JOHN HARVEY KELLOGG (1852-1943)

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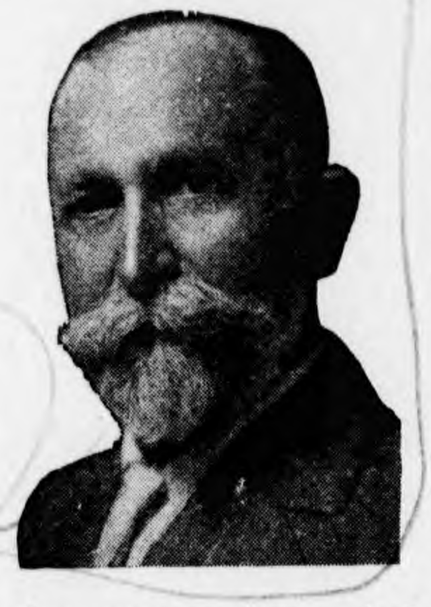
KELLOGG, JOHN HARVEY
THEORY AND WRITINGS

WHAT'S YOUR SAFETY MARGIN?

By J. H. KELLOGG, M.D.
Supt. Battle Creek Sanitarium



WHEN an engineer builds a bridge he puts in a safety margin. In his estimates, he makes his beams and cables strong enough to carry the expected load and then multiplies this strength by ten to provide for emergencies and for wear.

The Divine Engineer, the Architect who planned and created your body—the house in which you live—put into every organ and structure a margin of safety to provide for strain and hardships, for encounters with disease, privations and accidents, and to provide for the wear and tear of work, and the waste of passing years and thus to make long life and old age possible.

Without a wide margin of safety in lung power, more than twenty to one, the first few breaths of foul or mountain air would snuff out the vital flame.

Without a great margin of heart power, the first attack of fever, or first sprint to catch a train would cause a fatal collapse.

The stomach, liver, kidneys, brain, every vital organ is endowed with ten to twenty or more times the power needed for ordinary or current use.

It is this margin of safety, this surplus of power, that makes a man a winner in an Olympic contest.

It is the foundation of endurance, of high efficiency, of supreme physical fitness, of great longevity. Aviation tests exclude men with small margins. Any man who becomes eminent in athletic sports or physical contests of any sort, owes his success to the fact that he is by inheritance and training endowed with an unusually large safety margin.

The same is true of the man who can drink and smoke and otherwise abuse his body without apparent injury. He has a big safety margin which was intended to serve as his backing in arduous work for the promoting of splendid enterprises in the business, the religious and the civic life of the world.

ONE can invest his margin, his vital surplus, in useful ways that will add to the world's spiritual or material wealth, or in harmful indulgences, the gratification of unnatural and perverted appetites. But don't imagine for a moment that these indulgences do no harm because you feel no injury. They are eating up your margin just as a spendthrift's extravagances eat up his bank account. You won't realize the truth until it is too late, until physical bankruptcy crashes down your vital capital and is gone forever.

One's margin of safety is an unknown quantity. It comes by inheritance from one's parents. It may be large or small. By right living and proper physical training in youth, it may be improved upon. When once gone, it is gone forever. Nature will not surrender until her last resource has been brought into use.

So when a young man says, "Smoking doesn't hurt me, I wouldn't smoke if it did, I'll stop when it does," he is blindly waiting for the balance of his safety margin to be consumed. When the doctor tells him, "You have tobacco heart, you must stop smoking," the damage has not just begun, it is nearly finished. His safety margin is so small that any slight emergency will likely carry him off.

YOUR safety margin is the most precious thing you possess.

Take good care of your body machine; you can easily double your efficiency if you do. It pays to be good—to oneself.

If you want to conserve it, here are a few practical hints that are based upon science and sound experience:

LIVE out-of-doors as much as possible. Sleep on a porch.

Exercise until you sweat every day.

Take a short cold bath in a tub or with a towel every morning.

Sleep eight hours every night. (Napoleon took naps in the daytime, so does Thomas Edison.) If you don't sleep well, take a warm bath at bedtime (95° F. for 15 to 30 minutes).

Keep your chest up at your work and your belly muscles pulled in. Sit and stand as tall as you can.

Keep clean, inside and outside.

Take care of your safety margin.

Don't smoke. Nicotine destroys the heart and lung safety margins.

Chew more and eat less.

A glassful of milk at each meal with an egg now and then will enable you, with advantage, to cut out beefsteaks.

Eat greens every day to enrich the blood. A dish of spinach has more blood food in it than an ordinary beefsteak.

Eat fresh vegetables, fruit and bran every day, better every meal, to insure free and complete elimination of the body wastes. The bowels should move three times a day Constipation is the mother of a host of maladies. Avoid laxatives and mineral waters. Take mineral oil if necessary.

Avoid tea and coffee. They are nerve and heart poisons. No substitute is necessary. Water, fruits, or fruit juices are the proper fluid foods.

HERE ARE 14,000 MEN IN MASS CALISTHENICS

A striking example of Association cooperation on a large scale in Czecho Slovakia. as in Italy, Greece, Bulgaria, Roumania, France, Poland, Asia and Latin America and nearly a score of nations. Note the number of physical directors shown on Page 61 sent out by Associations of the States and Canada

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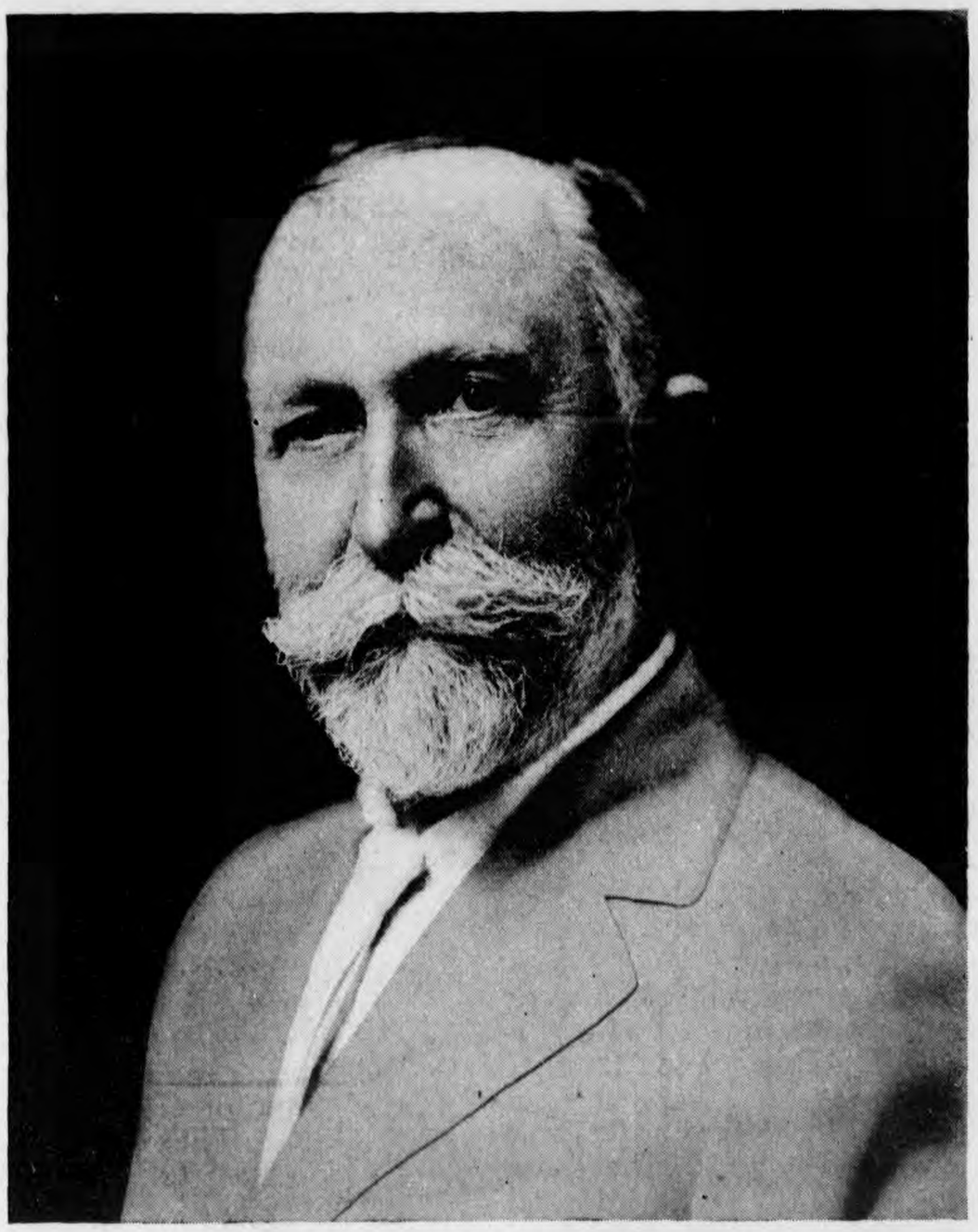
The Food Value of Milk

By DR. J. H. KELLOGG

FOOD is to an animal what the earth is to a plant. It is the soil out of which we grow. What we eat today is walking around and talking tomorrow. The most marvelous of miracles is the transmutation of common foodstuffs into men and women, the transfiguration of bread, potatoes, and beefsteak into human intelligence, grace, beauty, and noble action. We read in holy writ how the wandering Israelites were abundantly fed in the Assyrian desert with manna from the skies and marvel at the providence which saved a million souls from death, forgetting that every harvest is a repetition of the same miracle, that each morsel of food we eat is a gift of heaven conveyed to us by a sunbeam. Food is simply sunshine captured by the chlorophyll of plants and served up to us in tiny bundles called molecules, which, when torn apart in our bodies by the processes of digestion and assimilation, release the captured energy which warms us with heat brought from the sun and shines out in human thought and action.



JOHN HARVEY KELLOGG, M. D.

Member of the Michigan State Board of Health. Dr. Kellogg is superintendent of the Battle Creek Sanitarium, the largest health resort of the kind in the world. Holstein milk is the only milk used on the tables and is procured from the Lakewood Farm. Dr. Kellogg has been prominent in movements for the betterment of the human race and is editor of The Good Health Magazine.

What is food? and what is its relation to the animal economy? are questions of which the wisest of the ancients knew absolutely nothing. It is less than a century since Liebig and Lehmann and their pupils began to unravel the mystery of food. In recent years no subject has received more assiduous attention from scientific men and none has been made the object of more constant or more profound research than the questions of food and food supply. The feeding of animals and men has come to be recognized as the most pressing and vital of all economic problems, a fact well emphasized at the present time by the critical situation in Belgium, Poland, and Germany.

The labors of Voit and Pettenkofer, Rubner, Zuntz, Atwater, Benedict, Chittenden, Mendell, Lusk and Hindhede have demonstrated that there is the closest relation between food supply or food selection and human efficiency. In fact, it has been clearly shown that the quality and quantity of the food intake is just as directly and as closely related to the question of human efficiency as is the quality and the quantity of gasoline to the efficiency of an automobile.

In fact, it has been established as a fundamental principle in human physiology that food is fuel. Life is a combustion process. The human body is a temple in which burns a sacred fire and food is the sacrifice which we bring as an offering to the altar.

The human body is a machine which may be likened to a locomotive—it is a self-controlling, self-supporting, self-repairing machine. As the locomotive rushes along the iron road pulling after it a thousand ton cargo of produce or manufactured wares or human freight sufficient to start a town or stock a political convention, its enormous expenditure of energy is maintained by the burning of coal from the tender which is replenished at every stopping place. The snorting monster at the head of the rushing procession gets hungry and has to have a lunch every few miles along the way. After a run of a hundred miles or so the engine leaves the train and goes into a round house for repairs; an iron bolt has dropped out or a brass nut has been shaken off. Every lost or damaged part of the metal leviathan is replaced, and then it is ready for another century run.

The human body is wonderfully like the locomotive. It pulls or carries loads, it expends energy, it consumes fuel and has to stop at meal stations to coal up, it has to go off duty periodically for repairs. The body needs just what the locomotive needs, fuel to furnish energy and material for repair of the machinery.

Food differs from fuel chiefly in the one particular that in each little packet of food done up by mother nature there is along with the fuel for burning, a tiny bit of material to be used for repair of the machine. In other words, food represents in its composition both the coal and the metal repair materials of the locomotive.

The starch, sugar and fat of food are the coal and the protein or albumen is the metal repair stuff. Here we see at once the reason why starch and sugar and fat are so abundant in our foodstuffs while protein or albumen is in quantity a minor element.

But there are other differences between food and

common fuel which are worthy of mention. The water and the salts are essential to meet the body's needs, especially the various mineral elements, lime, soda, potash and iron. All these we must have—lime for the bones and nerves, soda and potash to neutralize the harmful acid products of combustion processes, and iron for the blood.

All these are found in normal foodstuffs but in greatly varying proportions, so that a pretty large variety of foods must be eaten to make sure that each of the different food principles required for perfect nutrition are supplied in ample quantity.

In recent years science has discovered another and most surprising property of food in which it transcends all other fuel substances as a diamond from the transvaal outshines a lump of coal. Natural food contains vitamines. It has long been known that a rice diet sometimes causes beri-beri, a form of general neuritis; and that a diet of dry cereals and preserved foods, in time, gives rise to scurvy; but the reason was a profound mystery. In very recent years it has been learned that the real cause of beri-beri is the lack of vitamines which are associated with the bran of cereals and so are removed in the process of polishing rice and in the bolting of wheat and other grains.

Vitamines do not enter into the composition of the body as do other food principles, but they are somehow necessary to activate or render active the various subtle elements which are essential to good nutrition.

There are several kinds of vitamines. Some are associated with the bran of cereals, others with the juices of fruits. Some are easily destroyed by heat, while others survive a boiling temperature. The discovery of vitamines must stand as one of the most masterly achievements of modern science even outshining in brilliancy the discovery of radium. It was only by the most persevering efforts and the application of all the refinements of modern chemical technic that the chemist, Funk, was able to capture and identify this most subtle but marvelously potent element of the food. This discovery has cleared up a long category of medical mysteries. We now know not only the cause of beri-beri and scurvy and the simple method of cure by supplying vitamine containing foods, but within a very short time it has been shown that rickets and pellagra are likewise deficiency diseases due to lack of vitamines, and in a recent discussion before the New York Academy of Medicine it was maintained that vast multitudes of people are suffering from disorders of nutrition due to the same cause.

With this brief summary of the nature of foodstuffs and their relation to body needs, let us now turn our attention to the most remarkable of all foods known to man, milk.

Milk differs from every other food substance known in the fact that it is a complete food. If in the case of adults it needs to be supplemented by other food stuffs, it is for the young infant when properly diluted, a perfect food. It contains in excellent proportions, all the elements needed by the growing child. This is not true of any other substance known.

The fuel element is represented in milk by fat and sugar of milk. The fat is of a sort easily utilized by the body.

The sugar of milk is a special product exactly adapted to the needs of the body, far superior to cane sugar and free from the unwholesome properties of the products of the sugar cane. It is found no where else in nature except in the milk of animals. Milk sugar is slowly digested and absorbed. This enables it to reach the lower intestine where it is converted into lactic acid and so prevents the putrefaction to which modern science has traced a great number of the maladies of both infants and adults.

It is due to the presence of lactose, that milk sours while meat putrefies. Nearly 10 years ago I placed in a jar of butter-milk a raw beefsteak to which no antiseptic of any sort had been added. The beefsteak is still intact, thanks to the anti-putrefactive properties of milk sugar and the acid forming bacteria which it feeds. The reason for this anti-putrefactive property of milk was discovered by Kendall of Harvard, who a few years ago demonstrated that in the presence of sugar even highly active putrefactive organisms produce harmless acids instead of noxious toxins and ferments. This is certainly a most beneficent provision of nature whereby the normal food of the young infant is kept in a wholesome state while undergoing the processes of digestion and absorption in the intestine.

In the casein of milk is found material for growth and repair, and in a form favorable for prompt and complete digestion and assimilation. There are also other proteins in milk which serve the same purpose.

Milk is also rich in salts, containing four times as much of these mineral elements as does mother's milk. Milk is particularly rich in lime. A pint of milk contains 16 grains of lime, more than is found in a pint of lime water. Note the contrast in this regard between milk and beefsteak, or flesh food of any sort. Meat supplies only half a grain of lime to the pound, although containing twice as large an amount of solids as does milk. The reason for this is obvious. Milk is a substance provided by nature as an exclusive food for a growing animal, and so must furnish lime for the bones as well as protein for the muscles. Meat represents but a fraction of the original foodstuff. When corn or other food is eaten by an ox, the several elements are separated, each going to form its own tissue, fat to fat, protein to muscle, and lime to the bones. So to get back the whole assortment of food principles fed to an animal, one must eat its entire body, the whole ox or the whole hog, bones and all. This being impossible, kind nature has supplied us in milk with bones, muscles, brains, nerves, every bodily structure in solution, and in attractive form, a most delectable and tempting nutrient unsurpassed by the daintiest products of the culinary art, or any achievement of chemical knowledge and skill.

Another notable quality of milk is its richness in vitamines. In this respect also milk is unique and superior to all other foodstuffs. Of ordinary foodstuffs each provides its own sort of vitamines. These remarkable and magic working substances are, according to Funk, the discoverer, produced only by vegetables. Each plant produces its own sort of vitamines. The vitamines of milk are not produced by the cow, but only collected by her. As she browses about the pasture she selects the various sorts of grasses, twigs, leaves and stems which suit her needs and with them gathers a fine assortment of cell stimulating, life-saving vitamines which are borne by the glistening streams which pour from her udder and impart to this wonderful foodstuff a potency as a body building agent possessed by no other known substance.

It should be mentioned right here, however, that these remarks are true only of clean cow's milk as it flows from the original fount, and do not hold for milk which has been boiled or pasteurized, or doped with alkalis, which several processes destroy the precious vitamines and deprive the milk of one of its most unique and valuable properties.

But there is something more to be said of the food properties of this fascinatingly interesting product of maternal providence. Milk is a live food. Of course it is not alive in just the sense in which a growing animal or a plant is alive, but still it possesses certain properties which are peculiar to living things, and which serve the body in a most remarkable manner.

Milk contains certain digestive enzymes or ferments, galactase, oxidase, and reductase which aid the processes of digestion. It is important to note, however, that this is true only of fresh milk which has not been sterilized by boiling. These useful ferments, like the subtle vitamines, are destroyed by heat. This may be easily shown by a simple experiment known as Storch's test for heated (boiled) milk. "Shake five c. c. of the milk in a test tube with one drop of 2 per cent hydrogen peroxide and two drops of 2 per cent sol. paraphenaleine-diamin. If the milk has not been heated a dark violet color appears at once, but if it has been pasteurized or boiled, no color appears."

There still remains a final word to be said about the wonderful properties of fresh cow's milk. Milk is a sort of fluid tissue and like other tissues is prepared from the blood; hence it is not surprising that the profound scientific study to which this remarkable food substance has been subjected within recent years has brought to light the fact that milk possesses some of the properties of the living blood from which it is produced. While still warm with animal heat freshly drawn milk, like the blood, possesses the power to combat and destroy germs. Milk contains various anti-bodies which are found in the blood, aglutinins, antitoxins, and opsonins. It must be admitted that these last named elements of milk have been so recently discovered that their relation and value to human life and health are not yet fully understood. It cannot be doubted, however, that future researches will show their function to be important, and there is ground for believing that they may play a part of some consequence

in preparing and maintaining the defenses of the body against disease.

Now that we are prepared to appreciate the superior value of milk as a foodstuff, let us consider some of the practical questions relating to the dietetics of milk. In order that milk shall fill the important place as a nutrient which its natural properties render possible, it is essential that certain conditions respecting its use should be complied with.

1.—Milk should be alive, or at least uncooked. Pasteurizing, that is, heating to a temperature of 158 degrees Fahrenheit destroys the anti-bodies of milk. When the milk is heated to a temperature of 176 degrees Fahrenheit the digestive ferments which it contains are destroyed. The boiling of milk modifies in a harmful way nearly all its ingredients and considerably reduces its nutritive value. Rats fed on boiled milk grow to only half their normal size. Scurvy sooner or later appears in babies exclusively fed on pasteurized or boiled milk. The subtle alchemy by which milk is prepared in the laboratory of nature is upset by the crude process of cooking. Boiled milk will sustain the life of rats but it will not enable them to grow to full development, and reproduction fails altogether. Science is teaching us every day that the fine adjustments and adaptations of nature cannot be safely ignored. We are gradually learning through the loss of millions of lives which have perished through our ignorance, that the foodstuffs which nature designed for our use are not the haphazard products of wild and incoherent forces but are wrought out by a subtle and infinite wisdom which fits them to our needs so perfectly as to transcend our highest knowledge and defy the profoundest analysis.

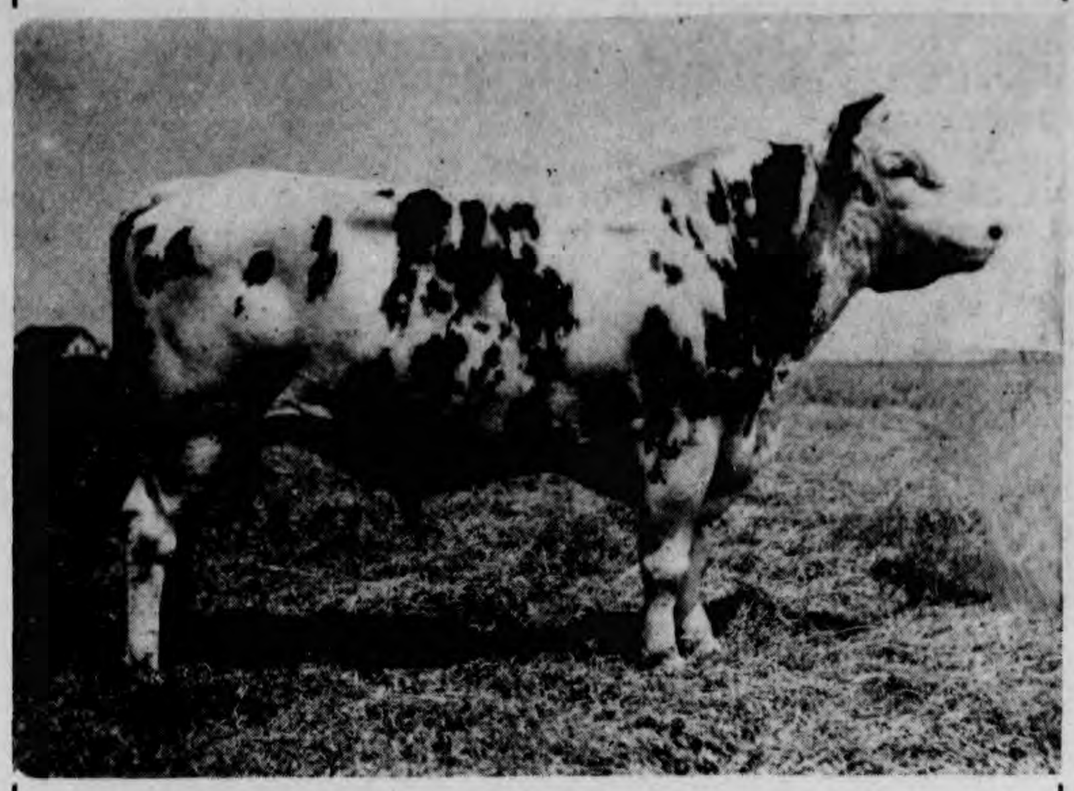
Man has been defined as a "cooking animal" and for ages the culinary art has been highly cultivated and made the means not only of utility but of harmful luxury. Through modern scientific research, we are coming to know that, notwithstanding its great service to the human race, the art of cookery has associated with it many perils, one of the greatest of which, though the most recently recognized, is the destruction of its vital elements, which so modify the food as to greatly impair its nutrient value. The beasts of the forest, and to a large extent also the primitive savage, take their food directly from the hand of nature, unsophisticated and uninjured and as a result enjoy an immunity from disease and acquire a vigor and toughness of constitution which are unknown to the civilized man. The chef of the future will display his finest talents, not in the compounding of complex combinations of foods with non-foods and poisons, into disease producing entrees, ragouts and dyspepsia-breeding deserts, but in selecting and serving in wholesome and attractive ways the pure products of nature's great food laboratories—the garden and the farm.

Milk, fresh from the bovine font, with its rich store of vitamines and enzymes, with the finest quality of protein for brain and muscle building, salts to stiffen the boney frame-work and fats to brighten the vital fires of the body, is a natural product which not only is not improved by the art of cookery, but is actually damaged by it and rendered incapable of supplying in the highest degree these subtle elements which are, we now know, so essential to good nutrition.

2.—Milk must be clean. The chief reason assigned for the pasteurizing or sterilizing of milk is the presence in the milk of large or small quantities of filth which should have been left in the stable or the barnyard. Combe and others have shown that the germs associated with this putrefying filth are the most prolific source of the diarrhoeas, and other intestinal disorders which annually carry off so many thousands of infants during the summer months. These same putrefactive germs are likewise the cause of intestinal toxemia or auto-intoxication. Entering the body through the medium of milk, they take up their abode in the colon where they grow and multiply to the extent of hundreds of billions daily, producing poisons which are akin to the venoms of serpents, and which, when absorbed into the blood, give rise to an almost infinite number of distressing symptoms, and several crippling and even fatal maladies.

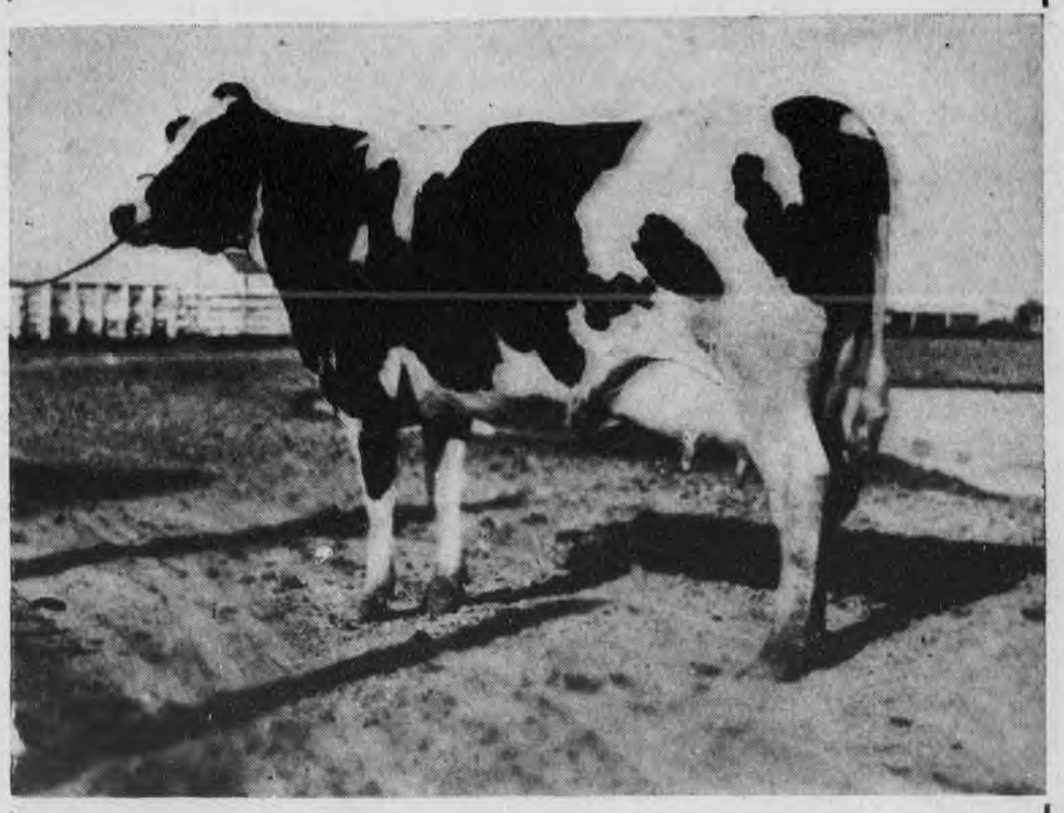
Clean milk obtained from clean cows kept in clean stables, collected in clean receptacles and distributed in clean vessels, is the choicest of all the infinite products of the laboratory of nature. Dirty milk, corrupted with gleanings from the dung heap, the chicken coop, the pig pen, and other sources of pollution, is a veritable poison cup, and is doubtless responsible for the loss of at least nine-tenths of the 300,000 infant lives which are every year sacrificed to ignorance and neglect.

Mrs. Anita Baldwin Bought These



Prince Gelsche Walker, the sire that will head Mrs. Baldwin's herd. Sold by the Morris Corporation.

Diotime Clyde Korndyke, a 31-pound cow that went from the Morris herd to Mrs. Baldwin's new breeding plant.



Lady Hiske Walker, 25-pound three-year-old sold by the Morris Corporation to Mrs. Anita Baldwin.

3.—Milk must be free from the germs of disease. In addition to the common organisms which give rise to putrefaction and with which the milk becomes contaminated through careless dairy methods, milk may contain germs of various specific diseases such as tuberculosis, typhoid fever, diphtheria, scarlet fever, sore throat, malta fever, maladies originally derived from human beings suffering from the above named disorders and with the germs of which the milk, by direct or indirect contact, becomes contaminated.

Milk may also communicate to human beings various disorders which originate in cattle, but which may be communicated to human beings by making use of milk of sick animals, such as foot and mouth disease, milk sickness, gastroenteritis, anthrax, cowpox, rabies, actinomycosis and perhaps other maladies. Modern research has shown that bovine tuberculosis is communicable to human beings. According to Rosenau, it must be conceded that not less than 5 to 7 per cent of all cases of human tuberculosis are due to infection from the use of infected milk or the flesh of tuberculosis animals. A careful examination of the mortality tables published by the United States Census Bureau shows that not less than 3,000 children die annually as the result of infection with bovine tuberculosis, and not less than 60,000 children are constantly suffering from bovine tuberculosis contracted chiefly through the use of diseased milk.

The New Jersey Tuberculosis Commission found 16 per cent of the dairy cattle in that state suffering from tuberculosis. In some parts of Germany 30 per cent of all the cattle were found to be infected with this disease. An investigation made of the milk supply of the District of Columbia showed that 15 to 25 per cent of all the cows furnishing milk to that community were suffering from tuberculosis.

Tubercle germs are not readily killed by dairying processes. Schroeder killed guinea pigs by infection with germs found in butter more than four months after it was made. Mohler found germs alive in butter five months after it was churned. Tubercle germs have been found in great numbers in cheese and ice cream. Morgenroth even found tubercle germs in nine out of 20 samples of oleomargarine purchased in the open market.

The public have been taught to place too much faith in sterilized or boiled milk. It is true that pasteurization or boiling of milk, destroys certain specific disease-producing organisms, such as those of typhoid fever, tuberculosis and diphtheria, but these processes at the same time destroy certain highly essential vital properties of milk, but as already pointed out fail to destroy the spores of putrefactive organisms, which probably are on the whole the cause of far greater mischief and many more deaths than the organisms which give rise to tuberculosis, typhoid fever and other specific organisms. If left to itself milk does not decay but sours. Boiled milk rots. The acid forming organisms which find their way into the milk from the air thus exercise a protective influence, preventing the toxemia which results from intestinal putrefactions. When an infant is fed upon sterilized milk, the stools, which are naturally slightly acid, quickly become foul smelling through putrefaction and the infant is thus exposed to highly potent disease-producing influences against which it is protected when fed upon natural clean milk. A temperature of 240 degrees for half an hour is required to destroy the spores of putrefactive germs and even such milk is likely to promote putrefactive processes in the intestine, especially in the case of young children. It is thus apparent that pasteurization and boiling of milk should be regarded only as makeshifts which mitigate to some degree the evils resulting from the use of milk contaminated with barnyard filth but are not by any means a substitute for clean natural milk.

As the public become better informed respecting the dangers and the causes of tuberculosis through the efforts of boards of health and anti-tuberculosis societies, the apprehension of danger from the use of milk is going to be greatly increased and this will naturally lead to less consumption of milk and dairy products. The average citizen is daily becoming wiser in relation to foods and he is no longer willing to close his eyes and swallow without question whatever is presented to him.

In my opinion the greatest obstacle in the way of the dairy business in this and other civilized countries is the prejudice which in recent years has been developing in the public mind against the use of milk containing barnyard filth with the germs of barnyard and pest-house diseases. The chief opponents of the dairy business are the manufacturers of baby foods. Physicians are continually warning mothers to beware of the milk supply and the manufacturers of baby foods are waxing rich from the sale of wheat flour with various slight modifications at prices a hundred times the original cost and actual value. When dairymen are able to supply the public with clean milk, free from barnyard dirt and disease-producing germs, baby foods will disappear from the columns of the country newspaper and from the shelves of the corner drug store, and the consumption of milk will increase many fold.

4.—Milk must be eaten, not swallowed as a beverage. All foods need to be masticated. The calf and the nursing infant chew the milk which they draw from the maternal fount. The movements of the jaws and the sucking movements executed by an infant in nursing induce an abundant flow of saliva which mixing with the milk, properly dilutes it, and to a high degree promotes its digestion. Milk when swallowed rapidly as a beverage is likely to form in the stomach large and hard curds which are very slowly digested. Many persons who suffer from taking milk in this way imagine themselves to be unable to take milk and so abandon its use. I remember a man to whom I had recommended the liberal use of milk. He protested that he was absolutely unable to use it at all and stated that on the last occasion on which he had taken milk he had nearly lost his life. A few hours after hastily swallowing several glasses of milk he experienced a sensation of suffocation, was then nauseated and on attempting to vomit experienced a choking sensation. On reaching his finger down his throat he felt a mass which he siezed and to his astonishment drew out a rope of milk nearly a yard in length. The milk had formed in his stomach one large, hard curd which he was certainly very fortunate in being able to get rid of so easily. The late Dr. Lawson Tait told me of a case in which he was obliged to perform a surgical operation to remove a similar mass of curds which had lodged low down in the intestine.

Milk should be sipped slowly and with a sucking movement of the throat so as to secure a liberal admixture of saliva. By this means the formation of hard, indigestible curds may be prevented.

5.—Milk must be taken in right quantities and in right combinations. It cannot be denied that milk digests better when taken by itself or in very simple combinations than when mixed with a large variety of other foodstuffs. In some instances, also, a large quantity of milk is more easily digestible than a small quantity. When the stomach produces a large amount of highly acid gastric juice as is usually the case with persons who have been accustomed to a hearty meat diet, the curds formed when a small amount of milk is taken will be large and tough, whereas if a larger amount of milk is taken, the curds formed will be smaller and softer. Hence, the proper remedy in many cases in which a person complains that he cannot take milk is to take more milk.

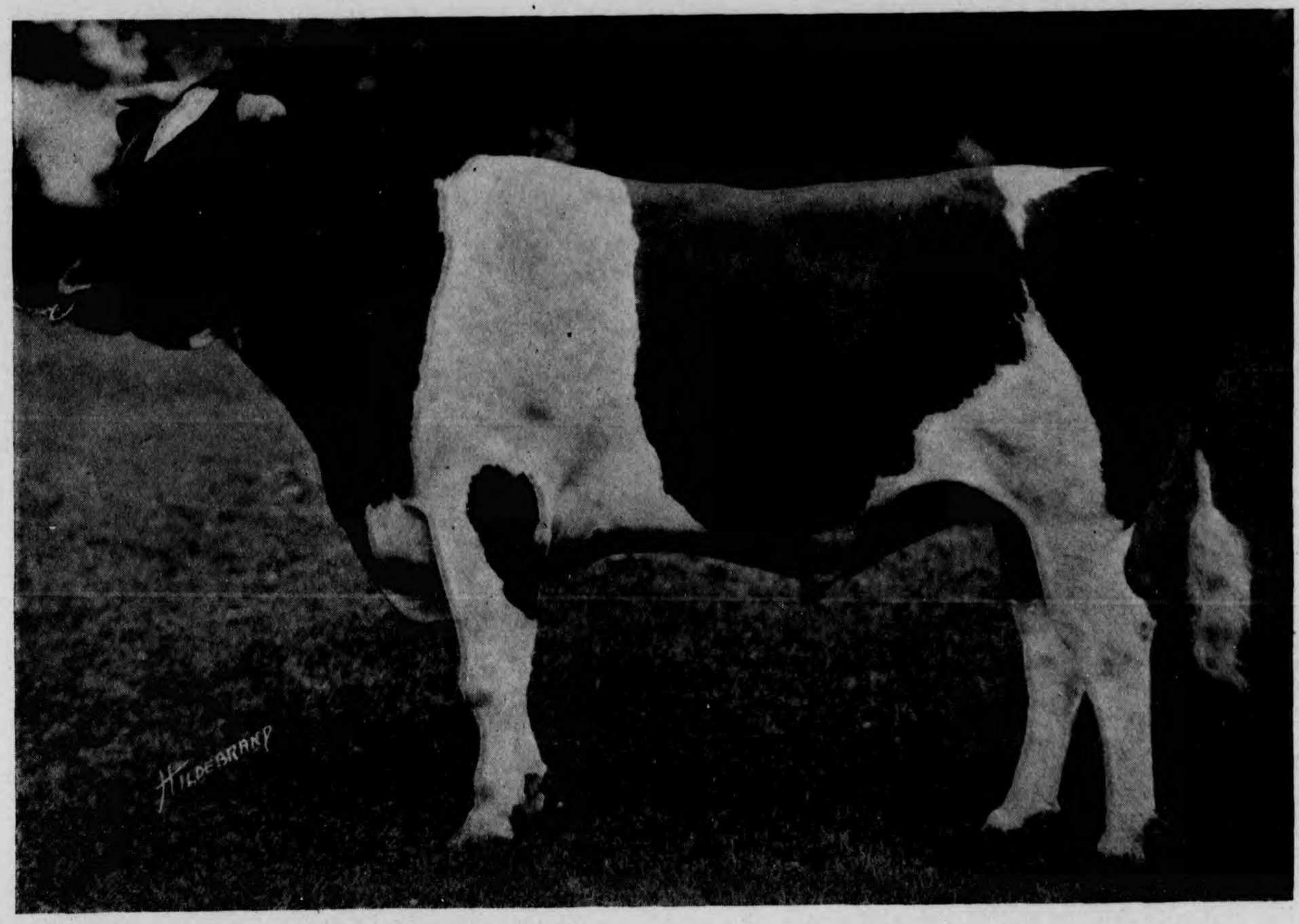
The taking of milk with meat is perhaps the worst of all dietetic combinations. The reason for this was made clear by Pawlow, the eminent St. Petersburg physiologist, who showed that meat requires a highly acid gastric juice for its digestion and that the stomach produces this sort of gastric juice when meat is eaten, while milk calls forth a gastric juice which is but slightly acid, though rich in digestive ferments. It is, of course, impossible for the stomach to make at the same time gastric juice suited for the digestion of meat and for the digestion of milk. The interesting discovery of Pawlow perhaps explains the ancient prejudice against the use of milk and meat together embodied in the Hebrew law, forbidding the seething of the flesh of the calf in its mother's milk.

When milk is largely used as a nutrient, the balance of the diet should consist chiefly of fruits and vegetables for the reason that milk contains an excess of lime and is deficient in potash and soda which are necessary for perfect human nutrition. The last named elements are abundant in fruits and vegetables, particularly in the potato, which is also very rich in salts of potash. A diet consisting exclusively of milk and cereals is less satisfactory. Such a diet often gives rise to scurvy in infants. Cereals are deficient in the alkaline elements which are needed to neutralize acid products developed in the body.

It is well to remember also in the use of milk, especially when it is freely taken, that one may easily by this means ingest an excess of fats. The milk of certain breeds of dairy cattle is exceedingly rich in fat. The use of such milk in some persons, and especially in infants and young children, gives rise to symptoms which are sometimes denominated as biliousness, but which are not directly connected with the liver, being due to putrefactive changes set up in the intestine by the presence of an excess of fat. Breeders of dairy cattle have labored to produce strains of milch cows which produce milk containing a large amount of fat because they are more profitable, but for

Twenty Thousand Dollars

For a 7-Months-Old Son of



Rag Apple Korndyke 8th

"The Greatest Bull in the World"

The public sale is a great place to demonstrate public opinion. When men back their judgment with their pocketbook, it means that they believe their conclusions to be sound. The great Detroit sale—conceded to have been the greatest Holstein sale the world has ever seen—demonstrated many things. It showed the public demand that actually exists for good cattle. It proved conclusively that registered Holstein cattle have no equals in public favor. It demonstrated very clearly the particular line of breeding that is most popular with the men of advanced thought in the Holstein industry, and it also clearly demonstrated the right of Rag Apple Korndyke 8th to be called "The Greatest Bull in the World." No other bull enjoys the distinction of having a seven-months-old son sell for $20,000.00. No other bull in the world has ever sired a 30-pound junior two-year-old daughter. No other bull in the world carries an inheritance in which the blood of the great Pontiac Korndyke, through his world-record daughters, is so bountifully blended or closely combined. The purchasing public have placed the stamp of approval on Rag Apple Korndyke 8th in no uncertain manner. His is the most commanding figure on the Holstein horizon of today. One of his sons will materially increase the value of your herd. Write and let us tell you more about the world's greatest sire, Rag Apple Korndyke 8th.

Oliver Cabana, Jr., PINE GROVE FARMS, Elma Center, N. Y.

table use, milk containing a smaller proportion of fat is much to be preferred. It may be on this account, suggested by Rosenau, that the milk produced by the Holstein cow is much better adapted to the human stomach than is that of breeds which produce a milk containing a larger proportion of butter-fat.

When employed in artificial feeding of infants and in some cases in the feeding of invalids, cows' milk must be especially modified. Ignorance of this fact and of the proper methods of feeding milk is responsible for the deaths annually of a great multitude of artificially fed infants. Of the 2,500,000 infants born in the United States annually, not less than 250,000 die as the result of improper artificial feeding. The mortality of bottle fed infants is more than four times that of breast fed infants. Cows' milk differs very decidedly from mother's milk. It contains four times as much lime and three times as much protein and only about two-thirds as much sugar. Protein and fat are the elements of cows' milk which are the greatest source of trouble to the human infant. Each animal produces milk exactly adapted to its own young, calculated to promote the development of its digestive organs in a normal way. The milk of the whale and the seal contains 50 per cent of solids and an enormous proportion of fat which the young whale needs to protect it in the icy waters in which it lives. Cows' milk contains a large amount of protein and lime to support the rapid growth of the calf which attains puberty at the end of two years, about one-seventh of the time required for the human infant to reach the same stage of development.

Various formulae have been devised and recommended for the production of cows' milk in artificial feeding. The most of these are more or less complicated. Recent experience has shown that a very simple method is much superior to the complicated measures which have been developed. It is only necessary to add two things, water and sugar, either milk sugar or malt sugar to render cows' milk suitable to the use of very young infants; malt sugar is preferable because it is free from germs which are often found in milk sugar in great numbers and is much more easily assimilated.

Another point to which attention should be called in the interest of both infants and invalids is the fact that certain persons become sensitized to milk as well as to other forms of protein, and to a person who is sensitized, even the smallest amount of milk gives rise to highly poisonous and even fatal symptoms. Many infants die annually from this cause. This fact should be borne in mind in changing the infant from the breast to bottle feeding. The milk should first be given in very small quantities, a teaspoonful in half a glass of water, the proportion being gradually increased until the proper dilution is reached. The same method should be pursued with individuals who have learned by experience that unpleasant symptoms are noted after the use of milk. The adult or infant who is sensitized to milk may be cured by the administration of milk in graduated proportions, beginning with extremely small doses. Such a case requires the personal care of an experienced physician.

Medical Uses of Milk.

Milk is not only useful as a nutrient for healthy persons but, by proper management, may be made to play a highly important roll as a curative agent. For example—there is no better means of inducing a rapid gain in flesh than by liberal milk feeding.

A patient may easily make a gain of half a pound to a pound a day by milk feeding and in favorable cases an even more rapid gain of flesh may be secured. Milk feeding has often failed, however, through neglect of one or more of the important principles which have been above outlined. To be successful as a fattening diet, milk must be taken in a natural state, neither sterilized nor pasteurized. It must be taken regularly and in small amounts but in large aggregate quantity. The amount required per day is from an ounce to an ounce and a half per pound of body weight. A glassful of milk every half hour is the usual routine. Twice a day the patient should eat freely of fresh fruits and such fresh vegetables as lettuce or celery. The purpose of this is to supply the needed alkaline salts which are lacking in milk and also to furnish a liberal supply of iron which is also lacking. The young infant can thrive upon an exclusive diet of milk for the reason that at birth an infant carries in its liver a very large store of iron which has been provided in sufficient amount to last through the nursing period, not present in milk in adequate quantity. The free use of fruits and fresh vegetables also helps to prevent constipation which is likely to result with an exclusive milk diet. Constipation is less likely to occur, however, when milk is taken in large quantity than when it is used in small amount. When the patient takes five or six quarts of milk a day he ingests a large surplus of protein, the curds formed from which pass in considerable amount through the intestine undigested and unabsorbed and thus aid bowel action.

By a milk regimen in which milk, fruits and vegetables are combined with bran or agar-agar, if necessary adding some paraffin preparation, to stimulate peristalsis, it is possible to rapidly change the intestinal flora. The sugar of milk which such a regimen supplies in large amount finds its way into the colon, sets up there fermentation processes which give rise to an abundance of lactic acid by means of which putrefactive processes are prevented, and thus the wild bacteria largely derived from meat and unclean milk are prevented from developing. The stools lose their foul odor and acquire the character of an infant's stool. The foul coat disappears from the tongue, and the unpleasant odor from the breath. The skin clears. the patient gains in flesh, and a state of high health rapidly replaces one of invalidism and disease. Employed in this way, milk becomes a most effective means of combating many forms of neurasthenia and other chronic disorders accompanied by autointoxication and emaciation.

Again, the free use of milk is a useful, almost necessary remedy for lime starvation which, according to Prof. Sherman, of Columbia University, is coming to be almost universal in this country, and is doubtless largely responsible for the early decay of the teeth noted among American children. Medical examination has shown decay of the teeth in 95 per cent of the children in our public schools. The body requires daily to make good its mineral losses 15 to 20 grains of lime and smaller amounts of associated minerals. The sugar, white bread, rice, meat, potatoes, butter and other articles which constitute the staple foodstuffs of the national bill of fare contain less than a third of the required amount of lime. Wheat contains one-half grain of lime to the pound, potatoes and rice about the same amount. Cane sugar, molasses, butter, and lard contain practically no lime at all. Milk, on the other hand, contains 16 grains of lime to the pint. Thus an ounce of milk contains as much lime as a pound of fine flour bread. Wheat bran is rich in lime, containing about the same percentage of lime as milk. It is evident then that the American people stand greatly in need of more milk and more bran to complete the national bill of fare. An extra pint of milk and three or four ounces of bran added to the bill of fare of the average American would in a few generations add two or three inches to the average height of the American people and would produce an immensely greater gain in constitutional vigor and stamina. The number of additional dairy cattle required to produce daily the additional 50,000,000 quarts of milk, my expert hearers will be better able to estimate than I can do. I merely drop the hint that the best way to promote the dairy business in this country is to first induce the American dairyman to produce clean milk, free from stable filth and disease from cows, and then to convince the American people that the readiest way in which they can escape becoming a toothless, boneless, and spineless nation is by the increased consumption of milk.

I must not consume your time with a lengthy discussion of the food value of milk from an economic standpoint as compared with other foods. It must suffice to note that 10c will buy in the form of milk more than twice as much food as in the form of beefsteak, nearly 10 times as much as in the form of oysters, and three times as much as is supplied by 10c worth of eggs, so that milk is really by far the cheapest of our ordinary animal foods. When we consider the amount of tissue building material which may be produced on a given area of land, the economy of milk as a foodstuff becomes still more apparent, by a simple calculation it may be shown that the same area of land which in pasture will produce 40 pounds of beef protein per annum will produce 375 pounds of wheat protein and 400 pounds of milk protein.

It is evident then that milk as a food product is well worthy of all the consideration which is given it, and that the advantages which may be easily obtained by the general application of the well known methods of scientific dairying will place the business of milk production in the very forefront of our food resources and will so raise the value of milk in the estimation of the average man, that an appreciative public will not only be willing but glad to pay for the pure, clean, disease free products of the dairy of the future, a price which will be an adequate return for the labor and investment required for its production and leave a margin of profit sufficient to make of every owner of a good herd of Holstein-Friesian dairy cattle a real American aristocrat.

