varied wooded hills, a glimpse of a cañon, peaceful farms, the shaded village, a huge boulder that adds the artistic touch of ruggedness, and the babbling brook that begins in a spring up the mountain side, but runs sparkling and singing down across the lawn and into the pond prepared for it in the lower grounds,— all these would inspire a poetic mood in the most dyspeptic.

But people get rid of dyspepsia in other ways, also, at the Boulder Sanitarium. The dining-room and kitchen are on the top floor of the building, and nothing could be daintier than the every-day menus served at this queen of Sanitarium tables. The Boulder Sanitarium can vie with the home institution in the manufacture of many of the foods, especially the crackers, sticks, and bread, which are delicious.

We did not see a speck of dust during our visit there, and we went all over the building and examined it fastidiously. Certainly the priestess of cleanliness presides at this institution. No one need be afraid of catching consumption or any other disease while he stays at the Boulder Sanitarium. If there is any such thing for him, he can not fail to leave his diseases behind after a reasonable sojourn in this health-inspiring center.

Our experience here and at Portland was so satisfactory that we decided not to pass by Lincoln. Hence a few days later found us whizzing out by trolley to College View, Neb. This Sanitarium has a beautiful location on one of those phenomena in this part of Nebraska, a hill. To my mind there is not a finer climate in the world, and if I could live in the sunshine and wind of Nebraska, I would not ask for a sanitarium. But if I were not posted as to health foods, I should wish to take a preliminary course at College View. This Sanitarium has a fine corps of workers, a large number of patients, and is doing untold good.

THE publishers have received a copy of the circular of the St. Helena Sanitarium. It is a veritable gem of its kind. Every other page is a half-tone reproduction of views of the building and glimpses of the beautiful scenery for which St. Helena and its vicinity are so deservedly famous. St. Helena is one of the oldest sanitariums in the United States. It is located at the head of the Napa Valley, one of the most beautiful spots in a State famous for its lovely scenery.

The institution is manned by a corps of able physicians and nurses who are familiar with the rational and scientific methods of dealing with sick people. It is equipped with the most admirable facilities, and its work is carried on in harmony with the same principles which have rendered world-famous the Battle Creek Sanitarium and its numerous branches, of which the St. Helena is one. Invalids visiting the Pacific Coast can not afford to miss a visit to the St. Helena Sanitarium. The new circular issued by this institution is a credit to the superintendent, Dr. A. J. Sanderson, to the artist, the printers, and to all who have contributed to it.

"MY MOTHER'S LIFE" AND GOOD HEALTH.

A SPLENDID OFFER.

READERS of GOOD HEALTH may obtain one copy of this remarkable new book and one year's subscription to GOOD HEALTH for the price of the book alone, $1.50. By availing yourself of this offer before the first of February, you will get GOOD HEALTH FREE for one year.

You know what GOOD HEALTH is. Read what some noted people say about "MY MOTHER'S LIFE:"—

"My Mother's Life" is more than a tender tribute from a devoted daughter to the memory of a loving mother. It is the record of as brave a life-struggle as was ever waged by a human being; it is the story of as white and noble a soul as ever helped to purify earth. As well as I had known and as truly as I had loved Mrs. S. M. I. Henry, this book was a revelation to me of the forces which had gone to the making of that strong, quiet, well-poised life and character. Chapters of the book read like a new edition brought down to modern times of the Acts of the Apostles. I have read no story of the early Crusade days so thrillingly interesting as is this. It is a book which should be placed in every home, and which must inevitably make motherhood seem a more sacred thing, which must encourage faith in God, and devotion to duty and to the highest ideals of life and character. KATHARINE LENTE STEVENSON,
President of the W. C. T. U. of Massachusetts.

The story charms me. The book should go into every home. BISHOP JOHN H. VINCENT.

It ought to be placed in the hands of every young woman who knows the English language. DR. J. H. KELLOGG.

Send all orders to the Good Health Publishing Company, Battle Creek, Mich.

NOW READY.— "A Text-Book of Histology," by Dr. A. A. Bohm and Dr. M. von Davidoff, of Munich. Translated by G. Carl Huber, M. D., University of Michigan. The volume contains over 500 pages, with 350 beautiful original illustrations. Price, $3.50 net. This work is subject to the usual discount allowed on net publications.