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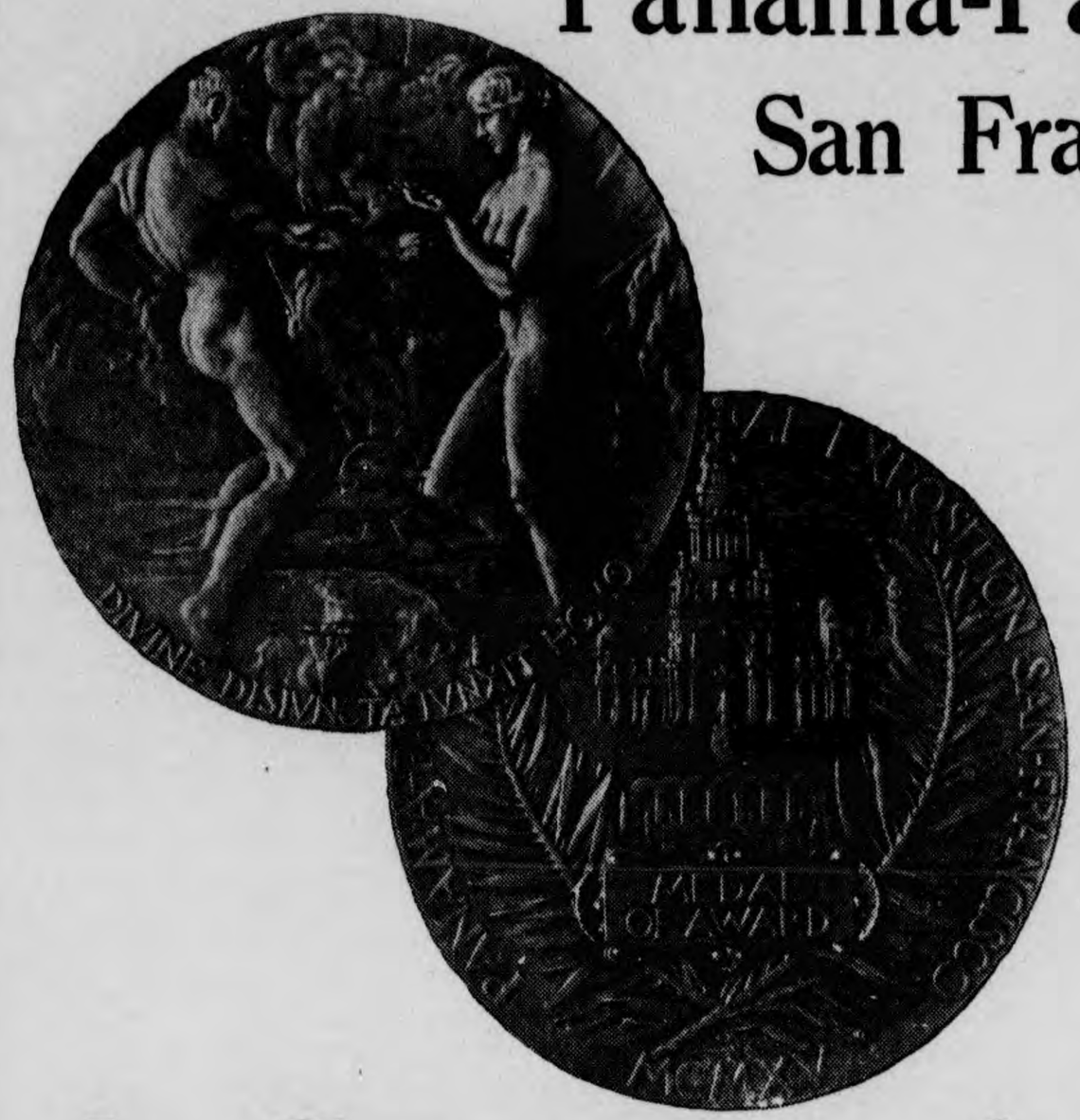

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WORTHY OF THE BREED

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WATERLOO, IOWA, JULY 8, 1916

Milk as a Human Food

THE address given by Dr. Kellogg, of Battle Creek, Mich., at the annual meeting of the Holstein-Friesian breeders in Detroit, was one of the most masterly discussions of this great subject ever produced. Milk as a food, has been fruitful of a great deal of comment by men of national reputation, by men who have devoted years to the study of foods and their adaptability to the human system.

Dr. Kellogg has given in this address more real valuable information than can be found in any other work that has ever come to the attention of this paper. Every Holstein-Friesian breeder in America ought to read this article. Further than that, every Holstein-Friesian breeder ought to have a copy of this article in his possession where he can refer to it frequently.

Dr. Kellogg has shown in convincing style and in language that is free from the technical terms that are so plentiful in every medical work, the real value of milk as a human food. He has shown just why some people think they cannot use milk in this way and he has also shown how milk may best be adapted to the human stomach and made most productive of the desired results.

If the advice given in this address could be spread broadcast and could be put into good, practical use, it would mean great things to the American public. It would save the lives of many children that must depend upon cow's milk for their nourishment; it would give renewed courage and greater zest to many a mother who is puzzled in the care of the development of her child.

The doctor has shown that milk in its pure state, or rather milk that is not changed save as it must be modified slightly to fit the digestive needs of the patient, is the real solution of the great problem of milk as a food. He has shown that milk which must be pasteurized in order to be pure can never fulfill its real purpose as a human food. It must be produced under sanitary conditions, it must be kept free from contamination and when so handled it is the ideal food. You can never make impure milk the equal of pure milk by any process of pasteurization or any other modification.

This address shows the wonderful possibilities of greater milk consumption, which means a greater demand, which likewise means greater profits for the dairyman. The possibilities along this line have just been touched upon in the article and it remains for the dairyman himself to solve this part of the problem.

The Holstein-Friesian World takes decided delight in producing Dr. Kellogg's address in full. In doing this, it is giving to every class of readers something thoroughly worth while. The consumer will be benefited, the breeder will be keenly interested, the producer of market milk will find much encouragement in what is said here.

Dairy Celebrations in Illinois

THE Holstein-Friesian World has mentioned Commissioner W. Scott Matthews a number of times in connection with the campaign that he is following for the upbuilding of better dairy conditions in Illinois. Mr. Matthews has just put on another celebration of this kind that will certainly mean much to the state which he is serving. These parades of pure-bred dairy cattle, which in the majority of cases are Holstein-Friesians, are unmistakable evidences of the wisdom and the far-sightedness of this section in upbuilding a better and stronger dairy sentiment and dairy communities. The popularity of the celebration is absolutely assured, for in each case there is always a large crowd and there is always an abundance of enthusiasm; there is always a great willingness to take part in the contests whatever they may be. Furthermore, the winners of the contests are materially benefited by the prizes which will mean much to them in future years.

It will be remembered that Commissioner Matthews was given a bunch of Holstein-Friesian bulls recently and now this new celebration which took place recently is further evidence of his correct attitude in regard to this great industry. The willingness with which prominent men in government, financial and business circles are cooperating with Mr. Matthews in work of this kind is worthy of consideration. The World wishes the utmost success and it congratulates the state of Illinois on its most excellent dairy commissioner.

The WORLD Next Week

PROMISES SOME UNUSUALLY INTERESTING FEATURES

Another McAlister story,

"The Greatest Bred Bull"

full of McAlister statistics written in the McAlister way.

Prof. Savage—continuing his feeding articles will discuss

"Feeding for long distance records"—good stuff this, for the semi-official men.

He is helping out, too, on the feeding problems with his Service Department.

And we have a new one—a woman writes on "Best Milk for Better Babies." It's a hummer.

SYRACUSE, N. Y. F. T. PRICE.

A Word of Explanation

LAST issue, we promised to finish the bulletin on the subject of "Environment and Breeding as an Influence in the Production of the Dairy Herd" in this paper. We are unable to give you the article because we haven't the illustrations that should accompany the story. Prof. Kildee has promised them to us but we are planning to use more of these than at first provided for and for that reason we are delayed slightly. The pictures will be ready and the article will be worth more when properly illustrated than it would be if put out with the illustrations now available. It will appear July 22d.

The man who goes farthest is the man who does what he thinks he ought to do, rather than the man who does what other people think he ought to do.

Occasionaally it may pay to appear like a fool, but it never pays to actually be one.

Home - Culture

POSITIVE AND NEGATIVE TRAINING.

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

Abridged from a Lecture before the Missionary Mothers' Class.

THERE is both good and evil in a child's nature. The problems ever present before those into whose hands is given the guidance of young lives, is how we can increase the good and hold the evil in check.

The Bible tells us to "overcome evil with good." May we not interpret this to mean that in child culture we should so cultivate the elements of good in a child's character that they will grow strong and vigorous, crowding out the evil? If the soil is preoccupied with good, there will be no room for the evil to take root.

It would seem, then, that our chief efforts in the training of a child should be directed toward the cultivation of virtues, the establishment of good habits, the formation of right tendencies by gently leading and encouraging him in *right* ways until he learns to love right for right's sake. The more customary method, however, is to direct all efforts toward deterring the child from *wrong* doing, apparently assuming that goodness is natural to the child, and as long as he appears good, no notice need be taken of it, but when evil begins to crop out here and there in his nature, then, by prohibitions, by censure, by reproaches, by fault-finding, and punishments, we make vigorous efforts to eradicate it.

The purpose aimed for in both instances is the same, but the methods employed are distinctly opposite: the former is positive, the latter negative training; the one endeavors to build up and enlarge that which is pure and good, the other seeks to tear down and destroy that which is impure and evil; the one emphasizes virtue, the other emphasizes vice.

Some one has said, "The 'Thou shalt nots' of the nine commandments have little import to the heart that keeps the 'Thou shalt' of the first."

Another has said, "Cultivate right tendencies in humanity, and the wrong ones must die out." "Build up the positive side of the child's character, and the negative side will not need to be rebuilt."

It is so much more human, however, to see the wrong, to notice the faults, to be cognizant of the failings of those around us, that the majority of us are prone to give most attention to negative training. We say, "Oh, you naughty boy!" and "Don't do this," or "Don't go there," far more frequently than we offer the child an incentive to do right and keep in the right path by surrounding him with the conditions most conducive to right doing.

A kindergartner of experience says, "There are two words I would, if I could, banish from the nursery. These are the words, *naughty* and *don't*. If they were nothing worse, they are indefinite and so unworthy. But they are worse; their effect is destructive rather than constructive, and there is in general the quality of the wet blanket in both words that has no redeeming thing in it.

"I think we all know that there is one fatal thing in life, and that is discouragement; and we can also see, if we think seriously about it, that the number of do n'ts the average child receives daily would discourage a grown person, and cannot be other than serious to the child; for while growth is all powerful, the least pressure will change the direction, and consequently the form of the growth. An imperceptible prick in a tender leaf in spring will show prominently as a scar or blemish in the mature leaf. So it is better to use the affirmative form more with children and the negative less." And how often the do n'ts are spoken when the thing prohibited is almost beyond the power of the child to control. We say to him,

THE GREAT PHYSICIAN

GOD WORKS THROUGH AGENCIES, BUT IT IS HE THAT WORKS. THE PHYSICIAN DOES NOT HEAL US; THE TREATMENTS DO NOT HEAL US; IT IS THE DIVINE POWER WORKING THROUGH ALL THE AGENCIES EMPLOYED THAT HEALS. LET US ALL LAY HOLD OF THIS GREAT SOURCE OF COMFORT AND CHEER; AND IF WE FEEL DISHEARTENED AND GLOOMY, LOOK UP, FOR THERE IS A GREAT POWER WHO IS ABLE TO DO FOR US ALL THAT WE NEED TO HAVE DONE.

I WISH THIS THOUGHT WOULD FIND ITS WAY INTO EVERY ONE'S MIND, - THE POWER THAT MADE US IS A FATHER, A BROTHER, AND A FRIEND, NOT AN ANGRY DEITY WHO ARBITRARILY CHASTISES US FOR OUR SINS BY CAUSING US SORROW AND PAIN. OUR SUFFERINGS ARE IN GENERAL THE CONSEQUENCES OF OUR OWN WRONGDOING, AND OUR MAKER IS DOING ALL HE CAN TO HEAL US OF THE RESULTS, CONVERTING AND RESTORING US AS FAR AS WE WILL LET HIM, AND WILL COOPERATE WITH HIM.

-JOHN HARVEY KELLOGG.

A BRIEF OUTLINE OF HYDROTHERAPY

By J. H. Kellogg, M. D.

Battle Creek, Mich.

Member of the Societe d' Hygiene of France, Life Member of the British Gynecological Society, Member of the International Periodical Gynecological Congress, American Medical Association, Michigan State Medical Society, American Public Health Association, American and British Associations for the Advancement of Science, American Microscopical Society, American Social Science Association, and Superintendent of the Battle Creek (Mich.) Sanitarium.

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1903

A BRIEF OUTLINE OF HYDROTHERAPY

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

Superintendent of the Battle Creek (Mich.) Sanitarium.

HISTORICALLY, hydrotherapy is the oldest of all curative measures devised and applied by man, but practically it is one of the newest to be recognized by scientific medicine. Like most other reliable remedies, its value was first determined empirically. For thousands of years the bath, the clyster, water drinking, and other simple hydriatic applications had been in common use by the laity for numerous affections, in a desultory and more or less imperfect manner, when in the early part of the last century there arose in Austrian Silesia an illiterate peasant who organized these methods, with many others of his own invention, into a system which possessed such curative power that patients were drawn by thousands from all parts of the civilized world. The slow ocean travel of those days did not prevent many from making tedious journeys from this country and even from South America to seek at the hands of this uncrowned king of therapeutics, the relief which they had sought in vain from all other known sources.

Priessnitz was not a charlatan. His work was subjected to the sharpest medical criticism by medical commissions appointed by various governments. Many medical men, including army officers, carefully studied his methods and openly published their approval of them. After years of opposition, he was finally recognized and officially authorized to conduct his work, which to-day is standing a monument to his genius, and is conducted by a worthy successor, a

well-qualified and scientific medical man. The work of Priessnitz has served as a model for all who have come after. It was necessarily defective, because empirical, but it was a great step in the march of progress, and it was a stepping-stone to greater and better things which have followed. It was the beginning of physiological medicine, which now embraces so many important and varied branches. At first, dietetics, exercise, sun-bathing, air-bathing, massage, and gymnastics were all included under the head of hydrotherapy; but the scientific study of the physiological and therapeutic effects of these rational agents has led to their differentiation and classification, so that now we have phototherapy, kinesitherapy, climatology, dietotherapy, and many other therapies based upon the use of natural forces and agents, as well as balneotherapy and hydrotherapy. This is the result of the natural evolutionary process by which most great truths are developed.

The basis of hydrotherapy, indeed of physiologic therapeutics in general, is the great truth expressed by Dietl, the renowned pupil of that great medical genius, Rokitansky: "Nature heals; this is the first law of therapeutics. Nature creates and maintains, therefore she must have power to heal."

The more recent studies of the blood and its functions by Metchnikoff, Ehrlich, and others who have followed them, have shown that it is through the agency of this most wonderful of all the tissues that the healing process is chiefly carried forward. In other words, "it is the blood that heals." Hence we must look for definite and positive curative results to those agents which are most capable of favorably modifying the quality of the blood, and controlling its distribution in the body. A recognition of this fact is a recognition of the paramount claims of hydrotherapy as the most potent and most nearly universal of all therapeutic methods. There is no other agent known whereby the constitution of the blood and the blood supply of the tissues at large and of individual organs, can be so certainly, so powerfully, and so readily modified, and in any desired direction, as by the scientific application of hydriatic measures. The methods of Priessnitz were in some respects crude, and his system was certainly

empirical, but his work was efficient, and his procedures still form the basis of practical hydrotherapy everywhere, as is graciously acknowledged by Winternitz, who easily stands at the head of living scientific investigators in this line.

Schüller showed (1874) by experiments upon trephined rabbits the following interesting facts in relation to the effects of thermic applications upon the brain: —

1. Water at neutral temperature (92° – 95° F.) applied directly to the brain produced no effect.

2. Ice applied to the brain coverings caused contraction of both veins and arteries, the contraction continuing for a short time after the withdrawal of the ice.

3. Ice applied to the scalp caused contraction of the cerebral vessels when carried to the point of producing general chilliness and shivering.

4. A cold compress applied to the spine and abdomen or a cold full bath caused instant dilatation of the cerebral vessels, lasting from three to ten minutes, then giving place to contraction.

5. Hot compresses or a hot full bath caused contraction of the cerebral vessels, later followed by dilatation.

6. Cold and warm applications applied to a nerve trunk produced an effect exactly opposite to that produced by the same applications made to the skin; that is, a cold application to a nerve trunk caused contraction of the cerebral vessels, while a warm application caused dilatation. Unquestionably the same effects, which are evidently reflex in character, occur when the sensory nerves of the skin are influenced by thermic applications, but they are overwhelmed and quickly wiped out by the mechanical dilatation of the cerebral vessels, resulting from the elevation of blood pressure and the displacement of a large quantity of blood toward the center of the body through the contraction and partial emptying of the vessels of the skin.

7. A heating compress or moist trunk pack of three hours' duration caused, first, dilatation, then contraction of the cerebral vessels and bulging of the membranes from the accumulation of lymph.

8. Pinching the skin produced the same effect as hot applications.

These interesting experiments, which have since been confirmed by observations made upon a man whose brain had been exposed by accident, laid the foundation for a scientific therapy of the brain, which has received far less attention than it deserves at the hands of medical men. These experiments show most clearly how cerebral congestion may be successfully combated by properly managed applications, and explains the relief afforded in insomnia by the moist girdle and the tonic effects of the cold douche.

Extensive experimentation by a large number of investigators, including Brown-Sequard, Paul Bert, D'Arsonval, Ziemssen, and Mosso, as well as Winternitz, Strasser, Wertheimer, and a host of others who have devoted a large part of their time to these studies, has finally placed each hydriatic procedure upon a strictly scientific basis, so that at the present time, hydrotherapy presents a whole series of varied and perfectly graduated measures, each of which may be applied under the guidance of accurate diagnostic means with utmost precision in therapeutic use, and with a certainty as regards results, in cases not utterly hopeless, such as can be obtained by no other means.

Hydrotherapy is termed a natural or physiological method, because it employs natural agents or forces and those which are constantly serving us in the maintenance of health. The sick man differs from the well man only in the fact that his organism is struggling under embarrassment. The natural bodily defenses are unable to maintain normal equilibrium. Hydrotherapy comes in with its powerful thermic impressions to reinforce and strengthen these defensive efforts, thus enabling the body to restore the normal equilibrium, which is health. In accomplishing this, a large number of hydriatic procedures act through impressions upon the temperature nerves of the skin, by far the most sensitive and most remarkable of the cutaneous nerves. Cold applications stimulate the cold nerves, and hot applications the hot nerves. Each of these sets of nerves has its own widespread network of reflex relations with nerve centers and through them with the internal parts and functions of the body. Every portion of the cutaneous surface is connected reflexly with

some special internal part. The skin has, by experiments upon animals and men, been very accurately mapped out into vascular areas which are so closely related with corresponding internal areas that changes induced in one of these external areas produce instantly a corresponding change in the internally related area. A cold cloth applied to the face contracts the vessels of the face and reflexly contracts the vessels of the congested brain, and so affords relief. Cold applied over the heart instantly energizes the cardiac muscle in precisely the same way. The skin overlying the stomach, the liver, the bowels, the bladder, and other pelvic organs, is in the same relation to them, and affords opportunity for producing excito-secretory as well as excito-motor effects. Very short and very hot applications produce similar effects by exciting the heat nerves; but warm or moderately hot applications produce the opposite effects. Thus we may either excite or depress the function of any internal part by a simple application of water, provided only that we make the application in the right place and of the right temperature. Thus we may restrain excessive activity, as when we apply heat over a cramping muscle, a fomentation to the abdomen in intestinal colic, for example; or we may increase activity to almost any desired extent by short cold applications, or alternate hot and cold applications, the most stimulating of all known exciting measures. Nothing will so quickly rouse a patient from the profound and deadly stupor of opium or other narcotic poisoning, as very hot and very cold applications made to the spine in alternation at intervals of fifteen or twenty seconds. There are no means by which the patient suffering from surgical shock or collapse under anesthesia, can be so much and so quickly rallied as by this means combined with very hot or very cold friction of the limbs. One who has witnessed the almost miraculous awakening to life which often follows such an application will no longer doubt the potency of thermic stimulation as a quick restorative. The effect is obtained through the nerves, and does not depend upon the paralyzed heart and the stagnant circulation. As quickly as a nerve impulse can reach the spinal axis, traveling at the

rate of two hundred feet a second, the restorative work begins, and each change in the thermic revulsion sends a new reviving impulse speeding with electric rapidity to awaken the sleeping centers and arouse the liver, kidneys, and other defensive organs to a renewal of the struggle for life.

Short cold applications to the whole surface arouse every cell and awaken every bodily function. Hippocrates employed the cold pouring bath with vigorous friction in sunstroke, and no better remedy is known to-day. Brand has shown that the cold bath is almost a panacea in typhoid fever through its wonderful power to increase vital resistance. He records eight hundred cases without a single death, and many thousands with a mortality of only three per cent. More than a century ago Currie used tepid bathing with equal success in scarlet fever, and Jackson used the same in yellow fever with equally good success.

Cold water is nature's antidote for fever. The cold bath not only lowers the temperature, but lessens heat production and increases the fighting power of the system. By a combination of hot water with cold water, hydrotherapy has shown itself able to cope with all forms of fever and general acute affections, not excluding smallpox, malignant malarial fever, yellow fever, and the bubonic plague.

General hot applications fill the skin with blood and thus divert blood away from internally congested parts. Hence the value of this measure, as well as of large fomentations, in all cases of visceral congestion or inflammation. Hence the value of the hot bath or the hot blanket pack as a curative measure in acute gastritis, hepatic, renal, and intestinal colic, ovarian, tubal, and other forms of pelvic inflammation, acute spinal inflammations or congestions, and even in certain cases of acute pneumonia or pleurisy.

Samuels has shown, by experiments upon rabbits, that cold applications lessen the intensity of inflammatory action. Heat intensifies the process but shortens it, as everyone knows who has watched the effect of a poultice or of other hot applications upon a boil.

One of the most remarkable of all physiological facts is the influence of general cold applications upon the blood.

Strasser has shown that cold applications increase the alkalinity of the blood. This increases the oxidizing power of the blood and its defensive activity, the bactericidal properties of the serum, and the migratory and phagocytic functions of the white cells.

First Thermes, then Winternitz, and later many observers, showed that a short cold bath accompanied by thorough reaction, marvelously increases the blood count. The total blood count may be increased as much as thirty per cent or more, and the white cells may increase thirty per cent. Modern researches show that leucocytosis is one of the means by which nature combats infection and many other impairments of the functional integrity of the body. Here then is a ready means by which to rally the defensive power of the body and to aid nature in her struggle against invasion of the vital domain.

There is no remedy which compares with short cold applications as a means of blood building. Brief general applications of cold to the surface by means of the cold mitten friction, cold towel rubbing, cold wet-sheet rubbing, the shallow bath, the cold shower or jet, powerfully stimulate the hematopoietic functions. It is to this influence of cold that sea-bathing owes its great virtue as a recuperative measure, rather than to the saline ingredients of the water, or any mysterious virtue in the odor of decomposing sea-weed.

In heart affections the influence of thermic applications far surpasses that of any drug. An ice bag applied over the heart energizes this organ at once, and in a most powerful manner. Within a few minutes, a rapid, feeble pulse may diminish fifteen to twenty beats to the minute, the diminution being frequently accompanied by a very marked increase in vigor. The application of an ice bag over the heart for half an hour three or four times a day is infinitely superior to digitalis, strychnia, or any other cardiac stimulant known. There is a toxic effect connected with all powerful cardiac stimulants which is cumulative. At the same time the system quickly acquires a tolerance for any one of these drugs, so that by the continued use, any good effect which

they may possess is ultimately lost, while the injurious effects accumulate. The ice bag, however, acting reflexly, operates immediately, and as the nerve centers are strengthened through its action, its beneficial effect becomes more manifest day by day, so that the hundredth time the remedy is applied, greater benefit is derived than at the first application. This is a wonderful property possessed by all physiologic remedies, and one of the great advantages of natural over artificial therapeutic agents.

Insomnia yields to hydriatic applications as to no other remedies. In hundreds of cases the writer has succeeded in securing healthful, natural, recuperative sleep in patients who had employed all the ordinary hypnotics not only without benefit but with actual detriment. The patient who has not slept for a week, will often fall asleep within a few minutes after being placed in a wet-sheet pack or a neutral bath. The able superintendent of the Kankakee Insane Asylum related to me a case in which the patient suffered from acute mania, and who required six attendants to hold her, — the worst case, he declared, that he had ever seen, — who had not slept at all for more than a week, and in whom the ordinary hypnotics given in large doses failed to produce sleep. She was almost immediately put to sleep by means of a neutral bath and a wet-sheet pack; and in three months, by the continued use of these remedies, the patient was restored to health. These measures were employed at the suggestion of one of my colleagues, Dr. Thomason, who happened to be visiting the asylum, and I have been informed have been extensively used in the treatment of similar cases.

The hydriatic treatment of pneumonia has reduced the mortality of this grave disease from twenty-five to thirty per cent to five to eight per cent. The cold chest compress, the leg pack, the sweating wet-sheet pack, and other hydriatic measures skillfully applied, are most effective means of aiding the natural powers of the body in their combat with the invading microbes which are the exciting cause of this grave malady.

The principle of fluxion is one of the most useful and readily applicable of hydriatic methods. This method de-

pends upon the fact that there is a direct connection between the cutaneous circulation and the vessels of all important internal parts. The vessels of the skin of the face and the scalp communicate freely with the arteries and sinuses of the brain. The vessels of the lungs communicate with those of the chest wall. The portal circulation is connected with the systemic at fully half a dozen different points, generally with superficial vessels. The pelvic vessels are directly associated with the vessels which supply the fleshy parts covering the hips and legs.

By hot applications these superficial parts may be filled with blood, and thus the latter may be diverted away from internal parts. This is the foundation of all derivative methods. By this means we may at will divert blood from the lungs, liver, stomach, intestines, kidneys, spinal cord, brain, pelvic organs, or any other internal part, or by cold applications opposite effects may be induced; that is, we may concentrate blood in parts which are in need of an increased blood supply. By alternate applications we may empty and fill any desired organ as often as we may desire, and may continue the process for an indefinite length of time.

By a combination of the fluxion method and a reflex application, most surprising results may be attained. This principle has long been employed in such simple procedures as the hot foot bath in combination with the cold head compress for relief of cerebral congestion. I have thought it useful to generalize the method, and find it a most efficient means of controlling visceral inflammation of every sort. In tubal or ovarian inflammation, we apply one or two ice bags over the inflamed part, which reflexly contracts the vessels of the inflamed tissues. At the same time we envelop the patient's hips and legs in a woolen blanket wrung out of water as hot as she can bear, wrapping her completely up in a dry woolen blanket so as to secure derivative action toward the skin. At the end of fifteen minutes, or when the skin is well reddened, the wet blanket is removed, the ice bag remaining, and two towels are wrung dry out of cold water and applied, one about each leg, enveloping the limb as completely as possible. Then mackin-

tosh is applied over the towel (a newspaper will answer) and half a woolen blanket over all, so as to secure immediate and thorough reaction and warming up. The ice bag is replaced every hour for ten or fifteen minutes by a very hot fomentation. This is necessary to prevent numbing of the skin, which destroys the reflex effect whereby the inflamed vessels are made to contract. The hot application also relieves pain by a certain inhibitory or anodyne effect most grateful to the patient.

Appendicitis, as well as all forms of acute pelvic inflammation, readily yields to this procedure in ninety-five per cent of the cases in which it is applied early, or within the first twenty-four hours. In cases which are further advanced the results are equally marked, if not quite so certainly successful. I have had an opportunity to test this method in the treatment of a large number of cases of appendicitis, and have rarely failed to see the patient convalescent within twenty-four hours after the beginning of the treatment, and often in less than a quarter of this time. Usually, marked relief follows within an hour or two after the beginning of the applications described. The special advantage claimed for this hydriatic method is, that it affords a certain means of determining whether or not surgical procedures should be adopted. If the case is one which demands surgical interference, little or no relief will be afforded by the hydriatic procedure. If any relief is secured, it will be but temporary; pain and other symptoms will speedily return in spite of the treatment. From three to six hours' time will always settle this question, and if an operation must be ultimately resorted to, the patient will have been benefited by the treatment, and the way prepared for the operative procedure, so that better results may be secured than could have been obtained without the preliminary treatment. I should mention that in all cases of appendicitis, food by the stomach is entirely withdrawn. Large enemas are administered two or three times daily, and the patient's strength sustained by nutritive enemas consisting of malt, or malt honey, beaten egg, or malted nuts in combination, and with the addition of a little salt.

This method is equally applicable to all forms of visceral inflammation, an ice bag or two over the inflamed part and a general or large hot application followed by a large heating compress to each leg.

In the treatment of chronic disease, hydrotherapy is indispensable. In recent works on practice one finds acknowledgement of this fact on almost every page treating of therapeutics. "If the foregoing remedies fail," as they often do, "resort to hydrotherapy," is the expression constantly reiterated by such authorities as Osler, Anders, and other men of equal professional standing. The query naturally arises, Why not call in hydrotherapy at the start, when its superiority is recognized? The only answer is the lack of practical knowledge of technique. But this difficulty is daily growing less serious, and will disappear as the value of this great remedy comes to be more thoroughly appreciated.

My paper is already longer than I intended to make it, although I have only entered upon the discussion of my subject. I will conclude by a brief mention of the services which may be rendered by the hydriatic method in a number of the most common and obstinate chronic maladies.

In the cachexias the cold mitten friction and the cold towel rub increase appetite, improve elimination, strengthen the heart, improve the action of the skin, increase oxidation, improve vital resistance, and secure improvement in most unpromising cases, sometimes even in cases which seem utterly hopeless, as in cancer, pernicious anemia, and various forms of autointoxication.

All curable forms of autointoxication naturally yield most readily to hydriatic measures in combination with other physiologic means. The sallow, inactive skin which is characteristic of this condition is powerfully stimulated to activity by the electric-light bath and sweating baths of all sorts, followed by short cold applications. The sweating pack followed by the cold wet-sheet rub, fomentations over the abdomen, cold towel rubbing, large enemas at a temperature of 75° to 80° administered daily, the wet girdle, cold mitten friction, copious water drinking, and, in fact, nearly all the

forms of hydriatic applications, are helpful in these cases.

Chronic inebriety, the morphia habit, and all forms of drug addiction afford a splendid opportunity for the application of hydrotherapy. The lowered nerve-tone is strengthened by short daily cold applications. Alternate applications to the spine stimulate the weakened cardiac and vasomotor centers. The sweating bath affords an admirable means of preparing the patient for the ordeal of the withdrawal of the drug. The neutral bath and the neutral wet-sheet pack relieve, to a marvelous degree, the extraordinary nervousness and irritability which follow the withdrawal of the drug. I have, in other papers, described a method which I have for a number of years employed most successfully in dealing with these cases.

In obesity the hot bath will increase oxidation to the extent of one ounce of fat in fifty minutes. The cold bath will do the same. In diabetes the cold bath will burn up an ounce of sugar in twenty-five minutes. The hot bath will do the same, though less safely.

In pulmonary tuberculosis, hydrotherapy will diminish fever, cough, night sweats, and pain, and will increase appetite and strength, cause a gain in flesh and blood, and so increase the bactericidal property of the blood as to bring about the destruction of the invading bacteria and complete restoration to health. The hydriatic method, coupled with an out-of-door life and proper feeding, will cure nearly every case of pulmonary tuberculosis if the case is taken in hand early enough. The daily cold bath and various local measures are required in this disease.

The sweating bath lessens hydrochloric acid formation and so helps in hyperpepsia and hypersecretion. The cold bath, if short, increases hydrochloric acid production, as does also the ice bag over the stomach before meals.

Hot baths burn up uric acid, and cold baths improve metabolism, so preventing the excessive formation of purin wastes.

In short, experience justifies me in saying that scientific hydrotherapy may be relied upon to increase vital resistance, the elimination of toxins, the destruction of poisons,

the destruction and elimination of bacteria, leucocytosis, and oxidation, to excite nerve centers, to promote normal metabolism, to encourage blood formation, to regulate blood movement, to increase heat production when needed, as in collapse, and to increase heat elimination, as in fever.

These means may be equally relied upon to decrease heat production in fever, to diminish heat elimination when necessary, to discourage bacterial growth, to relieve stasis of the circulation, to diminish metabolism when excessive, and to lessen nervous irritation.

What other therapeutic indications are left to be met in the treatment of chronic ailments, which are not fully supplied in proper alimentation, an ample supply of pure air, and water as a beverage, and proper nursing?

I may be looked upon as an enthusiast, but I am willing to submit all my claims for hydrotherapy to the test of scientific criticism. After an experience of thirty years in the extensive use of this agent in all sorts of cases, chronic and acute, I am compelled to recognize in it the greatest and most useful curative agent which a kind Providence has placed at the disposal of the human race.

In this paper I have attempted only a very meager outline of the principles, methods, and applications of hydriatic measures, which I have endeavored to discuss in a comprehensive manner in my work on "Rational Hydrotherapy."[1]

[1] F. A. Davis Company, Philadelphia, Pa. 1902.

OBSERVATIONS ON THE RELATIONS OF POSTURE TO HEALTH AND A NEW METHOD OF STUDYING POSTURE AND DEVELOPMENT

By John Harvey Kellogg, M.D., LL.D., F.A.C.S.
Medical Director, Battle Creek Sanitarium, Battle Creek, Michigan

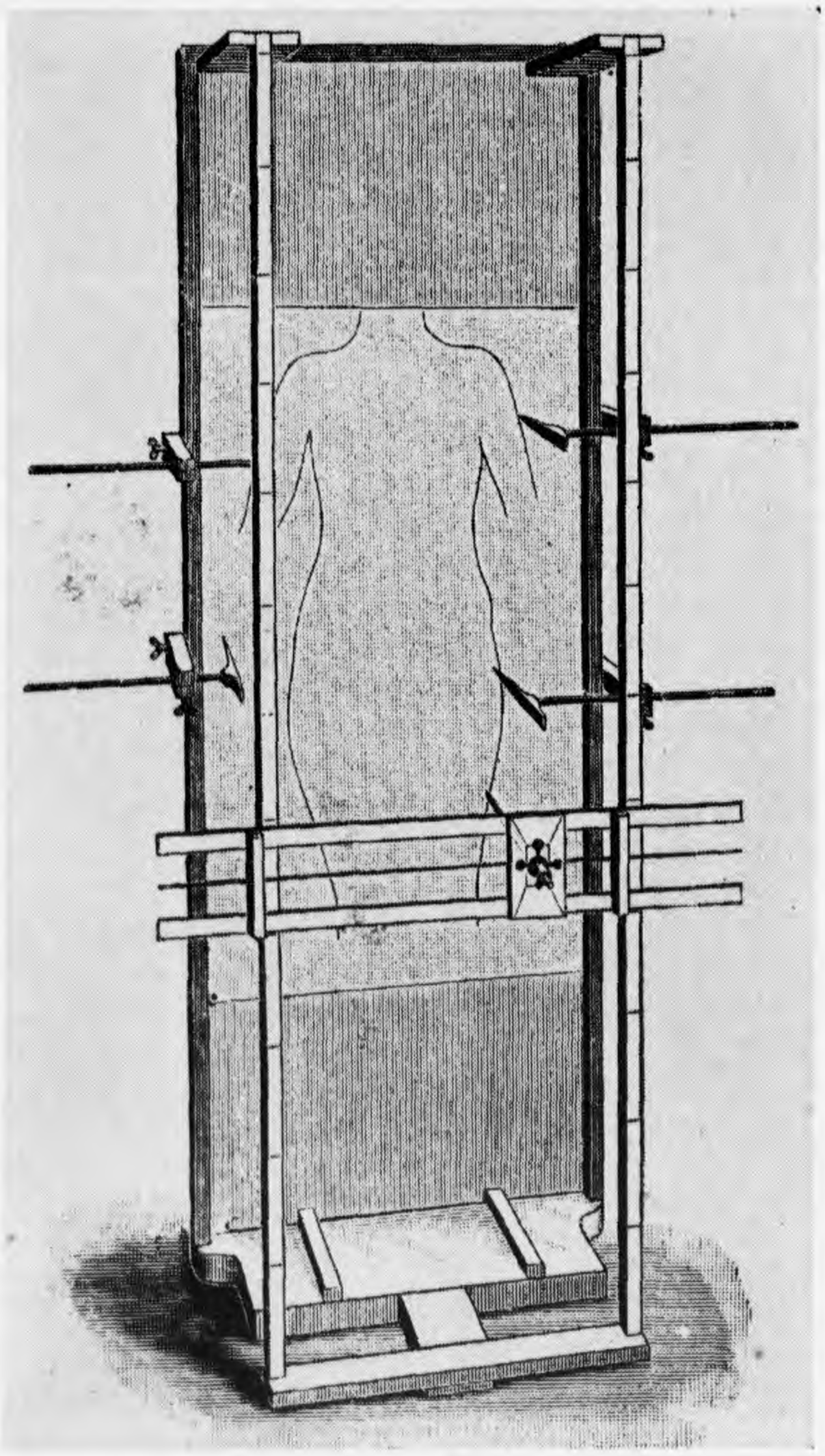

FIG. 1. The author's device for making outlines of the human figure, used 1890-1900.

More than fifty years ago, through a study of the Swedish system of gymnastics, I became interested in the question of posture. After a visit to Stockholm in 1883, to perfect my knowledge of the Swedish system by study under Hartelius, the successor of Ling, son of the founder of the system, I began a systematic study of posture in every patient who came under my care at the Battle Creek Sanitarium, and devised an instrument for making outlines of the human figure in the standing position.

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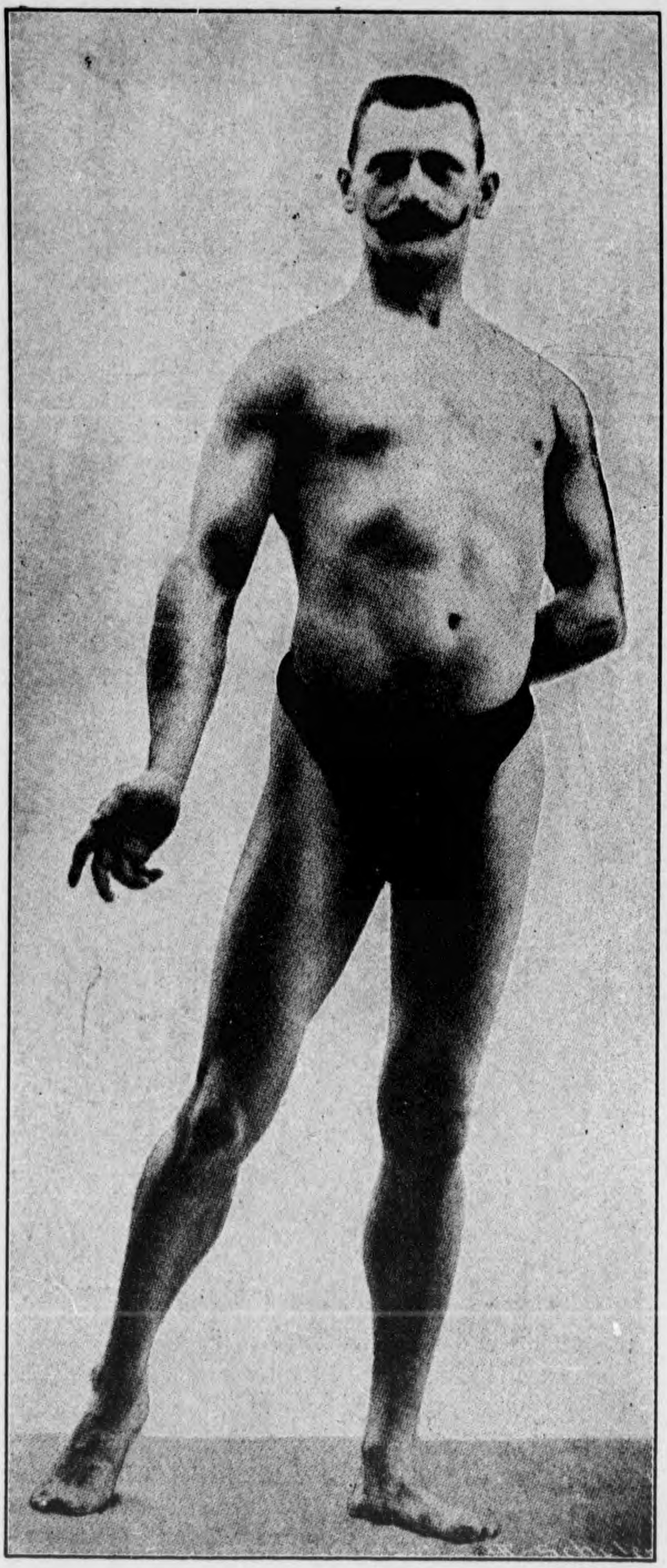


FIG. 2. A well poised athletic figure

With this instrument were made hundreds of outlines, some of which are shown herewith.

In connection with these outline studies, I made a careful study of the position of the internal viscera, beginning with the pelvic viscera in women, and a little later, after the publication of the work of Glenard on visceroptosis, in men as well as in women. By comparison of my tracings with the results of the study of the static relations of the viscera, I dis-

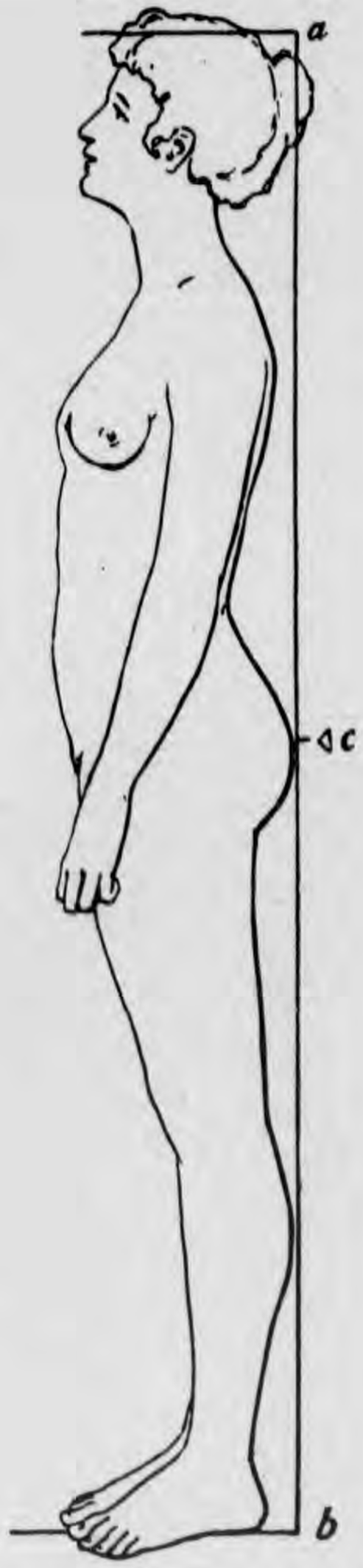


FIG. 3. The Tangent of Pasteur

covered that there was a constant and unmistakable relation between the contour of the body and the static relations of the internal viscera. I reported some of the results of these studies in a paper read before the American Association of Obstetricians and Gynecologists, in 1891, and a year later made a further report in a paper presented to the International Periodical Congress of Gynecologists and Obstetricians, at its meeting at Brussels, Belgium.

In these papers I set forth, and supported by clinical data, the following propositions, which I quote from the last of the above-mentioned papers:

"1. *Displacement of the pelvic viscera is not, as a rule, an isolated pathological condition, but is associated with similar static disturbances of the viscera of the abdominal cavity.*

"2. *The principal causes of uterine and ovarian displacements are such as affect the static relations of the viscera of the abdomen as well as those of the pelvis. Hence the rational treatment of pelvic displacements requires the removal of all causes of displacements of the abdominal as well as of the pelvic viscera, and the restoration of the normal supports of these organs.*"

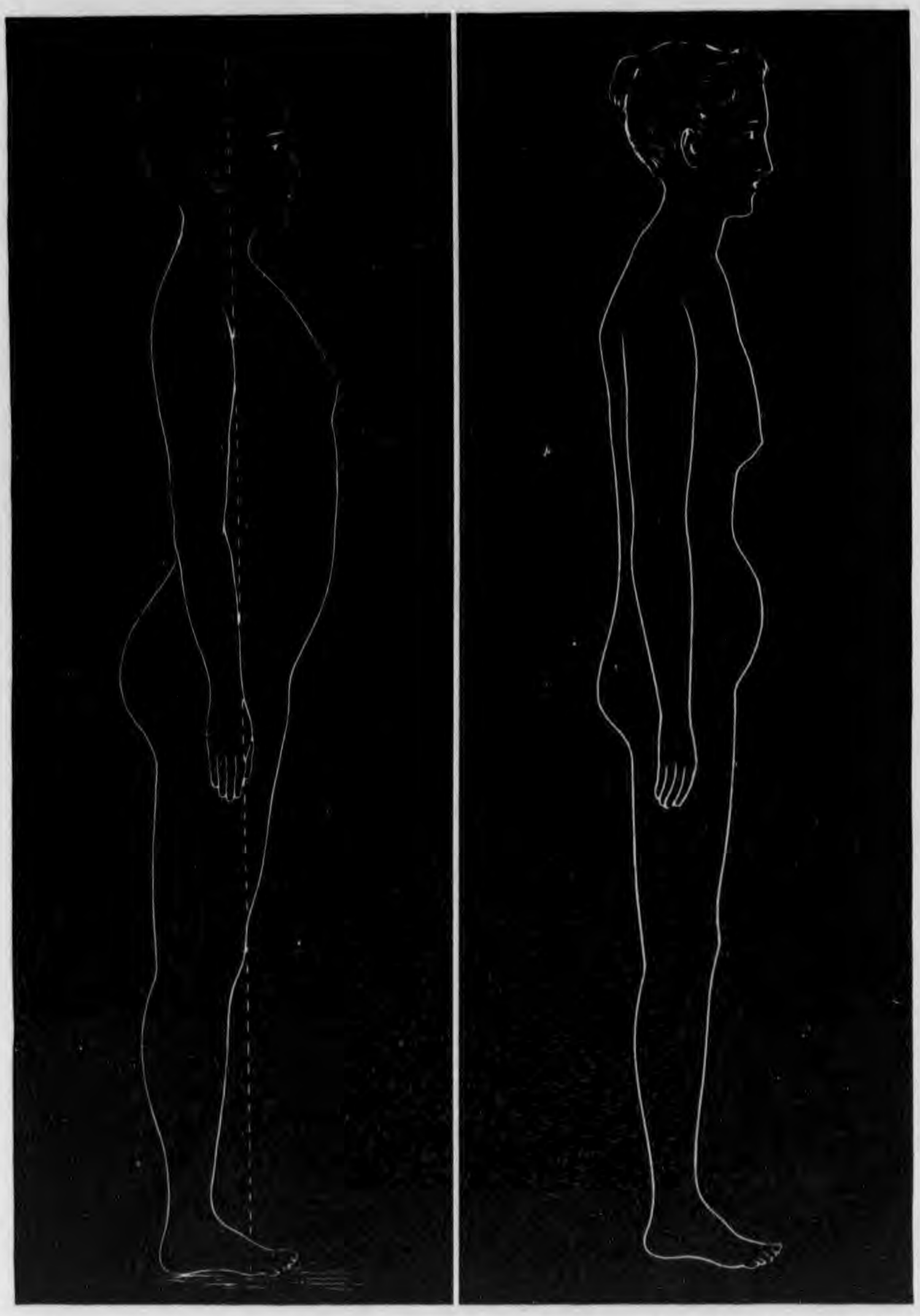


FIG. 4. Outline tracing made by the author (1891). 1. Correct standing position. 2. The same person in relaxed standing position, before correction by training.

In searching for the causes of displacement of the viscera of the abdomen and pelvis, especially by making a careful study of the bodily contours and attitudes of persons suffering from displacement of the abdominal pelvic viscera, I became convinced that the habitual posture is one of the largest single factors in producing these conditions.

The observations made, and the conclusions to which I arrived at that time, are summarized in the following paragraphs, which I quote from

my paper presented at the International Congress held at Brussels, above mentioned (1892).

"The strong and beautiful curves which are observed in a spirited horse are not only attractive from an æsthetic point of view, but are also of the highest significance from a physiological standpoint. In the healthy, vigorous animal, one observes that the head is held high, the neck and back strongly curved, the limbs firmly set, and the whole expression indicates vigor and strength. The same is equally true of the human body. An erect head, well curved back, prominent chest, retracted abdomen, and firmly set limbs are indicative of an energized carriage of the body which is characteristic of health. The flat chest, posterior dorsal curve, projecting chin, and protruding abdomen are equally indicative of a relaxed and weak carriage of the body, characteristic of feebleness and disease. The spiritless and tired horse does not hold his head up; he lacks the vigor and disposition to hold it up. So the woman who has been accustomed to the support of stays of steel or bone finds herself when without these means of support, feeling, as she says, as though she would fall to pieces. The muscles of the waist lack the ability to balance the chest and shoulders upon the pelvis.

"The direct effect of the corset, and of any constriction of the waist, is to break down the natural curves of the back, straightening the spine, thus depressing the chest, causing the shoulders to fall forward, and producing general collapse of the front wall of the trunk.

"In consequence of the weakness of the muscles that support the trunk, and especially weakness of the waist muscles, an ungraceful and unnatural carriage of the body appears, not only in walking and standing but in sitting. The weak-waisted woman is comfortable only when sitting in a rocking or easy chair. She cannot be comfortable unless the back is supported. Consequently, in sitting, the muscles of the trunk are completely relaxed, thus causing collapse of the waist and protrusion of the lower abdomen by the compression at the waist occasioned by the depression of the ribs.

"Such persons, in standing, assume a great variety of awkward and unhealthful positions. The most common faults are, dropping the shoulders, projecting the chin, carrying hips too far forward with weight resting upon the heels and a general lack of even and graceful balance of the body. In walking, the forward position of the hips makes it impossible to plant the whole sole of the foot down at once and firmly, so that the weight is thrust continually upon the heels. This evil is increased by wearing high-heeled shoes. A swinging, swaying, wriggling, or otherwise awkward gait is the most common mode of walking in women, very few of whom are good walkers, in consequence of the inability to balance the body well, through weakness of the muscles of the waist.

"The extreme frequency of spinal curvature of various forms in women is an evidence of the prevalent weakness in them of the muscles of the trunk, which results from their neglect of active physical exercise and from bad sitting postures; at least this is true of American women. A

notable degree of spinal curvature, sufficient to produce symmetry of the body, may be found in the great majority of American women."

It is a notable fact that primitive people who wear little or no clothing have good figures and excellent standing poise. The nude savage stands erect, with his chest well held up.

GREAT FREQUENCY OF SPINAL CURVATURE IN YOUNG WOMEN

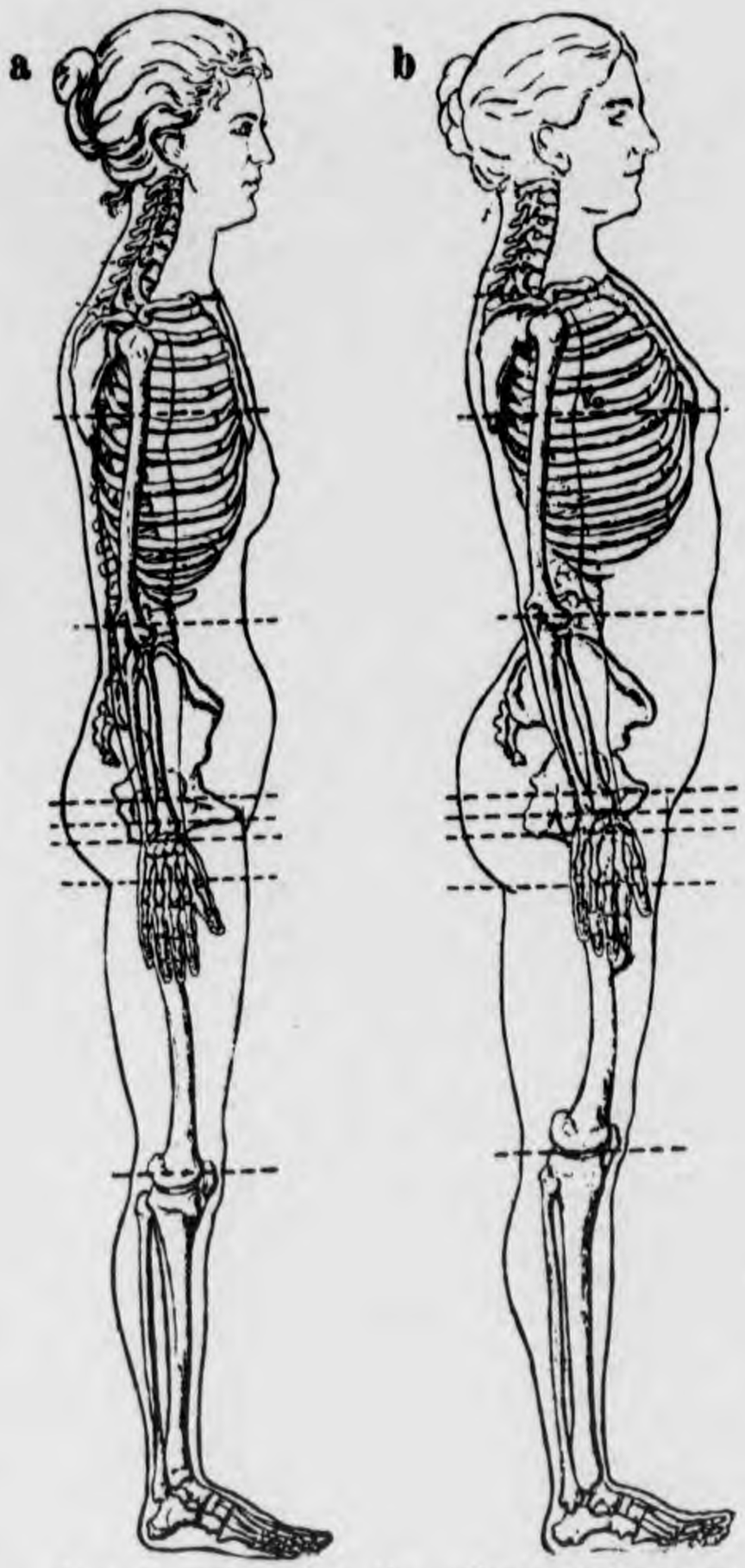


FIG. 5. Showing the effect of improper position upon the skeleton, especially the chest.

In 1892, I made a careful examination, with special reference to bodily symmetry, of two hundred students in attendance at a college, seventy-five of whom were young women and one hundred and twenty-five young men. Of the young women, whose ages were from eighteen to thirty, only four were found who did not present some degree of lateral curvature of the spine, which in a number of instances was so exaggerated as to interfere seriously with respiration. Marked posterior curvature of the spine was prominent in a large proportion of the cases, especially in the middle and upper dorsal region, resulting in forward carriage of the chest and head. Among the much larger number of young men, scarcely a dozen cases were found in which the spine was perceptibly curved; and in only one

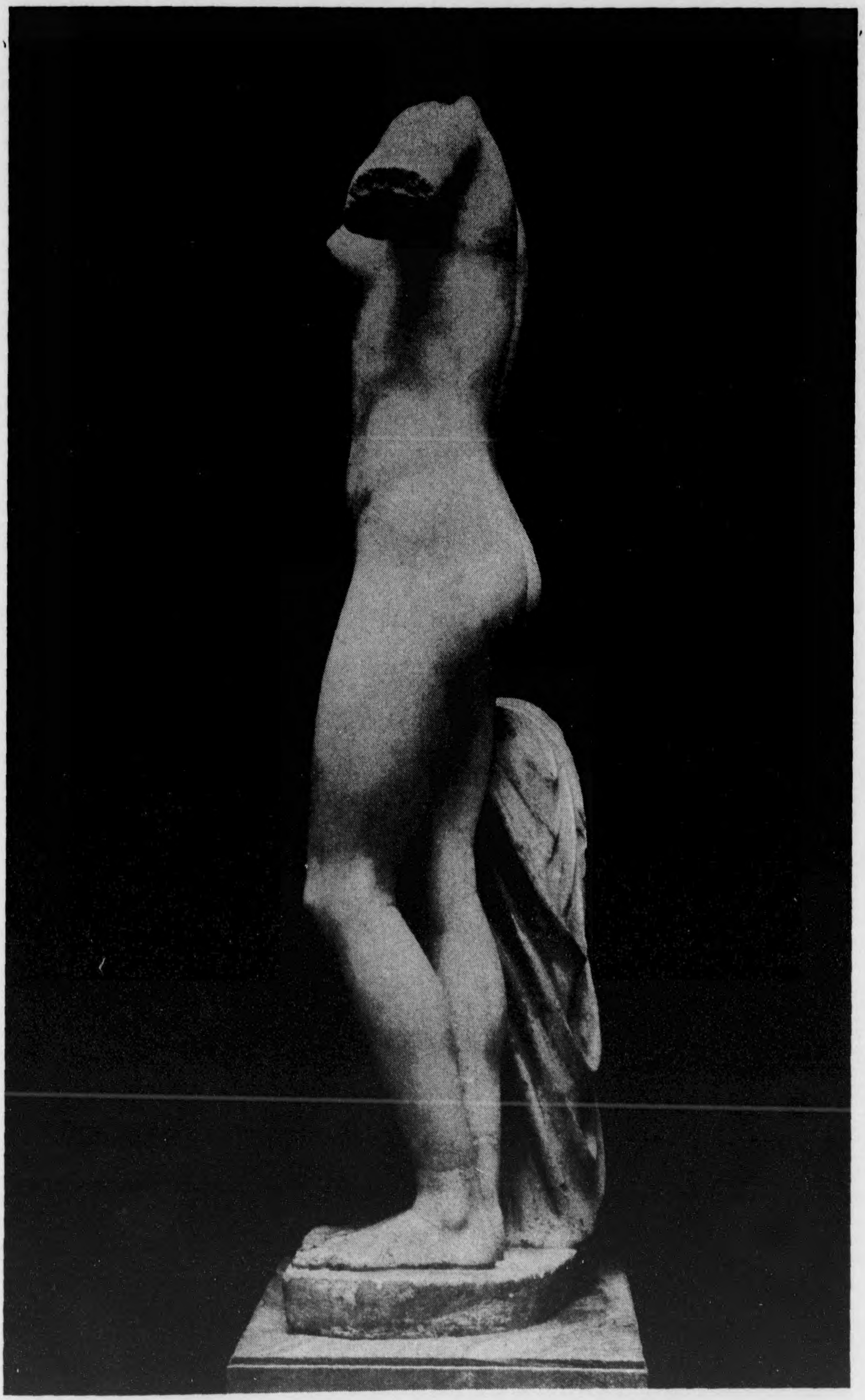


FIG. 6. Greek statue

case was there a decided lateral curvature. The showing for the young men in this instance was unusually good, perhaps owing to the fact that they were largely from the country, and had been all their lives accustomed to active out-of-door work and sports.

Sir John Forbes, who has made quite extensive investigations upon this subject in schools for young women in England, records that on visiting a boarding school containing forty girls, he found on close inquiry that there was not one girl who had been in school two years who was not more or less deformed as the result of lack of muscular exercise and bad posture.

An examination of the young ladies' seminaries in this country would doubtless disclose a similarly deformed condition of the young women students. The young woman who grows up in a rocking-chair or behind the ordinary school desk, cannot escape a greater or lesser degree of distortion of the trunk.

NORMAL CONTOUR OF THE BODY

In an effort to determine the normal contour of the body, I made quite an extended study of women who had grown up under natural conditions. Among these were a number of American women who had had special opportunities for athletic training and had escaped the damaging effects of restricting clothing.

In October, 1887, I visited the Yuma Indians, at that time still living in their primitive simplicity, the men being clad only in G strings and the women in small bark aprons. I found these primitive people splendidly developed. The men were veritable Apollos in physique and several women whom I measured had very nearly the proportions of the Venus de Milo.

I also studied native Mexican women and native Chinese women who had never worn civilized dress. I made studies, also, of a considerable number of ancient Grecian models of men and women. I made the interesting observation that women have a larger waist than men. Comparing the waist measurement, taken at the narrowest part of the trunk, with the height, I found the proportion to be 47.6 per cent for women, and 45.4 per cent for men.

In 1899 I visited Cairo, Egypt, where I found an opportunity to measure a considerable number of native women from the Nile region. These women had never worn other clothing than a loose gown. I found their waist proportion to be nearly equal to that of the Venus de Milo.

Last year (1926) I had an opportunity to study a large number of Arab women at Biskra, an oasis in the Sahara Desert. These women had never worn corsets and had suffered no injury from waist constriction. Excluding those who were abnormally fat, I found the waist constriction to be slightly over 47 per cent.

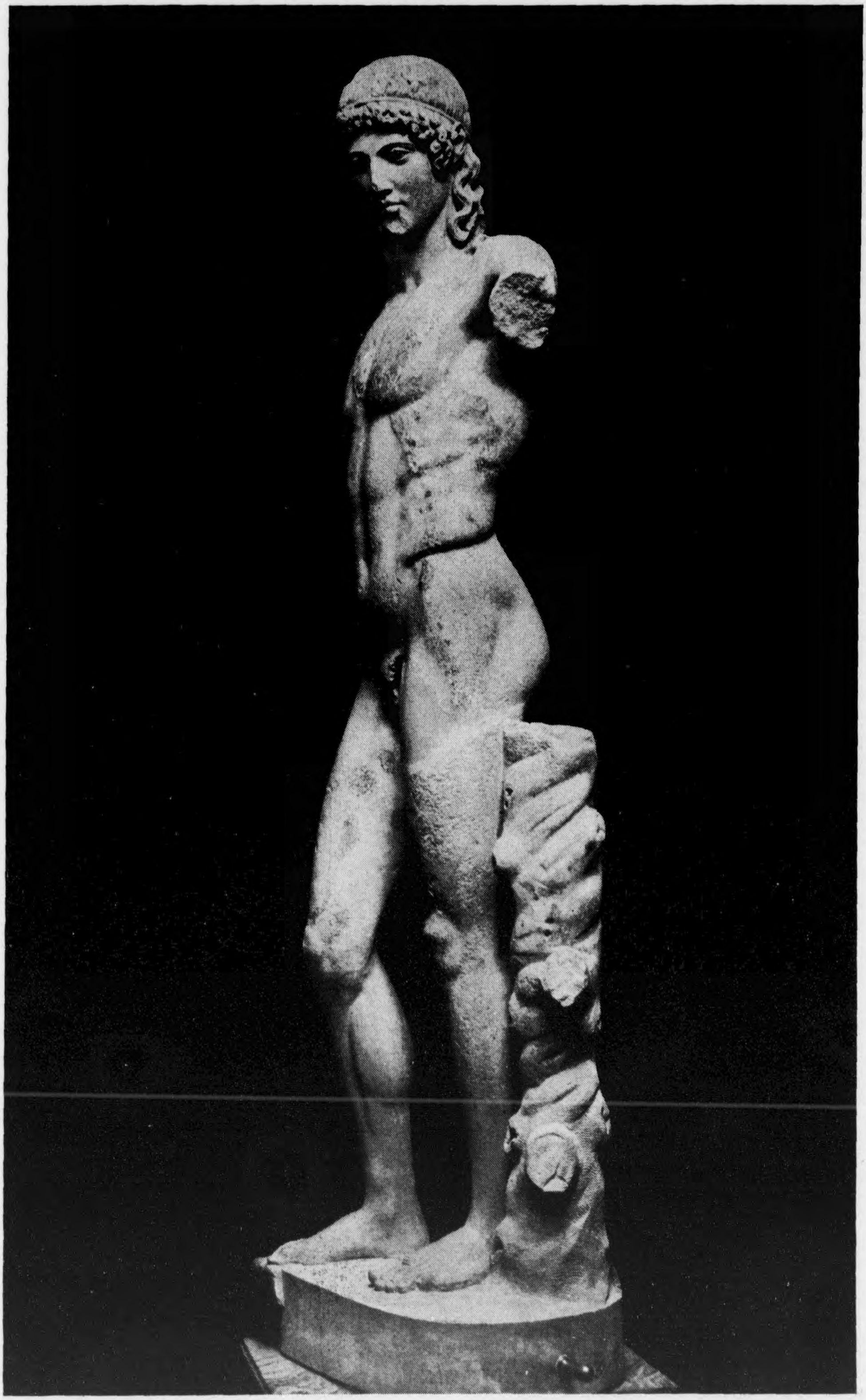


FIG. 7. Apollo

FIG. 8. Arab slave girl

WOMEN'S WAISTS LARGER THAN MEN'S

This is a matter of considerable importance, for not only women but men—through the vicious influence of the fashion plates—have formed a false ideal of the contour of the human female figure. It is necessary that women should have a larger waist than men for the reason that the stomach, liver, spleen, kidneys and colon—all organs that lie in the trunk at the level of the waist—are larger in proportion to the body and weight than in men.

WEAK TRUNK MUSCLES

Another study, which I began many years ago, and which I may briefly mention as of interest in this connection, was the testing of various groups of muscles of the body, including those of the trunk, and a comparative study of the results in men and women. These results were summed up in an extended comparative table, which I first presented in a paper read before the British Association for the Advancement of Science.

These studies made by means of the Universal Dynamometer, which I devised for the purpose, brought out in a very strong light the fact that in persons whose posture is habitually bad, the three great groups of trunk muscles, anterior, posterior and lateral, are disproportionately weak. This is clearly shown in the accompanying graphs.

BAD POSTURE A SERIOUS FACTOR IN DISEASE

While I first became interested in the subject of posture in connection with changes in position of the pelvic viscera in women, I very soon became convinced that bad postures are a serious factor in many diseased conditions, and that training and proper bodily carriage and the correction of the bodily defects and deformities due to bad postures, are measures that should receive great attention, both as means of prevention of bodily disease and as therapeutic means in a very large class of chronic invalids.

CHAIRS ARTIFICIAL

A chair is as artificial as a house. The savage generally lies down or reclines when not engaged in activity upon his feet. A relaxed condition of the abdominal muscles is natural and proper in the horizontal position, but when the muscles of the trunk are relaxed in the erect position, the pressure of the head and shoulders naturally inclines the body either forward or backward, according as the head is before or behind the line of gravity. If the inclination is forward, the result is the shortening of the distance between the sternum and the pubes and the relaxation of the abdominal muscles. This destroys the natural support of the viscera and of the large blood vessels that are found in the lower cavity of the trunk and which have so great a capacity that they are capable of holding all the blood of the body. When the pressure of tense abdominal muscles is removed from these blood vessels, the result is a great increase of blood in this vascular area and corresponding decrease in other parts of the body, especially the upper parts and particularly the brain and central nervous

system. The loss of memory, mental confusion, inability to concentrate the mind, slowness of comprehension, and mental dullness in children, as well as in adults, may be sometimes attributed, in part at least, to this withdrawal of blood from the general circulation in the manner indicated.

The vessels of the abdominal region, when not well supported by tense muscles, and when the body is in an erect position, constitute a stagnant pool in which a great portion of the blood is withdrawn from the circulation, thus diminishing the vital efficiency of other parts while hampering the functions of the abdominal organs through accumulation of venous blood.

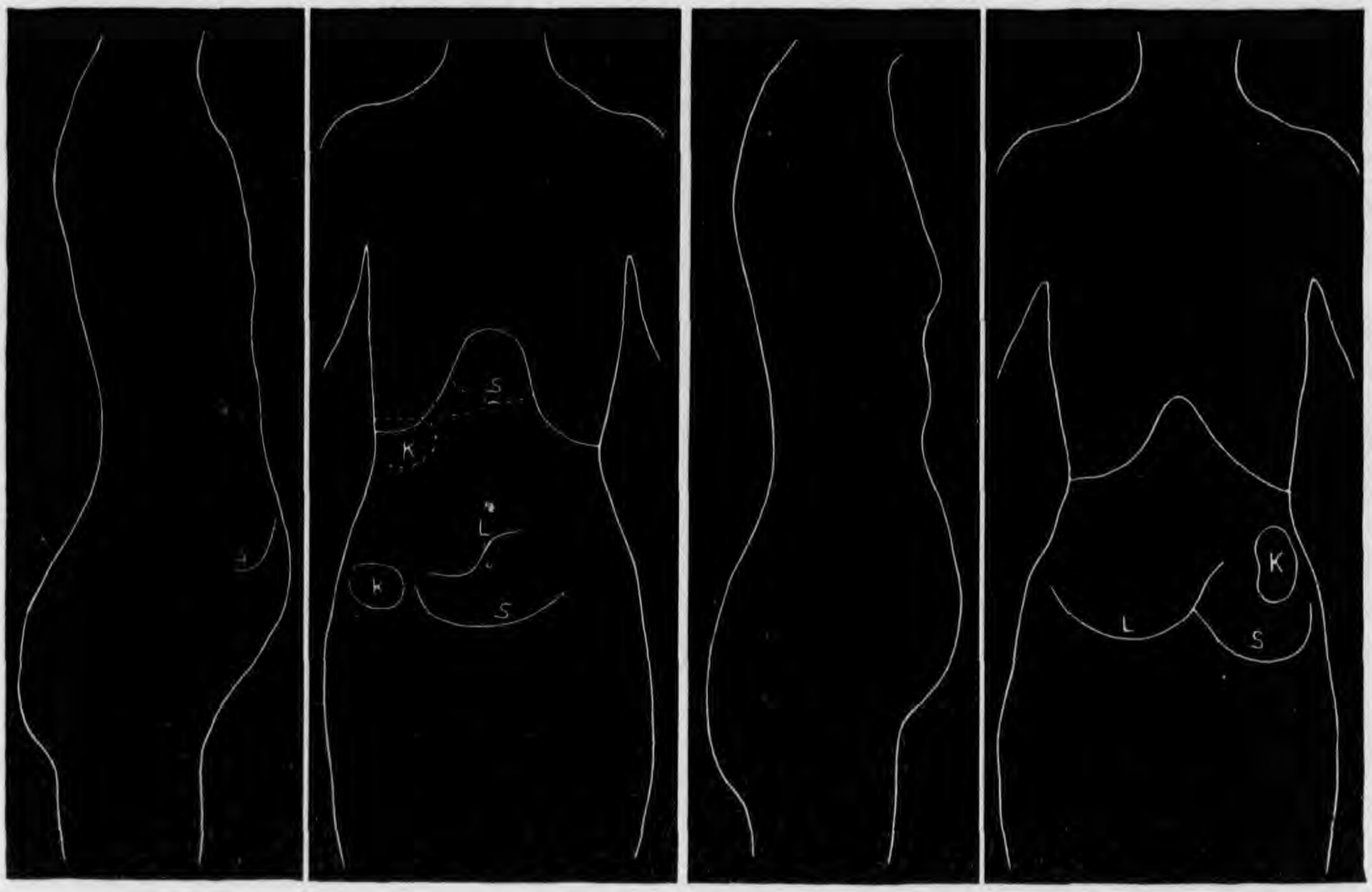


FIG. 9. Outline tracing showing correlation of external contours with internal visceral displacements.

The evil effects of this accumulation of blood in the ventral region is well shown by Hill's experiment in which a rabbit died in a few hours when supported in a vertical position. Hill showed, however, that the experiment succeeded only in the case of tame rabbits. Wild rabbits survived because of the possession of stronger abdominal muscles.

It is evident from the above that so long as the body is in upright position, its several parts—roughly speaking, the head, shoulders, chest and hips—must be maintained in proper relation to one another. This may be accomplished either by energized muscles, as in forcible standing or sitting, or by the aid of a proper support, as when sitting in a chair with a suitably constructed back. The construction of most chairs is such as to make relaxation of the muscles of the trunk unsafe, even dangerous, because of the malposition into which the trunk is forced by gravity and the resulting effects upon the heart, lungs, diaphragm and other viscera, and the grave disturbance of the functions of respiration and circulation.

One of the chief benefits derived from play, from breathing exercise, and exercises of all sorts that excite the activity of the muscles of the

trunk, is the fact that such bodily movements serve to drain the splanchnic area of stagnating blood, while increasing the blood supply of the brain, muscles and other vital parts. It should be regarded as much a part of the teacher's duty to train the student by constant admonitions and example in correcting poise as in the correct use of language.

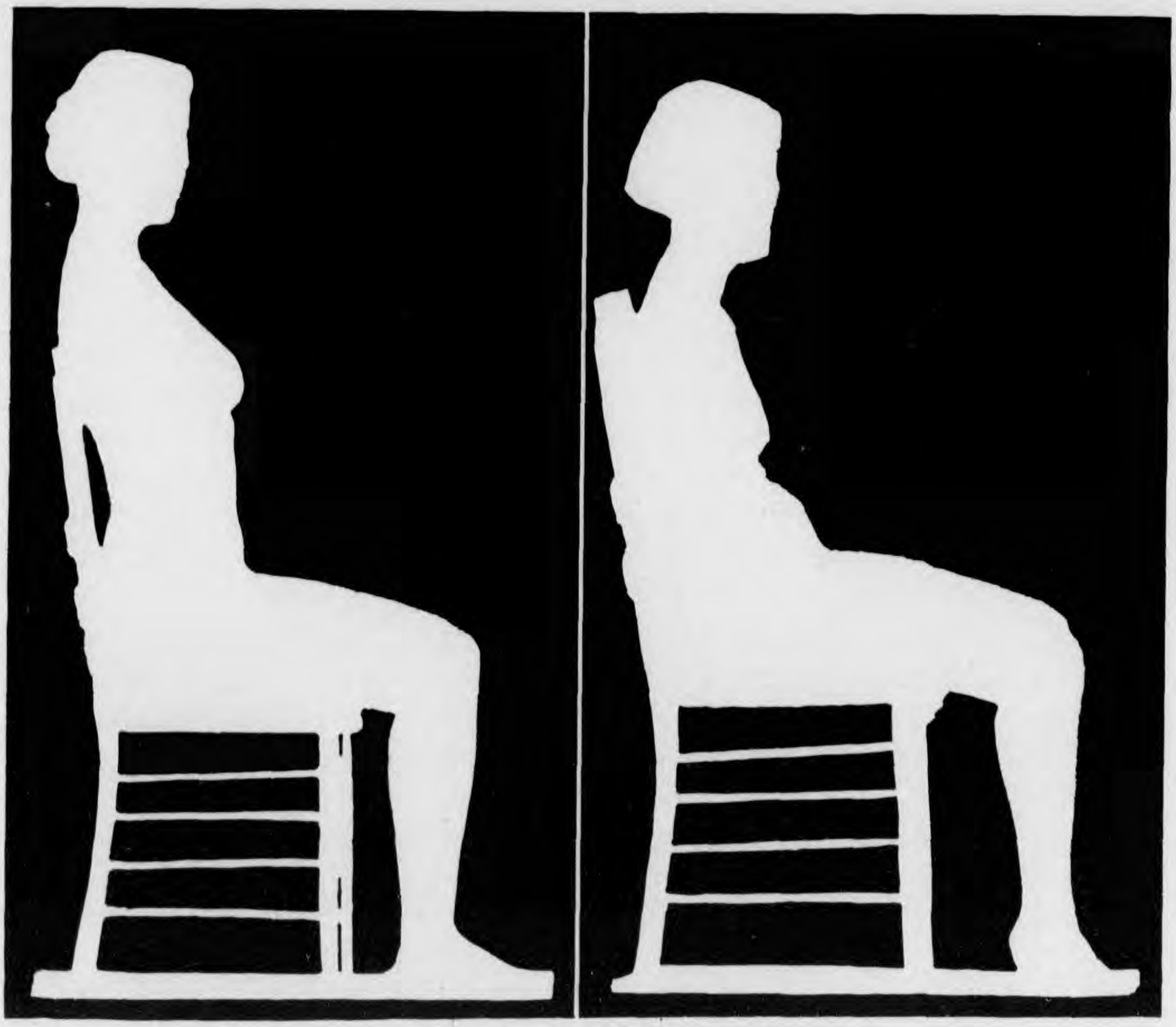


FIG. 10. Correct and incorrect sitting posture

THE ARAB HOLDS HIS TRUNK ERECT

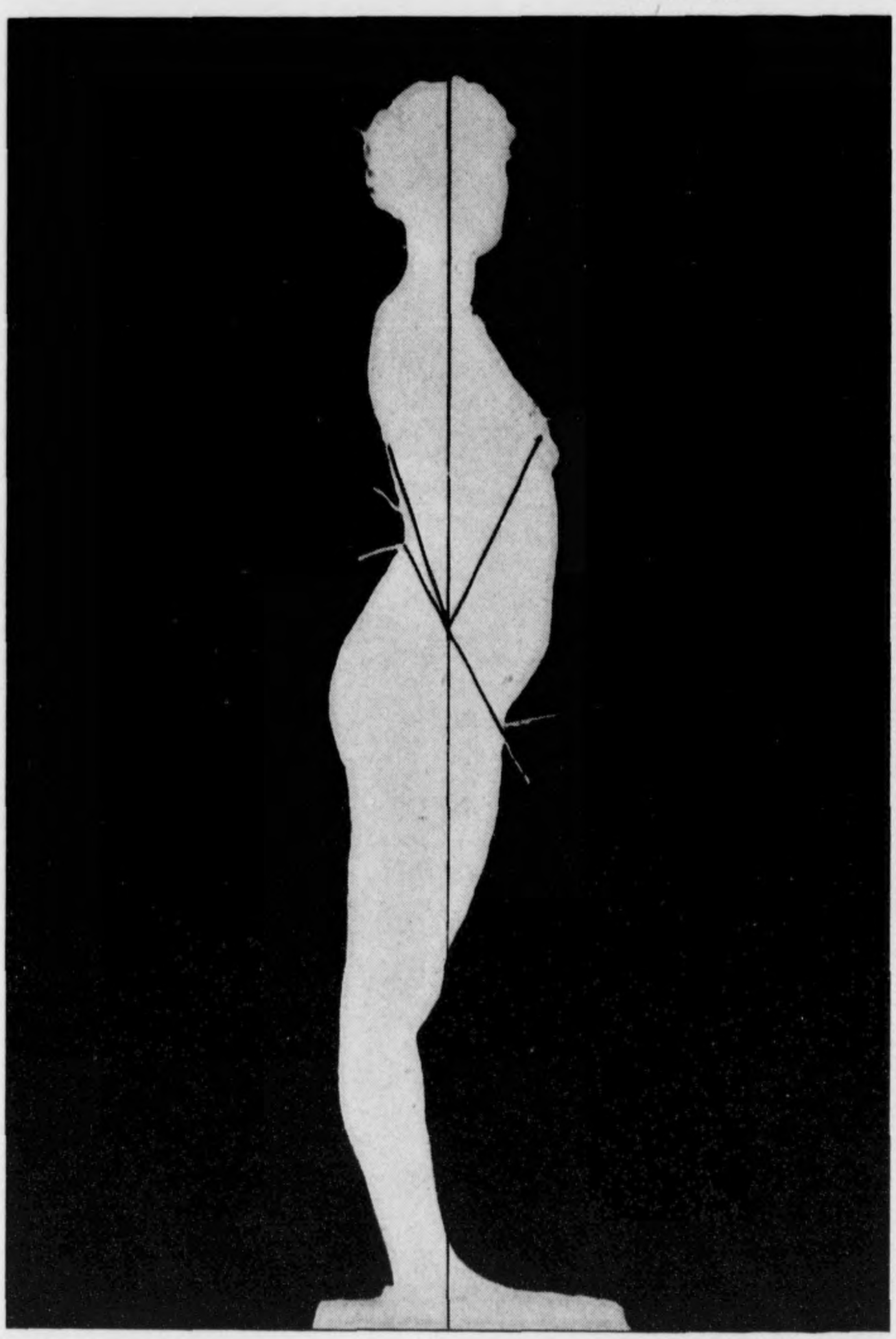
When traveling in North Africa many years ago, I was particularly impressed with the universally erect carriage of the native Arab at all ages and under all circumstances. Whether swaying back and forth upon a camel's back, keeping time with the rolling movement of the awkward beast, or running along beside a train of camels or laden donkeys, or sitting upon a rock eating a dinner of dates, hard bread, and dried cheese, the Arab always holds his trunk erect, as straight as a pine. Remarking on this fact to an intelligent American gentleman who had lived for a third of a century among the Arabs, I was informed that the straight carriage of the Arab is the result of the most careful training from early childhood. Said he, "In an Arab encampment in the twilight when the families are gathered in their tents, one may often hear a father or mother exclaiming, 'Sit up, Abraham, sit up; you look like a fool doubled up so. Sit up.' "

Another, and perhaps one of the most serious of all the effects of the relaxed posture, is its influence upon the diaphragm. As pointed out by Eppinger, the low-standing diaphragm results in a displacement of the heart. The pericardium is attached to the great vessels of the upper chest, to the trachea above, and to the diaphragm below. The apex of the heart normally rests upon the diaphragm and is supported by it. When the diaphragm is dragged down by the descent of the liver, stomach and other heavy viscera that are attached to its under side, because of a relaxed condition of the abdominal muscles, the heart is pulled down into a vertical position and is under a strain, so that, in the words of Eppinger, "during each contraction the heart has to pull itself up." The proof of this extraordinary strain upon the heart is found in a slight up and down motion of the pharynx, the so-called Oliver-Cardarelli's symptom. The importance of this symptom was first pointed out by the eminent Professor Wenckebach,of Vienna, some years ago. It may be noticed during inspiration even in mild cases of low-standing diaphragm. It is evident that a heart that is compelled to do this enormous amount of extra work at each beat will become exhausted sooner than a heart working free under normal conditions. This is one reason why persons with flat chests and rounded backs have little endurance.

Eppinger noted that persons with a low-standing diaphragm, "usually have a very small degree of lumbar lordosis and have tilting of the pelvis (lessened pelvic obliquity)," adding "this causes a further relaxation of the abdominal muscles, as the distance between their insertion points is decreased."

This is a perfect description of an individual whose habitual posture has flattened his lumbar curve and hence caused depression of the chest and abnormal prominence of the lower abdomen, due to descent of the abdominal viscera and, consequently, a low-standing diaphragm. But Eppinger seems not to have noted the causative relation of bad posture to this condition. The slumped posture is the natural result of the fact that our house chairs, the seats occupied by children in schools and by adults in churches, theaters, trains, street cars and other public places, are rarely constructed in such a way as to support the body in a normal posture when it is relaxed. Consequently, the moment relaxation occurs, gravitation takes control and the body is pulled into whatever position the supporting structure may cause it to assume.

The universality of this condition among civilized people, in the opinion of the writer, gives to this question of posture, and especially the sitting posture, great importance as a health factor. The standing posture is in general simply the natural result of the sitting posture. If the habitual sitting posture is such as to hold the body in proper form, the same poise will be maintained in the erect position.



The same as Fig. 11 after correction of posture

Everyone who has studied posture has encountered three embarrassing difficulties: (1) The absence of clearly defined standards as to what is good or normal posture; (2) the absence of exact terms for expressing deviations from the normal; and (3) the lack of means of accurately determining and describing departures from the standards regarded as normal.

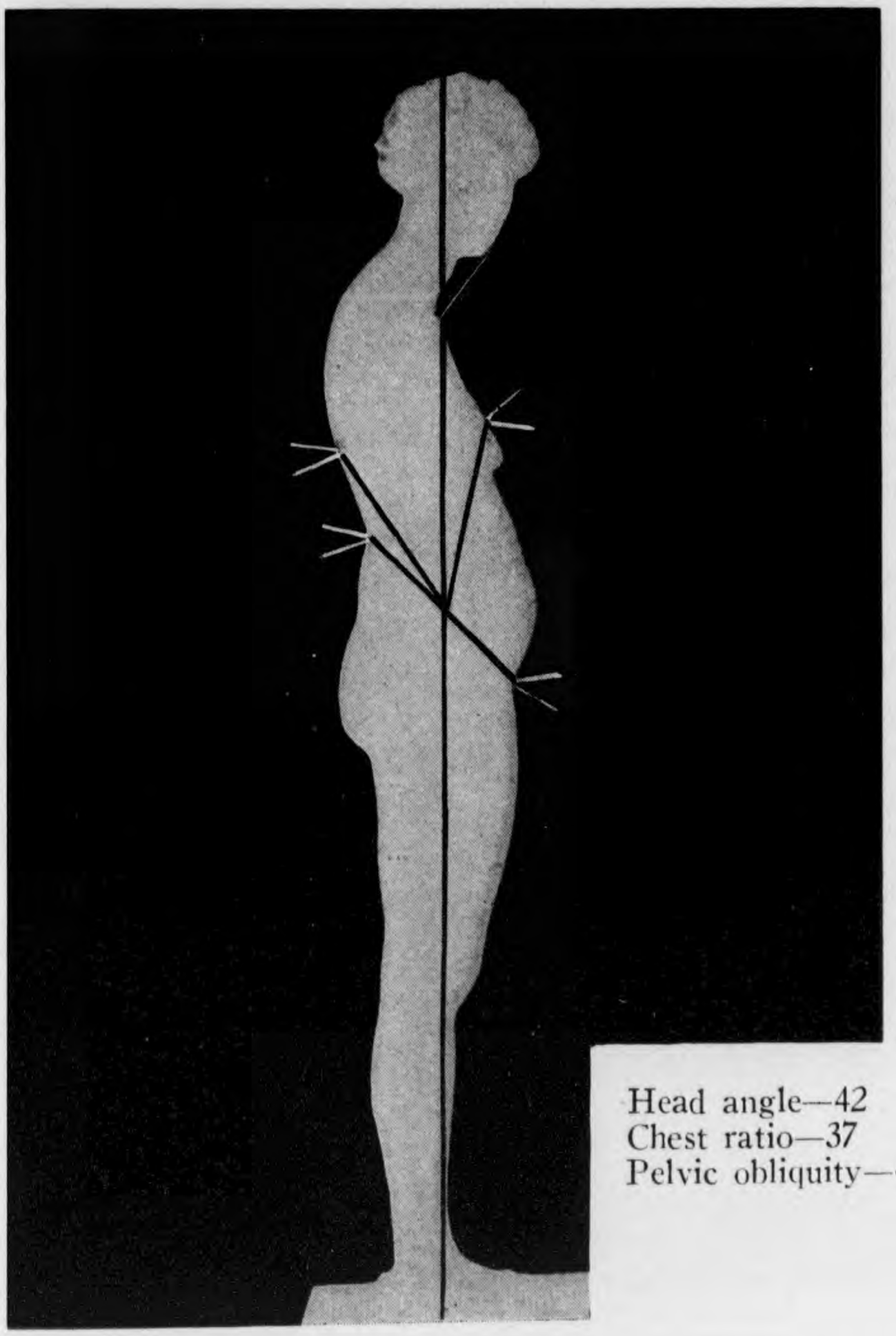


FIG. 11. A typical school girl figure

During more than forty years' study of this subject I have gradually developed a method that seems to overcome these difficulties. The method is based upon the proposition that the poise of the body either sitting or standing, is determined by four essential factors: (1) The Vertical Balance; (2) the Pelvic Obliquity; (3) the Chest Ratio; and (4) the Head Angle.

THE NORMAL POSTURE

The natural standing or sitting posture is the position naturally assumed by a well-developed person whose muscles are in a fresh or rested and energized state, and in whom the heart, lungs and every other bodily

organ can perform its function in a normal, unrestricted manner. In the normal posture, either standing or sitting, the head is erect, the neck straight, the anterior line of the trunk is convex from neck to pubes—the most anterior portion of the skeleton being the lower end of the sternum—and the posterior line of the trunk is concave except for a flattening or slight convexity in the cervico-dorsal region.

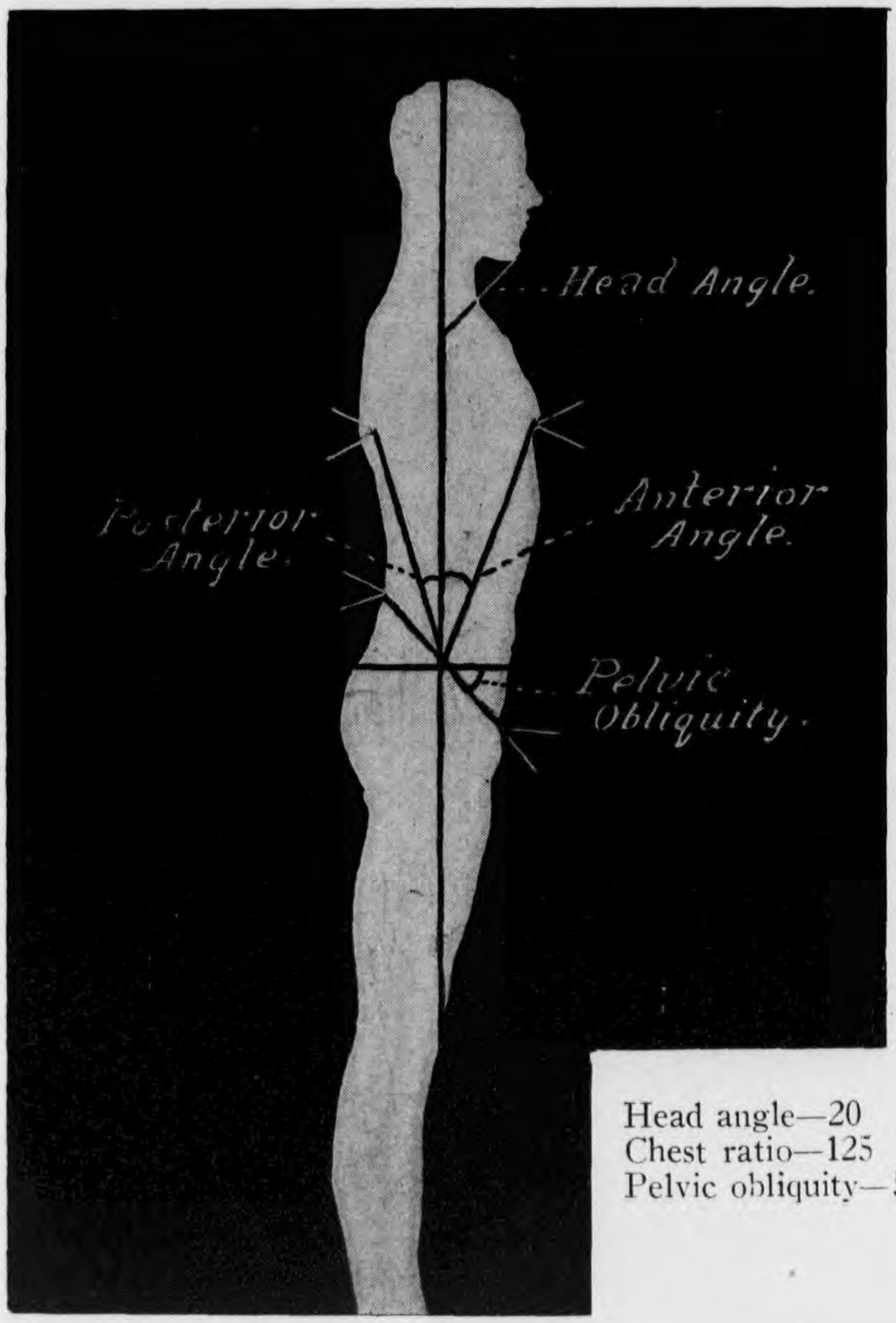


FIG. 12. A Swedish athlete

The Vertical Balance (V B)

The Vertical Balance is the posture assumed by the standing or sitting body in adjusting itself to the influence of gravity. The normal Vertical Balance in standing is the result of a delicately adjusted reflex coördination of symmetrically developed flexors and extensors and other opposing muscles throughout the entire body. When the muscular system has been symmetrically developed, either by natural all-around exercise such as a savage life affords or by intelligent training, the muscles automatically hold the bones of the skeleton in such positions as to give to the contour of the body its highest degree of beauty and of strength. When there is lack

of symmetry in development, however—certain groups of muscles being disproportionately weak or strong—the automatic reflexes fail to secure symmetry. The body falls, under the influence of gravitation, into some unnatural attitude in which weakness rather than strength is expressed, an attitude that may be as offensive to the artistic sense as it is incompatible with health.

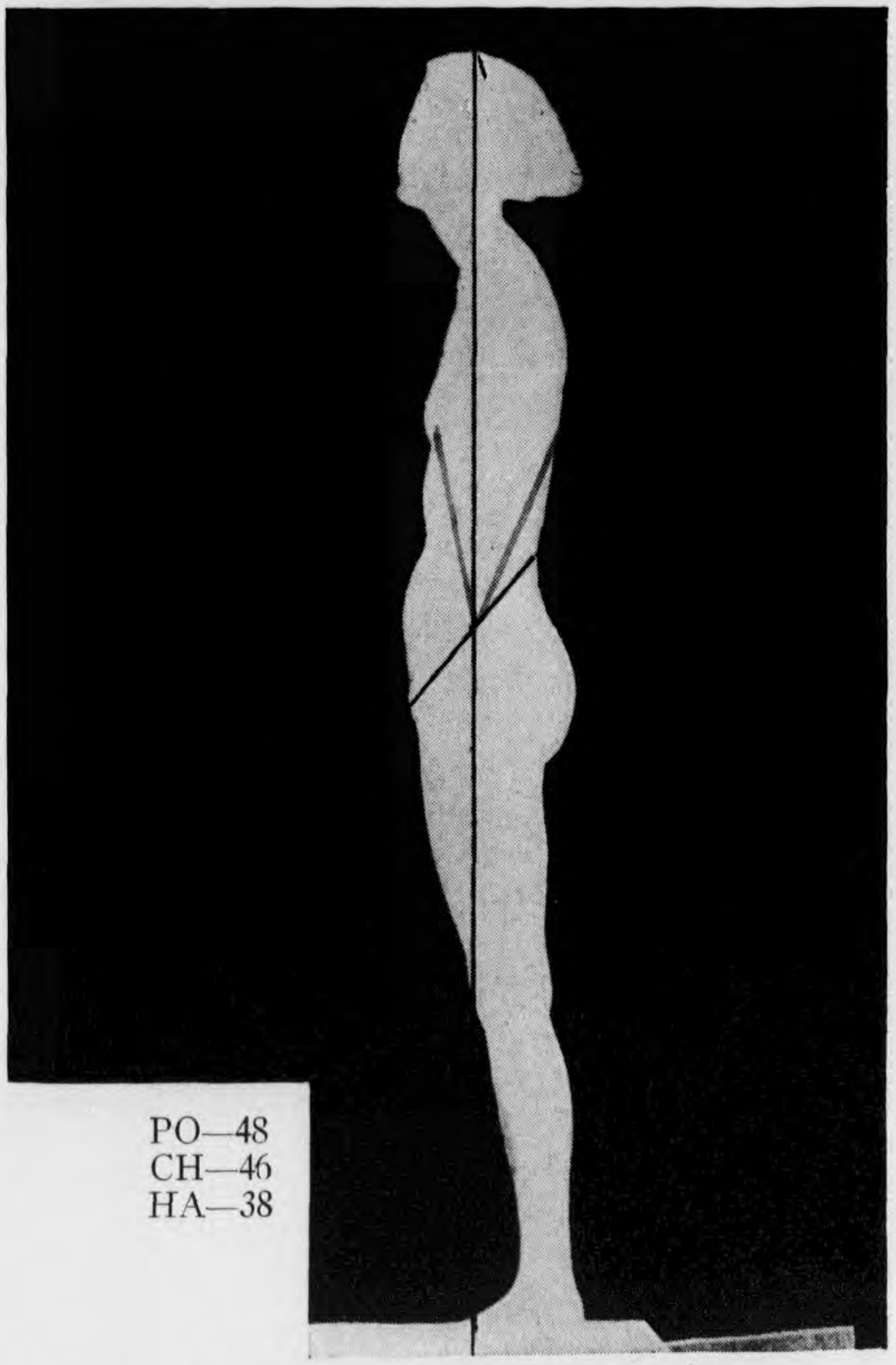


FIG. 13. A good example of the effect of the so-called "slouch position," in which the hips are pushed forward and the chest flattened. The PO is much lessened, the CR less than half the normal and the HA nearly double; the conventional type of recent years.

When the standing body is in normal Vertical Balance, a line dropped from a point an inch or two in front of the ear will pass through the center of the plane of the obliquity of the pelvis and will strike the foot at the instep. This line may be called the Vertical Axis of the body, although it lies a little anterior to the gravitational center of the erect body. It serves as a line of reference in analyzing the posture of a person in the standing position.

In the studies of posture by means of profile tracings that I made some thirty-five years ago, I considered as normal a posture which, when habitual, I had never found associated with prolapse of important viscera.

The Pelvic Obliquity (P O)

In the study of posture, I assume—as a fundamental proposition—that the pelvis is a pedestal upon which the torso is balanced. By Pelvic Obliquity is meant the inclination of the plane of the brim of the pelvis from the horizontal. The obliquity of the pelvis is marked by a line passing from the pubis to the promontory of the sacrum. With the aid of the X-ray, I have found that if this line is extended backward it touches the tip of the third lumbar vertebra.

The Chest Ratio (C R)

The Chest Ratio expresses the relation between that portion of the chest that is in front of the Vertical Axis and that portion which is behind this line. This relation is determined thus: A line is drawn from the point of intersection of the Vertical Axis with the plane of the pelvis and the lower end of the sternum, which is normally the most prominent portion of the chest. Another line is drawn from the same starting point to a point at the back of the chest just opposite the lower end of sternum. The two angles thus formed are measured and the anterior is divided by the posterior. Normally, the anterior angle is always larger than the posterior, never smaller. The difference is 10 to 20 or even more degrees, so the normal appears to be 18 to 25 degrees.

In the study of individual cases this angle is found to be exceedingly variable. It is modified by almost any change from the normal posture. Increase of the Pelvic Obliquity increases the prominence of the chest and the Chest Ratio. Decrease of the Pelvic Obliqu.ty invariably lessens the Chest Ratio. The Chest Ratio, may, however, be increased or diminished —without affecting the Pelvic Obliquity—by a change in the relation of the head and shoulders to the Vertical Axis. If the upper part of the trunk is moved backward in relation to the Vertical Axis, the dorsal curve will be increased, for the reason that the head and shoulders must be carried forward in order to maintain the vertical balance. The natural effect of this change in posture will be to lower the chest. As a result of this, the diaphragm will be depressed, the viscera crowded down, the lower abdomen will be made more prominent. Notwithstanding these changes the Pelvic Obliquity may remain unchanged.