W. B. Saunders & Co., publishers, 925 Walnut St., Philadelphia.

WILLIAM PENN ALCOTT, nephew of Bronson Alcott, one of the chief promoters of the Brook Farm experiment, and one who knows perhaps more of the inside facts in relation to this interesting social experiment than any other living person, will, within the next few months, contribute to GOOD HEALTH several articles which will present to our readers a fund of information never yet placed before the public. Mr. Alcott contributes to this number a very interesting and instructive article, entitled "Lessons from the Gorilla."

ANNUAL REPORT OF STATE BOARD OF HEALTH, 1898, TO BE HAD.

THE usual distribution of the copies of the 1898 Annual Report of the Secretary of the State Board of Health has been made; and there are copies of that Report which might be sent to those who are "interested in or laboring for the promotion of the public health," provided a request is made to the Secretary of the State Board at Lansing for a copy, and sixteen cents in stamps are sent, with which to prepay the postage.

THE CENSUS OF 1900.

A BOOKLET giving the population of all the cities of the United States of 25,000 and over, according to the census of 1900, has just been issued by the passenger department of the Chicago, Milwaukee & St. Paul Ry., and a copy of it may be obtained by sending your address, with two-cent stamp to pay postage, to the General Passenger Agent of the Chicago, Milwaukee & St. Paul Ry., Chicago, Ill.

"WHAT'S THE TIME?"

A BOOKLET with this title, just published by the Chicago, Milwaukee & St. Paul Ry., should not only be in the hands of every traveler, but should have a place on the desk of every banker, merchant, or other business man:

The four "Time Standards" which govern our entire time system and which are more or less familiar to most of the traveling public, but by many others little understood, are so fully explained and illustrated by a series of charts, diagrams, and tables that anyone who chooses can become conversant with the subject in question. There are also some twenty-four tables by which, almost at a glance, the time at any place being given, the hour and day can be ascertained in all the principal cities of the world.

A copy of this pamphlet may be had on application to Geo. H. Heafford, general passenger agent, Chicago, inclosing two-cent stamp to pay postage.

A HEALTH RESORT.

EXCELSIOR SPRINGS, Mo., on the Kansas City line of the Chicago, Milwaukee and St. Paul Railway, has become one of the leading all-the-year-round health and pleasure resorts in the United States. The use of its waters has benefited a great many sufferers.

The Chicago, Milwaukee and St. Paul Railway has just issued a finely illustrated booklet, describing the resort and telling of its advantages, which will be sent free on application to Geo. H. Heafford, general passenger agent, Chicago, with two-cent stamp inclosed for postage.

GOING WEST AND NORTHWEST.

THE best line west of Chicago, if you are going to any point in Montana, Idaho, Washington, Oregon, Kansas, Nebraska, Colorado, Wyoming, Utah, Nevada, or California, is the Chicago, Milwaukee and St. Paul Railway. Direct and short lines between Chicago, Sioux City, Omaha, Milwaukee, La Crosse, St. Paul, and Minneapolis. Solid-vestibuled, electric-lighted, steam-heated trains; free reclining-chair cars; compartment and sleeping cars; the finest dining cars in the world. If you contemplate a trip West or Northwest call on any coupon ticket agent in the United States or write to Harry Mercer, Michigan Pass. Agent, 32 Campus Martius, Detroit, Mich., saying where you are going, about when you will start, how many there will be in the party, and full information, with maps, time-tables, and rates of fare will be promptly furnished free. Be sure to ask for your tickets via C., M. & St. P. Ry.

THE COLORADO SANITARIUM, BOULDER, COLO.

THE COLORADO SANITARIUM.

LOCATION.

THE Colorado Sanitarium is located at Boulder, a beautiful city of 8,000 inhabitants twenty-nine miles northwest of the city of Denver, on the Colorado and Southern road. On account of its close proximity to the foot-hills, its variety of scenery, its location at the entrance of three of Colorado's finest cañons, and its abundant supply of the purest water from the perpetually snow-clad range, it offers advantages for health and recreation not to be found elsewhere in the State.