The Head Angle (H A)

The angle formed by the chin with the Vertical Axis is measured by a line passing from the chin through the upper end of the sternum to the Vertical Axis. This measures the degree of forward carriage of the head. A large head angle is associated with an exaggerated posterior cervico-dorsal curve. It is very likely to be found in persons with long necks. The Head Angle has a considerable range of variation. The normal appears to be about 18 to 25 degrees.

USE OF THE SHADOWGRAPH

In order to make an exact study of posture it is necessary to have an exact outline of the subject. It is desirable to have the front profile as well as the side, although the side profile is most important. There are various means of accomplishing this. The most convenient and exact I

find to be what may be somewhat inaccurately termed a shadowgraph. It is, rather, a photograph of the shadow of the subject. The subject stands, either nude or clothed in a thin, tightly-fitting undergarment, in front of and close to a muslin screen. A shadow is cast upon the screen by a strong light placed opposite the middle of the subject at a distance of about sixteen feet. A photograph of the shadow is made by a camera

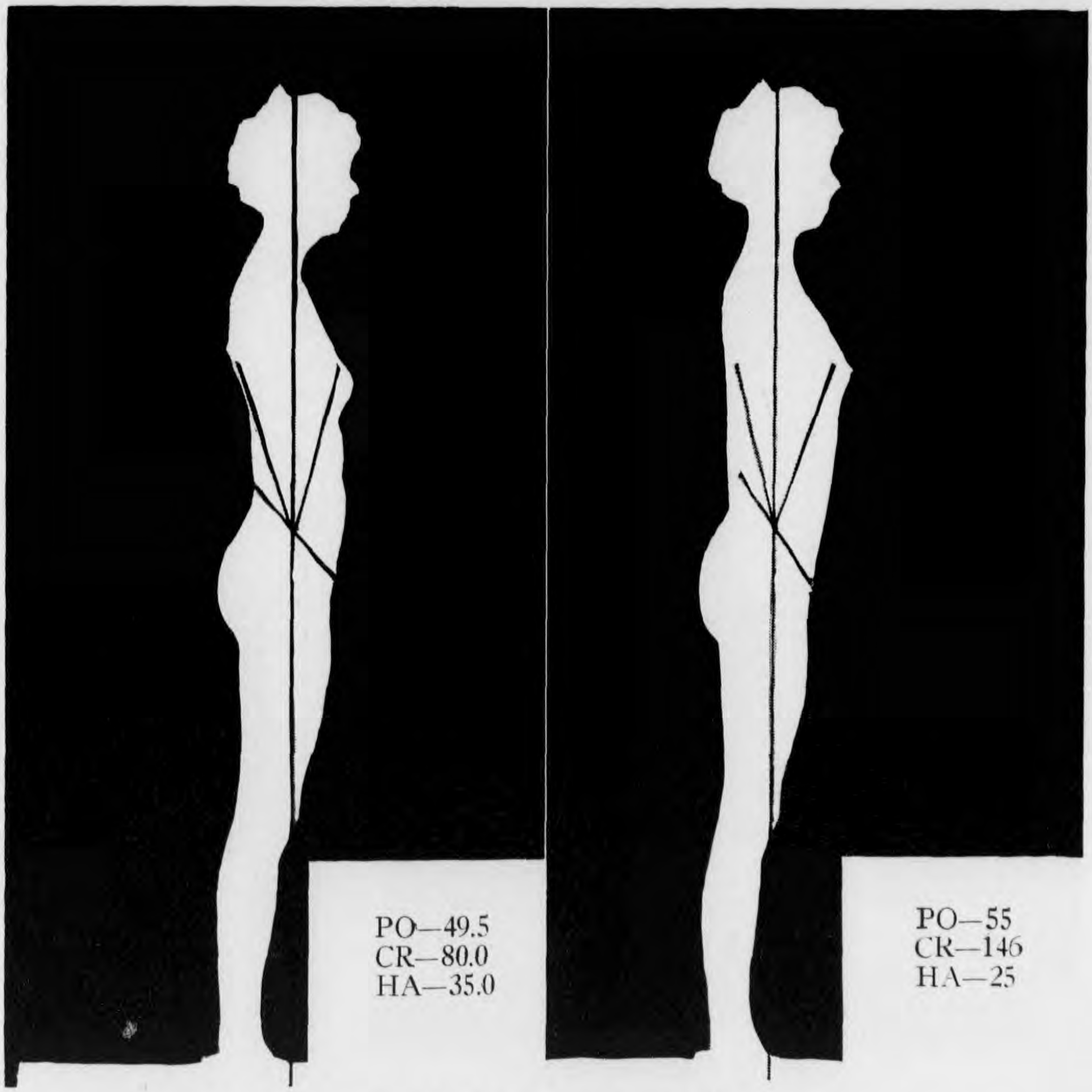


FIG. 14. A weak type corrected

placed behind the screen. With the apparatus that I employ, an exposure of about eight seconds is required. The negative shows a white figure on a black background. The negative itself is used for study and record. Positive prints can be made for record if desired. When duplicates are wanted, two or more negatives may be made.

To insure accuracy in the analysis of the shadowgraph the various points of reference must be fixed by markers, which should be placed at the following points: (A) The pubis; B) the tip of the spine of the lumbar vertebra; (C) the extreme lower end of the sternum; (D) a point on the back opposite the lower end of the sternum; and (E) the

upper end of the sternum. If desirable, the opening of the ear may also be indicated.

The marker employed consists of aluminum wire bent to an acute angle. The wire is attached at the angle to a thin strip of aluminum, which is fastened to the skin by adhesive strips or glue. In locating points on the shadowgraph, it is only necessary to extend the lines shown in the shadow

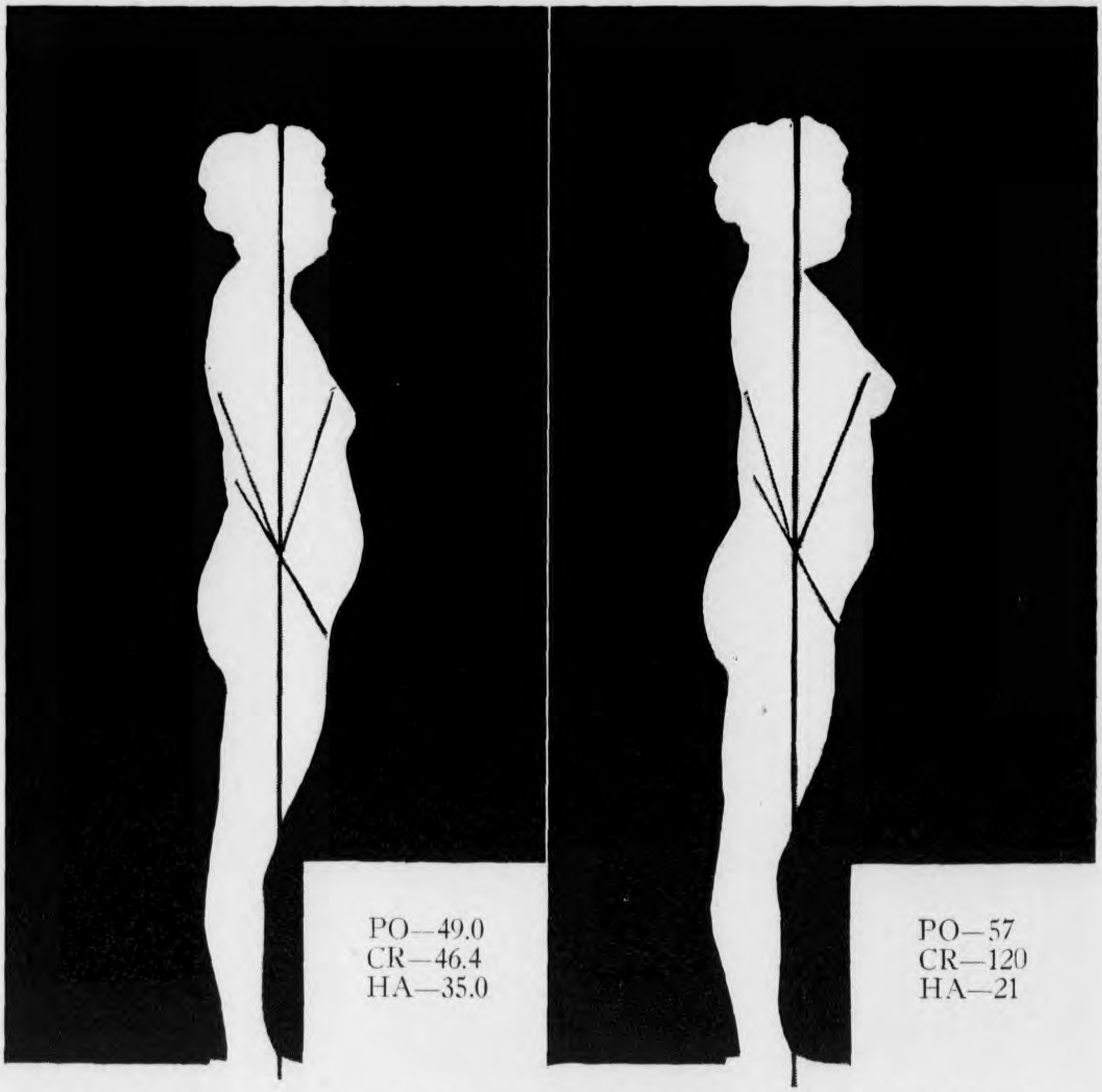


FIG. 15. Faulty carriage of the head, shoulders and chest with diminished PO. The type of figure most frequently met in persons of sedentary habits.

to the point of intersection, which point will of course mark the surface of the body.

HOW TO STUDY SHADOWGRAPHS

In studying the shadowgraph, the first step is to connect the markers A and B. The inclination of this line from the horizontal measures the obliquity of the pelvis. The center of this line is found and a dot made.

A vertical line (the Vertical Axis, V A) passing the whole length of the shadowgraph is drawn through this point. Next a line is drawn from the same point to each of the two chest markers, C and D.

Another line is drawn from the tip of the chin through the marker E to the Vertical Axis.

The angles formed by these several lines with the Vertical Axis are now measured and the results recorded. The angular measurements are made with an ordinary draftsman's sextant.

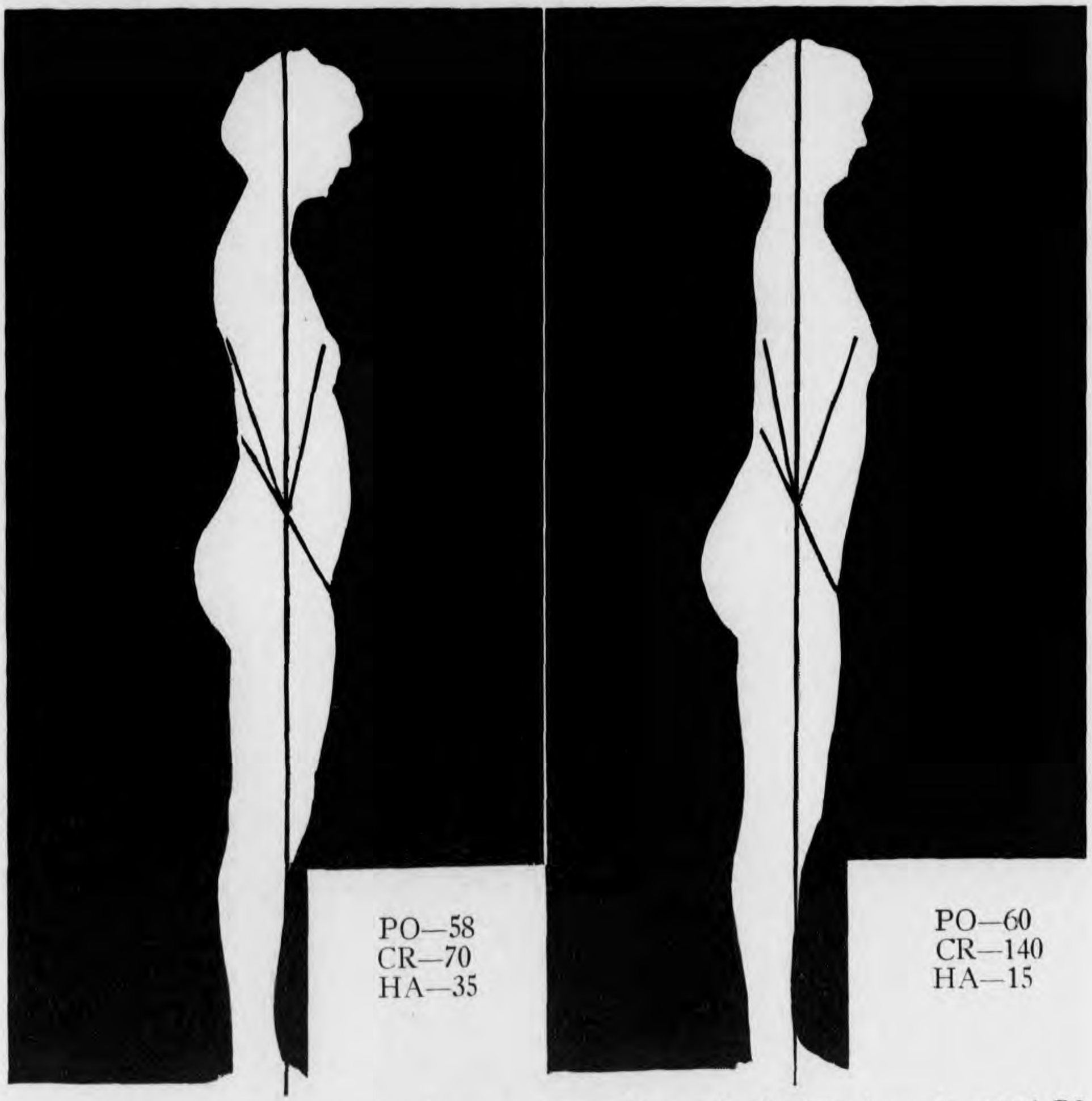


FIG. 16. A common type found among stenographers and school teachers. A normal PO with faulty carriage of the shoulders and upper chest. Somewhat overcorrected.

It should be noted that the angle of the Pelvic Obliquity is measured from the horizontal, while all the other angles are measured from the vertical.

It may be remarked that a very useful analysis of a shadowgraph may be made in the manner above indicated without the aid of the markers after one has become somewhat accustomed to studying shadowgraphs by this method. The several lines can be drawn with approximate accuracy even without the aid of the markers.

Simple inspection of the shadowgraph after the Pelvic Obliquity line and the Vertical Axis have been drawn will show clearly at once the several defects that exist. If the Pelvic Obliquity falls below fifty degrees,

the effect will readily appear in a flattening of the lumbar curve and depression of the chest, and this abnormality will be shown in a diminished Chest Ratio. The lower abdomen will be abnormally prominent, the upper back will be rounded, and the shoulders pushed forward. While the Pelvic Obliquity varies less than does the Chest Ratio, being often found normal notwithstanding the presence of marked deviations from normal

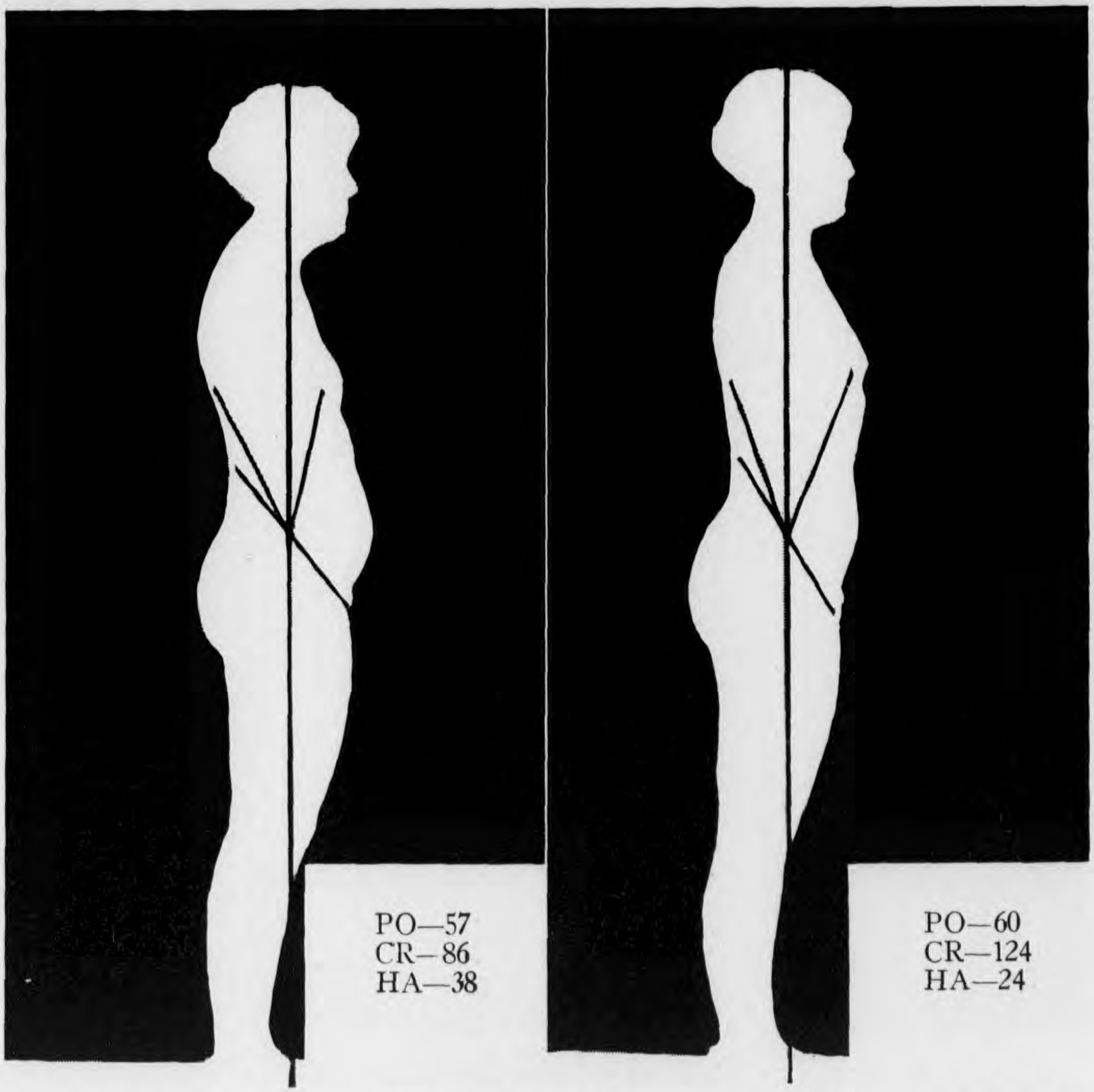


FIG. 17. The forward carriage of the hips seen in most persons with an excess of abdominal fat. The abdominal prominence is greatly lessened by correction of the standing position.

in the upper torso, figures as low as 40 and even sometimes less are occasionally met, and 45 to 48 is very common.

An exaggerated Pelvic Obliquity, or lordosis, is seldom seen. I am even skeptical as to whether lordosis occurs at all except as the result of a diseased condition of the bones, as in rickets or tuberculosis. In the condition that by many physical directors is regarded as lordosis, I found no increase in the Pelvic Obliquity. The exaggerated curve is due to the fact that the shoulders are carried too far back, the result of a sagging of the trunk through weakness of the back muscles and forward carriage of the head. In such cases, when the shoulders are pushed forward and the

chest raised so as to give it normal prominence, the so-called lordosis disappears. In making a correction of this sort the Pelvic Obliquity does not change, hence lordosis cannot be present.

It is evident, then, that in corrective work for these cases the effort should not be to flatten the lumbar spine, which is often done, but to get the chest and shoulders forward by proper exercises, and especially by strengthening the muscles of the trunk.

PELVIC DISPLACEMENTS IN WOMEN

A low Pelvic Obliquity is generally found in women suffering from pelvic displacements of the uterus. A pronounced Pelvic Obliquity is necessary to protect the pelvic floor against excessive strain. This is especially true in women. When a normal degree of Pelvic Obliquity is maintained, the weight of the abdominal and pelvic viscera is supported by the pubes, the promontory of the sacrum and the strong muscles of the lower abdominal wall.

When the pelvis is tilted upward by a flattening of the lumbar curve, and with relaxation of the muscles of the lower back and abdomen, the heavy organs of the abdominal cavity are dragged downward by gravity. Excessive strain is put upon the membranous ligaments which elongates and weakens them. When this condition becomes habitual, permanent injury is done. The membranous bands, by which the stomach, liver, colon and other abdominal and pelvic organs are connected to the diaphragm above and to the back and sides of the abdominal and pelvic cavities, are not intended to sustain the weight of these organs, which is very considerable, but rather to act simply as mooring ropes which check any tendency to too great movement from the normal position. The strong muscular abdominal walls, however, are evidently designed to carry the weight of the viscera. By a most admirable arrangement, the lines of pressure and resistance are so adjusted that when the subject maintains a normal posture, the influence of gravity toward displacement of the viscera is reduced to a minimum. A subject who has a flat lumbar curve —that is, an abnormally low degree of Pelvic Obliquity—has a flat chest, a protruding abdomen, and a low-standing diaphragm, with prolapsed viscera underneath it and a pendant or vertical heart above it.

EXERCISES TO CORRECT DEFECTS

In the use of this method of analyzing posture in connection with corrective gymnastics, a shadowgraph is first made with the subject in his ordinary attitude. The subject is then put in as nearly as possible a normal posture, and a second shadowgraph is made. The two shadowgraphs are shown to the subject and explained to him. He is also given a set of exercises, and an explanation of how the exercises if perseveringly employed will correct his various defects. At the end of a month another

shadowgraph is made. The subject is then allowed without criticism to place himself in what he considers to be the normal position. If faithful work has been done on the part of both trainer and subject, a very considerable degree of improvement should be recognized.

In the writer's experience it is nearly always possible by the exercise of a little tact to place young subjects in approximately a normal posture at once, and much can be done in the same direction with most adults. Even in cases in which considerable rigidity of the spine has developed, a very appreciable degree of improvement can be made by making clear what the correct posture is, and just how to make use of the muscles in such a way as to approximate as closely as conditions will permit the normal poise. I found no device that assists so much in accomplishing this as does the shadowgraph. It enables the subject at once to see himself as others see him. The effect is usually to produce a very great ambition to correct the outstanding defects.

[Since this paper was published the writer has developed a posture chair which not only prevents but cures antero-posterior postural defects. This chair is described in a paper entitled "The Perfected Posture Chair," a copy of which will be sent on request.—J. H. K.]

SUPPLEMENT TO

Battle Creek Sanitarium News

Fighting Old Age

John Harvey Kellogg, M.D.

IF YOU are past forty and you feel tired much of the time and your face is beginning to drop as shown by a deepening dimple on each side of the mouth, you are getting old, prematurely old. Old Father Time is pursuing you and is catching up with you.

Old age is a disease, a chronic malady as definite and real as rheumatism or diabetes; and it is a progressive disease like a fire in a house, which when once started keeps on burning until the house is destroyed. We may fight the fire and put it out. So we may fight old age and arrest its progress and even in some cases almost completely obliterate the signs which lead one to say, "I'm growing old."

Controllable Causes of Old Age

To successfully combat old age we must know something of its causes. One of the most obvious symptoms of the old age disease is lack of "pep," or undue fatigue, either constant or the result of relatively slight effort. Fatigue is always due to poisons. In the medulla oblongata, the bulb of nervous matter which joins the spinal cord to the brain, there is a small group of nerve cells which is known to physiologists as the fatigue center. Its duty is to inspect the blood and when poisons which are caused by work accumulate in the blood stream, to call for rest by causing a sense of weariness or fatigue. It is the duty of the liver to destroy the fatigue poisons and of the lungs and kidneys to remove them. So long as these organs are successful, the poisons do not accumulate and the fatigue center does not demand rest; but when they fail to destroy or remove the paralyzing fatigue toxins, weariness or exhaustion results.

As age advances, the great eliminative organs, especially the liver and kidneys, become progressively less efficient. Wear and tear consumes the safety margin. Endurance lessens. Fatigue follows more quickly on the heels of effort. Old age has arrived. It is the writer's belief that normally, barring accidents, old age should not appear sooner than 100 years. Possibly the maximum limit of human life should be two centuries or even more, under perfectly normal conditions. But the marvelously perfect human machine never has a chance to do its best, because of the enormous burdens of unnecessary and damaging work

Battle Creek Sanitarium from Irving Park

heaped upon it. Like any other machine, its capacity is limited. The amount of wear and tear a machine will endure, in other words, the amount of work it can do, depends first of all upon the quality of the material that enters into it, that is, the inherited constitution or stamina. This is something we can not change. But there is another factor of even greater importance, the rate of wear and tear due to habitual use and abuse. Suppose for example, the material and workmanship of a motor car is such that it will run 300,000 miles. If run 300 miles a day, it will last 1,000 days. If run 1,000 miles a day it will last only 300 days; or at the rate of 2,500 miles a day, it will collapse in 120 days.

Evidently the first thing to be done in combating old age is to lower the rate of wear and tear by lessening the amount of work done.

Can this be done?

Certainly it can be done. A cigar or a cocktail throws upon the liver and kidneys many hours of extra work. The way the odors of liquor and tobacco hang upon the breath is an indubitable evidence of the long struggle required to free the body from these lethal drugs. Tea, coffee and cocoa belong in the same category along with sleep-producing drugs, drug laxatives, tonics and other nerve foolers such as aspirin and its congeners. All drug habits are open invitations to Old Father Time, because of the added burden they lay upon the poison-destroying and poison-eliminating organs.

Foods which Shorten Life—How Neglect of the Colon Causes Old Age

Unwholesome foods, such as rich entrees, pastries, excess of proteins, condiments and rich sauces, increase the wear and tear of the vital machine and shorten life. Said Battling Nelson when he disappointed his backers by losing a boxing contest he ought to have easily won, " 'Twas the beefsteak that done it. I swiped an extra beefsteak when my trainer wasn't looking and it made me tired."

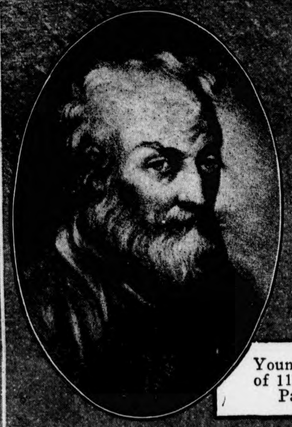
Crippled Colons Cause Old Age

But the worst drag of all, the chief promoter of old age, is the neglected and abused colon. Metchnikoff discovered that animals that have the longest colons have the shortest lives because of the poisons formed by the putrefying residues.

When food residues and intestinal secretions are retained more than a few hours in the colon, putrefaction

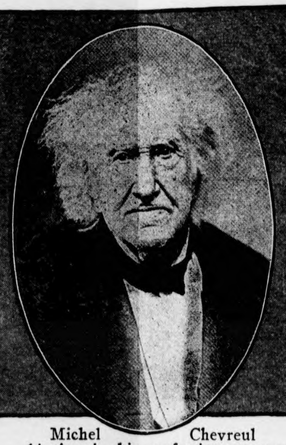
(*Continued on page four*)

Prominent People Past and Present—All Advocates of "Biologic Living"

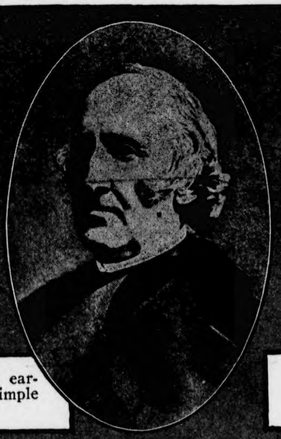


Young Parr lived to age of 113 years — Son of Old Parr — Centenarian

Luiji Cornaro — 100 years (Venetian Medical Writer)



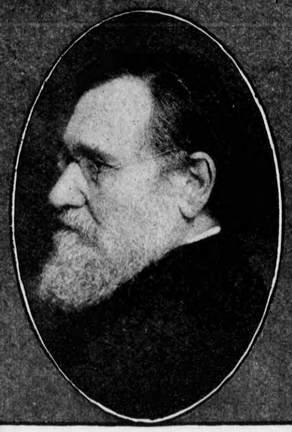
Michel Chevreul (Active in his profession at age of 102)



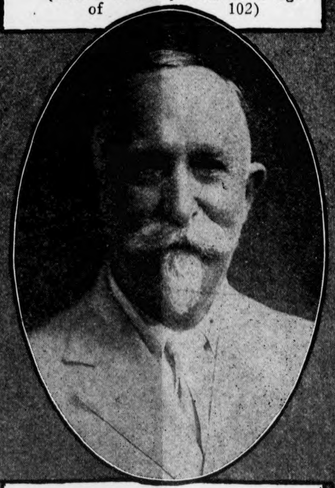
Wendell Phillips (An earnest exponent of Simple Living)

John Bigelow (Reached the age of 94)

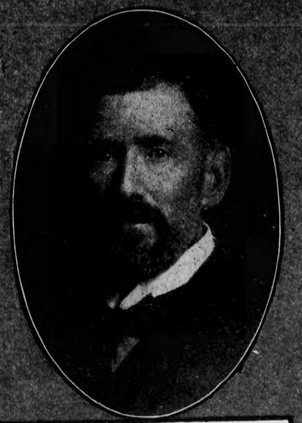
Dr. Stephen Smith (A. M., LL.D. Reached the age of 99)



Prof. Elie Metchnikoff (The Immortal Scientist)

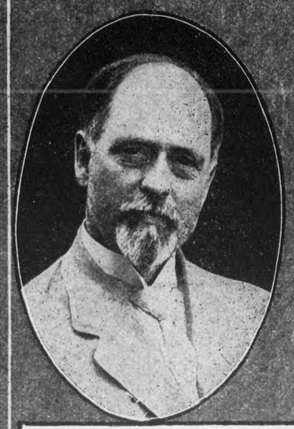


John Harvey Kellogg (M.D., LL.D., F. A. C. S., Supt. of Sanitarium)



Rt. Hon. Sir Horace Plunkett (K. C., V. O., F. R. S. (The Eminent Irish Statesman)

Wilfred Grenfell, M.D., F.A.C.S. (Hero of Labrador)



Prof. Irving Fisher (Yale University)

Luther Burbank (The famous horticulturist)

C. W. Barron (Financial expert and publisher)

Dr. Frank Crane (Popular author and editor)

Henry T. Finck, A.B. (Music Editor — N. Y. Evening Post)

Fighting Old Age

(Continued from page one)

occurs and the poisons produced, when absorbed and distributed throughout the body become the source of endless miseries, disorders and degenerations, and a potent means of shortening life. Metchnikoff proved that the animals that have the shortest colons have the longest lives.

Change of the Intestinal Flora Combats Old Age

Fortunately this cause of systemic poisoning and premature senility may be wholly suppressed by changing the intestinal flora as suggested by Quinck, improved by Torrey, Rettger, Distaso and numerous others and perfected by the research department of the Battle Creek Sanitarium after many years of research and experiment. This perfected method combines the following measures:

1. The suppression from the diet of putrefying and putrescible foods.

2. Increasing the activity of the colon by assisting, without medication, the crippled colon to keep itself free from residue.

3. By implanting a potent culture of the protective microorganism, **Lactobacillus bifidus-acidophilus** which a beneficent Creator has provided for the protection of the human alimentary canal against putrefactive and other disease-producing germs.

By the application of this method, intestinal putrefaction may be controlled and thus the most active of all causes of old age and chronic disease may be suppressed.

Of course, there are other highly effective means of combating man's worst enemy. Sun bathing, air bathing, swimming in outdoor and indoor pools, electric light baths, hikes and other outings, tonic baths and a host of other rejuvenating measures render efficient aid in stopping the old age process and bringing back something of the zest and buoyancy of younger years, and sometimes, when the old age disease is not too far advanced, the renaissance of youth is almost unbelievable. The coated tongue clears, the bad taste leaves the mouth, the tainted breath loses its offensiveness, the face shortens as the skin recovers its elasticity, wrinkles are less conspicuous, fogs lift from the brain, one seems to be emerging from a murky sea, the environment seems brighter, more springlike. Life takes on a new zest and seems more worth living.

Rejuvenation a Delightful Experience

And this quest for youth is not a dull or tedious experience. It is as thrilling as Sir Gallahad's quest for the Holy Grail and equally fruitful; for the change from senescence to rejuvenescence is almost equal to a resurrection.

There is nothing crude, painful or repulsive to discourage the aspirant for rejuvenescence. The whole program is a delightful experience. The bill of fare is not what many people imagine a health regimen to be, a monotonous hodge-podge of raw or half cooked dishes, uninviting to the eye and lacking in flavor, but a widely varied and daintily served menu of delicious fruits, green vegetables of the choicest varieties fresh from the Sanitarium gardens, fresh fruit and vegetable juices, every wholesome food delicacy obtainable prepared in the most perfectly equipped kitchens by expert chefs and daintily served in a most attractive lofty-ceilinged, air-conditioned dining room. Chops and steaks are not missed because the mouth filling entrees which take their place are better. There is no lack of gustatory satisfaction. Said Mr. George Bernard Shaw after a Sanitarium dinner with the writer, "That was the best meal I ever ate."

But the best part of the experience is to note the steady dropping off of burdens long painfully borne and the disappearance of old enemies long hated and feared—the long restless nights, the abdominal miseries, the prostrating headaches, "that tired feeling," the gloom, irritability, worry and fear, the ineptitude and indecision,—this unloading of physical and mental handicaps is such a delightful and joyous experience that one feels almost as though he had been born again and such expressions as, "I feel like a new man," "I am another person altogether," are evidence of the patient's recognition of the rejuvenating change which he is undergoing.

Rockefeller's Wisdom

Mr. Rockefeller's generous use of the great fortune which his keen business foresight secured to him has made him the benefactor of multi-millions of people. No doubt his many carefully planned humanitarian projects have benefited vastly more human beings than those of any other man now living or who has ever lived.

And it is interesting to note that he has not neglected to use precisely the same discretion in caring for his own health that has enabled him to deliver whole continents from pestilence and maladies which once claimed many thousands of victims annually by most frugal eating habits and a complete avoidance of the use of tobacco, alcohol and other unwholesome practices. Although compelled by ill health to retire from active business at the age of sixty, he has been able to lead a comparatively comfortable and active life until he is now approaching the century mark, and still holding old Father Time at bay. And he is keeping up-to-date by using Acidophilus to change his intestinal flora.

And the younger Rockefeller is equally wise. When, some years ago, he visited the Battle Creek Sanitarium, he explained to the Associated Press reporters that although not suffering from any disease, he had come to the Sanitarium to spend a month in studying up-to-date methods of promoting and maintaining health and a high degree of mental and physical efficiency. We have good reason for believing that Mr. Rockefeller, to use his own words, "is still profiting by what he learned of biologic living at Battle Creek."

Men at the head of great affairs need the super-health which is only attainable by scrupulous conformity to biologic requirements.

Admiral Byrd's Visit

Admiral Byrd, the famous bi-polar explorer, now on a lecture tour exhibiting wonderful pictures of the Antarctic and delighting audiences with a graphic account of his thrilling experiences, was a welcome visitor at the Sanitarium for a couple of days recently and is returning soon for a longer stay. The hardships he endured during his long isolation at the Advanced Base during his last visit to the Antarctic greatly impaired his health. He has discovered that the biologic methods of the Sanitarium are highly beneficial and he will spend a few weeks learning the technic of the biologic life in preparation for the great work to which he intends to devote his life in writing, lecturing and organizing in behalf of world peace. The high pinnacle which the Admiral has reached in popular esteem will enable him to accomplish a great work in his anti-war campaign, and the super-health attainable by meticulous attention to the physiologic demands of the body will prove a great factor in the attainment of the success which we confidently predict will attend the Admiral's efforts.

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A BRIEF OUTLINE OF HYDROTHERAPY

By J. H. KELLOGG, M. D.

Battle Creek, Mich.

Member of the Societe d'Hygiene of France, Life Member of the British Gynecological Society, Member of the International Periodical Gynecological Congress, American Medical Association, Michigan State Medical Society, American Public Health Association, American and British Associations for the Advancement of Science, American Microscopical Society, American Social Science Association, and Superintendent of the Battle Creek (Mich.) Sanitarium.

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A BRIEF OUTLINE OF HYDROTHERAPY

By J. H. KELLOGG, M.D.,
Superintendent of the Battle Creek (Mich.) Sanitarium

HISTORICALLY, hydrotherapy is the oldest of all curative measures devised and applied by man, but practically it is one of the newest to be recognized by scientific medicine. Like most other reliable remedies, its value was first determined empirically. For thousands of years the bath, the clyster, water drinking, and other simple hydriatic applications had been in common use by the laity for numerous affections, in a desultory and more or less imperfect manner, when in the early part of the last century there arose in Austrian Silesia an illiterate peasant who organized these methods, with many others of his own invention, into a system which possessed such curative power that patients were drawn by thousands from all parts of the civilized world. The slow ocean travel of those days did not prevent many from making tedious journeys from this country and even from South America to seek at the hands of this uncrowned king of therapeutics, the relief which they had sought in vain from all other known sources.

Priessnitz was not a charlatan. His work was subjected to the sharpest medical criticism by medical commissions appointed by various governments. Many medical men, including army officers, carefully studied his methods and openly published their approval of them. After years of opposition, he was finally recognized and officially authorized to conduct his work, which today is standing a monument to his genius, and is conducted by a worthy successor, a well-qualified and scientific medical man. The work of Priessnitz has served as a model for all who have come after. It was necessarily defective, because empirical, but it was a

great step in the march of progress, and it was a stepping-stone to greater and better things which have followed. It was the beginning of physiological medicine, which now embraces so many important and varied branches. At first, dietetics, exercise, sun-bathing, air-bathing, massage, and gymnastics were all included under the head of hydrotherapy; but the scientific study of the physiological and therapeutic effects of these rational agents has led to their differentiation and classification, so that now we have phototherapy, kinesitherapy, climatology, dietotherapy, and many other therapies based upon the use of natural forces and agents, as well as balneotherapy and hydrotherapy. This is the result of the natural evolutionary process by which most great truths are developed.

The basis of hydrotherapy, indeed of physiologic therapeutics in general, is the great truth expressed by Dietl, the renowned pupil of that great medical genius, Rokitansky: "Nature heals; this is the first law of therapeutics. Nature creates and maintains, therefore she must have power to heal."

The more recent studies of the blood and its functions by Metchnikoff, Ehrlich, and others who have followed them, have shown that it is through the agency of this most wonderful of all the tissues that the healing process is chiefly carried forward. In other words, "it is the blood that heals." Hence we must look for definite and positive curative results to those agents which are most capable of favorably modifying the quality of the blood, and controlling its distribution in the body. A recognition of this fact is a recognition of the paramount claims of hydrotherapy as the most potent and most nearly universal of all therapeutic methods. There is no other agent known whereby the constitution of the blood and the blood-supply of the tissues at large and of individual organs, can be so certainly, so powerfully, and so readily modified, and in any

desired direction, as by the scientific applicaton of hydriatic measures. The methods of Priessnitz were in some respects crude, and his system was certainly empirical, but his work was efficient, and his procedures still form the basis of practical hydrotherapy everywhere, as is graciously acknowledged by Winternitz, who easily stands at the head of living scientific investigators in this line.

Schüller showed (1874) by experiments upon trephined rabbits the following interesting facts in relation to the effects of thermic applications upon the brain:—

1. Water at neutral temperature (92°-95° F.) applied directly to the brain produced no effect.

2. Ice applied to the brain coverings caused contraction of both veins and arteries, the contraction continuing for a short time after the withdrawal of the ice.

3. Ice applied to the scalp caused contraction of the cerebral vessels when carried to the point of producing general chilliness and shivering.

4. A cold compress applied to the spine and abdomen or a cold full bath caused instant dilatation of the cerebral vessels, lasting from three to ten minutes, then giving place to contraction.

5. Hot compresses or a hot full bath caused contraction of the cerebral vessels, later followed by dilatation.

6. Cold and warm applications applied to a nerve trunk produced an effect exactly opposite to that produced by the same applications made to the skin; that is, a cold application to a nerve trunk caused contraction of the cerebral vessels, while a warm application caused dilatation. Unquestionably the same effects, which are evidently reflex in character, occur when the sensory nerves of the skin are influenced by thermic applications, but they are overwhelmed and quickly wiped out by the mechanical dilatation of the cerebral ves-

sels, resulting from the elevation of blood-pressure and the displacement of a large quantity of blood toward the center of the body through the contraction and partial emptying of the vessels of the skin.

7. A heating compress or moist trunk pack of three hours' duration caused, first, dilatation, then contraction of the cerebral vessels and bulging of the membranes from the accumulation of lymph.

8. Pinching the skin produced the same effect as hot applications.

These interesting experiments, which have since been confirmed by observations made upon a man whose brain had been exposed by accident, laid the foundation for a scientific therapy of the brain, which has received far less attention than it deserves at the hands of medical men. These experiments show most clearly how cerebral congestion may be successfully combated by properly managed applications, and explains the relief afforded in insomnia by the moist girdle and the tonic effects of the cold douche.

Extensive experimentation by a large number of investigators, including Brown-Sequard, Paul Bert, D'Arsonval, Ziemssen, and Mosso, as well as Winternitz, Strasser, Wertheimer, and a host of others who have devoted a large part of their time to these studies, has finally placed each hydriatic procedure upon a strictly scientific basis, so that at the present time, hydrotherapy presents a whole series of varied and perfectly graduated measures, each of which may be applied under the guidance of accurate diagnostic means with utmost precision in therapeutic use, and with a certainty as regards results, in cases not utterly hopeless, such as can be obtained by no other means.

Hydrotherapy is termed a natural or physiological method, because it employs natural agents or forces and those which are constantly serving us in the maintenance of health. The sick man differs

from the well man only in the fact that his organism is struggling under embarrassment. The natural bodily defenses are unable to maintain normal equilibrium. Hydrotherapy comes in with its powerful thermic impressions to reinforce and strengthen these defensive efforts, thus enabling the body to restore the normal equilibrium, which is health. In accomplishing this, a large number of hydriatic procedures act through impressions upon the temperature nerves of the skin, by far the most sensitive and most remarkable of the cutaneous nerves. Cold applications stimulate the cold nerves, and hot applications the hot nerves. Each of these sets of nerves has its own widespread network of reflex relations with nerve centers and through them with the internal parts and functions of the body. Every portion of the cutaneous surface is connected reflexly with some special internal part. The skin has, by experiments upon animals and men, been very accurately mapped out into vascular areas which are so closely related with corresponding internal areas that changes induced in one of these external areas produce instantly a corresponding change in the internally related area. A cold cloth applied to the face contracts the vessels of the face and reflexly contracts the vessels of the congested brain, and so affords relief. Cold applied over the heart instantly energizes the cardiac muscle in precisely the same way. The skin overlying the stomach, the liver, the bowels, the bladder, and other pelvic organs, is in the same relation to them, and affords opportunity for producing excito-secretory as well as excito-motor effects. Very short and very hot applications produce similar effects by exciting the heat nerves; but warm or moderately hot applications produce the opposite effects. Thus we may either excite or depress the function of any internal part by a simple application of water, provided only that we make the application in the right

place and of the right temperature. Thus we may restrain excessive activity, as when we apply heat over a cramping muscle, a fomentation to the abdomen in intestinal colic, for example; or we may increase activity to almost any desired extent by short cold applications, or alternate hot and cold applications, the most stimulating of all known exciting measures. Nothing will so quickly rouse a patient from the profound and deadly stupor of opium or other narcotic poisoning, as very hot and very cold applications made to the spine in alternation at intervals of fifteen or twenty seconds. There are no means by which the patient suffering from surgical shock or collapse under anesthesia, can be so much and so quickly rallied as by this means combined with very hot or very cold friction of the limbs. One who has witnessed the almost miraculous awakening to life which often follows such an application will no longer doubt the potency of thermic stimulation as a quick restorative. The effect is obtained through the nerves, and does not depend upon the paralyzed heart and the stagnant circulation. As quickly as a nerve impulse can reach the spinal axis, traveling at the rate of two hundred feet a second, the restorative work begins, and each change in the thermic revulsion sends a new reviving impulse speeding with electric rapidity to awaken the sleeping centers and arouse the liver, kidneys, and other defensive organs to a renewal of the struggle for life.

Short cold applications to the whole surface arouse every cell and awaken every bodily function. Hippocrates employed the cold pouring bath with vigorous friction in sunstroke, and no better remedy is known today. Brand has shown that the cold bath is almost a panacea in typhoid fever through its wonderful power to increase vital resistance. He records eight hundred cases without a single death, and many thousands with a mortality of only three

per cent. More than a century ago Currie used tepid bathing with equal success in scarlet fever, and Jackson used the same in yellow fever with equally good success.

Cold water is nature's antidote for fever. The cold bath not only lowers the temperature, but lessens heat production and increases the fighting power of the system. By a combination of hot water with cold water, hydrotherapy has shown itself able to cope with all forms of fever and general acute affections, not excluding smallpox, malignant malarial fever, yellow fever, and the bubonic plague.

General hot applications fill the skin with blood and thus divert blood away from internally congested parts. Hence the value of this measure, as well as of large fomentations, in all cases of visceral congestion or inflammation. Hence the value of the hot bath or the hot blanket pack as a curative measure in acute gastritis, hepatic, renal, and intestinal colic, ovarian, tubal, and other forms of pelvic inflammation, acute spinal inflammations or congestions, and even in certain cases of acute pneumonia or pleurisy.

Samuels has shown, by experiments upon rabbits, that cold applications lessen the intensity of inflammatory action. Heat intensifies the process but shortens it, as everyone knows who has watched the effect of a poultice or of other hot applications upon a boil.

One of the most remarkable of all physiological facts is the influence of general cold applications upon the blood. Strasser has shown that cold applications increase the alkalinity of the blood. This increases the oxidizing power of the blood and its defensive activity, the bactericidal properties of the serum, and the migratory and phagocytic functions of the white cells.

First Thermes, then Winternitz, and later many

observers, showed that a short cold bath accompanied by thorough reaction, marvelously increases the blood count. The total blood count may be increased as much as thirty per cent or more, and the white cells may increase thirty per cent. Modern researches show that leucocytosis is one of the means by which nature combats infection and many other impairments of the functional integrity of the body. Here then is a ready means by which to rally the defensive power of the body and to aid nature in her struggle against invasion of the vital domain.

There is no remedy which compares with short cold applications as a means of blood building. Brief general applications of cold to the surface by means of the cold mitten friction, cold towel rubbing, cold wet-sheet rubbing, the shallow bath, the cold shower or jet, powerfully stimulate the hematopoietic functions. It is to this influence of cold that sea-bathing owes its great virtue as a recuperative measure, rather than to the saline ingredients of the water, or any mysterious virtue in the odor of decomposing seaweed.

In heart affections the influence of thermic applications far surpasses that of any drug. An ice bag applied over the heart energizes this organ at once, and in a most powerful manner. Within a few minutes, a rapid, feeble pulse may diminish fifteen to twenty beats to the minute, the diminution being frequently accompanied by a very marked increase in vigor. The application of an ice bag over the heart for half an hour three or four tiems a day is infinitely superior to digitalis, strychnia, or any other cardiac stimulant known. There is a toxic effect connected with all powerful cardiac stimulants which is cumulative. At the same time the system quickly acquires a tolerance for any one of these drugs, so that by the continued use, any good effect which they may possess is ultimately lost, while the

injurious effects accumulate. The ice bag, however, acting reflexly, operates immediately, and as the nerve centers are strengthened through its action, its beneficial effect becomes more manifest day by day, so that the hundredth time the remedy is applied, greater benefit is derived than at the first application. This is a wonderful property possessed by all physiologic remedies, and one of the great advantages of natural over artificial therapeutic agents.

Insomnia yields to hydriatic applications as to no other remedies. In hundreds of cases the writer has succeeded in securing healthful, natural, recuperative sleep in patients who had employed all the ordinary hypnotics, not only without benefit but with actual detriment. The patient who has not slept for a week, will often fall asleep within a few minutes after being placed in a wet-sheet pack or a neutral bath. The able superintendent of the Kankakee Insane Asylum related to me a case in which the patient suffered from acute mania, and who required six attendants to hold her,—the worst case, he declared, that he had ever seen,—who had not slept at all for more than a week, and in whom the ordinary hypnotics given in large doses failed to produce sleep. She was almost immediatetly put to sleep by means of a neutral bath and a wet-sheet pack; and in three months, by the continued use of these remedies, the patient was restored to health. These measures were employed at the suggestion of one of my colleagues, Dr. Thomason, who happened to be visiting the asylum, and I have been informed have been extensively used in the treatment of similar cases.

The hydriatic treatment of pneumonia has reduced the mortality of this grave disease from twenty-five to thirty per cent to five to eight per cent. The cold chest compresses, the leg pack, the sweating wet-sheet pack, and other hydriatic meas-

a certain means of determining whether or not surgical procedures should be adopted. If the case is one which demands surgical interference, little or no relief will be afforded by the hydriatic procedure. If any relief is secured, it will be but temporary; pain and other symptoms will speedily return in spite of the treatment. From three to six hours' time will always settle this question, and if an operation must be ultimately resorted to, the patient will have been benefited by the treatment, and the way prepared for the operative procedure, so that better results may be secured than could have been obtained without the preliminary treatment. I should mention that in all cases of appendicitis, food by the stomach is entirely withdrawn. Large enemas are administered two or three times daily, and the patient's strength sustained by nutritive enemas consisting of malt, or malt honey, beaten egg, or malted nuts in combination, and with the addition of a little salt.

This method is equally applicable to all forms of visceral inflammation, an ice bag or two over the inflammed part and a general or large hot application followed by a large heating compress to each leg.

In the treatment of chronic disease, hydrotherapy is indispensable. In recent works on practice one finds acknowledgement of this fact on almost every page treating of therapeutics. "If the foregoing remedies fail," as they often do, "resort to hydrotherapy," is the expression constantly reiterated by such authorities as Osler, Anders, and other men of equal professional standing. The query naturally arises, Why not call in hydrotherapy at the start, when its superiority is recognized? The only answer is the lack of practical knowledge of technique. But this difficulty is daily growing less serious, and will disappear as the value of this great remedy comes to be more thoroughly appreciated.

My paper is already longer than I intended to make it, although I have only entered upon the discussion of my subject. I will conclude by a brief mention of the services which may be rendered by the hydriatic method in a number of the most common and obstinate chronic maladies.

In the cachexias the cold mitten friction and the cold towel rub increase appetite, improve elimination, strengthen the heart, improve the action of the skin, increase oxidation, improve vital resistance, and secure improvement in most unpromising cases, sometimes even in cases which seem utterly hopeless, as in cancer, pernicious anemia, and various forms of autointoxications.

All curable forms of autointoxication naturally yield most readily to hydriatic measures in combination with other physiologic means. The sallow, inactive skin which is characteristic of this condition is powerfully stimulated to activity by the electric-light bath and sweating baths of all sorts, followed by short cold applications. The sweating pack followed by the cold wet-sheet rub, fomentations over the abdomen, cold towel rubbing, large enemas at a temperature of 75° to 80° administered daily, the wet girdle, cold mitten friction, copious water drinking, and, in fact, nearly all the forms of hydriatic applications, are helpful in these cases.

Chronic inebriety, the morphia habit, and all forms of drug addiction afford a splendid opportunity for the application of hydrotherapy. The lowered nerve-tone is strengthened by short daily cold applications. Alternate applications to the spine stimulate the weakened cardiac and vasomotor centers. The sweating bath affords an admirable means of preparing the patient for the ordeal of the withdrawal of the drug. The neutral bath and the neutral wet-sheet pack relieve, to a marvelous degree, the extraordinary nervousness and irritability which follow the withdrawal of the

drug. I have, in other papers, described a method which I have for a number of years employed most successfully in dealing with these cases.

In obesity the hot bath will increase oxidation to the extent of one ounce of fat in fifty minutes. The cold bath will do the same. In diabetes the cold bath will burn up an ounce of sugar in twenty-five minutes. The hot bath will do the same, though less safely.

In pulmonary tuberculosis, hydrotherapy will diminish fever, cough, night sweats, and pain, and will increase appetite and strength, cause a gain in flesh and blood, and so increase the bactericidal property of the blood as to bring about the destruction of the invading bacteria and complete restoration to health. The hydriatic method, coupled with an out-of-door life and proper feeding, will cure nearly every case of pulmonary tuberculosis if the case is taken in hand early enough. The daily cold bath and various local measures are required in this disease.

The sweating bath lessens hydrochloric acid formation and so helps in hyperpepsia and hypersecretion. The cold bath, if short, increases hydrochloric acid production, as does also the ice bag over the stomach before meals.

Hot baths burn up uric acid, and cold baths improve metabolism, so preventing the excessive formation of purin wastes.

In short, experience justifies me in saying that scientific hydrotherapy may be relied upon to increase vital resistance, the elimination of toxins, the destruction of poisons, the destruction and elimination of bacteria, leucocytosis, and oxidation, to excite nerve centers, to promote normal metabolism, to encourage blood formation, to regulate blood movement, to increase heat production when needed, as in collapse, and to increase heat elimination, as in fever.

These means may be equally relied upon to decrease heat production in fever, to diminish heat elimination when necessary, to discourage bacterial growth, to relieve stasis of the circulation, to diminish metabolism when excessive, and to lessen nervous irritation.

What other therapeutic indications are left to be met in the treatment of chronic ailments, which are not fully supplied in proper alimentation, an ample supply of pure air, and water as a beverage, and proper nursing?

I may be looked upon as an enthusiast, but I am willing to submit all my claims for hydrotherapy to the test of scientific criticism. After an experience of thirty years in the extensive use of this agent in all sorts of cases, chronic and acute, I am compelled to recognize in it the greatest and most useful curative agent which a kind Providence has placed at the disposal of the human race.

In this paper I have attempted only a very meager outline of the principles, methods, and applications of hydriatic measures, which I have endeavored to discuss in a comprehensive manner in my work on "Rational Hydrotherapy."[1]

1 F. A. Davis Company, Philadelphia, Pa. 1902.

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Something Every Hospital Needs

Physiotherapy Service May Be Rendered at Small Investment In Equipment; Knowledge of Subject Most Important

By John Harvey Kellogg, M.D., Superintendent, Battle Creek Sanitarium, Battle Creek, Mich.

A department devoted to physiotherapy may not be needed by every hospital, but every hospital needs physiotherapy. Every hospital does not need a dining-room, but every hospital needs food for its patients and a dietitian or nurses and physicians trained in the principles of nutrition and scientific feeding. So every hospital needs physiotherapy and a physiotherapeutist.

The modern general hospital is supposed to be a place where the sick may receive the benefit of every curative method and resource recognized by scientific medicine, and there seems to be no good reason why the modern general hospital should not realize this ideal in its equipment and the personnel of its staff of physicians and nurses.

LITTLE EXPENSE NECESSARY

If the question of expense is raised, the objection is easily answered by the fact that for a very efficient application of physiotherapy very little expensive or special equipment is actually required. The great essentials of physiotherapy, in addition to diet, are air and water—at different temperatures,—light and exercise—active and passive. These most potent of all means of modifying metabolism and nutrition may be applied in a thoroughly efficient manner and with most satisfactory results without the use of very expensive or elaborate apparatus. The most important part of a physiotherapeutic equipment is a thorough, theoretical and practical knowledge of physiotherapy. With this, great results may be attained with little or no special equipment; without it, the most elaborate equipment is useless.

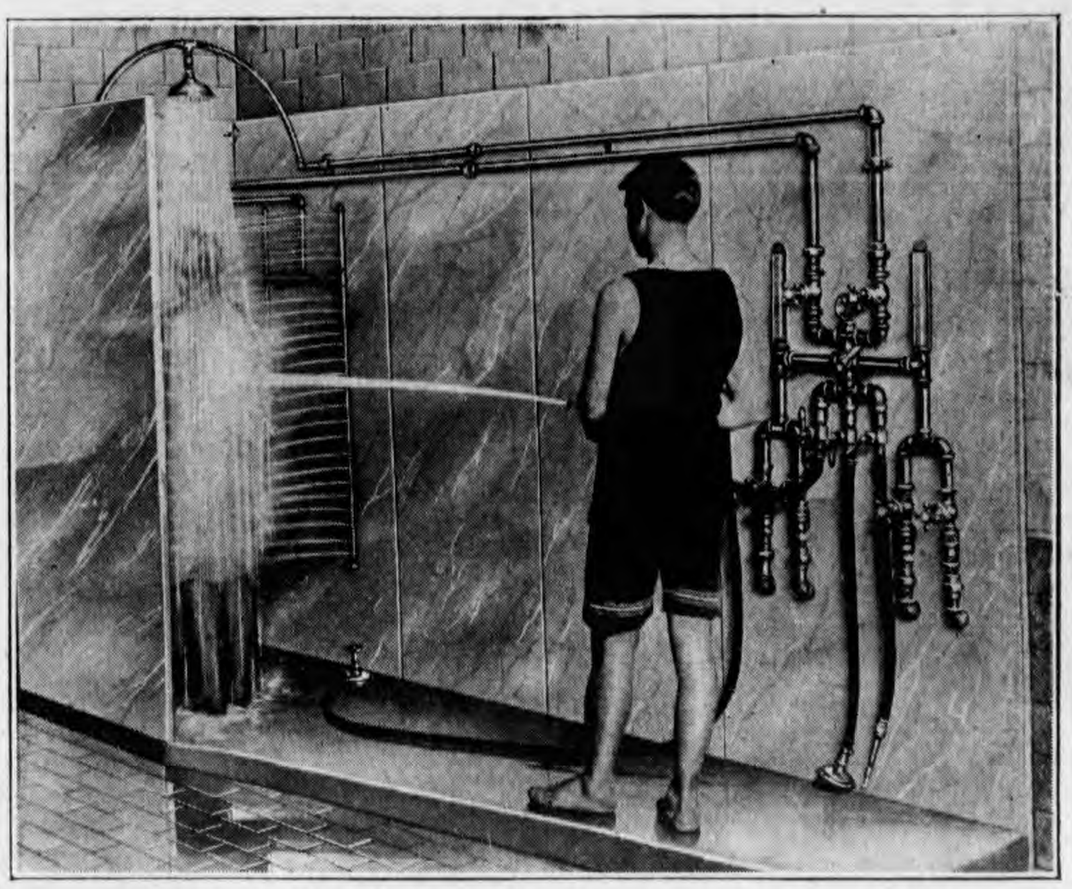
Not so very long ago, I happened to visit a large hospital which possessed a most elaborate and up-to-date physiotherapeutic outfit. The hydriatic equipment was particularly elaborate and expensive. Said the nurse, "Do tell us how to use hydrotherapy. The doctors send us down patients every day with a prescription for hydrotherapy, but they don't tell us what to do."

The doctors were not to be greatly blamed. The teaching of physiotherapy in our medical schools is still so inadequate and inefficient that the student has no opportunity to become sufficiently familiar with the technic to be able to make an intelligible prescription. Although now recognized as the biggest part of therapeutics, it receives the least attention. Very often the teachers are themselves little familiar with the subject. This neglect of physiological therapeutics by our medical schools is without doubt responsible for the existence of osteopathy, so-called chiropractic, and a dozen other medical cults.

KNOWLEDGE OF SUBJECT IMPORTANT

Water, as a means of producing thermic impressions and thereby influencing the vasomotor nerves and centers, is the most potent as well as the most versatile of all curative agents. By its proper use, even with such simple means as a wet rag, it is possible to control almost at will the blood circulation of any vital organ, and thereby to produce therapeutic effects quite surprising to those who are not familiar with the results obtainable with this wonderful agent when skilfully applied even with the simplest means.

A room or series of rooms fitted up with expensive appliances makes a fine show in a hospital, and produces a great impression upon visitors and may be made of real and great service; but the thing really needed in the general hospital is such an intimate acquaintance with the resources of physiotherapy as will in large measure eliminate the use of hypnotic drugs to produce sleep, of medicines and mineral waters to stimulate delinquent colons, and even of drugs for relief of pain.



HYDROTHERAPY APPARATUS AT BATTLE CREEK

The neutral bath and allied measures are so remarkably efficient in producing sleep that the use of sleep-producing drugs is rapidly becoming obsolete in the leading hospitals for the insane in this country as well as in France and in other European countries where they have been long employed.

The analgesic effects of heat are among the most remarkable of all therapeutic effects. Heat kills pain. Just how, nobody knows, as no one has yet explained the action of opium or of other pain-relieving drugs. Of course, heat is not a complete substitute for opiates, but it will relieve at least nine-tenths of all the pains for relief of which opiates are commonly given, and has the great advantage of being wholly free from the numerous dangers and disadvantages of opiates. Every hospital should be supplied with conveniences for quickly preparing fomentations, with thermophores and electric photophores, as well as hot water-bags and other convenient means of applying heat. These simple and inexpensive appliances are far more im-

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From a paper read before 1923 convention, American Hospital Association, Milwaukee, Wis.

portant than an elaborately appointed department filled with expensive apparatus.

Nevertheless, the physiotherapy department with especially trained persons in charge is just as essential for the complete equipment of a modern hospital as is an operating room, an examining room or a laboratory. In such a department should be found appliances for the efficient use of hydrotherapy, thermotherapy, phototherapy, mechano-therapy, electricity, corrective gymnastics, automatic exercise and indoor and outdoor gymnasiums. For many years I have made a close study of appliances adapted to physiotherapy and have tested every new apparatus that has become known to me and have selected out of a great number of more or less useful appliances those which have proven to be of real service. Chief among these I may mention the following, all of which are in use at the Battle Creek Sanitarium, most of them having been in practical use for many years:

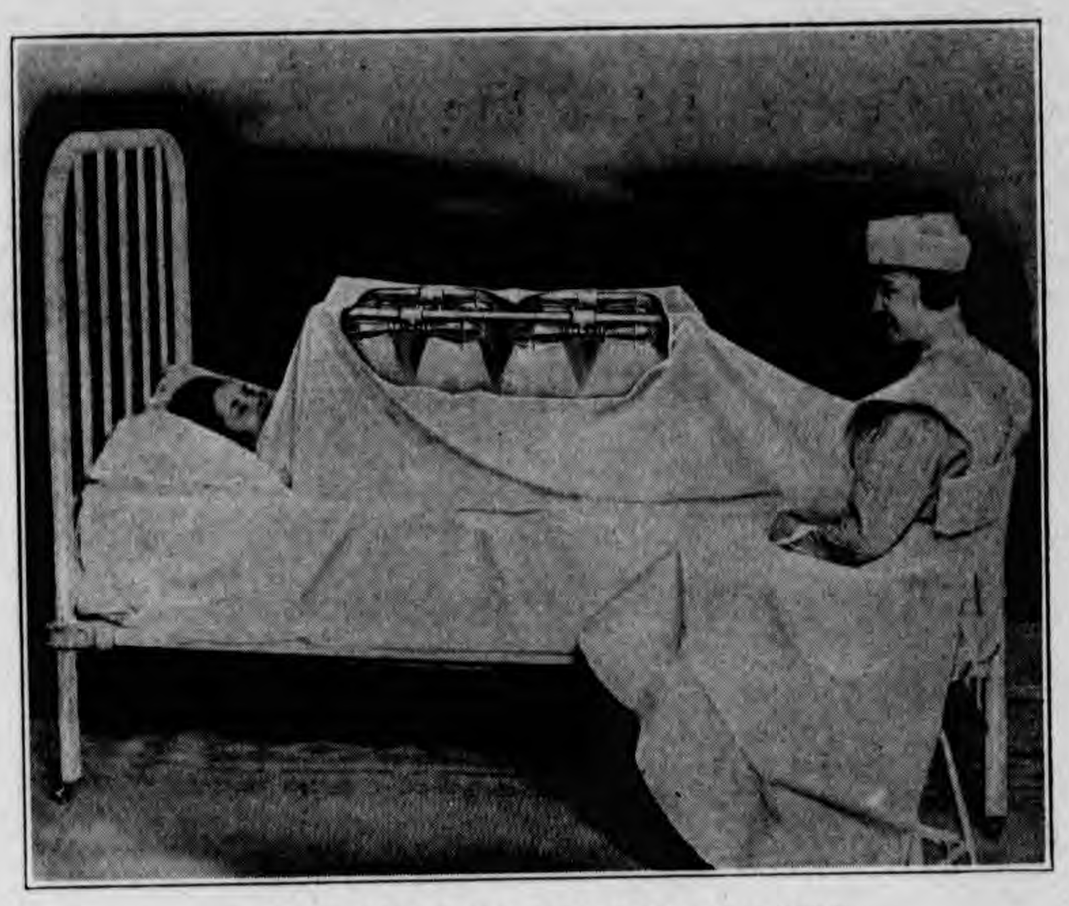


PHOTO-DIAGRAM OF "RADIANTOR"

HYDRIATIC APPARATUS

HYDRIATIC APPARATUS—The douche is useful, but by no means the most essential part of a hydrotherapy outfit, although so much emphasis has been given to douche apparatus in recent years that in the minds of many it seems to be regarded as the one thing needful for a complete equipment. Many of the newer hospitals are supplied with expensive douche appliances which are used scarcely more often than are the fire extinguishers. The fact is the douche is an appliance that requires more skill in its use and is less frequently called for in a general hospital than a large number of other much simpler and far less expensive appliances, such as sitz, leg, arm and foot baths, and full bath tubs adapted to the neutral bath. The simple shower and spray bath with a good thermostate will satisfactorily supply the needs of the ordinary hospital. The first douche apparatus ever used in a hospital consisted of a box with a perforated bottom which was supported over the patient while water was poured in. This mother of douches, used in a hospital in Edinburgh 200 years ago, though crude, was most efficient in combating fever.

So long as the idea prevails that an expensive douche apparatus is a whole hydrotherapeutic outfit, hydrotherapy will make little progress in hospital practice. The douche is exceedingly useful in certain classes of hospitals, particularly institutions for the insane and those that are especially devoted to nervous diseases and non-surgical or gastro-intestinal disorders. The investment required need not be great. A simple appliance which may be attached to a wall slab will accomplish everything that can be done with the most elaborate and expensive apparatus.

PHOTOTHERAPY AND AEROTHERAPY

PHOTOTHERAPY AND AEROTHERAPY—Light supplies not only heat, but other forms of radiant energy which are highly potent vital stimulants. When light rays fall upon the skin the chemical rays act upon the superficial layers producing, when very intense or long continued, an erythema. The luminous rays, however, penetrate deeper. As they penetrate an opaque substance, like human flesh, they meet with resistance and are converted into the longer, infra-red or heat rays which penetrate still farther. The electric light thus becomes next to sunlight, the most efficient means of applying heat since in the form of luminous heat rays a larger amount of radiant energy convertible into heat in the tissues may be therapeutically applied to a given surface, in a given length of time, than by any other known means.

A beam of light contains all the different forms of heat rays, luminous and non-luminous, from infra-red to the top of the gamut. This is clearly shown by the spectrum. However, it is to be remembered that when luminous rays enter the body, they are quickly converted into infra-red, so that all these rays in practical use become infra-red whether originally luminous or non-luminous.

The most valuable of all our phototherapeutic resources is sunlight. Every general hospital should be equipped with sun porches or an outdoor gymnasium for the warm season and sun rooms for use in cold weather. Unfortunately, in passing through ordinary glass, the actinic rays of sunlight are largely lost. It is hoped that quartz glass may sometime become available for use in connection with sun-baths in cold weather. I have made use of the sun-bath extensively for more than forty years, and have found it invaluable not only as a general vital stimulant, but as a means of promoting the healing of indolent wounds.

It is doubtless true, as Rollier has observed, that all the benefits of sun-bathing are not to be attributed to the actinic rays or to the effects of light, but are, in part, due to the thermic effects produced by contact with cool air. He finds, for example, that sun-baths are more efficient in the early part of the day, when the air is cool, than in the middle of the day, when the air has become heated. In the use of sun-baths in the outdoor gymnasium, I have, for many years, made use of the cool shower bath as a means of combating the depressing effects of excessive heat during hot weather. By alternating exposure to the sun's rays with short, cool baths, most powerful tonic effects may be produced.

Our long, cold season nearly half a year, and the large proportion of cloudy days, greatly lessens the value of sunlight in practical therapeutics; but, fortunately, most of the advantages of sunlight may be obtained by an efficient use of the electric light. For local effects, the photophore, in which the use of the incandescent lamp is a source of light and heat, and the arc light are most useful and efficient. Every hospital should be supplied with a number of these appliances which are now available in forms adapted to all sorts of medical and surgical cases in which the application of heat is desirable.

To obtain the general effects of light when sunlight is not available is a somewhat more difficult problem. By combining arc lights with Cooper-Hewitt tubes and the quartz light, all of the effects of sunlight may be readily secured. In a cabinet which, for convenience, I call "the sunlight bath," there are six arc lights, two Cooper-Hewitt tubes and one quartz lamp. By this combination, the effects of the most intense sunlight may be secured. In fact, it is even possible to produce in ten minutes a slight degree of erythema, if this is desirable.

ELECTROTHERAPY

ELECTROTHERAPY—While less widely applicable as a therapeutic means, is nevertheless a most important feature of a physiotherapeutic hospital outfit. Unfortunately, electrotherapy has always been more or less in disrepute. This highly useful agent has been discredited by the extravagant claims made for it by so-called electrotherapeutists and by the attempt to make it a panacea, whereas its useful application is really limited to certain classes of patients. It is true that electricity is useful as a general tonic, but for this purpose cold water, cold air and sunshine are so much more potent and practical that its value is overshadowed.

The most important use of electricity in connection with a hospital, outside of its diagnostic uses, is as a means of passive exercise. Two purposes are served, first, the development of weak or paralyzed muscles; and, second, stimulation of tissue change or metabolism. There is a great demand

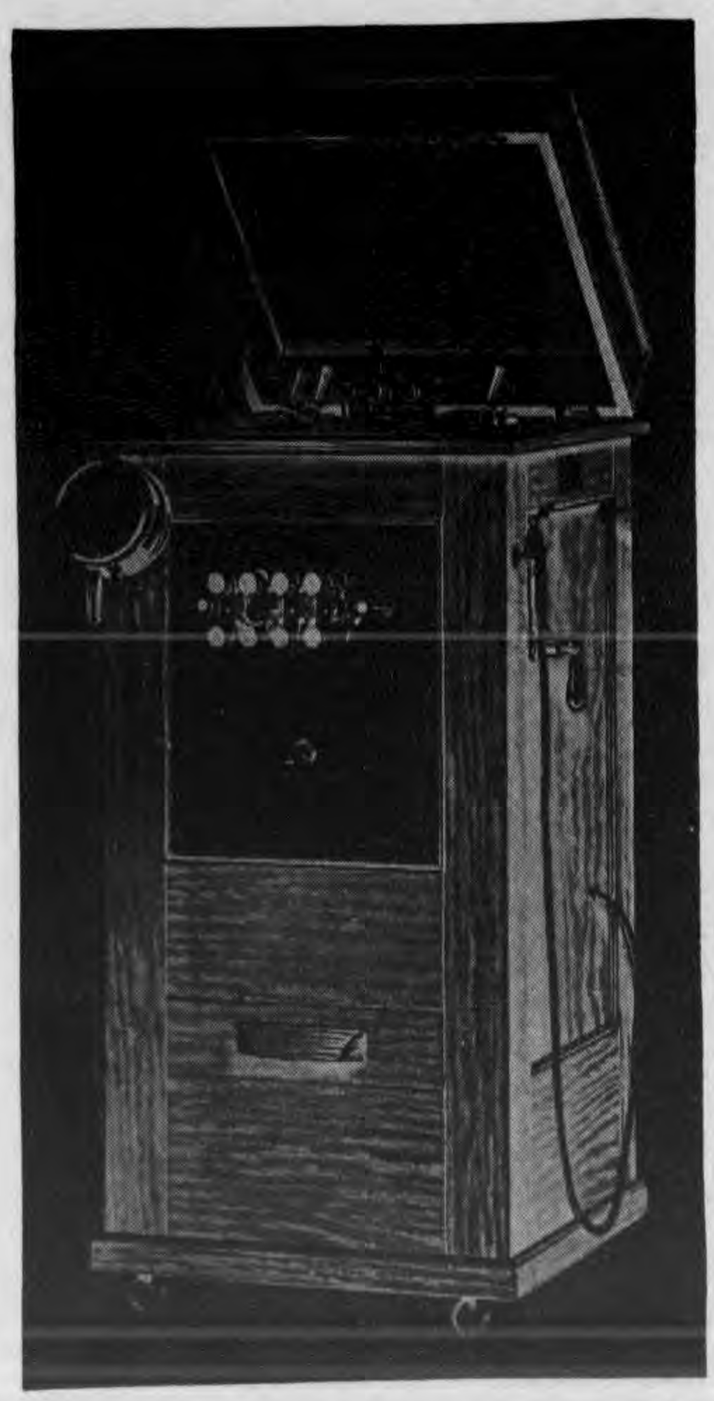
for the use of electricity for both of these purposes in hospital practice. Improved muscular development is required not only in cases or paralysis, but in a great number of cases in which the muscles are weak because of disuse through sedentary life, bad posture, etc.

As a means of increasing metabolic activity, suitable applications of electricity may be advantageously made in a very large number of hospital cases. We are, I believe, prone to forget that the confinement of a patient in bed produces nutritive disturbances which ought to be combated by suitable measures. Modern metabolism studies are also showing that there is a very considerable number of persons whose metabolic rate is below normal and requires stimulation. For all these cases, electricity is a most valuable resource. The best form of electrical current for this purpose is the sinusoidal. I had the good fortune to discover the value of this current as a mode of passive exercise nearly forty years ago. I was carrying on a series of experiments with electrical currents from all available sources and happened upon a form of current which produced vigorous and painless muscular contractions. I saw at once the value of this current for automatically introducing muscular exercise and have made extensive use of it ever since. A few years later, D'Arsonval, of Paris, in experimenting with high frequency currents, discovered a form of current which produced painless contractions and which, on investigation, I found to be identical in form with the current of which I had made use. The current is known as the sinusoidal current because of its form. Its painlessness is due to the fact that in the faradic current the change of direction occurs at the point of highest intensity.

The most efficient forms of the sinusoidal current for influencing metabolism are the sinusoidal bath, by which the metabolic rate may be easily doubled without the slightest discomfort to the patient, and the automatic exercise chair, by which the metabolic rate may be increased to any degree desired—from 100 per cent to 600 or 890 per cent.

THERMO-PENETRATION APPARATUS

Another electrical appliance of proven value is the diathermy, or thermo-penetration apparatus, a high tension apparatus which supplies the current which is practically identical with the so-called wireless current, but of much lower tension. In the passage of this current through the body, the electrical energy is converted into heat and thus by this means heat may be applied to any internal viscus with the same exactness as that with which heat may be applied by other means to the surface of the body. This agent is found exceedingly useful in making heat applications to deep-seated



MEDICAL DIATHERMY CABINET

AN AUTOMATIC EXERCISER

organs such as the lungs or heart and large nerve trunks and certain joints, and produces highly valuable results.

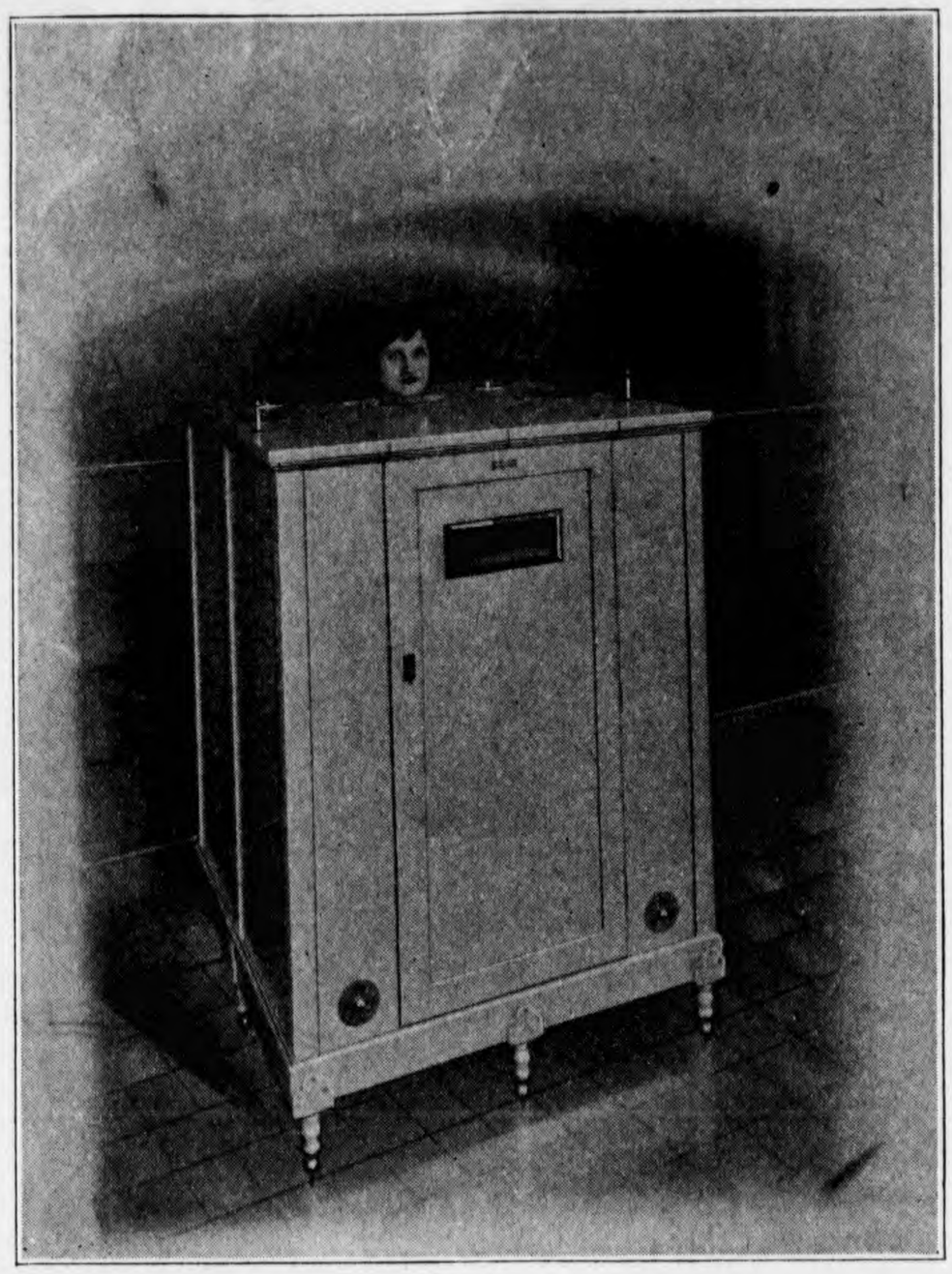
No general hospital should be regarded as properly equipped without these useful electrical appliances.

MECHANOTHERAPY

Mechanotherapy—Mechanotherapy, like electrotherapy, has been greatly discredited by the excessive claims made for it in the attempt of the partisans of this method to accomplish by mechanical means results which are much more efficiently obtained by hydrotherapy or electrotherapy. After careful study of all the various forms of apparatus which have been produced in this country and in Europe for use in mechanotherapy, and after an experience of more than forty years with this line of therapeutics, I am thoroughly confirmed in the opinion that certain results may be accomplished more efficiently by suitable mechanical appliances than by any other means and that at least a few of these appliances might be advantageously added to the equipment of the average general hospital.

Perhaps the most useful of these appliances are means for applying a kneading movement to various parts. By means of a simple device, the oscillo-manipulator, kneading movements may be applied to any part of the body and the movements may be graduated from the most gentle application to the most vigorous and thorough-going. Applications of this sort are highly valuable for patients subjected to long confinement to bed as the result of traumatisms or after serious operations, in cases of paralysis and in the wasting of muscles which results from chronic joint diseases. Mechanical kneading is also most useful in connection with the rest cure, in convalescing cases and in all cases in which it is desirable to promote local or general nutrition. Mechanical massage, as well as manual, has the advantage that it promotes anabolism, or constructive metabolism, without materially increasing catabolism, or destructive tissue change. Exercise promotes constructive metabolism, but at the same time enormously increases destructive metabolism. Hence, in cases in which it is desirable to promote tissue-building and an increase of fat and blood, passive exercise and massage render invaluable service. The average patient cannot afford to pay for the services of a trained manipulator. This opens a wide field for the mechanical manipulator, which is in practical use for securing the general systemic effects of massage fully as thorough-going and efficient as is manual massage. Mechanical massage has the advantage that it may be applied by the patient himself or by an ordinary attendant and thus may be utilized in a great number of cases which might not be able to afford the expense of manual massage.

A large general hospital should provide a variety of mechanical appliances for administering passive movements for the mobilization of the joints and appliances for promoting exercise, such as pulley weights, the riding horse, the stationary bicycle, rowing machines, etc. For the efficient use of exercise as a therapeutic measure, a suitable means should be provided for obtaining accurate information regarding the patient's muscular system. A thoroughly scientific method requires the testing of the strength of each of the larger groups of muscles and comparison of the results with normal standards. This is best done by making a graph, which will



ELECTRIC LIGHT BATH CABINET

show at a glance the defective groups of muscles and the degree of deficiency in strength. This method, which has been in use at the Battle Creek Sanitarium for nearly forty years, was adopted many years ago by the Government military schools at Annapolis and West Point. Every cadet who enters Annapolis is examined by this method and required to bring up the strength of all the weak muscles to the 100 per cent line before he is allowed to spend any time watching the ball games and other competitive sports.

Attention must be given, also, to posture. This applies to bed patients as well as ambulant cases. The study of the outlines of the body are often highly suggestive of deeply-seated morbid conditions to which attention should be given. For example, a round back and a protruding abdomen always indicate a low-standing diaphragm. Since the pericardium is attached to the diaphragm, when the diaphragm is dragged down, the heart is dragged down with it, and with every heart beat the heart muscle is compelled to do, in addition to its normal work, a large amount of unnecessary and unnatural work in lifting the diaphragm and the heavy viscera which are attached to its under surface.

AID TO PATIENTS

These patients with flat chests, round backs and prominent bellies, have no endurance when they are on their feet and quickly get out of breath when they undertake exercise of any sort because of the extra work required of the heart. These patients are also very likely to suffer from the strain upon the sacro-iliac and intervertebral articulations, especially of the lumbar region, which is the natural consequence of a position in sitting or lying which puts these joints under undue strains. These strains often give rise to severe backache, the cause of which is frequently not suspected. Hospital patients often suffer greatly from this cause. Such patients may be almost instantly relieved by simply propping up the hollow of the back with sandbags or cushions. The backs of seats and rolling chairs provided for convalescing patients in hospitals as well as the seats in ordinary use in home, churches and theaters and elsewhere, almost invariably ignore the natural requirements of the contour of the body and, affording no support for the lower part of the back, compel the feeble patient to crumple up in order to secure the support which his lack of strength requires.

The shadow-graph affords a convenient means for the study of the outlines of the body, and is an aid to diagnosis, and is especially useful as a means of demonstrating to the patient himself the necessity for observing correct posture in sitting and lying as well as in exercise and work.

From the writer's standpoint, physiotherapy is by far the greater part of therapy, and hence methods and appliances for employing the various physical agents by which the body functions may be influenced should constitute the major part of the hospital equipment and organization. I see no reason why the general hospital should not provide its patients with the same advantages which are afforded by the up-to-date sanitarium.

In conclusion, I will call attention to what may be termed prophylactic physiotherapy, which I consider as important as any, if not the most important of all. This consists in the systematic education of the patient while under treatment, in right habits of living. While the medical or surgical care of the patient must, of course, be the first and principal aim of the hospital, the proper education of the patient during the period of his hospitalization, so that he may be so far as possible insured against the necessity of again seeking hospital care, should be made a regular part of the work. The opportunity is one which should not be neglected. Every general hospital ought to have associated with its physiotherapy department a health director capable of instructing patients in an entertaining and convincing way, so that when the sick man leaves the hospital he may carry home with him not only a body which has been improved by the treatment which he has received, but, through the teaching and training which have been given him, a new set of habits through which he may not only maintain the improvement made, but may for a long time afterwards continue to improve in bodily fitness and efficiency.

standpoint of the operator, gas has its limitations. How are we then to overcome these shortcommings? This can be accomplished by the combining of local anaesthesia with gas. As we have stated above, a large percentage of all surgery can be performed under local anaesthesia. But local anaesthesia alone does not eliminate the psychic factor—the mental anxiety alone being an important factor in the production of shock. If this is attempted by the use of larger doses of morphine, we are treading on dangerous ground as morphine is safe only within certain limits. The use of local anaesthesia alone gives in many cases a demonstration of the skill of the operator, but too often it amounts to skillful surgical gymnastics with the patient playing the role of an unappreciative listner. However, local anaesthesia does eliminate the local pain and the conduction of traumatic impulses to the brain. The fact that the patient is unconscious regardless of the agent, does not limit the actual damage to the brain cells by the operative trauma. Under local anaesthesia this is made possible. It further eliminates to a great extent the time factor in operating. There is no need for rushing.

There are other factors of importance, among them being the preparation of the patient for operation in elective cases; I mean the mental preparation. The patient is probably not accustomed to hospital routine and is liable to be frightened and apprehensive. All sources of anxiety and worry must be removed and the confidence of the patient must be gained. All annoyances and unnecessary noises must be eliminated. Pleasant surroundings are imperative, and the subject of operation should be avoided to as great an extent as possible. Every consideration should be shown the patient by the doctor, the assistants, the nurses, and attendants. This all constitutes a part of the anaesthesia. A good night's sleep on the night previous to the operation is essential and can be secured by drugs, and for this we prefer the combination of 10 to 20 grains of sodium bromide, 10 grains of chloretone, and ½ to 1 grain of codeine. Our patients, except children and the aged are given ⅛ to ¼ grain of morphine and 1/200 to 1/150 grain of hyoscine one-half hour before the operation.

The use of local and gas does not meet all of the requirements of the surgeon in some cases, and at times it is necessary to give a small amount of ether for a few minutes to secure relaxation.

The combination of the above agents has long been advocated by Crile under the descriptive term anoci-association or anociation. He stands today as the foremost champion of gentleness in operation, protection of the patient, lower mortality, and lower morbidity.

To return to the subject of nitrous oxide-oxygen as an anaesthetic agent without proper adjuncts, its place in major surgery is very small and in the hands of the average surgeon would give results far inferior to ether. If gas anaesthesia is to be employed successfully in major surgery, the following requirements are absolutely necessary: (1) A trained anaesthetist; (2) the surgeon must work each day with gas and not reserve it for any special class of cases; (3) the patient must be kept pink at all stages of the operation. If the surgeon deviates from any of these rules, he is courting disaster. If the surgeon wishes to employ gas he should meet its shortcomings by other agents, not by increasing the strength of the gas.

The more serious the patient's condition, the better they take the anaesthetic from the anaesthetist's point of view, but the more it becomes a factor of harm. In the seriously ill, analgesia§ plus local while more difficult to handle, is the best for the patient; it rules out the emotions as well as pain and thus psychic shock is prevented.

If the surgeon selects his patient for operation, eliminating the bad risks; if the height of his interest is in conserving his own mortality rate rather than in the saving of extra lives; if he operates under deep ether narcosis with the relaxation of the post-mortem room, he surely will conserve much of his own energy, but he will fall short of doing his duty as a physician. Carstens used to preach to his internes, "Be a lion or a mouse" and the surgeon of today still needs the heart of a lion in his deliberations. Gas-oxygen combined with local anaesthesia (½ to 2 per cent novocain) conserves the strength of the ordinary surgical case, eliminates shock, and reduces morbidity from operative proceedure to a minimum. Anociation combined with direct blood transfusion extends operability to the seriously ill, the jaundiced, the starved, the diabetic and the highly toxic. By its means it is possible to operate without an increase in the pulse rate or a fall in the blood pressure.

CONCLUSIONS

1) We are concerned today with the further lowering of our surgical mortality and morbidity. Nitrous oxide used as a routine anaesthetic is one of the big factors in accomplishing this end.

(2) Nitrous oxide-oxygen alone is entirely inadequate as an anaesthetic in the great ma-

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§Crile—Some Considerations of Acute Abdominal Conditions in Gynecology. New York State Journal of Medicine, October, 1921.

jority of surgical operations. It should be combined with local anaesthesia.

(3) In administering nitrous oxide anaesthesia, the patient's color should at all times be pink. If the patient becomes livid the good results of the anaesthesia are defeated and the agent becomes a dangerous one.

(4) Nitrous oxide-oxygen is the safest of the inhalation anaesthetics in the hands of the expert. In the hands of the novice, it is the most dangerous.

(5) Nitrous oxide-oxygen preceeded by morphine and hyocine and combined with novocaine (anociation) is an ideal anaesthetic and will give the best results in mortality, in morbidity, and in further extending help to a large class of patients which in some cases are classed as inoperable because of their serious condition.

—2201 JEFFERSON AVENUE, EAST.

DISCUSSION

DR. E. O. SAGE, Detroit: I have thoroughly enjoyed Dr. Blaine's paper on nitrous oxide in major surgery. I agree with him in most instances that nitrous oxide is the anesthetic of choice, always preceded, however, by the use of morphine and hyocine, without which it is almost impossible to get sufficient relaxation, especially in abdominal work. Another thing, if the anesthetist knows his surgeon he will find the success of the anesthetic will be much better.

Regarding color, most text-books state that a successful nitrous oxide anesthetic is when the patient is kept pink. In reality the color of the patient will depend on the amount of hemoglobin; for instance, if you have a very anemic patient you will not change the color on giving a saturated solution or a straight nitrous oxide anesthetic, so for that reason you cannot consider the pink color as meaning that the patient is in a condition of sufficient relaxation for operation. The blood pressure is surely a measure of prime importance, especially in the so-called trying out of a patient preparatory to operation. The patient who can be saturated with nitrous oxide and come back and be resaturated will stand almost any surgical interference.

Another feature that I believe Dr. Blain did not mention was rebreathing. I feel that one of the most important factors in successful nitrous oxide anesthesia is rebreathing. That can be very easily measured. I believe a machine so constructed that we can see the amount of new gases that go in will help to carry on a very successful anesthetic. That is brought out in this way: Given the amount in cubic centimeters that the patient can breathe, that is breathing at one inspiration or one expiration, and counting the number of respirations per minute, tables have been worked out by some of the best men in the country by which we can estimate a definnite amount of rebreathing that will keep up the carbon dioxide that is essential in keeping the patient going.

Too little cannot be said regarding the training of anesthetists. The anesthetist rather than the doctor is more often I believe in a position to judge the patient's ability to withstand any sort of an operation. I believe if the laity themselves knew of the value of the anesthetic they would surely put more emphasis on who is to give the anesthetic. A very excellent gentleman and doctor whom most of us knew, Dr. Charles Moots, once said that he had told Mrs. Moots if he became unconscious from something that required immediate surgical interference to insist on a good anesthetist; any good surgeon could do the operation.

Another feature regarding the mixture of your nitrous oxide and oxygen, we might say that a mixture of from 75 to 83 per cent of nitrous oxide with enough oxygen to bring the solution up to 100 is good in most instances. You will have little nausea if you guard against having too much pressure on your machine. If you have too much pressure you will have very severe postoperative nausea. The difference is explained by the fact that some people can sleep in a closed room indefinitely without any disturbing respiratory conditions while another individual will require all the windows open in order to be comfortable.

DR. J. H. KELLOGG, Battle Creek: This is a very interesting paper of Dr. Blain. I have been interested in nitrous oxide for over thirty years and have used it almost exclusively for the last fifteen years. We have learned something by experience of the points brought out by Dr. Blain. There are two or three other points that might be of interest. The great dangers from nitrous oxide we found were asphyxia and acidosis. The acidosis may depend very largely on the intensity of the anesthetic and the limit of time the patient is under the anesthetic and it also depends upon the condition of the patient before operation. Acidosis is combated generally by the liver. The liver function is to de-toxicate the poisons in the system. Now the liver cannot do this unless it has a good supply of glycogen and glycogen is a production of glucose. Therefore, the best way to protect the patient against acidosis is to give glucose before operation. This is accomplished by giving large quantities of malt sugar and milk sugar. The common practice of starving the patients, especially the abdominal cases, before operation reduces the glycogen in the blood and makes them favorable subjects for acidosis. Consequently for many years it has been our practice to fill up these people with glucose solution for twenty-four hours before operation instead of starving them. In addition, the patient gets a half pint of boiled water containing an ounce or more of sugar. Then every hour the patient has a glass of warm water containing an ounce or two of malt sugar. This not only supplies the body with carbohydrates, but supplies the body with the liquids that will be lost by the anesthetic.

Another thing is local anesthetic. In the abdominal cases we find that the tendency of the reflexes of the abdominal muscles is to very brisk. This can be greatly obviated by giving just beneath the peritoneum, just through the skin or even through the muscle and just beneath the peritoneum. In that way less anesthetic is required and the acidity is reduced.

Another point which is most important of all is the relation of the breathing of the patient. Deep breathing is most important. Short breathing increases the danger of asphyxia. If the patient gets blue in the face it is becauuse he has asphyxia. If we would permit the patient to breathe deeply much of the asphyxia would be eliminated. A method which I have used is a compress of ice water covering the chest. When this is applied the patient at once takes a deep breath. You found that out when you went in swimming as a boy. You cannot put your hand in cold water without taking a deep breath. This reflex action will cause you to take a deep breath. What you want when you get a patient under an anesthetic is to give him more gas. Increase the percentage of gas and you cut down the oxygen, but you get more gas without reducing the percentage of oxygen by the cold compress and in that way you keep the patient breathing deeply. Leave the compress on five minutes, then

take it off and rub them briskly. This rubbing is important because the nerves will become interrupted and the skin must be rubbed with a dry towel so as to procure a reaction. We find that by adopting these different courses that we have no trouble with the gas. We use gas oxygen anesthetic in all types of cases and the mortality is no more than with ether.

DR. C. D. BROOKS, Detroit: I think our section is to be congratulated by having such an important subject brought up before the Surgical Section. As a rule gas is not used enough because some one has the idea that it is not as safe as some other anesthetic. As a matter of fact, if it were given a trial by a competent anesthetist we would find it was the safest anesthetic. I think the anesthetic that is considered the safest for the patient is the one to be adopted by any surgical group. We have had experience with gas oxygen for about seven years and we feel more and more convinced that it is the best and safest operation for the patient. It should be given by an expert the same as surgery should be done by an expert. Once in a while we hear some one say a patient died from gas. It is necessary to have team work in order to get the best results. A patient going into the hospital should be met by those with whom she deals later on. I think the anesthetist should be introduced to the patient by the surgeon and have a minute or two talk by herself. A few minutes' talk before the operation will satisfy the patient. First of all, the anesthetist can tell the patient there is no danger, which is true if the anesthetist is giving the anesthetic. The danger is so small it is like the danger of one going downstairs. "There is nothing to worry about, we will take care of you no matter what happens" with quiet efficiency all along the line bring that patient through the operation to a state of convalescence which you cannot do with any anesthetic except local, which is not so desirable.

DR. H. W. PLAGGEMEYER, Detroit: I think in kidney surgery particularly there is a very brilliant field to demonstrate the efficacy of nitrous oxide. You remember McNye's experiments in which he divided the dogs into three groups. To one group he gave chloroform and ether, the second local and the third nitrous oxide. In every one where he gave ether and chloroform he got a fat embolism in the glands. In this line of work I think you have the most striking field for the use of nitrous oxide accompanied by morphin. We do not have the same effect experimentally that we have with ether and chloroform.

MEDICAL MANAGEMENT FOLLOWING GASTRO-INTESTINAL SURGERY*

I. W. GREENE, M. D.

ANN ARBOR, MICH.

In the past we have had much acrimonious discussion concerning the relative value of medical or surgical treatment of many gastro-intestinal conditions and particularly of gastric and duodenal ulcer, but I believe that among thinking medical men, there is agreement that both proponents are in a measure right, and in a measure wrong. We are agreed that all gastro-intestinal conditions should first be investigated by the internist who should, if possible, determine the diagnosis and by various functional tests attempt to determine the extent and seriousness of the lesion. At this point, in many cases, it is desirable that there be a reasonable consultation between the internist and surgeon to determine if medical or surgical treatment should be instituted, for it must now be an accepted fact that not all peptic ulcers require gastro-enterostomy or excision nor is it advisable to remove or surgically drain every case of cholecystitis. The surgeon is no longer willing to operate on a peptic ulcer of comparatively short history which has not had the benefit of proper medical treatment; and on the other hand the internist does not wish to treat medically the patient who shows definite evidence of organic obstruction at the pylorus, or perhaps has indefinite gastric symptoms which there is good reason to believe is caused by an infected gall bladder. This better cooperation between medicine and surgery has, I am sure, been of the greatest value in obtaining far more satisfactory results than was possible during the period of more arbitrary decision. There is, however, still something to be desired in the way of team work if we are to do ourselves and our patients full justice.

After very few surgical procedures upon the gastro-intestinal tract can we hope for complete restoration of the normal function. Perhaps in an early operated acute appendix there is relatively little change from the normal function, but even here there may be adhesions formed which are not entirely innocuous and which may give rise to some digestive disturbances. Certainly no one will argue that any surgical procedure for peptic ulcer will allow the digestive load to be as ably handled as by a normal stomach and small bowel. Both surgeons and internists have felt that there was still much to be desired in this class of surgery. Bastedo(1) reports that in his practice, ulcer cases that have had one or more operations come for treatment almost as frequently as ulcer cases which have not been operated, while Davis(2) of Omaha states that 15 to 40 per cent of operations done for gastric ulcers are failures.

It is hardly conceivable that the damage done by an old cholecystitis is entirely eradicated by either drainage or excision. Graham(3) has shown that hepatitis is a constant accompaniment of cholecystitis and varying degrees of pancreatitis are a rather common complicatioa of cholecystitis. Even as regards the gall-bladder and large bile ducts recurrence is frequent. Deaver(4) in 1920 reported 800 cases, of which 8½ per cent were reoperative cases, several of which were tertiary operations.