The city of Boulder was selected by the founders of the Colorado Sanitarium on account of its superior climatic and other advantages as a health resort. The city is one of the oldest in the State of Colorado, and well deserves the name which has been given to it by so many tourists and travelers, as "Boulder the Beautiful." It has also been termed the "Athens of the West," on account of its superior educational advantages. Among other attractions, the University of Colorado and the Texas-Colorado Chautauqua are located here.

PART OF SANITARIUM FAMILY ON THE VERANDA AFTER DINNER.

THE COLORADO CLIMATE.

On account of its climatic conditions, Colorado has gained for itself a world-wide reputation as a health resort. The curative influence of this unique climate is evidenced by a large number of residents here who, though once invalids, are now enjoying renewed health, prosperity, and happiness.

In summer the days are seldom hot. While those who live in the Middle, Eastern, and Southern States are suffering from extreme heat through the summer months, the guests and patients of the Colorado Sanitarium are enjoying the cool breezes which are brought to the institution from the snow-clad mountains a few miles away.

The nights particularly are always cool and comfortable, and the breezes are always in motion, allowing one to sleep and to rest comfortably without any disturbance from heat. An editorial writer in the London *Lancet*, says: "I am glad that my autumn holiday has enabled me to visit Colorado, and I am convinced that in its pure, dry air many patients who linger at home, only to die, might there get better, and work, and do well.

feature of the Colorado climate is one of inestimable value in that it allows the invalid to live an out-of-door life the greater part of the time during the winter months. Many invalids make the serious mistake during the fall and winter months of going to a warm climate. Heat and moisture are debilitating, and are certainly not to be sought for by those with an impaired digestive system, or malaria. The winter climate at the Colorado Sanitarium is an

A Group of Nurses.

WINTER CLIMATE.

A committee appointed by the American Climatological Association for the purpose of getting reports as to climatic advantages in the different parts of Colorado, has reported Boulder as one of the most favorable points in the State for invalids and others seeking health.

The advantages of the winter climate at the Colorado Sanitarium must be experienced in order to be appreciated. In fall and winter there is an abundance of sunshine, the air is pure, sunny, cool, and invigorating, and it is certainly an ideal climate for any one seeking health. This ideal one for at least the majority of people in delicate health, and particularly for those with faulty digestion, malaria, anemia, and all conditions in which the nutrition of the individual is imperfect.

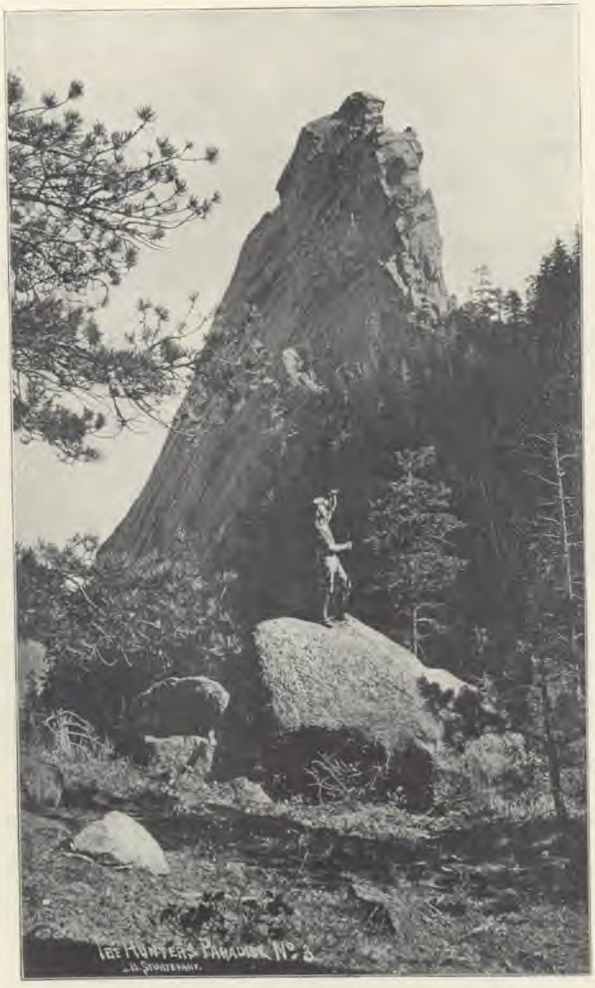
BUILDINGS.