In that type of chronic appendicitis which produces reflex gastric symptoms, often simu-

*Michigan State Medical Society, Flint, Mich., June 9th, 1922.

lating rather closely the syndrome of peptic ulcer, we have a particularly refractory type of trouble. It would seem that we have had for so long an upsetting of the reflex mechanism of the stomach that the removal of the original offending agent does not entirely alleviate the insult done to the intricate mechanism involved.

In resection of the small bowel there is often at least temporarily distressing digestive disturbances and this is much more true in resection of the stomach for suspected carcinoma. There are, of course, other examples of the less common operative procedures on the abdomen in which results short of normal are the best we can hope for, but those enumerated constituted the bulk of our problems.

I would not, however, wish to convey the impression that surgery is unsatisfactory or undesirable in many gastro-intestinal conditions. In far the greater proportion of cases the failure to obtain a normal gastro-intestinal tract is due to the underlying pathological process and not to surgical errors. If one had a badly shattered femur he would not refuse surgery because he might ultimately have a somewhat shortened leg, but would rather wish such measures taken as would aid in most nearly approximating its former usefulness. Similarly, we must use surgical measures when indicated and supplement them with such medical treatment as will be most useful in securing the desired result.

Why then should not all such patients be returned to the internist who has made a study of dietetics and medical management of digestive disorders, so that he may again test their digestive function and advise intelligently after this has been determined? The surgeon, as a rule has neither the time or inclination to do such work, nor should he be expected to have. We are, however, justified in asking that he turn the problem over to one who is capable of doing so. If the patient has not previously been seen by the medical man, it is even more important that he should be taken over and by one familiar with such investigations.

Perhaps in no other class of patients is postoperative medical supervision quite so necessary as after the various operative procedures for peptic ulcer. No hard and fast rules can be laid down for their managements, as many factors enter into the decisions in these cases. The type of operation which was chosen, the previous history of the trouble, the social and economic status of the patient and his temperament must all be considered before you can intelligently advise. Among many good surgeons gastro-enterostomy, either with or without excision, will often be the operation of choice. If it is not advisable to excise, there will still be the ulcer to consider. It has been repeatedly shown that there is a strong tendency for at lest a part of the food to be emptied through the pylorus. Even if excision has been possible, the tendency to recurrence must be guarded against. In every case re-examination by the X-ray is desirable to determine how well the new opening is functioning and if there is gastric retention or pylorospasm. Gastric analysis should be repeated to determine if hyperacidity is still present, for Sippy(5) has pretty well proven that hydrochloric acid is a serious hindrance in the healing of ulcer and the emptying of highly acid poorly prepared chyme into a portion of the bowel not fitted by nature to receive it can surely be thought of as at least a strongly contributing factor in the causation of jejunal ulcer. If hyperacidity is shown to exist it should be controlled by the careful use of alkalies and by withholding from the diet such food as will provoke excessive acid secretion. We can not hope for the best ultimate result if the patient is turned loose after a few weeks with the advice that he can eat anything he wishes. It is usually advisable that for a number of weeks after release from the hospital the patient be given three small meals a day with one or two milk and cream feeding between meals. The meals should consist of bland ,easily digested food, such as breakfast cereals, poached or coddled eggs, custards, pudding, strained vegetable soups, and some bread. The use of alkalies depend on whether or not there is any considerable amount of acid. Its use must be checked by the use of the stomach tube and should not be dispensed with too soon. At the end of six or eight weeks the diet can be gradually increased ultimately, including nearly all foods except those that are fried; the coarser vegetables and very acid fruits. The meals, however, should not be large, rarely exceeding ten or fifteen ounces in amount.

Often, after all seems well following some mental, physical, or dietary indiscretion, the patient will have a distressing return of his old symptoms, but investigation will show only an irritable stomach with spasm and increased peristalsis. A few weeks of the previous treatment, with small doses of atropin, will again put them on their feet. These patients do much better if they will occasionally come back for re-examination and advice. It should be strongly impressed upon all ulcer cases that medical supervision is as important as though they had nephritis or diabetes, and that ulcer is essentially a chronic disease with a tendency to recurrence. If this is not made very clear and emphatic they will drift out of your control, forget your orders as to diet, and overtax their imperfect digestive apparatus. Eventually, in most cases they will again get in trouble and

THE SMOKER'S LIVER

JOHN HARVEY KELLOGG, M.D.

"It fortified my mind and made me cease to want to smoke." That is what a reformed smoker said to the writer in his office one day. He was a manufacturer from St. Louis. He had tried a hundred times to give up smoking, which he knew was harmful to him, but had failed. When he learned what tobacco did to his liver he said to himself, "I can't afford to have my liver damaged. I need it for other purposes than to destroy nicotine" and then added, "Somehow the knowledge of what tobacco was doing to my liver sort of fortified my mind so that I no longer craved it. I haven't wanted to smoke since. I wish every smoker could know about this." This is the reason for this tract,—to give every smoker who wants to know the truth about tobacco an opportunity to get the facts.

The liver is one of the most wonderful organs in the body. It is surprisingly versatile, doing more different kinds of work than any other organ. Here are a few of the many wonderful things the liver does:

1. It makes every day about twenty ounces of bile, which is the most poisonous of all the secretions—six times as poisonous as urine, containing the alkaline wastes of the body.

2. The liver aids digestion by producing hormones, which activate the digestive juices.

3. The liver completes the work of digestion, acting upon all of the elements of the food, and adding a refining touch to the work done by all the other digestive organs.

4. The liver stores sugar and regulates the supply of sugar to the muscles and other organs to furnish energy for work.

5. The liver stores vitamins.

6. The liver destroys and removes dead and worn-out blood cells.

7. The liver destroys poisons.

8. The liver captures and retains poisons which it can not destroy, thus protecting the rest of the body.

How Tobacco Damages the Liver

The first pipe or cigar would probably prove a fatal dose except for the fact that the liver is able to destroy the poisonous properties of the nicotine and other poisons derived from tobacco.

This distoxicating power of the liver resides in its cells. Alcohol, creosote, morphia, the poisons produced by putrefactive bacteria, in fact all organic poisons, are acted upon by these wonderful cells in such a way as to destroy or very greatly decrease their pernicious qualities.

It is for this reason that when a drug is given by hypodermic injection only half as large a dose is required to produce a given effect as when given by the mouth. When injected under the skin the poison enters the circulation at once; when taken by the mouth, most of the drug passess through the liver and is distoxicated by it. Even

when injected under the skin the poison is largely captured by the liver and destroyed, although more slowly and less completely.

This wonderful distoxicating power of the liver was demonstrated by Roger, a pupil of the famous Bouchard, many years ago.

Why Smoking After Meals is Less Harmful Than When the Stomach is Empty

The experiments of Roger, Charrin, and others, brought to light the curious fact that this distoxicating power of the liver is much greater after a meal than before, and led to the demonstration of the important part played by sugar or starch in the liver function. After a meal rich in farinaceous foods the liver cells are well filled with an animal starch known as glycogen, which is known to be essential for the distoxicating activity of the liver.

This physiological fact explains the observation of Brooks that "there is a universal and well founded belief that the use of tobacco on a full stomach is less likely to produce symptoms than on an empty stomach."

Stern (1907) thinks that tobacco may produce alimentary glycosuria, and that a mild diabetes may be aggravated by the use of cigarets. He even attributes certain cases of diabetes to nicotine poisoning.

Graziani showed that tobacco causes changes in the liver, particularly hemorrhages and areas of necrosis (death of tissue.)

Adler showed at the end of two months enlargement of the liver and infiltrations indicating the beginning of sclerosis. These conditions were increased at the end of four months. The connective tissue was dense. Fatty degeneration was also present.

Fatty and sclerotic changes in the liver have been noted by Gy and others in experiments upon animals as the result of chronic nicotine poisoning.

Those Hardy Old Smokers

If the liver were able to destroy all the nicotine imbibed by smokers and to continue to do so for an indefinite period of time, the smoker might indulge his pipe with impu-

nity and without stint. Indeed, some smokers seem to possess an almost unlimited liver capacity and to be able to distoxicate almost unlimited quantities of nicotine. They are blessed with wonderful livers and are able not only to smoke almost constantly, but to drink quantities of whisky, to indulge their appetites without restraint, and yet maintain a marvelous degree of efficiency and manifest an astounding ability to resist the ravages of time.

These men owe their unusual tolerance of tobacco and other poisons to the fact that they possess extraordinary livers which are able to do double or quadruple duty as poison destroyers. That they cannot be cited as proof that tobacco is harmless, is clearly enough shown by the fact that for every one possessed of this unusual tolerance to poisons because of his extraordinary endowment with capacity for poison destruction, there are many hundreds who demonstrate their lack of this unusual natural protection by succumbing to the poison habit at an early age.

How Smoking Reduces Weight

Many smokers justify the habit by the fact that when they do not smoke they gain in weight. This fact in itself is evidence of damage to nutrition caused by smoking.

The liver plays a highly important part in the process of digestion. It works over and refines, so to speak, the crude products of gastric and intestinal digestion. When compelled to devote its energies to the destruction of nicotine, it cannot do the work of digestion properly. Crude and waste elements accumulate in the blood and tissues, and are eliminated in lessened quantity. This accounts in part for the lessened endurance of smokers and for the loss of weight due to smoking.

If you are a smoker, won't you pause a moment between whiffs and ask yourself the question whether you can afford to continue a habit which does such harm to one of the most essential organs in the body besides the great damage it does to the heart, nerves, kidneys, stomach, every organ and tissue in the body? Do not be misled by the

suggestion, "It is time enough to stop when you find that smoking is hurting you." Tobacco is a subtle foe. If you wait until you become conscious of the injury done, it will be too late. The damage then will be irreparable. Worn-out livers, heart and kidneys cannot be replaced. There are no "spare-parts" for the human machine.

The way to stop smoking is to stop wanting to smoke.

TOBACCOISM

or

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by

DR. JOHN HARVEY KELLOGG

Not a tirade against tobacco, but a simple statement of the known facts respecting the effects of tobacco upon the human body as shown by laboratory experiments and clinical observations by eminent scientific authorities. The book should be in the hands of every teacher and the facts should be made known to every smoker.

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The Modern Medicine Publishing Company

Why Are We Less Sturdy than Our Ancestors?

By J. H. KELLOGG, M.D.
Superintendent Battle Creek Sanitarium, Battle Creek, Mich.

THE men who cleared the forests and broke up the prairies, defied the mosquito with its plague of malaria, and bore the hardships of pioneer life to plant our civilization, were tougher, sturdier, more manly, more enduring men than the average man of to-day.

The war-time examinations showed that half the men between the ages of 21 and 30, when a man should be in his very prime, were so far below the standard of normal health and vigor that half of them were not only unfit for military service at the front but incapable of being made fit by training. We lose from our population of one hundred million, by death, 1,500,000 people every year; 3,000,000 people are sick all the time. An average of seven days are lost from labor by sickness every year. Tuberculosis is gaining ground. It kills one out of every ten of our population. Cancer kills one in twenty. Heart disease, Bright's disease, and other chronic maladies are rapidly gaining ground. While the average length of life is increasing, the number of people who attain great age is rapidly decreasing. Every year fewer people die of old age for the reason that the average man dies before he is old enough to die of old age. Insanity, imbecility and epilepsy are increasing, and if the present rate of increase continues, in less than two centuries we will all be imbeciles, lunatics, idiots, or epileptics. In England and Wales the insane are increasing twice as fast as the sane, and in France, ten times as fast. Another evidence that the human race is running out is found in the fact that the birth rate is diminishing. In France, England, and Germany the birth rate is declining so rapidly that if it continues at its present rate, a century hence not a child will be found in any of those countries, and in this country the decline of the birth rate, if not so rapid, is none the less definite and constant.

What Happens When an Old-Fashioned Animal Tries to Live in a New-Fangled Way

In the Marquesas Islands, a hundred years ago, there were 140,000 happy, healthy people, perhaps the finest race the world ever saw. At the present time there are only a few hundred left of these splendid people, who sprang originally from the same Caucasian root as ourselves. They have faded away under the blight of our perverted civilization. Every civilized country is traveling the same road, though more slowly. The fundamental cause of our trouble is unbiologic living. Man is a very old-fashioned animal trying to live in a new-fangled way, in a manner that no animal ever before adventured, and so unnatural and so ill-adapted to his constitution and his requirements, as to render his ultimate undoing inevitable. No animal has ever survived such radical and violent departures from its normal environment as modern man has made. He is by nature a tropical creature, an open-air dweller. In the open air he is free from tuberculosis, pneumonia, and a long list of "house diseases" which his atavistic proclivities toward cave dwelling have led him to cultivate. We have only recently found out that the wind carries a healing balm on its wings which fortifies the body against disease and makes fresh air the most important of all prophylactic and therapeutic means. The average man has not learned this important truth and so the business man, incarcerated behind the bars of his counting room, with his male assistants dies at the premature age of 36 years, while the farmer, whose vocation keeps him in the open, lives to 55. The business man loses more than one-third of his life, the price he pays for ignorance or neglect. And the business woman dies at 26, while the housewife lives more than twice as long, dying only at 53,—and 42 per cent of these office girls die of tuberculosis, one of the most easily preventable and curable of all the serious maladies to which man is subject.

Man is naturally a low protein feeder, like his relatives, those sturdy forest men, the chimpanzee and the gorilla, who began life with him in the primeval forests of the Eocene in North America, 3,000,000 years ago, when, according to Prof. Elliot of Oxford, there was not a single high protein feeder among all the higher animals that roamed the earth. The gorilla has adhered to the original bill of fare and to-day is king of that portion of the Congo in which he lives, not a lion being found within a space of four hundred miles square, in which the forest monarch reigns supreme. This primitive creature has the strength of ten men; but he cannot endure the conditions of civilization. No gorilla has ever survived two years in captivity. Man has become in a measure immune to these evil conditions; but his immunity is only apparent; it is nothing more than delayed reaction. The ultimate effect is the same. The gorilla dies in captivity in a few months. The imprisoned business man lingers longer but dies fifty years before his time. There is no such thing as real immunity to unbiologic conditions. There is postponement of judgment, but no pardon.

Comparative Life Expectation of Men and Women

For nearly fifty years the writer has been a close student of the influence of habits upon health. During this time a study has been made of the habits of

more than 100,000 persons. One very definite conclusion reached is that while acute disease is usually the result of accident or infection, chronic disease is for the most part due to the breakdown of the vital machine as the result of the cumulative effects of unbiologic habits. In a paper read two years ago before the National Association of Life Underwriters, on "The Relation of Habits to Life Expectancy," I called attention to statistical facts which seem to me to indicate that certain habits have a very definite relation to health and longevity. In a study of the causes of death, death rate, and life expectation at different ages of men and women, some very notable differences were found. Here are a few of the facts, briefly stated.

The boy of fifteen has a life expectation of 50 years. The girl of fifteen has 52 years ahead of her, and at the age of 75 there are four women alive for every three men.

For every 100 female deaths from disease of the blood vessels, 140 men die. One hundred and seventy men die of angina pectoris to every 100 women. Between the ages of 20 and 24 years, 300 men die for every 100 women; and twenty years later, at the age period of 40 to 44, nearly four times as many men as women die from disease of the heart and blood vessels, or 376 men to 100 women. The large use of alcohol and the general use of tobacco by men would seem to be a large factor in causing the great difference in the mortality rate, for Hunter has shown that the mortality of moderate drinkers is double that of abstainers, and the medical director of a great life insurance company and one of our best-known actuaries, have independently reached the conclusion that under like conditions, for every 100 deaths of non-smokers, 110 smokers will die. From the facts above presented this would seem to be a very conservative estimate. According to Dwight, the records of the New England Mutual Life Insurance Company covering sixty years shows that the mortality of smokers is 57.6 per cent greater than that of non-smokers.

It is also worthy of note that the Census Bureau reports only 407 female decedents from alcoholism for 3,500 male decedents, and the mortality from alcoholism dropped to one half the former figures the first year of war prohibition.

Above the age of 25 years, the mortality of men from tuberculosis is notably greater than that of women. Between 25 and 70 years, 170 men die of lung tuberculosis for every 100 women, and at the age period of 50-54 years, 243 men die for every 100 women. One in four of all adults over 25 years of age die of lung tuberculosis; but the proportion of women's deaths is less than 1 in 5, while 1 in 3 is the proportion of men.

THE RELIGION OF THE BODY

Our daily habits are the foundation on which we build for health or disease, a mold in which we shape our physical destiny.

A dangerous fallacy which leads annually to the loss of millions of years of life is the notion that a man may be possessed of a surplus of vitality which he may expend in excesses and indulgences of various sorts, without serious injury. We need to learn that this surplus of vigor is a margin of safety provided for emergencies and to be drawn upon in our declining years when outgo exceeds income, a sacred endowment which we hold in trust not for ourselves alone, but for the community, the nation, the race, by the judicious use and investment of which we may contribute to the welfare of our fellows, of those who come after us. To waste material wealth is folly; to squander vital capital is no less worthy of condemnation. We belong not to ourselves, but to the race; we have been bought with a price, the sum of which includes an infinite total of toil and effort and struggle and sacrifice to which many thousands have contributed that we might exist and that we might be what we are.

All present-day religions need to be supplemented by a new religion or at least a new code, which shall set forth the sacred claims of our physical being, the religion of the body. Preachers should proclaim it from the pulpit. Teachers should dwell upon it every day and every hour. It should be taught in the Sunday School as a part of spiritual and ethical culture. Indeed, health culture, aiming toward soundness of body and mind might well be made the basis of all culture.

WHY THE WAR LOWERED CERTAIN DEATH RATES

Among the interesting lessons from the war is the notable lowering of the death rate in several countries. In Denmark, the death rate fell 35 per cent, due, in the opinion of Dr. Hindhede, the Danish food controller, to simpler habits of living, and especially the

(*Continued on page 28*)

I Will

I will start anew this morning with a higher, fairer creed;
I will cease to stand complaining of my ruthless neighbor's greed;
I will cease to sit repining while my duty's call is clear;
I will waste no moments whining and my heart shall know no fear;
I will look sometimes about me for the things that merit praise;
I will search for hidden beauties that elude the grumbler's gaze;
I will try to find contentment in the paths that I must tread;
I will cease to have resentment when another moves ahead;
I will not be swayed by envy when my rival's strength is shown;
I will not deny his merit, I will strive to prove my own;
I will try to see the beauty spread before me, rain or shine—
I will cease to preach your duty and be more concerned with mine.

—*S. E. Kiser.*

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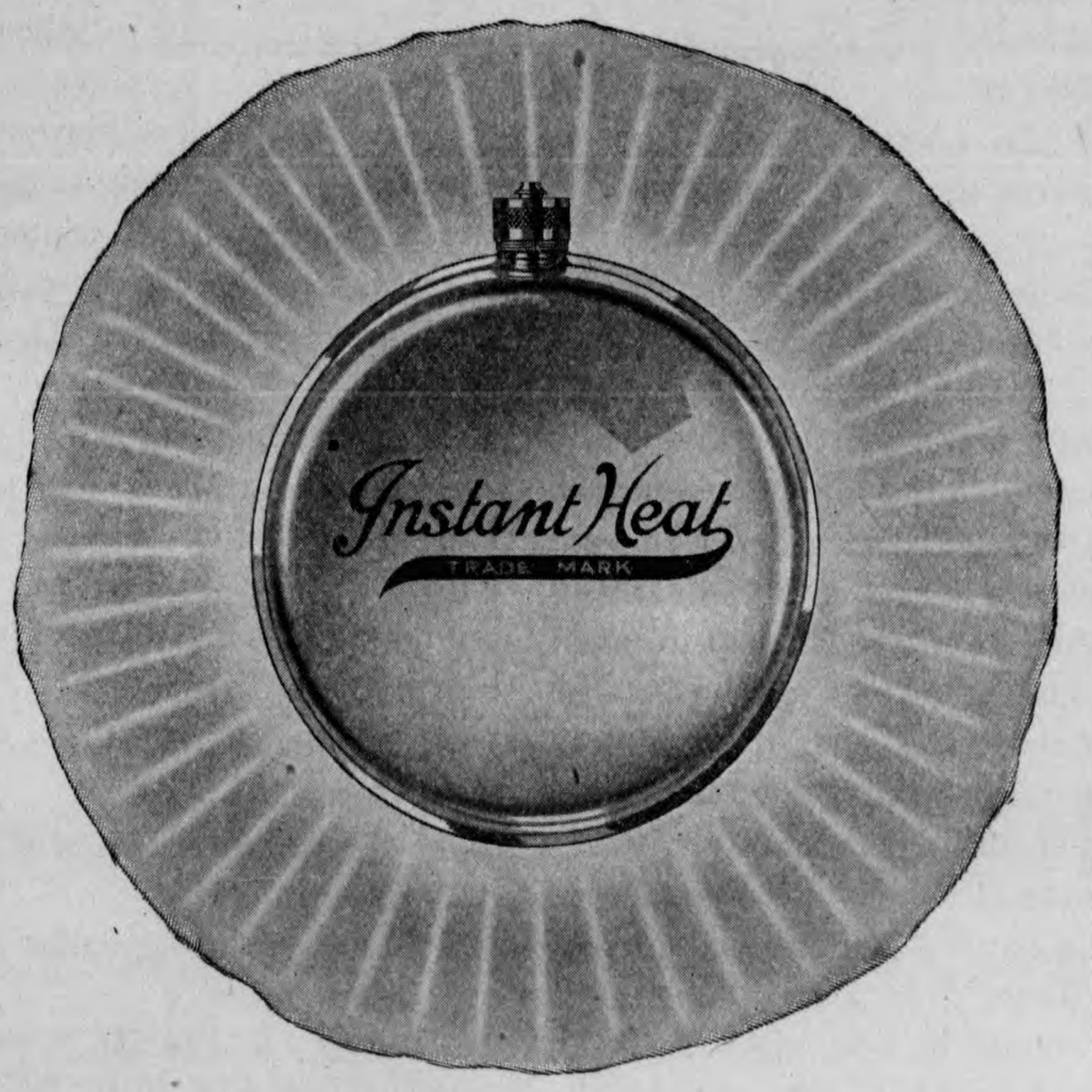

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FOODS FOR CHILDREN

THE question of forbidden foods for children has long contained a full list, but in more recent experiments it has been found that a large per cent of the difficulty lies in the cooking more than in the food itself.

The cooking of food for children is very important and should in all cases be free from many combined dishes. The simpler in form and milder in flavor, the more desirable the dish is for the children. If the family follows a more simple menu, eating largely what the child is to have, the effect has often been beneficial to the family and the child is often more easily encouraged to eat what he should.

Before I lay me down to sleep,
Each night I'll brush my teeth,
I'll brush the front, I'll brush the back,
I'll brush on top and underneath.

Each morning when I awake,
Again my little brush I'll take,
A thorough brushing to repeat,
To keep my mouth clean and sweet.

At least twice in each year,
Before my dentist I'll appear,
Resolved to follow his advice,
And keep my teeth polished nice.

—George N. West, D.D.S.

Children often have to be taught to like new foods and food especially good for them. Be patient but firm. Begin by giving a small amount of a new food, give but one new food at a time and repeat frequently until the child likes it. Children often have to be coaxed to eat certain foods and much depends upon the mother's ingenuity in playing games or using camouflage and in offering a variety sufficient to tempt the child. When the child does not like milk, the easiest method is to include the desired amount in his food, in soups, custards, and by cooking the cereals and vegetables in milk.

The protein requirement is usually considered covered by a quart of milk a day. After the seventh year and sometimes as early as the fifth, a small amount of meat is needed. This should be first given as broth or gravies, later as scraped meat balls, etc. Choose the lean cuts of meat, avoiding those high in fat content, such as pork.

The calcium requirement is ordinarily met by the use of eggs and a quart of milk a day. By a liberal amount of eggs, fruits, and leafy vegetables the iron, phosphorus and vitamine requirement is met.

The vegetable diet is an important one. The vegetables of the leafy variety are the most common as they lend themselves readily to the diet either in the form of soups or later as a vegetable easily masticated. Spinach is the most popular one largely because of its iron content. Cauliflower is valuable for both iron and calcium. Cabbage, while usually avoided, may by careful cooking be prepared to equal cauliflower. In many homes the use of cabbage is imperative and rather than do without any fresh vegetable in winter, cabbage is often recommended. It should be cooked *uncovered* in a very small amount of water. The strong flavor is due more to being cooked in a closed kettle. Use little water on all vegetables and boil them nearly dry. The mineral content is largely lost when the surplus water is poured off. Raw cabbage placed in milk seasoned with salt and butter and baked uncovered until tender is the ideal way to add nourishment and lose none in the cooking.

An adequate day's diet for children includes:

1. A quart of milk.
2. Cooked cereal, preferably oatmeal, four or five days weekly.
3. One green vegetable.
4. One fruit.
5. Egg, meat or fish.

With less than a quart of milk a day all children should have butter, not the vegetable oils in margarines. With an adequate milk diet this butter fat is usually supplied.

Why are We Less Sturdy than Our Ancestors?

(*Continued from page 12*)

low protein diet and the use of coarse bread. The same thing was true in Germany. The medical director of one of the largest life insurance companies, which has a large number of policy holders in Germany, informed the writer some months ago that the death rate of their policy holders in Germany was much less during the war than before, even including war losses, and was even less than the same class of risks in this country.

Lieut.-Col. Harris of the U. S. Army stated in a paper read at a medical meeting held last year in Atlantic City, that he had been informed by German physicians that disorders of the stomach largely disappeared in Germany during the war, together with the disorders of the liver and kidneys which usually develop in persons over 50 from overfeeding. It is said that diabetes has practically disappeared in Germany and that gout, formerly very common, is now unknown, which is ascribed to the absence of coffee and the small amount of alcohol in the beer.

If Germany is profiting by the absence of its customary poisons, we are at present suffering from an

overdose, and that notwithstanding the prohibition of alcoholics, for the increased consumption of coffee and tobacco has established new records which give to the average American a daily dose of three or four grains of nicotine and four grains of caffein. Here are two widely prevalent habits which are likely to counteract almost any effort in the direction of health and race betterment which does not aim to lighten the burden of heart, nerves, liver, kidneys and glands of internal secretion imposed by these lethal drugs.

MAKE MAN THE PARAGON OF ANIMALS

Health studies and health conditions must be given first attention in our public schools. A good knowledge of physiology and personal hygiene should be required of every graduate from high school, academy, college, or university. The people must be made to understand that soundness of body is fundamentally essential in business, art, literature, politics and religion, as well as in warfare, sports, and industry. They must be made to realize that in our great haste to achieve civilization we have neglected to provide the necessary compensations for the good things left behind in the primitive environment by which the race was trained and tutored to its physical preëminence, and that we need a mild return to savagery to secure the same purity of air and cleanness of food and wholesomeness of environment which the savage enjoys; that the inside of our bodies must be kept clean as the outside; that we have no vitality to squander and need no vices in order to enjoy life to the full; that we must assiduously cultivate health instead of disease as we have been doing for a thousand years, and especially in the last century. Thus, by creating an enthusiasm for health promotion and physical perfection, we may incorporate the practice of eugenics and euthenics into the mores of society, and even make them a part of religion, and be able to create laws and sanctions by which we shall cease to propagate disease and unfitness and shall begin to climb back toward the primitive health and hardihood from which we have fallen, and set in operation the forces through which, after generations of righteous and biologic living, will come forth a new and better man, who shall truly be, in the words of the immortal poet,

"The beauty of the world,
The paragon of animals."

The Cockroach Party

A BIG cockroach peeked through a crack in the floor, and winked at another that crept under the door. A third one dropped from a chink in the wall and the three on the pantry hastened to call, where a feast had been spread by the maid of the house. All the while, each roach kept as still as a mouse; but ate with appetite keen, sugar—a bit, corn starch, plaster of Paris—dry-scattered on floor and shelf, low and high. Water, they craved, and each took a big drink. Soon, on the floor they writhed, too sick to think—for a hard ball now filled each little inside. They kicked once or twice, rolled over and died.

HOBOS AND SMALLPOX

By HERMAN SPALDING, M.D.
Chief, Bureau of Medical Inspection, Department of Health, Chicago

CHICAGO is comparatively free from smallpox; but in neighboring cities and towns the disease is known to be prevalent. Under winter conditions, the unvaccinated, idle wanderer, the picturesque and useless hobo seeks the city, where cheap lunch, cheap lodging house and sympathetic nickel distributor await him. So long as he can get something for nothing he will not work. He is a disease distributing parasite upon a healthy body politic. Each year he brings smallpox into Chicago. He gets one hundred dollars' worth of care in the Isolation Hospital free, conveys the disease to every unvaccinated person with whom he comes in contact, and then goes onto the street again to beg and live at the expense of others.

As fast as the hobos enter the city they should be captured, forcibly cleaned, vaccinated and put to work cleaning alleys and streets and doing any other emergency work long enough each week to pay for their meals and lodging.

Now this gentleman of leisure, carrying smallpox, may wear good clothes that he has picked up somewhere, and you may meet him in cars, public hallways, on the street, or at your back door where he applies for a handout. If you are vaccinated, he cannot give you smallpox if he tries, but every year this undesirable, useless, smallpox-distributor meets persons who are careless or indifferent about vaccination and, as a result, the Isolation Hospital begins to receive cases of smallpox, always from the ranks of the unvaccinated.

No person with a vaccination made within seven years, or an older vaccination with a recent re-trial, whether it "takes" or not, needs fear smallpox.

The city has a very large number of unvaccinated persons. They are in danger themselves and, like the hobo, a menace to others.

Get vaccinated as a matter of preparedness!

It is easier to *retain* health than to *regain* it. Two dollars a year invested in HEALTH AND SANITATION is cheaper, too.

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ANNOUNCEMENT

The tremendous attendance at the Health and Sanitation Exposition held recently at the Coliseum indicated that our people are profoundly interested in measures pertaining to health and sanitation in the home and in the factory.

The JOURNAL OF HEALTH AND SANITATION is being published as the result of a suggestion of Dr. John Dill Robertson, Chicago's Commissioner of Health. It is the only journal dealing exclusively with health matters distributed in the City of Chicago. It is being subscribed for by the housewives and the people generally.

The JOURNAL will have articles by the Commissioner of Health, Health Officers, the staff of the Municipal Tuberculosis Sanitarium, and the medical and nursing profession in and out of Chicago. In this manner a wider and more general publicity of health truths, illustrated by cuts and cartoons, will be carried to the people in home, store and shop, and thus result in the prevention of disease and making human life safer.

The character of the JOURNAL is such that we very earnestly advise all subscriptions begin with the initial number, January, 1921. Carefully preserve each copy, send them to us at the end of the year and have them bound into one volume—Price $2.00—and you will add to your library a book of priceless value.

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SOME POINTS EVERY MOTHER SHOULD KNOW ABOUT CHILDREN'S TEETH

A child cuts its first tooth at about six months of age and the first (or temporary) set, should be complete about the end of the second year.

Thumb sucking or the use of **pacifiers** are positively injurious and cause many deformities of teeth and jaws and frequently cause marked change of features.

Now remember this:

When the child is about six years of age, the **first permanent molar** comes in behind the temporary teeth and **before** any of the temporary teeth come out, and is usually **mistaken** for one of the temporary teeth and neglected. If allowed to decay too far, it may be lost and it will **never be replaced.**

The **first permanent molar** is the largest and the **most important** tooth in the head and has the greatest influence on the proper growth of the other teeth and jaws.

Clean teeth do not decay.

It is **important** that the **temporary teeth** should be kept **clean** and filled **if necessary** to preserve them, until nature is ready to cast them off.

The premature loss of the temporary teeth has a direct influence on the development of the jaws and may cause serious deformity or irregularity of the teeth. Decay in the temporary teeth, may cause pain for the child and its health and growth are injured by inability to chew its food properly.

Decay is chiefly due to food remaining in contact with the teeth. **This food** decomposes, forming acids, **which attack** weak spots in the enamel covering the teeth, by dissolving the tooth substance.

Teeth should be **brushed after each meal.**

The most important of all is **after the last meal,** because it is during the **period** of sleep, that the acids have the **best** opportunity to act.

To properly **clean** the teeth, use **a** small tooth brush with stiff bristles, brushing the outer, inner and grinding surfaces of the teeth.

The teeth of each jaw should be brushed **separately,** brushing the **upper teeth down** and the **lower teeth up. Do not brush** up and down, with the teeth in contact because this method will injure the gum tissue and crowd the gum away from the teeth.

No tooth powder, tooth paste or **mouth wash,** ever manufactured, will **destroy germs** or **neutralize acids** about the teeth, if applied and then washed out at once.

To secure the best results, apply a small quantity of the powder or paste with your finger, rubbing it in between your teeth—Allow this to remain at least three minutes while washing your face and hands and combing your hair, then brush your teeth.

This allows the dentrifice to chemically affect the decomposing food and neutralize the acid.

Good teeth are necessary to **proper** mastication.

Proper mastication is necessary **for** good digestion.

Good digestion is necessary for proper assimilation.

Proper assimilation is necessary **for** good health.

—Public Service Commission, Chicago Dental Society.

"My advice to the people of Chicago is to drink milk."

—Health Commissioner Robertson

This is what Dr. Robertson said in the TRIBUNE, December 1. His advice is good, but be sure you drink *good milk*—the kind that is delivered by the WANZER wagons.

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Medical Journal and Record, Sept. 18, 1929

sleep. Dryness in the mouth and haggard features of the face were present. This condition lasted several days and the patient did not improve materially, notwithstanding that washing of the stomach and rectal Murphy drips of considerable quantities of glucose solutions had been applied.

Dr. Willy Meyer and Dr. Eggers were of the opinion that, if the condition should not improve quickly, a reopening of the abdomen would be necessary. At this juncture the duodenal tube was inserted and used, first while still in the stomach, to empty this latter organ when overfilled with the fluids running into it from the intestine; later, as soon as the capsule end of the tube lodged in the jejunum, feeding through the tube was begun and kept up, affording the stomach perfect rest. Soon thereafter patient recuperated gradually and after a period of six to nine days he was himself again. He could partake of food without nausea and the bowels began to act more normally. Very soon he could stand an ordinary diet, without any discomfort, gained considerably in weight and left the hospital practically well.

We ascribe the cure of this patient to the help the duodenal tube rendered during the period of the acute ileus of the stomach (vicious circle), putting this organ at perfect rest and lending strength to the organism to readjust matters.

Having had success by this mode of treatment (in association with Dr. Willy Meyer) in three cases (one described in this paper and two elsewhere) I do not hesitate to recommend this procedure in similar cases of postoperative gastric ileus. The duodenal tube can then be tried, using it at first as a means of emptying the stomach, and later, when it enters the jejunum, for feeding. There is always time, if this method fails, to resort to surgery.

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20 EAST SIXTY-THIRD STREET.

Dependable Methods of Producing and Maintaining an Aciduric Intestinal Flora

JOHN HARVEY KELLOGG
Battle Creek, Mich.

Some thirty years ago I happened to be in Paris when Metchnikoff and his assistants had just launched their Bulgarian bacillus therapy. Combe of Lausanne had accepted the method and was attracting patients from all parts of Europe. The method failed because Metchnikoff did not recognize the biological difference between Bacillus bulgaricus and Bacillus acidophilus. The two organisms look alike but differ in the fact that one (Bacillus acidophilus) is capable of developing and flourishing in the intestine, while the other (Bacillus bulgaricus) cannot. Notwithstanding this serious error, Metchnikoff's work was not by any means wholly discredited. He proved, as others before had demonstrated, that the character of the intestinal flora is a matter of great moment; that the blood stream may be invaded by the bacterial exotoxins and endotoxins, and even by bacteria.

Metchnikoff reached the conclusion that the colon was not only useless but dangerous. The food residues of a meal were ready for rejection twelve to fourteen hours after eating (Cannon). Why retain this putrescible material to become the breeding place of 30,000,000,000,000 bacteria daily? Sir Arbuthnot Lane soon answered the question by removing the colon, and his example gave rise to a sanguinary epidemic of colectomies in Europe and this country with results which a few years later led to the abandonment of the operation as a remedy for intestinal toxemia. As Keith, the eminent English anatomist, said, "The fault was with the fuel, not the engine." The colon needed to be reformed, not ablated.

Escherich some time before had recognized the necessity for "changing the flora" of the intestine, suggesting that, "It is necessary to employ the 'acid fermentations' as antagonists of the 'alkaline fermentations' (putrefactions), either by adding to the diet carbohydrates, such as lactose, or by giving cultures of acid producing bacteria." This, so far as I know, was the first suggestion of the desirability or possibility of changing the intestinal flora. Escherich was one of the ablest bacteriologists of his time. He made important pioneer studies of the stools of infants and started fruitful lines of inquiry which his premature death left others to carry on.

Intestinal antisepsis had been thoroughly tested by Combe with no encouraging results. Stern had shown that betanaphthol, administered for several days in succession, did not diminish the number of bacteria in the intestine.

The eminent Professor Quincke had suggested that a rational method of combating the putrefactive and pathogenic bacteria of the intestine would be "to try to supplant the injurious bacteria by beneficent ones, just as weeds are suppressed by the growth of useful crops."

Tissier called attention to the fact that the stools of breast fed infants are always acid and that they present, bacteriologically, an almost pure culture of Bacillus bifidus, an aciduric organism, which makes its appearance in the stools of the infant within a few days after it begins to nurse. When the infant is given cow's milk, the stools soon become alkaline and putrescent, and a bacteriological examination

shows a mixed flora in which the colon bacillus is dominant and Bacillus welchii, Bacillus putrificus, Bacillus butyricus and other putrefactive bacteria are found in varying proportions. The stools are dark in color and malodorous.

Herter and Kendall later found that after the addition of lactose to the milk fed to cats, cultures of their stools showed a flora made up almost wholly of Bacillus bifidus and Bacillus acidophilus.

Sittler demonstrated (1908) that by adding lactose to cow's milk, the stools of bottle fed babies could be made acid and rich in aciduric organisms like the stools of nurslings. And Amman, several years before (1898) had cured his own child of a serious, acute intestinal infection by administering liberal doses of lactose.

A few years later (1915) Torrey reported excellent results from the administration of large doses of lactose in cases of typhoid fever. The character of the stool was markedly changed and the course of the disease favorably modified.

Dr. Distaso, a former assistant of Metchnikoff, working in the Royal Institute of Public Health of London (1911), showed that dextrin used in liberal quantity, might change the intestinal flora from a putrescent to an aciduric character.

Later, Rettger and Hall, of Yale University, demonstrated that of all the different sugars, lactose alone changes the flora to the Bacillus acidophilus and Bacillus bifidus types. In fact, the commonly used sugars may produce harmful effects. Says Cruickshank, "The administration of glucose, saccharose and maltose is associated with an increase only in the numbers of streptococci. (1)

The fact that cane sugar increases the number of pernicious organisms in the intestine, in part at least, explains the gastrointestinal disturbances which often follow the free use of candies and other sweets, and justify its strong condemnation in cases of colitis, of which the free use of cane sugar in candies and other forms may be suspected of being a cause. This does not apply to lactose, however, because this one sugar suppresses the growth of all noisome bacteria and promotes the growth of Bacillus acidophilus and other aciduric organisms.

These observations made very clear two important facts with reference to change of the intestinal flora:

1. The character of the diet is the controlling factor in the determination of the character of the stools, since the residues left in the colon are the culture medium for the bacterial flora.

2. Lactose and dextrin are the only agents capable of producing and maintaining an aciduric intestinal flora. So long as lactose is present in the intestine, putrefaction will be inhibited. In the absence of lactose, there will be putrefaction, even with the most restricted diet, because of the putrescibility of bile, mucus and unabsorbed residues of digestive fluids.

The administration of cultures without lactose or dextrin is useless, as bacteria will not grow without food. At least, a large part of the benefits derived from the use of acidophilus milk is due to the lactose which it contains. The addition of lactodextrin to a milk culture much more than doubles its efficiency. But milk with the addition of lactodextrin is practically just as efficient. The change will occur just as certainly with or without the culture and even without the milk. In some cases, in fact, milk delays the change.

The average efficient dose of lactose was found by Rettger to be 300 grams, or 10 ounces, taken in three doses. The objection that this large amount of sugar might cause glycosuria in cases with low sugar tolerance, led me to combine dextrin with it in such proportions as to bring the amount of sugar easily within the range of minimum normal tolerance. The lactodextrin combination removed the sugar hazard without lessening efficiency. This was demonstrated by laboratory tests on animals as well as by clinical results, as was to be expected, since Distaso and Schilling had shown (1911), and, later, Rettger, that dextrin will change the flora equally as well as lactose and "perhaps a little better."

When lactose or dextrin is given without cultures, the protective flora develops promptly because Nature supplies the culture for older children and adults as well as for nurslings. In fact, Bacillus acidophilus is always present in the stools, often in very small numbers only, but sufficient in number quickly to develop an aciduric flora when a sufficient amount of lactose or lactose and dextrin is supplied in the diet. This is clearly shown by an observation by Cruickshank, the eminent bacteriologist of Aberdeen, Scotland. He inoculated milk with feces and obtained an abundant growth of Bacillus coli and enterococci the first few days, but after seven to ten days, he found a vigorous growth and almost pure culture of Bacillus acidophilus. This important observation may be easily verified. Milk in a test tube is inoculated with fresh feces and placed in the incubator. After two or three days Bacillus coli are abundant. After ten days, few, if any, Bacillus coli can be found, but Bacillus acidophilus is present in great numbers, together with yeasts. The medium culture is so highly acid that Bacillus coli, Bacillus welchii and other "wild" bacteria cannot grow in it, but it is exactly suited to the Bacillus acidophilus, which thus becomes dominant.

This is exactly what happens in the human intestine when the flora is changed by the use of lactodextrin. The Bacillus coli, Bacillus welchii and other objectionable organisms, may increase in numbers for a few days, producing large quantities of gas; but within a few days the gas production lessens, as the gas forming germs are destroyed by the acids formed, and displaced by Bacillus acidophilus, the normal protective organism.

These facts supply a substantial foundation for the lactodextrin method of changing the intestinal flora. Experience has shown clearly enough that cultures, even when freely used, are not efficient. Milk cultures succeed better than others because they contain some lactose; but the amount is insufficient. Better results are obtained by adding to milk cultures liberal quantities of lactodextrin, but comparative experiments using ordinary milk with lactodextrin, show that the results are essentially the same without the culture as with it, though possibly the change is expedited a day or two by the use of a good milk culture in liberal quantities. The inconvenience involved in the use of cultures and the great uncertainty of their quality, are formidable obstacles to their use. Fortunately, they are not neces-

sary. The one thing needful is lactose. This remarkable sugar stimulates the growth of the Bacillus acidophilus and other protective organisms, and at the same time destroys the Bacillus coli, Bacillus welchii and other undesirable organisms, thus changing the flora. And this result is thoroughly dependable. When taken in proper quantity, that is, one ounce for each twelve pounds of body weight, the flora will improve within a few days. The offensive odor will diminish and in a few days disappear.

The combination of dextrin with lactose was found to be important as a precautionary measure. To be effective, lactose must be given in doses sufficiently large to flood the intestinal tract throughout its entire length, and to make certain that a quantity sufficient to be effective reaches the lowest parts of the intestine, where it is most needed.

A nursing infant of twenty pounds gets two ounces of lactose in the quart of milk it receives from its mother; that is, one ounce for ten pounds of body weight. Rettger found ten ounces to be the amount needed to change the flora with reasonable promptness. Dividing this into three doses, gives three and one third ounces, or 100 grams, for each dose. This large amount of sugar, even though lactose is absorbed more slowly than other sugars, raises the blood sugar and, being repeated many times, might possibly lead to the development of diabetes.

Fortunately, dextrin, as shown by both Distaso and Rettger, is fully equal, if not superior, to lactose in developing an aciduric flora in the intestine. Dextrin is much more slowly absorbed than lactose and hence is not likely to overstrain the liver or pancreas. Dextrin does not raise the blood sugar and in combination with a soluble form of lactose, is sufficiently palatable to be acceptable to most persons. By the use of nine or ten ounces of lactodextrin daily for a few days and a proper regulation of the diet, the flora may be rapidly and favorably modified. In cases of chronic intestinal toxemia, the tongue clears, the fetor of the breath disappears, the bowels become regular, the stools become almost odorless, and the numerous symptoms associated with chronic colitis and autointoxication rapidly disappear. When lactodextrin is discontinued, the old putrefactive flora rapidly returns. In ten or twelve days the stools become offensive and symptoms of toxemia are likely to reappear.

A dietetic method of maintaining a protective aciduric flora when once established has been a long sought desideratum. This has now been supplied in betalactose, a soluble form of lactose which may be used as a table sugar in place of the various cane sugars and glucose products.

This isomer of lactose, betalactose, has been known to chemists since 1855, but has never been made of practical use until produced in lactodextrin. Practically pure betalactose is now available under the commercial name of B-lac. This form of lactose is three times as soluble and more than three times as sweet as ordinary milk sugar, or alphalactose, and easily replaces powdered cane sugar in table use for the sweetening of fruit desserts and beverages.

By the regular use of lactose in this way, lactose may be made to afford the same protection to older children and adults which it gives to nursing infants, who are practically immune to digestive and bowel disturbances, so long as mother's milk is their exclusive diet. This is doubtless due to the fact that mother's milk contains more than 6 percent of lactose, more than half its total solids. Cow's milk contains only 4 percent of lactose, and when diluted the lactose content is usually reduced to one third the normal amount or less. It is for this reason more than any other that the infant's digestive disorders begin so soon after weaning.

By the habitual use of the soluble lactose, B-lac, as a table sugar, two very important things are readily and dependably accomplished: 1, A protective, aciduric flora is maintained; and 2, the injuries resulting from the use of ordinary sugar are avoided, not only the digestive and other disorders attributed to these sugars by many authorities, but also the increase of streptococci and other highly harmful types of bacteria.

It may now be confidently said that the biological problem upon which Metchnikoff and his associates labored unsuccessfully for many years, has at last been solved. It is now easily possible to change the flora and to keep it changed; that is, to establish in any case a dominant, aciduric flora and to maintain it consistently. It is only necessary to make liberal use of lactodextrin for a few days, usually a week or two, and to instruct the patient to substitute betalactose for other sugars at meals and to make free use of it.

When a protective or aciduric flora is maintained without interruption, digestive and intestinal disorders rapidly disappear. Colitis, socalled biliousness, gastralgia, lack of appetite, heaviness or other distresses after meals, rarely persist for any length of time. Of course, changing the flora is by no means a panacea; but it does eliminate a great handicap which must be a factor even in many maladies not directly associated with the alimentary tract.

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Status of Therapeutics of Irradiated Ergosterol.—Alfred F. Hess, J. M. Lewis and Helen Rivkin, New York (*J. A. M. A.*, August 31, 1929), assert that further clinical experience with preparations of irradiated ergosterol has shown that it is a specific for rickets, tetany and osteomalacia. As yet it has not been proved to be of definite value in other clinical conditions. In the course of the past year, a standard dosage has been established for the prevention and for the cure of rickets. The basis of this standardization is a biological estimation of antirachitic potency rather than a gravimetric assay of the irradiated ergosterol. It has been found that, if the prescribed dosage is observed, neither toxic symptoms nor hypercalcemia need be feared. These phenomena seem to be entirely or almost entirely due to an excess of antirachitic action. Hypercalcemia can also be induced experimentally by giving undue amounts of codliver oil. Irradiated milk, especially dried milk, is likewise a valuable product in combating rickets and tetany.

A Carrier for Barium in Roentgenology

JAMES A. TOBEY
New York

For examination of the gastrointestinal tract by means of roentgenograms, a barium meal is now generally employed. In the years since the discovery of the x ray by Roentgen in 1895, experience has demonstrated that barium sulphate forms the most satisfactory opaque substance in the stomach and intestines, though bismuth had some vogue at one time.

In order to get the best results, the barium sulphate must possess excellent chemical and physical properties, and it must be provided with a suitable carrier. Purified barium sulphate especially designed for x ray work is now manufactured and sold by a number of commercial firms, some of which also put out a complete barium meal. Though these complete products sometimes are of value, a natural food carrier for the barium is usually more advantageous, for psychic effect if for no other reason.

The barium salt used in roentgenology must be the sulphate and not the harmful sulphide. The barium sulphate must be free from other barium salts which are soluble in water or dilute hydrochloric acid and it should contain no foreign substances. In addition to these chemical qualities, the barium sulphate should be uniform in physical properties so that it yields a smooth and homogenous suspension, without too rapid settling. These chemical and physical characteristics mean better skiagrams.

There are a number of important specifications for the carrier of the barium sulphate. It must be viscid or dense enough to hold the heavier barium salt in even suspension, yet not so bulky that it fails to fill all the intestinal spaces. It must be easily digestible and cause no deleterious effects on the gastric system. It must be palatable and agreeable to the patient, so that no complicating psychic effect is produced. Finally, it must be simple and easily obtainable.

Many food substances and mixtures have been sought to fulfill all these requirements. Various forms of milk, such as buttermilk, skimmed milk, powdered milk, condensed milk, and malted milk, have been tried and have given good results. Corn meal and cooked cereals have been advocated, though they have not always proven entirely satisfactory. The choice of the carrier for barium must of course, often depend on the physical condition of the patient. In some gastrointestinal diseases buttermilk, for example, might be contraindicated.

The carrier for barium sulphate which seems to come nearest to fulfilment of the standards, except in cases of diabetes, is chocolate malted milk. Plain malted milk has been manufactured for many years and has been popular in roentgenology, but it has usually seemed desirable to add syrups or some other flavoring substance to it. Chocolate flavored malted milk makes a bland drink which is easily digested and is extremely palatable. The patient is generally already familiar with it and so has no difficulty in taking this product.

Chocolate malted milk has another advantage in that it contains nothing that can influence adversely either the barium or the gastrointestinal tract. This fact is readily apparent when consideration is given to the ingredients and methods of manufacture of a high grade chocolate malted milk, such as that put out by the Borden Company.

This malted milk product is made from barley malt, wheat flour, salts, and whole milk, with added sugar and chocolate flavor. First the barley grain is induced to germinate, with the development of an enzyme. At the right time, it is kiln dried and then stored for several months. This barley malt is next mixed with water and wheat flour, this mash being heated until the enzymes have converted the starch present into dextrin and maltose. Next are added whole milk and certain salts, after which there is a predigestion of the milk casein. Chocolate flavor is then added and the mixture is condensed and dried in a vacuum pan or on a steel cylinder. Finally, it is powdered and sugar is added.

The average chemical composition of a chocolate flavored malted milk, such as Borden's, is as follows:

	Percentage
Fat	9.8
Protein	13.0
Lactose	13.6
Maltose	16.8
Dextrin	12.7
Sucrose	27.2
Ash	2.5
Chocolate solids	2.2
Moisture	2.2

The retail price of chocolate malted milk varies from forty-five to sixty cents a pound package. It may be obtained much more cheaply in twenty-five pound lots, then costing only about thirty-five cents a pound, with certain discounts to hospitals and physicians. A large institution doing regular x ray work would find it profitable to purchase this product in 100 pound quantities.

Strict accuracy in measuring is not essential in making up a barium meal. Excellent results seem to be obtained by using one third barium sulphate and two thirds chocolate malted milk powder. The easiest procedure is to fill a large glass jar, such as a soda fountain jar, approximately one third full of the pure barium sulphate and then add the chocolate malted milk to it and mix thoroughly. Thus, the powdered material is ready in bulk, instead of having to be prepared for each individual case.

When ready for a study meal, this powdered mixture of barium sulphate and chocolate malted milk should be liquified by adding it to water or fluid milk. Since about a pint of this solution may be given as the meal, four or five teaspoonfuls of the powder may be added to 16 ounces (one pint) of water. If whole fluid milk is used in place of water, as may be allowable in the case of many patients, somewhat less of the chocolate malted milk and barium powder is sufficient. The whole liquid mixture should be vigorously stirred, preferably with a mechanical mixer.

Sit Up — Don't Sit Down

The Perfect Chair at Last

By DR. JOHN HARVEY KELLOGG

THE chair is a device of civilization. The savage does not use chairs. When he is tired, he lies down.

The civilized man sits *down*. He ought to sit *up* instead. This he can do only by a voluntary effort. A properly constructed chair will *hold him up*.

Here is the chair problem in a nutshell:

We sit to rest.

To rest, one must relax.

So long as one sits up by voluntary effort, his trunk muscles are working and he is resting only his legs.

In the horizontal position, one may relax completely and so be fully at rest.

In the upright position, the moment the muscles relax, gravitation pulls the body out of shape unless it is supported.

A properly made seat, then, will have such a shape that it will hold the body in a normal position when it is completely relaxed; that is, when the muscles let go, there is no drop or slump.

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*Reprinted from November, 1931, Good Health Magazine, Battle Creek, Michigan.

There are four essentials:

1. The chair bottom should not be too high from the floor, and should have a sufficient backward slope to prevent slipping forward.

2. The chair back must curve forward so as to support the lumbar spine or "small of the back."

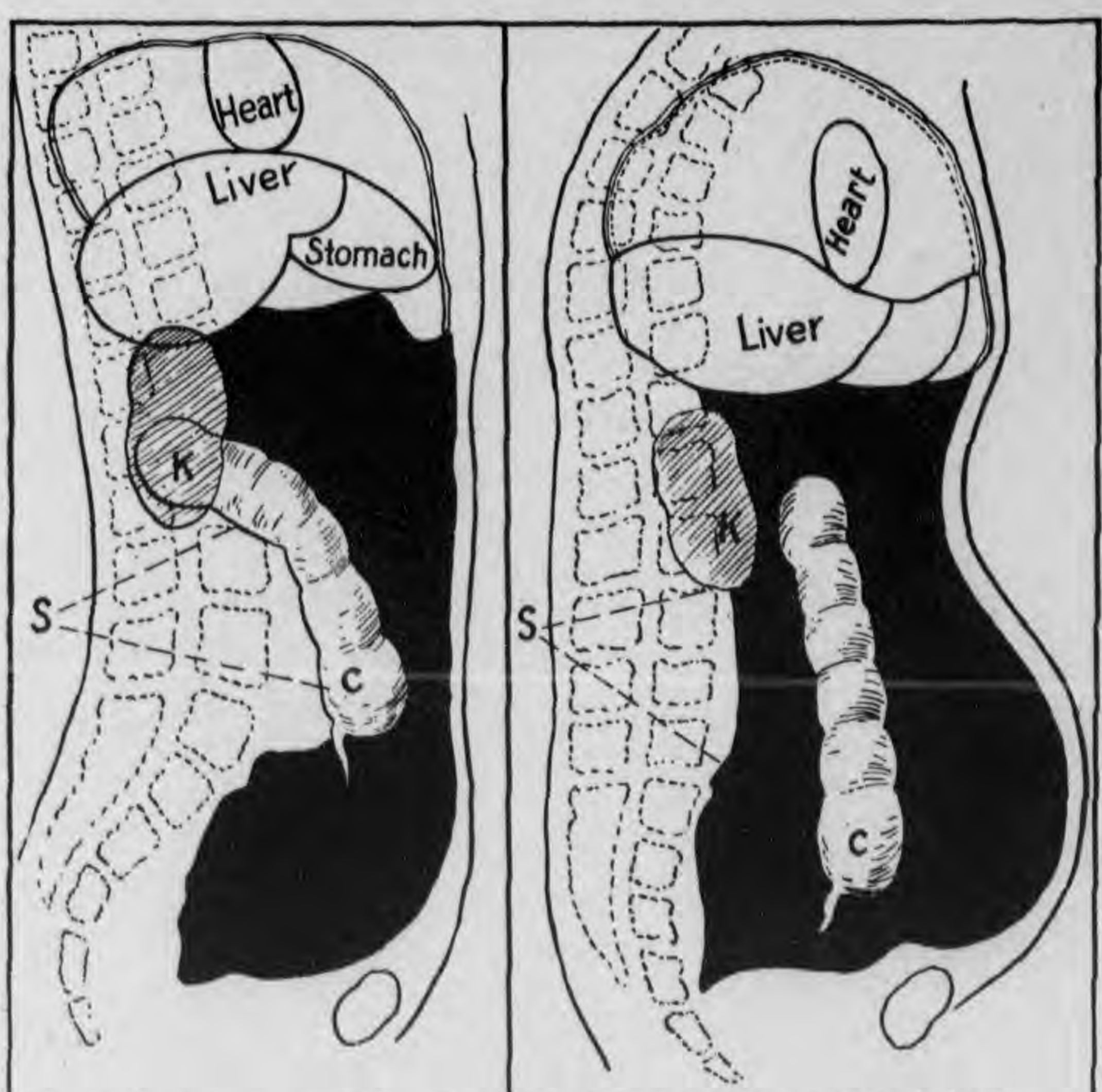
3. The lower part of the back must recede sufficiently to receive the hips, so that the natural curves of the spine may fit reciprocal curved surfaces of the seat back.

4. The dorsal spine must be pushed forward by a support between the shoulder blades to prevent the chest from dropping.

Man is a four-legged animal going about on his hind legs. When he stands up or sits up, a muscular effort is needed to keep him erect. If he faints or falls asleep, he falls down. When he gets tired sitting up, he slumps. If he is sitting on a stool, he "humps" or arches his back and collapses in front. If his seat has a back, he leans against it, getting some support, but not enough to keep his body from becoming misshapen, losing the graceful curves which are Nature's cunning device for keeping the internal organs in place.

In other mammals, when standing erect, the arms and legs are at right angles with the long axis of the trunk. In man, when erect, they are parallel. But a man's internal anatomy is arranged the same as though he walked on all fours like a dog or an ox. The heart and lungs are pretty safe in their bony cage, the chest; but the great abdominal cavity has only a muscular wall at the front and sides, and the curved

spine behind. When the trunk is horizontal, as in lying down or when running about on all fours (a fine exercise, by the way), like other four-legged animals, the organs lie comfortably in their places without strain; but when the trunk is raised to a vertical position, as in sitting or stand-



S- Abdominal Shelf
C- Colon-Cecum
K- Kidney

S- Shelf destroyed by loss of lumbar curve
C- Prolapsed Colon

ing, the liver, stomach, etc., become pendant, and millions of delicate, sensitive nerves are put under strain. There are the heavy liver, the stomach, often heavily loaded with a hearty meal, the pancreas and the spleen, the kidneys, colon and all the rest of the abdominal furniture, all hanging from the diaphragm and spine.

It would seem, then, that for once Mother Nature made a mistake when she allowed man to raise his head above other creatures and run about on his hind legs, or forgot to rearrange his anatomy to fit his perpendicular posture.

Not so. Mother Nature never forgets anything. Instead of making a man's backbone straight like that of an ox, she put a graceful curve into it like a capital stem, a Hogarth's line of beauty, to make a shelf to support the floating viscera (See accompanying cuts). And then, to keep them from sliding off, she attached a mooring rope to each one and drew in the muscular cover, the abdominal wall, with a strong curve at the bottom, so as to keep everything in place so long as the spinal curves are maintained, and the strong anterior spinal convexity is preserved, the great shelf that carries the chief weight of the abdominal viscera. When this curve is obliterated by bending the body forward, the viscera are left hanging on their slender mooring ropes and at once begin to sag. The weaker and more relaxed the abdominal wall, the greater the sagging.

In the writer's opinion, badly constructed chairs which deform and cripple our bodies are one of the major evils with which civilization has afflicted the human race.

The civilized world badly needs a chair reform. School seats, theater seats, church pews, house chairs, automobile seats are all badly shaped, some worse than others, but not one is right.

The trouble in reforming the chair has been that nobody has known just what is the matter.

The recent discovery of the importance of the intrascapular support has solved the problem.

The new model chair, known as the Battle Creek chair, is in use at Battle Creek College and the Battle Creek Sanitarium and gives universal satisfaction. After a few days' use of the new chair or of the "Posture Panel," round shouldered, flat-chested persons find themselves holding their chests up and feeling a decided increase in sense of fitness and well-being.

After fifty years' study of chairs, the writer feels no little satisfaction in having at last found the key to the chair problem. The lumbar support which we have advocated for more than forty years, helped greatly, but something was lacking. Nobody could tell just what. We were blinded by a misconception. We naturally think of the spine as a ridge. The human spine, when the body is erect, is not a ridge, but a furrow. And there is a space between the shoulder-blades which must be filled by a proper support, so as to prevent dropping of the chest, which will occur to some extent even though the lumbar spine is supported. With proper intrascapular and lumbar support, the normal curves of the spine are maintained, and every viscus remains in its proper place.

A well-known chair expert who has for many years made a special study of chairs, after examining the new chair and especially referring to the upper dorsal support, exclaimed, "This is a real contribution." The application of the idea to the hundreds of thousands of chairs yearly made by his company will make a good beginning toward deliverance from chair torture from which

our whole population is today suffering, and not only in America, but the whole civilized world.

The Posture Panel

Anyone who is chair-conscious and wants to exchange torment for perfect rest and comfort, may do so at once by providing himself with a Posture Panel, which may be used with almost any seat. It adds greatly to comfort in riding in an automobile or a Pullman car.

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Posture Panel

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VEGETARIANISM

By

DR. J. H. KELLOGG

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The Arbitrator is now being published under a new cooperative arrangement with the Community Service League of New York, a part of the organization of the Community Church of that city.

By the terms of this arrangement The Arbitrator does not surrender its independence to the League, nor the League assume directing control of The Arbitrator. It is agreed that matters of policy, in which there is a difference of opinion, shall be decided by joint conference between the editor of The Arbitrator and a representative of the League.

Under this arrangement The Arbitrator will be published and directed, as hitherto, by the editor, who is neither Mr. Holmes nor Mr. Brown nor any officer of either the Community Church or the Social Service League, but an individual well known to the undersigned representatives of the League, who prefers, for good and sufficient reasons, to remain anonymous.

It is believed that under this mutual beneficial compact of association The Arbitrator obtains a wider and more defined constituency and the League another agent in the extension of this work of social education through public discussion which it has long served through its forum. Henceforth The Arbitrator may be said to exemplify each month, in the form of the printed word, what the Community Forum exemplifies each Sunday evening on its platform in the form of the spoken word.

Copies of The Arbitrator will be sent to members of the Community Church or the Free Religious Association at fifty cents per year, instead of the usual price of one dollar, or may be obtained at the meeting of the Community Forum.

Signed:

The Editor, for The Arbitrator
John Haynes Holmes,
Harvey Dee Brown,
Helen E. Redding, for the League.

MORAL DILEMMAS

Careful introspection reveals the difficulty in solving questions of every-day experience, and it is fair to presume that not one out of fifty moral and religious teachers could give consistent answers to the following queries, or would even attempt such a task. However, if valuable replies are received some, at least, will appear in a subsequent issue.

IS A LIE EVER JUSTIFIABLE?

1. Is absolute truth at all times a requisite in following what we consider the will of God?

2. If not, is each person to decide for himself when a lie is justifiable, or can general rules be established?

3. Is it proper to lie when the interrogator has no right to the information demanded?

4. Is it proper to lie about unimportant matters if by so doing we can make others happier?

5. Is a doctor justified in misinforming his patient in order to ease the latter's mind?

6. Are we justified in making false statements about a business transaction in order to earn a large sum to give in charity?

7. Was a captured soldier, on either side, questioned regarding the movement of his troops, justified in giving false information in order to save his comrades?

8. Should a man "lie like a gentleman" under oath to protect a woman's honor?

9. If such lies are justifiable, are we to presume that our ideal religious teachers would resort to them?

CORRESPONDENCE

Dear Mr. R.....

It is the part of a true friend to call attention to errors, and we therefore thank you for your letter criticising the summary of Inequities as a departure from our usual impartiality.

It is true that all the accusation of injustice cited so far is against the employer class, whereas the laboring class is by no means guiltless. Labor unions have broken contracts, workmen have malingered on the job, and labor has used violence and unfair tactics; but such acts, wrong as they are, do not appear quite so heinous when committed by men who can barely earn the minimum for subsistence as when perpetrated by those who have all the comforts of life.

However, we shall be most pleased to include in the summary an exposition of the employer's side, prepared in manner similar to the current series of quotations; and this invitation is extended to the Civic Federation, Security League or other conservative organization that wishes to demonstrate from actual occurrences that the poor are oppressing the rich.

Yours very truly,
The Arbitrator.

The Kindly Fruits of the Earth

BY

J. H. Kellogg, M. D., LL. D., Fellow American Medical Association; Fellow of the Royal Society of Medicine; Author of "Rational Hydrotheraphy," "Antointoxication," "The Itinerary of a Breakfast," etc. Editor of "Good Health Magazine."

Within the last fifty years, there has been a veritable revolution in matters pertaining to diet. Seventy-five years ago, when Sylvester Graham was making his famous campaign for dietetic righteousness, he was not only made the butt of ridicule by the laity, but was vigorously combated by scientific men of all classes. It was true that Cuvier, Bell, Gassendi, and scores of other naturalists had testified to the fact that a man was a near relative of the higher apes, with whom he constitutes the family of primates, and that his diet must, consequently, be essentially the same as that of his forest cousins. But this great biologic fact seemed to make no impression upon the writers of books on dietetics other than the few heretics who were regarded as quite outside the pale of authority.

When the writer first became interested in the biologic diet by reading the works of Graham, now more than fifty years ago, not a single medical authority could be found who recommended a non-flesh dietary. On the contrary, it was unanimously maintained that flesh food was essential for the maintenance of sound health and vigor, notwithstanding the fact that men and women were to be found in India and other countries who had never tasted flesh food and whose ancestors for many centuries had abjured the flesh of animals from religious scruples.

But a new day has dawned. Within the last twenty years, a number of physiologists have admitted the adequacy of a fleshless diet, and at the present time not a single authority of standing on the subject of diet maintains the necessity for using flesh. Nearly all, in fact, readily admit that flesh food may be wholly dispensed with and that without injury. One of the latest expressions on the subject is the following from Dr. Graham Lusk, ("Food in War time") a descendant of the famous diet reformer who popularized the use of graham bread:

"The flavor of meat is such that it lends itself to the easy preparation of a palatable meal, but this flavor could undoubtedly be as well obtained if the present reduced consumption of meat were cut in two. It is a question of habit; but with the present reduced supply of meat one must adopt new habits. **It would be highly desirable if the grain now fed to fatten beef were given to maintain herds of milch cows."**

"If one takes milk with other foods, meat may be dispensed with. Thus Hindhede advocates as ideal a diet consisting of bread, potatoes, fruit and a pint of milk. Splendid health, both of body and mind, the peasants' comparative immunity to digestion, kidney and liver disease, as well as an absolute immunity to gout, is the alluring prospect held out by the following dietary:

Graham bread	1	pound
Potatoes	2	pounds
Vegetable fat	½	pound
Apples	1½	pounds
Milk	1	pint

Prehistoric man, like the inferior members of the man family, the big apes of the tropical forests at the present time, was not a flesh-eater. Of this Professor Elliott gives us convincing evidence in his entertaining work, "Prehistoric Man."

Elliott tells us that in the Eocene period, when the human race had its beginning, there were no carnivorous animals, and nut trees of various sorts were found in abundance. Says this learned author:

"On the bushes by the rivers and along the shore there were all sorts of fruits and nuts. For the subsistence of our lemur-monkey-man in the early stages of evolution, what fruits would seem **a priori** most suitable? I think one would select the banana and bread-fruit. Ancestral forms of both were flourishing in the Eocene. Many other fruits with which man has been afterwards continually (perhaps one might venture to say **most intimately**) associated, occur at this period. These are, most of them, found in so many places that one is apt to think they were then of world-wide distribution.

"In the temperate brushwood and on riversides, acorns, hazel-nuts, hawthorn, sloe, cherry and plum might be found.

Here and there he might alight upon a walnut or almond; figs also of one kind or another seem to have been common. Palm trees existed, and some of them were of enormous size.

"With honey, in addition to the other items given above, the lemur-monkey-man could have found every article of diet which is of importance to the lowest races of mankind. A Yahgan, Bushman or Vedda would consider a land like this a paradise. Moreover, there was not, so far as we are aware, any carnivorous creature in the Eocene period."

It is an interesting fact that the oldest traditions of all the great nations of antiquity describe the diet of the first men as a bloodless fare. Says the Latin poet, Ovid, of the Golden Age:

"If men with fleshy morsels must be fed,
And chaw with bloody teeth the breathing bread;
What else is this but to devour our guests,
And barb'rously renew Cyclopean feasts?
We, by destroying life, our life sustain,
Not so the golden age, who fed on fruit,
Nor durst with bloody meals their mouths pollute."

According to the Hebrew scriptures, after God created man, he gave him his bill of fare, as recorded in the twenty-ninth verse of the first chapter of Genesis:

"And God said, Behold, I have given you every herb bearing seed, which is upon the face of all the earth, and every tree, in the which is the fruit of a tree yielding seed, to you it shall be for meat."

Professor Price, of the University of Chicago, tells us that the Sumarians, people who lived 2,000 years before the time of Abraham, never took the life of animals or partook of flesh foods except in connection with a religious ceremony.

Lord Byron on one occasion said, "Man is a carnivorous product; he must have prey." This is an error. Man is not carnivorous in his instincts. He is not by nature a hunter. If he goes hunting, he has to take along a dog to find the prey for him and a machine with which to kill it. Carnivorous animals are provided by nature with the weapons necessary for fighting, liking and consuming their victims.

The carnivorous appetite is altogether a cultivated one. We have gotten so far away from our natural environment and natural habits, that it is high time that we should begin to inquire the way back, and it is encouraging to note the growing interest at the present time in the subject of dietetics and natural living.

The trouble is that most of the current instruction on the subject is misinformation. For real authentic knowledge, we should go to our primate relatives who still retain the dietetic habits of their prehistoric ancestors and ours. The wise old apes of the tropical forests of Borneo and the Congo know more about dietetics than all the professors of the universities. Chemists and physiologists have for a thousand years been imparting to the world a vast amount of things they don't know.

The chimpanzee knows. The oran-utan knows. The gorilla knows. All of these creatures, the primitive prototypes of man, know what human beings, as well as themselves, should eat. Away back in the ages somewhere, these forest men and man's remote ancestors, lived side by side in the same primeval tropical woods and gathered fruits from the same trees, and shrubs, and herbs and tender shoots, leaves, and succulent roots from the same bogs and fens. Maybe they fought over the finest date orchards and the biggest cabbage patches, and threw stones and sticks at one another, and maybe they hobnobed under the same cocoanut tree. We don't know much about the social customs or the international laws which the world recognized in those days, but one thing we do know. The big apes have kept alive and in use the forest lore of the olden time. Every mother ape shows her offspring how to select the proper things to eat, those which are wholesome and nourishing, sufficient for complete maintenance of energy and endurance—in other words, good foods from among the millions of sickening and poisonous products of the forest, the jungle and the plain.

The ape remembers and constantly uses to its great advantage, the thousands of useful facts, smells, tastes, forms, effects, of substances adapted to its use.

But man has forgotten. He has let all this precious knowledge slip away from him. He has permitted himself to become so engrossed with the invention and promotion of what we call civilization that he has lost sight of what we call the most essential knowledge, and has for the most part lost interest in it. Human life has become a veritable jangle of perversity. In these

matters which lie closest to man's organic life, he is utterly at sea with reference to what is for his best interest. He does not know what kind of a house to live in nor what sort of clothes to wear, and worst of all, he has no proper knowledge of what to eat, when to eat, how to eat, nor how much to eat. And the older he gets the less he knows. A new-born babe knows what to eat, when, and how much; but when it gets a little older, the mother begins to teach it all sorts of harmful and foolish things about eating which no ape mother would think of teaching her offspring. Half the things the civilized mother serves up to her little ones as dainties, the ape mother would warn her children against as poisons.

Numerous writers, in defending a flesh dietary have made the assertion that vegetarian races are physically and mentally inferior to races living upon a mixed diet.

Unquestionably there can be found some vegetarian races who are inferior to some flesh-eating nations. On the other hand, there are plenty of examples of tribes or nations living upon a flesh or mixed diet who are inferior to other nations not strictly flesh abstainers, the natives of Tierra del Fuego and the Kalmuck Tartars, for example.

In making comparisons of this sort it is necessary to take into account the influence of heredity, climate, social and political conditions and other factors which profoundly influence both physical and intellectual development. For a fair comparison, it is necessary to contrast flesh eaters and flesh abstainers who are living under identical conditions. When such a comparison is made, the findings certainly do not support the above statement.

Take, for example, India, where we find a subject race numbering three hundred million people held under control by an army of occupation consisting of less than one hundred thousand British soldiers. We are told that this fact proves the inferiority of the vegetarians, since three hundred million rice eaters are so easily held in subjection by one hundred thousand beef eaters. Those who offer this argument overlook the fact that there are among the three hundred million natives of India one hundred million Mohammedans, who, like the British soldier, are meat eaters, their religious scruples placing no dietetical restrictions on them except to abtain from eating pork. So the meat-eating British army of one hundred thousand holds in subjection not only two hundred million rice eaters, but also one hundred million meat eaters!

In other words, according to this argument, one British soldier is equal to two thousand rice eaters and one thousand East India meat eaters. Evidently there must be in operation some other factor than that of diet.

But we must not forget that the strictest flesh abstainers in India are the Brahmins who are at the same time the most vigorous, the most highly developed physically, of all the people in India. These men, who for more than two thousand years have been flesh abstainers, show no evidence of physical deterioration and are in no whit inferior mentally or physically to mixed feeders in any part of the world. Indeed, the young Brahmins have not infrequently been found among the prize winners in English and American universities. As philosophers, linguists, and logicians they are acknowledged to be the compeers of any men who live in any part of the world; and taken as a class, might even outrank in physical and mental development an equal number of average Europeans.

It is now universally conceded that meat is not essential as an article of diet. It is only necessary to have a sufficient supply of complete protein, and this may be obtained from certain vegetables as well as from meat, as nuts and the soy bean.

It may further be said also that milk and eggs supply complete proteins and are greatly superior to meat in the fact that they furnish vitamines and food lime, both of which are highly essential to the growth and development as well as the maintenance of the body. Vitamines and lime are practically altogether lacking in meat, and Professor McCollum seems to be quite justified in asserting that to cow's milk and not to meat should be attributed any superiority claimed for meat-eaters, for meat-eating nations are also milk-eaters.

The protein of eggs, milk and of nuts and soy beans, according to the world's most eminent authorities, may replace the proteins of meat; and this fact is so clearly established that the Inter-Allied Scientific Food Commission considered it unnecessary to fix any minimum meat ration, since meat may be wholly eliminated from the dietary without injury.

It may be positively stated, in fact, that

any one may at once drop all meats of every description from his dietary without suffering any loss whatever, provided he will take care to include in his daily bill of fare two or three glasses of milk.

Probably the greatest objection to the use of meat is the fact that it leaves in the colon putrescible residues which readily undergo decomposition and flood the body with toxins, ptomaines, skatol, indol, and a host of other poisons, the growth of which is enouraged by meat. All meat as commonly eaten is fairly alive with putrefactive bacteria, which, developing in the colon, may become the cause of appendicitis, colitis and other disorders which are practically unknown among non-flesh eating people, as pointed out many years ago by Dr. Senn, a famous Chicago physician, and by Dr. Lucas Champonniére, the surgeon general of the French army.

Vegetable proteins do not encourage the growth of these dangerous germs, as pointed out years ago by Tissier, of the Pasteur Institute and Herter, of New York, and more recently by Torrey, and confirmed by Professor Mendel of Yale and other investigators.

It would seem that farther discussion of the meat question is hardly necessary; for since meat is not essential to nutrition, but is merely a luxury, it at once becomes evident that when economy is essential to the public welfare, even to the public safety, the consumption of meat is one of the first things to be curtailed.

It is to be remembered, also, that the readiness with which meat residues undergo putrefaction in the colon, renders flesh-eating one of the most active causes of autointoxication, the mother of the majority of human ills and the most active of all causes in the abbreviation of human life.

(Mr. Edwin Tenney Brewster has prepared for us an article, "Why I am not a Vegetarian," which will appear in a subsequent issue.)

Biblical Dietetics

And the Lord spake unto Moses and to Aaron, saying unto them, Speak unto the children of Israel, saying, These are the beasts which ye shall eat among all the beasts that are on the earth.

Whatsoever parteth the hoof, and is clovenfooted, and cheweth the cud, among the beasts, that shall ye eat. Nevertheless these shall ye not eat of them that chew the cud, or of them that divide the hoof: as the camel, because he cheweth the cud, but divideth not the hoof; he is unclean unto you. And the coney, because he cheweth the cud, but divideth not the hoof; he is unclean unto you. And the hare, because he cheweth the cud, but divideth not the hoof; he is unclean unto you. And the swine, though he divide the hoof, and be clovenfooted, yet he cheweth not the cud; he is unclean to you.

And these are they which ye shall have in abomination among the fowls; they shall not be eaten, they are an abomination: the eagle . . . and the bat . . . Yet these may ye eat of every flying creeping thing that goeth upon all four, which have legs above their feet, to leap withal upon the earth; even these of them ye may eat; the locust after his kind, and the bald locust after his kind, and the beetle after his kind, and the grasshopper after his kind . . . For I am the Lord that bringeth you up out of the land of Egypt, to be your God: ye shall therefore be holy, for I am holy.—Leviticus, 11th Chapter.

(Each reader must accept from the church the assurance that these were God's instructions in 1490 B.C.; and that, in those days, the camel's hoof was not divided, and that the hare did chew the cud and has been ruminating over it ever since, thus giving the appearance that deceived the author of the instructions. If man has received no revelation subsequent to the Bible, is it not disobedient to substitute swine for the beetle on our menu; or is it perfectly reverent to suggest that the Biblical writers were mistaken not only about zoology but in attributing these unscientific conceptions to the creator of all things? Have we not a better idea of God and food than Moses had?)

Do Inequities Exist?

(Continued.)

For those who have not seen the last two instalments it may be well to explain that the purpose in summarizing inequitable conditions is not to arouse the workers to demand a revolution, but, on the contrary, to dissuade from violence and to persuade conservative people that there is need for recognition of, and change in, various practices which are sufficiently unfair to arouse discontent.

If it is once generally realized that the majority of the laboring classes, in spite of their much heralded prosperity, do not obtain an income capable of providing a standard of living to which an honest, hard-working, valuable citizen of America is entitled, then it will only remain for all intelligent classes to lead in devising some legal method by which every worthy human being may secure proper environment, comfort and justice.

The strange feature in social reform is —and it is one of the main arguments against orthodox religionists—that those who profess most loudly the omnipotence of God and his love for all creatures, apparently consider that it is God's will that a comparatively few people should receive the blessings of this world, and that it is an act bordering on impiety to suggest greater equalization. They claim that there exists, under present laws, equality of opportunity, and they blame upon each individual his failure to provide for his family properly.

The method of obtaining the needed relief is not here considered, but it is confidently asserted that, under the laws of the United States, any reform desired by the majority can be secured by perfectly legal means, and that no other force should be or will be employed, provided those who smart under a sense of injustice are permitted free expression of their grievances and are accorded sympathetic co-operation in their efforts to better themselves.

The employing class seldom appreciates the existence of any injustice whatsoever. In 1900 they sincerely believed that a man who was paid $2 a day was getting fifty cents more than he earned, and in 1920 they view the demand for higher wages as a sign of depravity deserving only condemnation.

It is hoped that a presentation of facts regarding actual conditions will educate the educated classes on subjects not included in the curriculum of schools or universities, and, once enlightened, that they will put into practice the self-sacrifice that true religion requires. Few of us will voluntarily surrender our advantages, but when all our compeers are obliged to submit to the same curtailment, there is every reason to believe that there will be greater happiness for the greater number.

LABOR

The New Vision

"Did you ever stop to think what would happen if labor ever quit the job?

"The old world would go rumbling along very comfortably if every soldier stopped fighting. Nobody would suffer much if every band stopped playing and the sound of martial music was heard no more. It is conceivable that this good old country of ours would worry along for quite some time if Congress stopped legislating, but if labor quit the job for 48 hours the world would starve to death or die of thirst. . . . Not until labor comes into its own, not until the world recognizes the dignity and authority of labor will the world be truly and finally democratic."—Hon. William J. Cary, in the House of Representatives.

"It must be admitted, unfortunately, that for a long period in the past, society failed to give labor a square deal or to do anything like its duty by labor. But in their rightful resentment against exploitation and in their determination for the redress of just grievances, labor should not permit itself to be misled by plausible fallacies or self-seeking agitators."—Otto H. Kahn.

Mr. Schwab gave utterance to this opinion at a dinner of the Alumni of Public School No. 40 at the Grand Hotel on January 24. The New York Tribune quoted him as saying:

"The time is coming when the men of the working classes, the men without prop-

men who join the union, if it be true that they have violated a rule of the department, which he believes they have."—N. Y. Sun, August 1, 1919.

"Federal prosecution of William Z. Foster, labor leader in the steel strike, on the grounds that he is inciting revolution in the United States by his radical writings, was asked by Representative Julius Kahn (Cal.), chairman of the House Military Committee, in a conference to-day with Attorney-General Palmer."—N. Y. Sun, September, 25, 1919.

"The striking steel workers would be willing to refer all of their grievances to the arbitration of a board selected by the President, John J. Fitzpatrick, chief organizer of the strikers, informed the Senate investigating committee late to-day. Replying to questions he said that if the companies would be willing to do this it would end the strike. . . .

"Fitzpatrick's testimony developed many matters which will be subjects of further inquiry. He charged that a reign of terror was deliberately instituted in the steel country, especially western Pennsylvania, long in advance of the calling of the strike. He said there had been murders, beating and refusal of the right of free speech and assembly since last June. He claimed the municipal authorities of that section were under domination of the steel industries; that business men in the towns had been threatened that they would be put out of business if they did not support the policy of the employing companies. . . .

"The strike, he said, resulted from the refusal of Judge Gary to confer with the representatives of the men, even after he had been asked by President Wilson to do so."—N. Y. Sun, September 26, 1919.

"Following the refusal of E. G. Grace, president of the Bethlehem Steel Corporation, to grant the conference requested by the American Federation of Labor committee for organizing iron and steel workers, the general committee of the labor organizations in the Bethlehem plant of the corporation voted unanimously to-night to strike at 6 o'clock Monday morning."—N. Y. Sun, September 26, 1919.

Notice of Strike Call

The statement giving notice of the strike call was as follows:

"The twenty-four industrial unions in the steel industry affiliated to the American Federation of Labor, having exhausted every honorable and possible means of securing a conference with the United States Steel Corporation for the purpose of discussing the intolerable and brutal conditions under which the men are compelled to work and having failed in their efforts, have decided by unanimous vote to cease work Monday, September 22.

"While we were engaged in these efforts, the most un-American, outrageous and unlawful tactics were employed to destroy our unions. In Western Pennsylvania men were denied the right of free speech and free assembly. Our organizers have been jailed; our meetings have been picketed by hundreds of gunmen, thugs and company officials, and thousands of our members have been discharged for no other reason than having become members of our union."—N. Y. Sun, September 11, 1919.

"The time for truckling to the labor cause has passed. Timidity and cowardice can no longer be tolerated. The employer and the public, too, must change their attitude. Instead of allowing themselves to be held in abject subjection to the fear of a strike, they must accept the challenge and let the strike come, preparing beforehand in the best way possible for it. If labor is bent on stopping all industrial activity there is no help for it and we must all take the consequences. Starvation will come to the wage earner as soon as to the rest of the public and if that will not show him the folly and futility of his course nothing will.

"With a continuance of the old policy, new demands by labor must continue to follow in quick succession since the cost of living under unending wage advances must rise higher and still higher, and furnish a basis for further demands in a never terminating series. In other words, demands for new wage increases will never cease until it becomes plain that they will be resisted, even if strikes and the tying up of industrial activities result.

"In the case of the Steel Corporation, the argument against yielding to the terrorism of a prospective strike is all the stronger. Here no question of wages is involved,

while the allegations of harsh or unfair treatment may be dismissed as utterly baseless. Indeed, the Steel Corporation has a record for considerate treatment of its employees which is not surpassed by that of any other corporation in the land. In numerous different ways special measures have been devised to promote the interest and welfare of the employees. As for wage advances, these have been made over and over again during the last two years, and all of them voluntarily—that is, without prompting or request from the men themselves. As a result of these successive advances the wages of the employees have more than doubled. Figures in support of this statement can be found in the last annual report of the company, published at length by us in our issue of April 5, 1919. The table appears on page 1402 of that issue, and shows that whereas in 1914 the average annual earnings for an employee was $905, and in 1915 $925, in December, 1918, this average was no less than $1,950."—Commercial and Financial Chronicle, September 13, 1919.

June 27th, 1919, the House "passed without a division the Blanton resolution, calling on the Secretary of Labor for all facts" regarding the expenses incurred in investigating Mooney's case. "If the facts as presented to the committee are borne out by the contents of the documents there is little doubt that a determined attempt will be made to restrict future activities of the Department of Labor to such an extent as to prevent the Government Department from becoming the tool of the American Federation of Labor in furtherance of that organization's political ambitions."—N. Y. Sun.

"Men are arrested and thrown into jail on the merest pretext. Only to-day men were seized as they were leaving Homestead and Duquesne to come to Pittsburg for trial on trumped up charges for which they were arrested here. What happened? They were held so that they could not appear here. The result was they forfeited their bail in Pittsburg and were fined in Duquesne and Homestead. . . .

"If there had been a conference in the first place there would have been no strike."
—John Fitzpatrick, Chairman of the Nat'l Committee for Organizing Iron and Steel Workers, September, 1919.

"That ever since the men started to organize a systematic persecution was instituted, beginning with discharge and winding up with murder, recalling to us vividly the days of Homestead and the reign of despotism in Russia.

"Through the efforts of the representatives of the steel industry officials in various localities have denied the men free assembly and free speech. Instances are too numerous where meetings have been suppressed, men arrested, tried on various unfounded charges, excessive bail required and cruel punishment imposed, all without warrant in law and justice.

"As one of many examples, in the city of McKeesport a meeting held by the men within their constitutional rights was broken up and men arrested and thrown into jail, charged with riot and held in the excessive bail of $3,000 each. Another patent example is Hammond, Ind., where four defenceless union men were charged upon and killed by hired detectives of the steel industry, and witnesses in behalf of their survivors have been so intimidated and maltreated that the truth of the killing was suppressed.

"Guns and cannon have been planted in mills, highly charged electric wires have been strung around their premises.

"Armed men in large numbers are going about intimidating not only the workers, but everybody in many communities who show the slightest indication of sympathy with the men.

"Men have been discharged in increasingly large numbers day by day. Threats and intimidation are resorted to for the purpose of putting the men in fear and prevent them from the exercise of their own free will, coerced into signing statements that they are not members, nor will become members of any labor organization, and threatened with eviction, blacklist, denial of credit and starvation.

"That a forced decline of the market would be imposed, so as to wipe out their holdings in stock, which they were induced to purchase in years past. Threats to move the mills and to close them up indefinitely.

"That an organized propaganda for villification of the American Federation of Labor, spreading rumors that the strike will be delayed and that such delay is only a sellout.

"That the real reason for opposition to organized labor representation on behalf of

the men who have grievances is that the steel industry is preparing to cut wages and to lower the standards to pre-war times and to return to a condition that encouraged the padrone system so prevalent in that particular industry."—Samuel Gompers, Pres. of American Federation of Labor, September, 1919.

"Boston policemen to the number of 1,500 went out on strike tonight at the 5:45 roll call, taking the drastic action long threatened, to win recognition for their newly organized union. The strike was precipitated by the suspension of 19 patrolmen found guilty by Commissioner Curtis of violating the department order against unionizing."
—N. Y. Times, September 10, 1919.

"The Boston policemen simply wish for the same liberty of action in promoting their economic interests (upon which the living of themselves and their families depends) as is enjoyed by all other employees of the city of Boston and the State of Massachusetts.

"They formed a union affiliated with the American Federation of Labor and when they formed their union their action was not in violation of any law applied to the Police Department or of any rules in the department, and the rule which the Police Commissioner charges the policemen with having violated was not established or promulgated by him until thirteen days after application for a charter for the American Federation of Labor had been made by 975 of the policemen in the department, nineteen of whom the Commissioner suspended and has since discharged from the department for violation of a rule that did not exist at the time they committed the act complained of."—Quoted by the Sun, September 16, 1919.

"In Washington yesterday Samuel Gompers, president of the American Federation of Labor, made an attack before the Senate Interstate Commerce Committee on the methods which, he said, had been employed by the steel companies. He charged the companies with 'murder, assault, arrest of men, prohibition of meetings on rented ground and workers dispersed by thugs, gangsters and detective crooks'."—N. Y. Sun, September 25, 1919.

After the steel strike was determined upon, we find a dispatch to The Sun, dated September 20, 1919:

"The House did an abrupt 'about face' to-day when, by a vote of 203 to 29, it restored to labor unions and organizations of farmers exemption from prosecution under the anti-trust laws, as provided in the deficiency appropriation bill.

"The announcement of to-day is a result of the meeting here on Labor Day, when the labor men demanded recognition for the unions in all the plants of the Bethlehem Steel Corporation, together with a number of other demands.

"Chief among them is a demand that the 24,000 men **laid off since the signing of the armistice** because of lack of orders be taken back and paid in full for the time that has intervened.

"To-day's demands also include recognition of the labor unions, the abolition of the company's unions, collective bargaining, higher rates of pay and the adjustment of alleged grievances. These grievances are not enumerated.

"There is small chance that Mr. Schwab or President Grace will receive the labor men making to-day's demands."—N. Y. Sun, September 23, 1919.

"He said that he had found mine owners unwilling to treat with the men as organizations or as individuals, and that no attempts had been made o smooth out difficulties by means of conferences. None of the mine managers, he said, would deal with the members of the board. Mr. Bruere told of 1,200 laborers being forcibly deported into Mexico, and said that the only cure for such conditions was patriotic instruction for the workmen and employers as well."
—N. Y. Sun, quoting Robert W. Bruere.

"Four organizers of the American Federation of Labor, includnig 'Mother' Jones, were fined $100 each by Mayor James S. Crawford, of Duquesne, to-day for attempting to hold a meeting of steel workers yesterday without first obtaining a permit.

"The other organizers arrested were W. Z. Foster, J. M. Patterson and J. L. Beaghen, who with 'Mother' Jones are in the Monongahela Valley trying to unionize steel workers."—N. Y. Sun, September 9, 1919.

" 'Agents of the companies sought to lead men in sympathy with the unions to commit some overt act or engage prematurely

in strikes for which the companies were prepared,' said Mr. Gompers. 'Even grumbling or expressing the hope that they might be organized led to the discharge of employees. This system of espionage was a greater one than ever was used in the detection of a great crime. The purpose of it was to put the fear of God into the hearts of the workers and the knowledge that if they attempted organizing it would be at the peril of their jobs.'

"Most meetings were forbidden, Mr. Gompers said. To get to and from some of the meetings which were permitted, he said, the workers had to pass through lines of detectives and thugs, hired to intimidate and spy on them and their doings. In McKeesport, Pa., right now the Mayor has forbidden meetings, Mr. Gompers said."—N. Y. Sun, September 27, 1919.

Extracts from "Labor Problems and Labor Legislation" by John B. Andrews, published by the American Association for Labor Legislation.

Unemployment

"A man willing to work and unable to find work is, perhaps, the saddest sight that fortune's inequality exhibits under the sun", said Carlyle. Yet Secretary of Labor, William B. Wilson, estimates that there are at all times in the United States from one to three millions who are "employed or unemployed in accordance with industrial activity or industrial depression". Such irregularity of work causes loss to both employer and workman. The latter loses by the stoppage or reduction of wages, leading to suffering, discouragement, and often suicide or crime. * * * As stated by an official United States report, "Most unemployment has no connection whatever with any fault of the worker". * * * Others rise before daybreak and by the light of the corner lamp-post scan the columns of the "want ads" in the morning paper. Arrived at the address given they may find fifty or a hundred applicants waiting for the same position.

Wages

The weekly wages of clerks in factory offices in New York State increased only 26% between June, 1914, and October, 1918, or from $19.18 to $24.11 weekly. The average weekly wage of shop employees in a large group of New York factories representing all forms of manufacture was only $22.22 in October, 1918.

The National Industrial Conference Board, a federation of employers' associations, estimated conservatively that the cost of living had gone up 70% in about four years. The United States Bureau of Labor Statistics reported that at the end of 1918 wholesale prices of all commodities combined were 106% higher than in 1913.

In December, 1917, the Philadelphia Bureau of Municipal Research estimated that $1200 a year or $23 a week was necessary to provide a "living wage" for a family of man, wife and three children.

We are forced to conclude that all the wage increases of the war hardly changed the situation, as wages in most cases little more than kept pace with the cost of living, and only very rarely exceeded it.

To a workman with little or nothing to depend on but his wages, the frequency with which he is paid is a matter of great concern. * * * Consequently all over the world industrial states have stepped in to protect the workers by requiring a regular pay day, sometimes monthly, sometimes fortnightly or weekly. About two-thirds of our American States have laws of this kind, generally providing for wage payments every two weeks. Years ago **some courts refused to uphold these laws,** stating that they were an infringement of the "liberty" of the workman, but later decisions have recognized the needs of the worker and his **inability to secure prompt payment from a large corporation** unless aided by legislation.

The worker who **must trade** at the company store is liable to pay excessive prices for inferior goods. He may find false items on his bill, against which he dare not protest for fear of losing his job, or on the other hand he may be bound to his job by a debt he is never quite able to discharge.

Hours

About one-quarter of our States have nine-hour laws for children and another quarter allow a work day of ten hours or more. In some of the southern cotton-mill states, however, it is legal for children to work at night and eleven hours a day, and such poor laws as exist are reported to be not well enforced.

In 1895 the Illinois Supreme Court set aside an eight-hour law for women workers

on the ground that it was an infringement on the "liberty" of a woman to work as long as she saw fit. * * * All but six states had laws limiting the daily or weekly hours of women's work at the beginning of 1919. The ten-hour day, found in more than a dozen states, was still the most frequent. * * * A few states have daily limits from ten and a quarter to twelve hours. * * * Laws restricting men's hours in general private employment are much less common—in fact in 1919 only two American states had such legislation. * * * After the famous Lochner case in 1905, when the highest court of the land set aside a statute giving a ten-hour day to New York bakers, many people believed that general laws affecting the hours of men were not constitutional in America. But in 1917, with many more scientific facts available as to the bad effects of long hours, the United States Supreme Court upheld the Oregon ten-hour law.

For those handling trains, **sixteen hours,** to be followed by at least eight or ten hours of rest, is generally set as the limit of a day's work. * * * The constitutionality of statutes which limit men's hours to eight a day is still uncertain.

In 1914, out of 6,600,000 wage-earners enumerated by the Census of Manufacturers, only 7.9 per cent., or 520,000, worked in factories where the eight-hour day prevailed. Some 230,000 were working seventy-two hours or more weekly, many of whom were toiling twelve hours a day, seven days a week, in the so-called continuous industries such as steel plants, paper mills, power stations, and glass and chemical works. Men in these establishments generally change from day to night shift weekly or fortnightly, working **twenty-four hours without rest** at that time. * * * In New York in 1910, over 20 per cent. of 179,000 trade unionists in a number of specified industries were engaged in seven-day labor. The old time Sunday laws, designed mainly to protect the Sabbath as a holy day, fail to meet these new conditions.

Danger

The number of industrial injuries occurring throughout the country is not known precisely. An estimate issued by the United States Bureau of Labor Statistics places the number of fatal accidents at 25,000 annually, and injuries resulting in disability of more than four weeks at 700,000. * * * The total number of injuries in American industry must be close to 3,000,000 annually.

Until 1915 the American seaman was kept in a condition of semi-slavery through employment under a **contract which was enforceable by imprisonment.** * * * In 1915 Congress passed the far-reaching seamen's act which permits men to leave a ship in a safe port, and abolishes arrest and imprisonment as a penalty for desertion.

Sickness

One group of experts concluded that, on the basis of 33,500,000 persons gainfully occupied, no fewer than 284,000,000 days' illness occur annually, causing an economic waste of nearly $750,000,000. Fully one-quarter of this enormous waste, they computed, could be prevented by deliberate effort, largely in the direction of greater care and cleanliness in the nation's workshops.

Unions

Many employers, including some of the largest corporations, still bitterly oppose all attempts of their men to organize, and will not allow a union member to work for them if they know it. In their efforts to prevent the growth of unionism they are assisted by certain Supreme Court decisions. In one case the court declared that employers had a perfect right to discharge workmen for joining a union. In another case this highest court in the country decided that a union had no right to attempt to organize men if they had agreed as a condition of employment not to join any union. These two decisions together seem to make it possible for powerful employers absolutely to destroy all organizations among their working force, although they themselves have full scope to unite in manufacturers' or employers' associations of various sorts. Nevertheless, the legal right to organize is now generally recognized. To protect this right Congress a few years ago passed the Clayton act.

Strikes

Strikes for higher wages or shorter hours are everywhere considered lawful. But strikes to gain a closed shop, sympathetic strikes, strikes against obnoxious foremen or non-union material, and strikes growing out of jurisdiction disputes between rival unions, have been condemned in many

states. Only in California is it settled law that all strikes are legal. * * * In several states the courts have condemned all picketing, and some have even made it illegal by statute.

Workmen's Compensation

Before the introduction of workmen's compensation laws the injured employee could recover for his suffering, maiming, loss of earnings, and expense of medical treatment only by suing his employer in a court of law. As such action was likely to mean discharge, few employees sought their legal remedy unless the injury were very severe and the expected indemnity correspondingly large. If a case was brought to court, the employer sought shelter behind a number of traditional legal defenses. One was the "fellow servant" rule by which it was frequently held that some other workman, not the employer, was responsible for the injury. * * * Another defense of the employer was "contributory negligence", which meant that the victim of the accident had brought it on himself by some want of care, however slight. Finally the employer might claim immunity under the principle of "assumption of risk". According to this principle the workman by accepting employment took upon himself all the customary hazards of the occupation, and also any extraordinary risk of which he became aware, but in spite of which he continued working. * * * Investigations showed that of every $100 paid by employers in liability premiums, only about $28 ever reached the claimants, and so late that the worst of the need was past.