The Colorado Sanitarium has been constructed with special reference to health and comfort. There are five buildings in all. All of these are of brick, heated with steam, lighted by electricity, supplied with hydraulic elevators, electric call-bells, etc., and have all the conveniences of a modern, well-conducted hotel. Each patient has his own private room, and each room

has an outside communication, and is abundantly supplied with fresh air and sunlight. All the rooms are neatly and comfortably furnished.

DISEASES THAT ARE SPECIALLY TREATED AT THE COLORADO SANITARIUM.

The Colorado Sanitarium is open to the reception of all who are suffering from any form of chronic disorder. Offensive and incurable patients, however, are not admitted. Among other disorders the following may be mentioned as being most successfully treated at the Colorado Sanitarium: Diseases of the nose, throat, and lungs; all forms of indigestion and dyspepsia; malaria; anemia; various forms of paralysis; rheumatism; locomotor ataxia; neuralgia; stomach and liver disorders; diseases of the kidneys; diseases peculiar to women; nervous exhaustion.



SCENE NEAR THE SANITARIUM.

MEDICAL ADVANTAGES.

The physicians of the institution are all regular graduates of the best medical schools, and have also had the advantages of postgraduate training, and a broad experience in the treatment of disease according to sanitarium methods. The medical work of the institution is conducted in harmony with the ethics of the profession, and on scientific lines and principles.

METHODS OF TREATMENT.

In addition to the natural advantages of the location, which are themselves sufficient to recommend the place to the health-seeker, there is every requisite of a well-equipped and well-regulated sanitarium. The methods of treatment employed in the institution are such as have been thoroughly tried, and have proved their efficiency in thousands of cases of chronic disorders which have been successfully treated in the other institutions established by the same general management as the Colorado Sanitarium.

Most of those who visit the sanitarium have given ordinary medical means a thorough trial; but they are still sick.

The whole life of an individual suffering with chronic ailments needs to be care-

fully regulated. His habits must be corrected, and such methods brought to bear upon his case as will rectify the morbid processes of his body.

In the Colorado Sanitarium hydrotherapy in its most modern and scientific methods is employed. Electricity in all its forms is used. Massage, Swedish movements, and manual manipulations of various kinds are utilized. The patient's diet, his exercise, his hours for rest; in fact, his whole life is under the careful control of his attending physician.

THE PARLOR.

DIET.

In the treatment of all forms of chronic disorders, careful attention to the nutrition of the patient is of fundamental importance. Without doubt many cases of pulmonary consumption have their origin in, and after the disease is established are aggravated by, disorders of digestion.

The matter of diet and nourishment in these cases, therefore, deserves careful attention. The preparation of the food, and the regulation of the diet in each case, form an important rôle in the getting-well program at the Colorado Sanitarium. The chemical processes of the stomach are carefully studied, after first giving the patient a "test meal;" and from the results of this analysis, together with the information gained by a physical examination of the digestive and other organs, the particular articles of food which are best adapted to any case are prescribed.

PHYSICAL TRAINING.

The institution is provided with a commodious gymnasium, where, under a trained director, each individual is put through a course of training adapted to his needs and condition.

After carefully testing the strength of each of the different groups of muscles in the body with a mercurial dynamometer, especially arranged for this purpose, the amount and the kind of exercise are indicated by the physician for each case.

The proper training and developing of the muscles of the chest are measures of

THE COLORADO SANITARIUM GROUNDS AND LAKE.

the utmost importance in cases of disease of the lungs, and, in the Colorado Sanitarium, constitute an essential part of the treatment of all pulmonary troubles. In addition to exercise in the gymnasium, carriage driving, horseback riding, out-of-door walks, and mountain climbing enter into the daily program of most of the guests of the institution.

THE GYMNASIUM.

The Sanitarium being situated at the very foot of the Rockies, the mountains are at its doors. Footpaths have been graded along the sides of the mountains of the Sanitarium grounds, for the use of the patients in taking their daily exercise.

THE DINING-ROOM.

LABORATORY FACILITIES.

Connected with the Sanitarium is a laboratory, where bacteriological, microscopical, and chemical work is carried on according to the most approved methods, and examinations are made of the sputum, blood, and urine of every case that applies for treatment, as an important aid in diagnosis.

SOCIAL LIFE.

The social life at the Sanitarium is wholesome and healthful. All connected with the institution as employees are believed to be Christian men and women, and are conscientious in their efforts to relieve the suffering. An atmosphere of good cheer and contentment pervades the institution, and all are made to feel at home.

For further information and circular address —

W. H. RILEY, Superintendent; or COLORADO SANITARIUM, BOULDER, COLORADO.

Directory

. . . OF . . .

Sanitariums.

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.

BATTLE CREEK SANITARIUM, Battle Creek, Mich.
J. H. KELLOGG, M. D., SUPERINTENDENT.

COLORADO SANITARIUM, Boulder, Colo.
W. H. RILEY, M. D., SUPERINTENDENT.

ST. HELENA SANITARIUM, or RURAL HEALTH RETREAT, St. Helena, Cal.
A. J. SANDERSON, M. D., SUPERINTENDENT.

NEBRASKA SANITARIUM, College View (Lincoln), Neb.
A. N. LOPER, M. D., SUPERINTENDENT.

PORTLAND SANITARIUM, 1st and Montgomery Sts., Portland, Ore.
W. R. SIMMONS, M. D., SUPERINTENDENT.

NEW ENGLAND SANITARIUM, South Lancaster, Mass.
C. C. NICOLA, M. D., SUPERINTENDENT.

CHICAGO BRANCH SANITARIUM, 28 33d Place, Chicago, Ill.

SANITARIUM TREATMENT ROOMS, 230 Euclid Avenue, Cleveland, Ohio.
A. W. HERR, M. D., SUPERINTENDENT.

HONOLULU SANITARIUM, Hawaiian Islands.

MEDICAL AND SURGICAL SANITARIUM, Apartado 138, Guadalajara, State of Jalisco, Mexico.
D. T. JONES, SUPERINTENDENT.

INSTITUT SANITAIRE, Basle, Switzerland.

CLAREMONT SANITARIUM, Cape Town, South Africa.

SKODSBORG SANITARIUM, Skodsborg, Denmark.

FREDRICKSHAVN SANITARIUM, Fredrickshavn, Denmark.

SOUTH SEA ISLANDS SANITARIUM, Apia, Samoa.

NEW SOUTH WALES MEDICAL AND SURGICAL SANITARIUM, "Meaford," Gower St., Summer Hill, N. S. W., Australia.

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GOOD HEALTH PUB. CO.,
BATTLE CREEK, MICH.

GUADALAJARA SANITARIUM.

THIS elegant and commodious modern building stands on its own extensive grounds, surrounded by lovely semi-tropical gardens. It is situated in the highest part of the city of Guadalajara, the western capital of Mexico. Guadalajara has a population of 100,000, and is second only to the city of Mexico as a place of interest. Its elevation is 5,000 feet above sea level. Its climate is perfect all the year round, the temperature ranging only from 65° to 85° F. in the daytime.

ROUND-TRIP RATES.

From Washington, $106.00; from Chicago, $85.10; from St. Louis, $75.50; from Kansas City, $67.60; from New Orleans, $59.25; from San Francisco (six months), $110.00; from Los Angeles (six months), $100.00.

The Sanitarium is fitted up with all modern appliances for rational curative treatment. First-class resident physicians and trained nurses from the Battle Creek Sanitarium, excellent service, home comforts, moderate terms. Apply for information to—

GUADALAJARA SANITARIUM,
GUADALAJARA, MEXICO,
or to the Battle Creek Sanitarium, Battle Creek, Mich.

GUEST—"Waiter, I am neither a dissecting-room nor a cemetery. Send for the undertaker and the city scavenger to remove these corpses. Such a bill of fare is fit only for a turkey-buzzard or a woodchuck. Your cook must have been a cannibal chef.

WAITER—"On the contrary, sir, our cook has just come from the Waldorf Astoria."

GUEST—"A distinction without a difference."