Two pioneer statutes for workmen's compensation were declared unconstitutional, but in 1911 the first state compensation act to go into permanent effect was secured in New Jersey. In the period 1911-1919 the legislation spread to forty-two states and territories. Most American laws provide for medical care, but they hedge it in with limits ranging from one week to ninety days or from $25 to $250 in amount. * * * Most laws set a "waiting period" of from three days to two weeks during which no compensation is paid. As only about 25 per cent. of accidents requiring medical care cause disability for more than two weeks it is clear that the latter period is too long.

Health insurance

The draft boards have shown that about a third of America's young manhood is physically unfit for military service. * * * About one-third of those too sick to work are getting no medical care. Official investigating commissions in five states have reported in favor of health insurance.

In England workmen have old age pensions, invalidity insurance, health insurance, industrial accident insurance, and unemployment insurance; in America they have only workmen's compensation. * * *

In the United States it is estimated that about 1,250,000 of the people over sixty-five years of age are dependent upon public or private charity, to the amount of about $250,000,000 annually. Yet, declares a leading authority, "the United States is the only great industrial nation in the civilized world that has not already attempted a practical and permanent solution of the problem of old age and dependency."

Enforcement of laws

The courts are frequently declaring labor laws unconstitutional partly because sufficient facts are not presented to demonstrate conclusively the need and the reasonableness of the legislation.

Employers have frequently objected to progressive labor measures which affected only their state. They said they feared the competition of rivals in other states who could operate under lower standards. * * * Similar arguments are sometimes made when it is proposed to pass a labor law covering the whole country. Then the plea of international competition is raised.

It must be borne in mind that, although some wrongs have been righted, the improvement has been so recent that the memory of former injustice is poignant, and fosters distrust of the employer class from whom the modification of suffering has been wrung with difficulty, and whose attitude towards labor does not yet show a change in spirit that can inspire confidence.

(To be continued.)

(We can recommend the booklet of 136 pages issued by the American Association for Labor Legislation, entitled "Labor Problems and Labor Legislation" by John B. Andrews, as the most attractive, readable, concise, complete, fair-minded exposition of the labor question that we have ever seen. The Arbitrator will send it free to new subscribers on request.)

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UPTON SINCLAIR. Pasadema, California.

The World
EDITORIAL SECTION
NEW YORK, SUNDAY, DECEMBER 21, 1924.

Dr. John Harvey Kellogg, Famous Dietician, Warns the Human Race That Extinction Threatens It if It Does Not Mend Its Habits—Prescribes a Milk-Vegetable Diet as the Way of Salvation

DESTRUCTIVE TENDENCY OF MODERN LIFE.

TAKEN as a whole, modern civilization evidently promotes disease and degeneracy more than health and race improvement, and we are falling into a terrible slough of degeneracy, physical, mental and moral. Really, the greatest problem before the world to-day is how to save the human race.

DR. JOHN HARVEY KELLOGG, militant foe of most of the pleasant habits that make life endurable, is noted as a great surgeon and for his researches in the problem of vegetarian diet for man, and as the highest authority in the world on water therapy. He is the Superintendent of Battle Creek Sanitarium, where he enforces all the principles of living which have made him famous or hated, as the case may be. He is the author of many books on surgery and diet, and is the founder and President of the Race Betterment Foundation.

This pronouncement is the outcome of conversations between Dr. Kellogg and Albert Henry Wiggam, author of "The New Decalogue of Science" and "The Fruit of the Family Tree," the doctor having been aroused to restate with characteristic vigor his theories about life and living by the publication of an unauthorized interview.

In presenting this article The World does so without in any way assuming responsibility for the views it contains.

SOME time ago a Chicago advertising firm sent out a fake interview in which I was made to say that the average American has lost two and one-half inches in stature because he does not take time to chew his food. I knew nothing of the so-called interview until after it had been given to the press and was in wide circulation and clippings began to come to me from all parts of the country. I had had no interview with any one upon the subject and had never stated or written anything which would justify the statement.

But there is no doubt the American people are losing in stature. Davenport has shown a falling off in stature within the last fifty years of at least half an inch and Dr. Henry Fairfield Osborn states that "investigations made during the World War" led to the discovery "that our people on the average had lost two and a half inches in stature since the Civil War."

Some of this loss of stature may be due to immigration, but I believe with Dr. Sargent, physical director of Harvard University, that other causes are at work—causes which are producing not only loss of stature but general race deterioration. Dr. Sargent, for example, calls attention to the fact that the greatest loss is shown in those portions of the country where city dwellers are the most numerous, as in New England, for example, where two-thirds of the population are town dwellers.

"Out-of-door life and the physical exercise associated with it promote bodily development—the growth of muscles and bones which determines the stature. McClellan, a famous English trainer, gives an account of a young recruit who took a new start in development and grew four inches after he was twenty years of age as a result of setting-up drills.

Modern Civilization Promotes Disease.

There is no doubt that the tendency of our modern civilization is to produce race deterioration both physical and mental. In the old European countries, especially in Southern Europe, this deterioration is more evident than in this country and has progressed so far that such eminent scientists as Major Leonard Darwin of London, son of Charles Darwin and the eminent leader of the English eugenics movement, Dr. Charles B. Davenport of the Carnegie Foundation, and numerous other men who have given special study to the subject have abandoned all hope of an endless future for the human race. Indeed, Major Darwin said at the late World's Eugenics Congress, "If our present civilization survives, and I fear it will not, it will have to be the United States that saves it."

There can be no doubt that we are going down hill. Insanity is increasing; crime is increasing. Diseases which result from degeneration, such as heart disease, arteriosclerosis, Bright's disease and cancer are steadily increasing. The draft examinations showed that more than half the young men of the country are physical milksops and mental mollycoddles and verified the prediction of Galton that the intelligence of the average man is only a shade above imbecility. If the average American at the present time is not a moron he is only a little above that degree of mental deficiency. Taken as a whole, modern civilization evidently promotes disease and degeneracy more than health and race improvement, and we are falling into a terrible slough of degeneracy, physical, mental and moral.

Danger of Race Extinction.

The problem is not a simple one. Many eminent scientists believe, as did the late Prof. Hyatt of Boston University, that "retrogression ending in extinction" always follows great race development. If this philosophy is true there is no chance to escape physical degeneration and race extinction. The race of men must become extinct as have already most of the higher vertebrate animals who were man's contemporaries in the cave-dwelling period. This is certainly a very pessimistic outlook.

I am glad to be able to take a more optimistic view. Those who see nothing but race extinction ahead evidently take it for granted that the entire human race is going to continue drifting downward as the civilized races are now doing, but I am convinced that this is an error. Man differs from all other races of animals in the superiority of his intelligence, by the exercise of which he may seek out the causes of race degeneracy and find means not only of escaping them but of setting in operation a counter movement upward. Through his intelligence man has subdued many of the great forces of Nature, tamed and harnessed them, and made them useful servants. Thus he is able to escape the usual operation of physical law, to defy gravitation, to soar in the heavens like a bird, to dodge the terrors of the thunderbolt, and to harness the lightning and make it pull trains and propel ships. Likewise, by an equally intimate study of the laws of eugenics and euthenics, and by whole-hearted effort to conform himself to the biologic laws which govern his being, man may escape the destructive influences which have exterminated other races of animals, and which with equal certainty will destroy man unless he intelligently and persistently combats the exterminating forces to the operation of which every living creature is exposed.

The Things That Blight.

Undoubtedly unbiologic habits are the chief factors in race deterioration. A boy born into the world with the capacity to become a giant may be dwarfed and weakened by wrong feeding. The blighting influence of syphilis, of alcohol, tobacco, and other drugs, gluttony, sensuality and other vices, cannot be questioned, and these destructive influences are multiplying. Our daily poison dose, through drug habits, has steadily increased from year to year until now the average person living in the United States, including women and children as well as men, swallows daily nearly 300 grains of poison, alcohol, nicotine, caffeine and opium. This alone would be enough to produce profound symptons of degeneration, if no other causes were in operation.

Within the last fifty years there has been an enormous increase in the use of tobacco, particularly in the form of the cigaret, which was brought into this country from France at the time of the Centennial Exposition. The consumption of cigarets has steadily increased since that time until now we are consuming about 60,000,000,000 cigarets a year. That tobacco has a decided influence upon growth has been definitely proven. Tobacco produces a grave disturbance in nutrition, as indicated by loss of weight. Roger showed that a solution of nicotine, two parts to the thousand, stopped the growth of plants.

Richon and Perrin (1908) injected two young rabbits out of a litter of six with infusions of tobacco. Their weight decreased notably. They ceased to grow. When the injections were stopped they rapidly gained weight and resumed growth.

The Menace of Nicotine.

Fleig subjected young animals to the influence of tobacco smoke. He observed "for a long time, even after the inhalation of the smoke ceased, the animals remained incompletely developed and in a state of very marked inferiority to the control animals."

French dog fanciers produce dwarf dogs by administering nicotine to them.

Smoking has the same effect upon boys.

In 1906 a special committee of the House of Lords of the English Parliament, reported a drastic bill to prevent juvenile smoking. The committee called especial attention to the fact that while boys showed many evidences of deterioration, lessened height, and as Prof. McKeever informs us, were often observed to be "sallow, sore-eyed, puny, squeaky-voiced, sickly, short-winded and nervous," the same signs of deterioration were not noted among girls.

Seaver, who studied Yale students, found that non-smoking students increased in height and in chest girth one-fourth more than the smokers. The increase in chest capacity of the non-smokers was most notable, exceeding that of the smokers by 77 per cent.

A professor of physiology of Johns Hopkins University a few years ago made an experiment which clearly demonstrates the injurious effects of tobacco upon growth. He exposed rats for definite periods, daily, to the influence of tobacco smoke, which was described as having a degree of density about equal to that of the smoke-ladened air breathed by the participants in a "college smoker." Little effect was observed upon the rats of the first generation, but the second generation showed very pronounced retardation of growth. At the age of six weeks, the smoking rats had attained only about half the size of rats of the same age which had not inhaled tobacco smoke.

Sixty years ago smoking was nothing like as nearly universal as at the present time. An army officer who had command of a large force in the Civil War told me that he did not think more than 10 per cent. of the men of that time were habitual smokers. It is well known that at the close of the late war less than 10 per cent. of the soldiers were non-smokers. A large proportion of those who went into the army non-smokers came out cigaret addicts. In view of all the facts which have been presented, it seems not unfair to charge tobacco with being one of the causes of the loss of stature which has occurred since the Civil War, and it may be the largest factor.

Our Limitless Rations.

Two other factors are certainly worth considering: One is the deficiency of lime in the diet. Lime is an essential element for bone building. Every growing child needs at least twenty or thirty grains of lime, or a third to a half dram of lime daily for the construction of the skeleton, the framework of the body which determines the height. The average American breakfast is exceedingly deficient in lime. A diet consisting of white bread, meat and potatoes contains almost no lime at all. A full day's ration made up of such foodstuffs will furnish less than one-fourth of the amount of lime daily required by a growing boy or girl. About the only widely used foods which are rich in lime are oatmeal and milk. Milk contains lime in abundance; oatmeal is fairly rich in lime. But, unfortunately, oatmeal, which was formerly in much more general use than now, has been largely replaced by breakfast foods, often denatured products which are almost wholly lacking in lime and other food salts which are essential for the growth of the body. Coffee, butter, sugar, meat, fruits, and of course pastry, sweet cakes and desserts are all deficient in lime. Greens, such as spinach, dandelion, kale, beet tops and turnip tops are rich in lime, but these excellent foodstuffs are unfortunately little used. **A larger use of greens and the addition of a pint of milk a day to the average dietary would without doubt result in a marked improvement in American physique.**

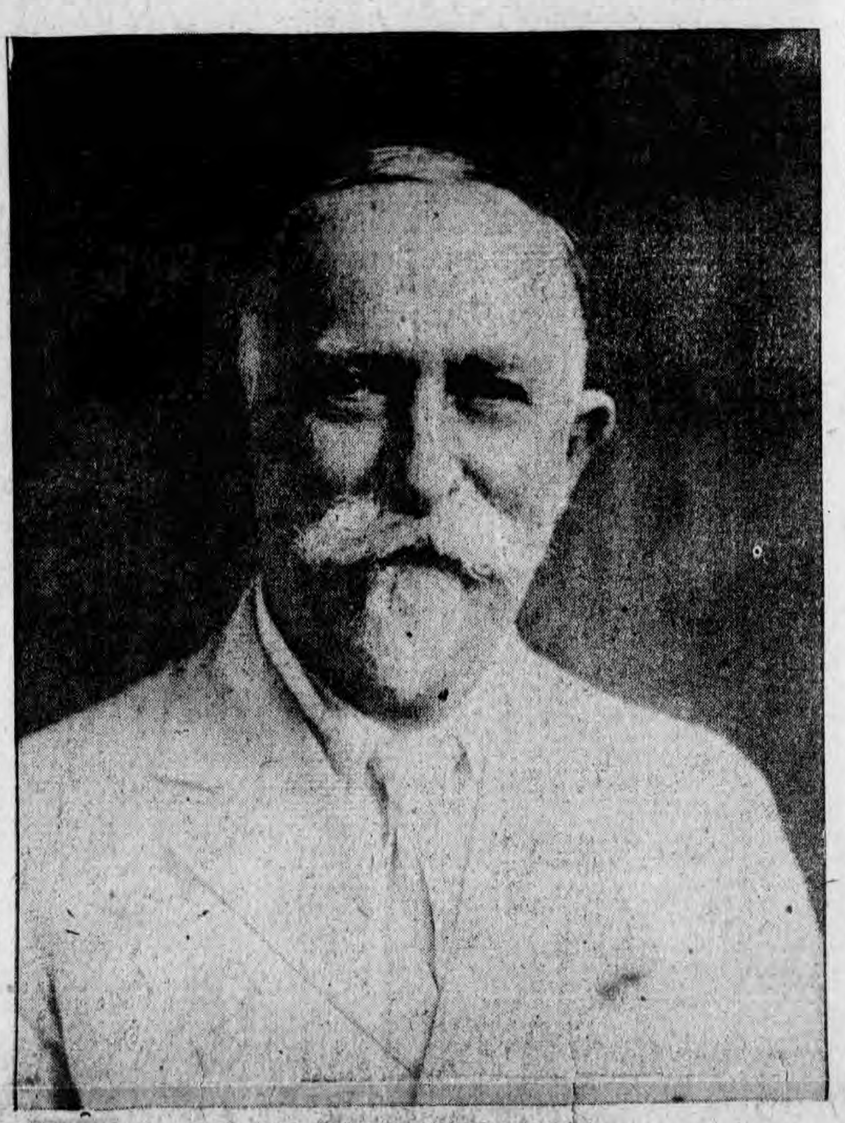
This very important change in the American diet can be made at no expense; indeed, such a change would lower the cost of living. Greens are readily available at practically no cost during the summer season. Many garden weeds, such as purslane, curly leaved dock and pigweed or lamb's quarters are excellent greens, while kale, cabbage and cauliflower supply an abundance of this bone-building element. The additional pint of milk would cost practically nothing, for we are throwing away or feeding to pigs, which is almost the same thing, enough skimmed milk every year to supply a pint a day to every man, woman and child in the country. As a matter of fact, nearly half of all the milk the country produces goes into the feeding trough or down the sewer, a yearly waste about equivalent to seventy-six pounds of beef per capita. In fact, if this skimmed milk which is now thrown away were used as human food, it would insure an ample supply of protein and such an abundant supply of lime for bone-building as would not only give our boys and girls stronger bodies but also better teeth.

Are We Becoming Toothless?

We are rapidly becoming a toothless nation largely because the average diet is lacking in the material needed for the construction of teeth and bones.

The economic advantage of saving the skimmed milk which is now wasted is really startling. If the pint of milk per capita equal to 100,000,000 pints a day in the United States, now thrown away were eaten, meat consumption would necessarily be cut down and might, in fact, be eliminated altogether to the immense benefit in my judgement of the health and physique of the American people.

The annual per capita cost of meat, according to the United States Bureau of Statistics, is $80 or more than $9,000,000,000. The elimination of this item of expense would pay our great war debt in less than three years and the whole population would be better off.



DR. JOHN HARVEY KELLOGG.

That such a change of diet would be not only safe but desirable is clearly shown by the replies made by the leading physiologists of the United States to a questionnaire sent out by the board of trustees of Beth Israel Hospital of New York, when they decided to adopt a meatless regimen, with the opening of their new great hospital, finest institution of the sort in the world.

Said Dr. Chittenden of Yale University on this occasion:

"With vegetables of all kinds, and milk, bread and butter, you have at your command all the necessary resources for a nutritious diet."

Said Dr. McCollum of Johns Hopkins University:

"I have not the slightest hesitation in saying that a vegetarian diet, supplemented with fairly liberal amounts of milk, is the most satisfactory type of diet that men can take."

Said Dr. Mendel of Yale University:

"I have given some thought to the advisability of introducing a meatless dietary into your hospital regime, and have reached the conclusion that there will be no objection to this upon physiologic grounds."

Another factor which no doubt has had some influence in lessening the stature of the American people is a deficiency of vitamins, the subtle element which is essential for the growth of both animals and plants. Vitamins are produced only by plants and are found only in vary small quantities in those parts of animals which are usually eaten. These essential vitamins are, however, found in abundance in the green parts of plants and fresh vegetables. A diet which supplies an abundance of lime, iron and other salts is almost certain to contain likewise a sufficient amount of vitamins.

Heavy Demand for Sweets.

It is quite possible there may also be a causative relation between the enormous consumption of cane sugar, largely in the form of candies and other sweets, and the shrinking of stature in America. The Americans consume more cane sugar than any other people in the world. The amount consumed has steadily increased during the last fifty years and now amounts to about 100 pounds per capita, or more than a quarter of a pound daily, or about one-fourth the total food supply. Cane sugar, either in its ordinary form in which it appears on the table or in the form of confectionery, is wholly lacking in lime, iron and vitamins, three food essentials. It is evident, then, that such an inordinate use of sweets in connection with a dietary already lacking in food salts and vitamins greatly accentuates the danger from this dietary deficiency.

Fruits, such as dates, figs and raisins are rich in lime and iron and ought to take the place to a large extent of the cane sugar and confectionery which is now used. Such a substitution of natural sweets for the concentrated artificial products which are new consumed in such inordinate quantity would undoubtedly result in a great improvement in the national physique.

Dr. Bunge of Switzerland and Dr. Sherman of Columbia University, New York, years ago called attention to the almost universal lime starvation which exists in civilized countries, which might easily be corrected by the dietary reforms suggested, which would include the discarding of fine flour bread from our tables, the free use of coarse cereals, including oatmeal, which might well take the place of many of the popular breakfast foods now in use, and the freer use of roughage in various forms, including greens, fresh vegetables and the coarser cereal products. Such a change would not only give our boys and girls a better chance to grow into well developed men and women but would insure an enrichment of the blood by supplying a sufficient amount of the needed food iron.

MAN'S POWER TO IMPROVE THE RACE.

IT is within the power of man to improve desirable qualities and eliminate defects and undesirable characteristics, and so in time produce a race of human thoroughbreds which will be as much superior to the average existing man as is the thoroughbred horse to the average horse of the farm.

Blood Quality Below Par.

We are becoming an anemic nation by depending too largely upon foods which are deficient in iron as well as lime and vitamins. The tremendous significance of anemia is recognized when we recall the dictum of Holy Writ, "The blood is the life." Modern physiology has demonstrated the scientific accuracy of the ancient belief that the blood is the creative agency in the body which builds and energizes every cell and tissue. A man whose blood is only 50 per cent. of the normal is only half alive. A person whose blood is depreciated is an easy prey to disease. His vital resistance is lowered. His fighting power against germs is lessened so he is likely to be an easy prey to influenza, pneumonia or any other germ enemy he happens to encounter. **There is good ground for believing that the average American is 20 to 30 per cent. below par in the quality of his blood.** Rich red blood is necessary to vigorous individual life as well as to national life and is an essential foundation for mental as well as physical health. Some day we shall have new aristocracy, the basis of which will be clean red blood instead of the tainted blue blood aristocracy which has so long dominated certain phases of modern life.

Bichat's declaration that civilization "is nothing more than the environment which tends to destroy humankind" was perhaps too sweeping, but it is now generally admitted that the conditions of civilization are in general such as tend to race destruction rather than race betterment. **Really, the greatest problem before the world to-day is how to save the human race.**

Hope in Biologic Living.

The one hope is in biologic living; that is, in a straightforward and thoroughgoing regulation of our life habits in harmony with the known facts of human physiology. We compel our horses, cows, sheep, even our pigs and poodle dogs, to live physiologically, and as a result we have the fleetest horses that ever lived, cows that give more milk, chickens that lay more eggs, pigs that fatten faster, and sheep that produce more and better wool than our ancestors ever dreamed to be possible. All our domestic animals are improving and at really an amazing rate, but we ourselves are going down.

The time has certainly come when the human race should take itself in hand and mark out for itself a regime which will lead toward race improvement to replace our present reckless self-indulgent mode of life which is driving us down to race extinction.

If anything is accomplished in the direction of race betterment, it will have to be through education. The public school is the last great hope of the world, but there must be a change in our educational ideals. The average child, when he begins school, starts on a down-hill slide toward invalidism, and the sanitaria of the country are rapidly becoming asylums for college-maimed and crippled young men and women who, through the deficiencies of our educational system, have become, as said the immortal poet, "sicklied o'er with a pale cast of thought." Instead of being improved in body as well as in mind, the average college student is physically damaged by the conditions to which he is subjected during college life. A few colleges are giving some attention to gymnastics and other forms of exercise, but the consideration accorded to this feature of hygiene, even by the schools most advanced in this direction, is most inadequate. The average student's participation in school athletics is rooting for the gladiators representing his college in their fights with the giants of some rival college. He takes his exercise by proxy. The graduate from college should carry away his diploma with the proud bearing of a soldier instead of the "student's stoop," which indicates a flattened chest and cramped lungs and a strong bent toward a consumptive's grave.

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The menace of race decay is a dark cloud hovering over the world; but, though the present outlook is dark, it is my confident belief that race hygiene, or eugenics, and personal hygiene, euthenics, applied with liberal intelligence, will save the race from the destruction which race degeneracy threatens. Other races of the animal kingdom are helpless to combat the influences which produce environment changes inimical to their existence; hence every one, sooner or later, must succumb to the destructive action of cosmic forces. The same fate must necessarily await the human race as a whole, unless man, through his intelligence, finds some way to avert the disaster. He can do this if he will. Unfortunately he has to a large extent neglected to recognize the necessity for preserving, so far as possible, the essential conditions of his primitive life. He has allowed himself to drift. He has formed habits by chance. Instead of laboring to preserve amid the conditions of civilized life the essentials of his primeval environment, he has done the opposite. He has allowed his fancy and his impulses to lead him into by and forbidden paths, and has undertaken to compel his body to adjust itself to impossible conditions; and the result is, instead of lessening, he has intensified, the evil effects of a bad environment.

Call for Correction of Habits.

The same forces which have destroyed other creatures, other genera and species, and which are preying upon man as a member of the animal kingdom, instead of being mitigated and neutralized by man's intelligence, have actually been increased and exaggerated by his perversions and vagaries. **Man has thus forced upon his body conditions which are so far removed from his biologic and physiologic requirements that, at the present time, he is actually accentuating by his daily habits of life the influence of those destructive forces which have wiped out thousands of species of animals.**

But we may change the situation by the intelligent application of eugenics and euthenics. By a careful study of our biologic needs, our physiologic requirements, we may reverse the process, and compel the forces which are dragging us down to lift us up, so that each generation may be superior to that which preceded it.

That there will some time be a new human race, a race far superior to the present, is believed by many scientists. It is within the power of man so to modify his environment and so to control the evolutionary forces which are working upon him as to eliminate the degenerative, destructive tendencies and to promote, encourage and intensify the forces making for race betterment, and thus to improve desirable qualities and eliminate defects and undesirable characteristics, and so in time produce a race of human thoroughbreds which will be as much superior to the average existing man as is the thoroughbred horse to the average horse of the farm.

Broad Education Essential.

The intelligence of the world should be set to work to multiply existing agencies and to create new agencies for the betterment of the race. A biologic survey should be made of every civilized community and of savage communities as well, for purposes of comparison. The laws of eugenics and euthenics should be taught in every school and preached from every pulpit. Every teacher, every leader of human thought, every publisher, all professions, all serious minded men and women, should join in making known to every human being in every corner of the globe the fact that **the human race is dying and co-operate in seeking to discover and apply the remedies necessary for salvation from this dismal fate.**

We must provide compensation for the departure from normal conditions of life which civilization necessarily involves. We need not return to savagery to be healthy, but we must see that the air we breathe is as clean as that which the savage breathes, that the food we eat is as wholesome and pure as the water we drink. We must encourage out-of-door living and sleeping. We must provide in every city out-of-door gymnasia with swimming pools for boys and girls. We must inculcate the principles of biologic living, and respect for the body, and appreciation of the value of physical fitness. We must give our pale skins more contact with the sun and air; we must keep the inside of our bodies as clean as the outside. We must cultivate clean blood. Society must establish laws and sanctions which will check the operation of heredity in the multiplication of the unfit. Eugenics and euthenics must become dominant matters of study and concern. Thus, and thus only, may we hope to check the mad rush of the race down the hill of decadence and slowly climb back and up toward the proud eminence where the race of man as the handiwork of God and the masterpiece of creation, by the aid of his unapproached intelligence and through implicit obedience to biologic laws, may defy the ravages of time and the perturbations of physical forces, and endure forever, indestructible and triumphant among the millions of animal forms now living and their predecessors buried in the crust of the earth.

Dr. John Harvey Kellogg, Famous Dietician, Warns the Human Race That Extinction Threatens It if It Does Not Mend Its Habits—Prescribes a Milk-Vegetable Diet as the Way of Salvation

DESTRUCTIVE TENDENCY OF MODERN LIFE.

TAKEN as a whole, modern civilization evidently promotes disease and degeneracy more than health and race improvement, and we are falling into a terrible slough of degeneracy, physical, mental and moral. Really, the greatest problem before the world to-day is how to save the human race.

DR. JOHN HARVEY KELLOGG, militant for of most of the pleasant habits that make life endurable, is noted as a great surgeon and for his researches in the problem of vegetarian diet for man, and as the highest authority in the world on water therapy. He is the Superintendent of Battle Creek Sanitarium, where he enforces all the principles of living which have made him famous or hated, as the case may be. He is the author of many books on surgery and diet, and is the founder and President of the Race Betterment Foundation.

This pronouncement is the outcome of conversations between Dr. Kellogg and Albert Henry Wiggam, author of "The New Decalogue of Science" and "The Fruit of the Family Tree," the doctor having been aroused to restate with characteristic vigor his theories about life and living by the publication of an unauthorized interview.

In presenting this article The World does so without in any way assuming responsibility for the views it contains.

SOME time ago a Chicago advertising agent sent out a fake interview in which I was made to say that the average American has lost two and one-half inches in stature because he does not take time to chew his food. I knew nothing of the so-called interview until after it had been given to the press and was in wide circulation and clippings began to come to me from all parts of the country. I had had no interview with any one upon the subject and had never stated or written anything which would justify the statement.

But there is no doubt the American people are losing in stature. Davenport has shown a falling off in stature within the last fifty years of at least half an inch and Dr. Henry Fairfield Osborn states that "Investigations made during the World War" led to the discovery "that our people on the average had lost two and a half inches in stature since the Civil War."

Some of this loss of stature may be due to immigration, but I believe with Dr. Sargent, physical director of Harvard University, that other causes are at work—causes which are producing not only loss of stature but general race deterioration. Dr. Sargent, for example, calls attention to the fact that the greatest loss is shown in those portions of the country where city dwellers are the most numerous, as in New England, for example, where two-thirds of the population are town dwellers.

Out-of-door life and the physical exercise associated with it promote bodily development—the growth of muscles and bones which determines the stature. McClellan, a famous English trainer, gives an account of a young recruit who took a new start in development and grew four inches after he was twenty years of age as a result of setting-up drills.

Modern Civilization Promotes Disease.

There is no doubt that the tendency of our modern civilization is to produce race deterioration both physical and mental. In the old European countries, especially in Southern Europe, this deterioration is more evident than in this country and has progressed so far that such eminent scientists as Major Leonard Darwin of London, son of Charles Darwin and the eminent leader of the English eugenics movement, Dr. Charles B. Davenport of the Carnegie Foundation, and numerous other men who have given special study to the subject have abandoned all hope of an endless future for the human race. Indeed, Major Darwin said at the late World's Eugenics Congress, "If our present civilization survives, and I fear it will not, it will have to be the United States that saves it."

There can be no doubt that we are going down hill. Insanity is increasing; crime is increasing. Diseases which result from degeneration, such as heart disease, arteriosclerosis, Bright's disease and cancer are steadily increasing. The draft examinations showed that more than half the young men of the country are physical milksops and mental mollycoddles and verified the prediction of Galton that the intelligence of the average man is only a shade above imbecility. If the average American at the present time is not a moron he is only a little above that degree of mental deficiency. Taken as a whole, modern civilization evidently promotes disease and degeneracy more than health and race improvement, and we are falling into a terrible slough of degeneracy, physical, mental and moral.

Danger of Race Extinction.

The problem is not a simple one. Many eminent scientists believe, as did the late Prof. Hyatt of Boston University, that "retrogression ending in extinction" always follows great race development. If this philosophy is true there is no chance to escape physical degeneration and race extinction. The race of men must become extinct as have already most of the higher vertebrate animals who were man's contemporaries in the cave-dwelling period. This is certainly a very pessimistic outlook.

I am glad to be able to take a more optimistic view. Those who see nothing but race extinction ahead evidently take it for granted that the entire human race is going to continue drifting downward as the civilized races are now doing, but I am convinced that this is an error. Man differs from all other races of animals in the superiority of his intelligence, by the exercise of which he may seek out the causes of race degeneracy and find means not only of escaping them but of setting in operation a counter movement upward. Through his intelligence man has subdued many of the great forces of Nature, tamed and harnessed them, and made them useful servants. Thus he is able to escape the usual operation of physical law, to defy gravitation, to soar in the heavens like a bird, to dodge the terrors of the thunderbolt, and to harness the lightning and make it pull trains and propel ships. Likewise, by an equally intimate study of the laws of eugenics and euthenics, and by whole-hearted effort to conform himself to the biologic laws which govern his being, man may escape the destructive influences which have exterminated other races of animals, and which with equal certainty will destroy man unless he intelligently and persistently combats the exterminating forces to the operation of which every living creature is exposed.

The Things That Blight.

Undoubtedly unbiologic habits are the chief factors in race deterioration. A boy born into the world with the capacity to become a giant may be dwarfed and weazened by wrong feeding. The blighting influence of syphilis, of alcohol, tobacco, and other drugs, gluttony, sensuality and other vices, cannot be questioned, and these destructive influences are multiplying. Our daily poison dose, through drug habits, has steadily increased from year to year until now the average person living in the United States, including women and children as well as men, swallows daily nearly 800 grains of poison, alcohol, nicotine, caffeine and opium. This alone would be enough to produce profound symptons of degeneration, if no other causes were in operation.

Within the last fifty years there has been an enormous increase in the use of tobacco, particularly in the form of the cigaret, which was brought into this country from France at the time of the Centennial Exposition. The consumption of cigarets has steadily increased since that time until now we are consuming about 60,000,000,000 cigarets a year. That tobacco has a decided influence upon growth has been definitely proven. Tobacco produces a grave disturbance in nutrition, as indicated by loss of weight. Roger showed that a solution of nicotine, two parts to the thousand, stopped the growth of plants.

Richon and Perrin (1908) injected two young rabbits out of a litter of six with infusions of tobacco. Their weight decreased notably. They ceased to grow. When the injections were stopped they rapidly gained weight and resumed growth.

The Menace of Nicotine.

Fielg subjected young animals to the influence of tobacco smoke. He observed "for a long time, even after the inhalation of the smoke ceased, the animals remained incompletely developed and in a state of very marked inferiority to the control animals."

French dog fanciers produce dwarf dogs by administering nicotine to them.

Smoking has the same effect upon boys.

In 1906 a special committee of the House of Lords of the English Parliament, reported a drastic bill to prevent juvenile smoking. The committee called especial attention to the fact that while boys showed many evidences of deterioration, lessened height, and as Prof. McKeever informs us, were often observed to be "sallow, sore-eyed, puny, squeaky-voiced, sickly, short-winded and nervous," the same signs of deterioration were not noted among girls.

Seaver, who studied Yale students, found that non-smoking students increased in height and in chest girth one-fourth more than the smokers. The increase in chest capacity of the non-smokers was most notable, exceeding that of the smokers by 77 per cent.

A professor of physiology of Johns Hopkins University a few years ago made an experiment which clearly demonstrates the injurious effects of tobacco upon growth. He exposed rats for definite periods, daily, to the influence of tobacco smoke, which was described as having a degree of density about equal to that of the smoke-ladened air breathed by the participants in a "college smoker." Little effect was observed upon the rats of the first generation, but the second generation showed very pronounced retardation of growth. At the age of six weeks, the smoking rats had attained only about half the size of rats of the same age which had not inhaled tobacco smoke.

Sixty years ago smoking was nothing like as nearly universal as at the present time. An army officer who had command of a large force in the Civil War told me that he did not think more than 10 per cent. of the men of that time were habitual smokers. It is well known that at the close of the late war less than 10 per cent. of the soldiers were non-smokers. A large proportion of those who went into the army non-smokers came out cigaret addicts. In view of all the facts which have been presented, it seems not unfair to charge tobacco with being one of the causes of the loss of stature which has occurred since the Civil War, and it may be the largest factor.

Our Limitless Rations.

Two other factors are certainly worth considering: One is the deficiency of lime in the diet. Lime is an essential element for bone building. Every growing child needs at least twenty or thirty grains of lime or a third to a half dram of lime daily for the construction of the skeleton, the framework of the body which determines the height. The average American breakfast is exceedingly deficient in lime. A diet consisting of white bread, meat and potatoes contains almost no lime at all. A full day's ration made up of such foodstuffs will furnish less than one-fourth of the amount of lime daily required by a growing boy or girl. About the only widely used foods which are rich in lime are oatmeal and milk. Milk contains lime in abundance; oatmeal is fairly rich in lime. But, unfortunately, oatmeal, which was formerly in much more general use than now, has been largely replaced by breakfast foods, often denatured products which are almost wholly lacking in lime and other food salts which are essential for the growth of the body. Coffee, butter, sugar, meat, fruits, and of course pastry, sweet cakes and desserts are all deficient in lime. Greens, such as spinach, dandelion, kale, beet tops and turnip tops are rich in lime, but these excellent foodstuffs are unfortunately little used. **A larger use of greens and the addition of a pint of milk a day to the average dietary would without doubt result in a marked improvement in American physique.**

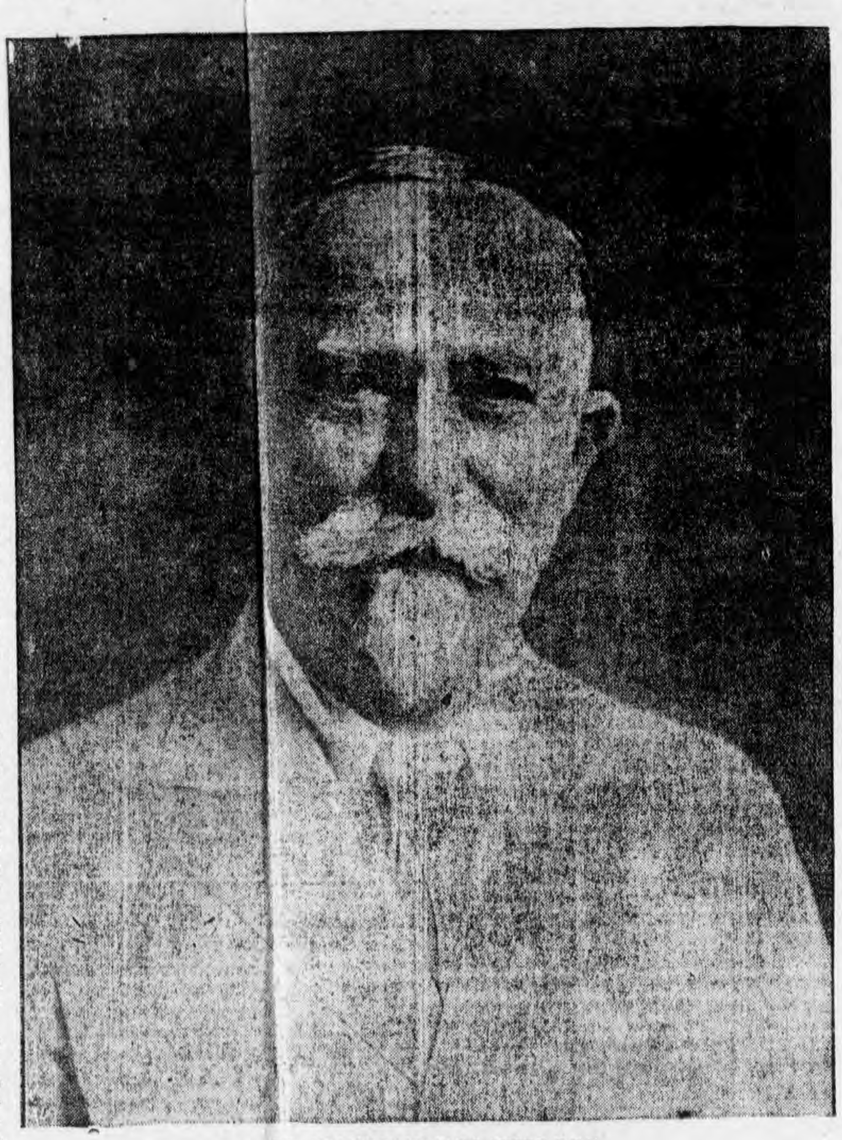
This very important change in the American diet can be made at no expense; indeed, such a change would lower the cost of living. Greens are readily available at practically no cost during the summer season. Many garden weeds, such as purslane, curly leaved dock and pigweed or lamb's quarters are excellent greens, while kale, cabbage and cauliflower supply an abundance of this bone-building element. The additional pint of milk would cost practically nothing, for we are throwing away or feeding to pigs, which is almost the same thing, enough skimmed milk every year to supply a pint a day to every man, woman and child in the country. As a matter of fact, nearly half of all the milk the country produces goes into the feeding trough or down the sewer, a yearly waste about equivalent to seventy-six pounds of beef per capita. In fact, if this skimmed milk which is now thrown away were used as human food, it would insure an ample supply of protein and such an abundant supply of lime for bone-building as would not only give our boys and girls stronger bodies but also better teeth.

Are We Becoming Toothless?

We are rapidly becoming a toothless nation largely because the average diet is lacking in the material needed for the construction of teeth and bones.

The economic advantage of saving the skimmed milk which is now wasted is really startling. If the pint of milk per capita equal to 100,000,000 pints a day in the United States, now thrown away were eaten, meat consumption would necessarily be cut down and might, in fact, be eliminated altogether to the immense benefit in my judgement of the health and physique of the American people.

The annual per capita cost of meat, according to the United States Bureau of Statistics, is $80 or more than $9,000,000,000. The elimination of this item of expense would pay our great war debt in less than three years and the whole population would be better off.



DR. JOHN HARVEY KELLOGG.

That such a change of diet would be not only safe but desirable is clearly shown by the replies made by the leading physiologists of the United States to a questionnaire sent out by the board of trustees of Beth Israel Hospital of New York, when they decided to adopt a meatless regimen, with the opening of their new great hospital, finest institution of the sort in the world.

Said Dr. Chittenden of Yale University on this occasion:

"With vegetables of all kinds, and milk, bread and butter, you have at your command all the necessary resources for a nutritious diet."

Said Dr. McCollum of Johns Hopkins University:

"I have not the slightest hesitation in saying that a vegetarian diet, supplemented with fairly liberal amounts of milk, is the most satisfactory type of diet that men can take."

Said Dr. Mendel of Yale University:

"I have given some thought to the advisability of introducing a meatless dietary into your hospital regime, and have reached the conclusion that there will be no objection to this upon physiologic grounds."

Another factor which no doubt has had some influence in lessening the stature of the American people is a deficiency of vitamins, the subtle element which is essential for the growth of both animals and plants. Vitamins are produced only by plants and are found only in vary small quantities in those parts of animals which are usually eaten. These essential vitamins are, however, found in abundance in the green parts of plants and fresh vegetables. A diet which supplies an abundance of lime, iron and other salts is almost certain to contain likewise a sufficient amount of vitamins.

Heavy Demand for Sweets.

It is quite possible there may also be a causative relation between the enormous consumption of cane sugar, largely in the form of candies and other sweets, and the shrinking of stature in America. The Americans consume more cane sugar than any other people in the world. The amount consumed has steadily increased during the last fifty years and now amounts to about 100 pounds per capita, or more than a quarter of a pound daily, or about one-fourth the total food supply. Cane sugar, either in its ordinary form in which it appears on the table or in the form of confectionery, is wholly lacking in lime, iron and vitamins, three food essentials. It is evident, then, that such an inordinate use of sweets in connection with a dietary already lacking in food salts and vitamins greatly accentuates the danger from this dietary deficiency.

Fruits, such as dates, figs and raisins are rich in lime and iron and ought to take the place to a large extent of the cane sugar and confectionery which is now used. Such a substitution of natural sweets for the concentrated artificial products which are new consumed in such inordinate quantity would undoubtedly result in a great improvement in the national physique.

Dr. Bunge of Switzerland and Dr. Sherman of Columbia University, New York, years ago called attention to the almost universal lime starvation which exists in civilized countries which might easily be corrected by the dietary reforms suggested, which would include the discarding of fine flour bread from our tables,

MAN'S POWER TO IMPROVE THE RACE.

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the free use of coarse cereals, including oatmeal, which might well take the place of many of the popular breakfast foods now in use, and the freer use of roughage in various forms, including greens, fresh vegetables and the coarser cereal products. Such a change would not only give our boys and girls a better chance to grow into well developed men and women but would insure an enrichment of the blood by supplying a sufficient amount of the needed food iron.

Blood Quality Below Par.

We are becoming an anemic nation by depending too largely upon foods which are deficient in iron as well as lime and vitamins. The tremendous significance of anemia is recognized when we recall the dictum of Holy Writ, "The blood is the life." Modern physiology has demonstrated the scientific accuracy of the ancient belief that the blood is the creative agency in the body which builds and energizes every cell and tissue. A man whose blood is only 50 per cent. of the normal is only half alive. A person whose blood is depreciated is an easy prey to disease. His vital resistance is lowered. His fighting power against germs is lessened so he is likely to be an easy prey to influenza, pneumonia or any other germ enemy he happens to encounter. **There is good ground for believing that the average American is 20 to 30 per cent. below par in the quality of his blood.** Rich red blood is necessary to vigorous individual life as well as to national life and is an essential foundation for mental as well as physical health. Some day we shall have new aristocracy, the basis of which will be clean red blood instead of the tainted blue blood aristocracy which has so long dominated certain phases of modern life.

Bichat's declaration that civilization "is nothing more than the environment which tends to destroy humankind" was perhaps too sweeping, but it is now generally admitted that the conditions of civilization are in general such as tend to race destruction rather than race betterment. **Really, the greatest problem before the world to-day is how to save the human race.**

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EDITORIAL SECTION

THE ART OF NOT GROWING OLD - - A Few Simple Recipes

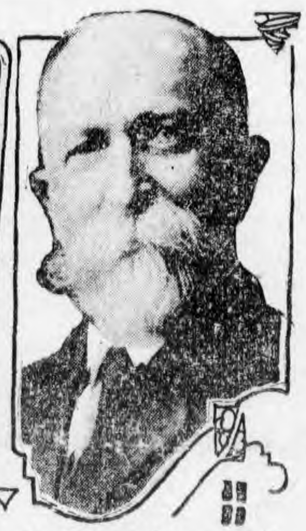
"CAN YOU READ AS ONCE YOU USED TO?" "Well, the printing is so bad,
No young folks' eyes can read it like the books that once we had."
"DON'T YOU GET A LITTLE SLEEPY AFTER DINNER EVERY DAY?"
"Well, I doze a little sometimes but that always was my way."
"DON'T YOU FIND IT SOMETIMES HAPPINESS THAT YOU CAN'T RECALL A NAME?"
"Yes, I know such lots of people but my memory's not to blame."
"DON'T YOU STOOP A LITTLE WALKING?" "It's a way I've always had."
"I have always been round-shouldered ever since I was a lad."
DON'T YOU STAY AT HOME OF EVENINGS?" "DON'T YOU LOVE A CUSHIONED SEAT
IN A CORNER BY THE FIRESIDE WITH YOUR SLIPPERS ON YOUR FEET?"
"DON'T YOU WEAR WARM FLEECY FLANNELS?" "DON'T YOU MUFFLE UP YOUR THROAT?"
"DON'T YOU LIKE TO HAVE SOME HELP WHEN YOU'RE PUTTING ON YOUR COAT?"
"DON'T YOU HATE TO TIE YOUR SHOESTRINGS?" "Yes I own it, that is true."
"DON'T YOU TELL OLD STORIES EVER?" "I am not aware I do."

—Oliver Wendell Holmes.

Luigi Cornaro
1464-1566
Who taught us
how much to eat

Sir William Temple
1628-1699
What taught us how to eat

Horace Fletcher
1849-1919
Whatever ought
to eat



Dr. J. H. Kellogg of
Battle Creek Who
taught us what
to eat.

IT COMES inevitably. Not at once but little by little, as the days go. We don't know just where it begins but the signs are always there. We can no longer hurry; we feel drafts, we dread evening parties; we don't work so hard to have a good time. Blessed be he who has nothing to complain of more than these.

But there are severer things to bear if the arteries or the stomach give out and the real old age begins. With some it has started at 30; with others not until twice that age.

Is there any way to put it off? Can we cheat the years and live to a useful as well as a happy old age?

Cornaro thought there was, and his trying out the experiment with success makes him an authority on the art of not growing old.

Who was Cornaro? You needn't mind asking, because very few have read his book. He was an Italian of an illustrious Venetian family, who began life a profligate and yet lived to be a 104. In his early life he was weighted down with money and class obligations, both of which are not very good for the digestion, seeing that they entail the giving and eating of big dinners. For centuries in the history of that proud republic of Venice the Cornaros are interwoven with all the history that went on. The family tree shows in its branches a queen, four doges, nine cardinals and several patriachs of the church in Venice and Constantinople. A host of them were men of letters, diplomats, philosophers and bachelors of arts and sciences. Their monuments can now be found in all the gorgeous churches of Venice.

But they have gone to dust and with them all they did and were, all except Luigi Cornaro, and he lives through a book he wrote in which he passed to posterity his secret of a long life. It is called "LA VITA SOBRIA," and means "The Temperate Life." Three parts there were to it, one essay written when he was 85, another when he was 91 and a third when he was 96. In all the message is the same—temperance, sobriety, regularity, abstinence should be the governing methods of our daily lives. He surely ought to know because at 40 he was a broken down man, a confirmed invalid. He had "gone the pace" and it was doing for him what it inevitably does, whether in the fifteenth century when he tried it out, or in the twentieth, when so many others are doing it. Moreover, he was as he expresses it, "of a choleric disposition," meaning in plain English that he had a nasty temper, (whether a cause or a result of his manner of living, makes no difference).

At 40 he was a despairing man, his nights and days, as he wrote, "a continual martyrdom." Then he fell in love and the things he was going to miss fell upon his spirits like a pall. He wanted to found a house, he wanted a family, he wanted a way to spend his money that would give him pleasure instead of pain.

It seems he was a man of strong will. Whether it was this attributo or the influence of the young lady herself, (by name, Veronica di Spilimbergo), that worked the miracle, we do not know. Certain it is that once on the road to health through temperate eating and drinking, Cornaro burned to share his good fortune with others.

It is to be noted right here that Cornaro lived when a message like his would have scant attention. It was a time when people gorged themselves at peacock and champagne banquets until they could hold no more, and then went into a small apartment built for the purpose, emptied out their stomachs and began over again. Gluttony was supposed to be a fine art and it was so practiced. Dirt underfoot in the streets, dirt underfoot in the palaces excited little comment. Garbage and dead animals festered together in those narrow medieval streets under an almost tropical sun. Small wonder that the black plague swept over Europe at definite intervals and decemated the population, rich and poor alike.

AGAINST DISEASE KNOWN, THE STRONGEST FENCE IS THE DEFENSIVE VIRTUE, ABSTINENCE.

—Benjamin Franklin.

Cornaro, after keeping rigidly to his regime of little food, plain food and no excesses, went through one of these epidemics of plague with safety when scores of his relatives and friends were stricken and died in agony. This experience convinced him more than ever that the "Vita Sobria" was the rational and proper life to live.

To fall ill in the sixteenth century was to give oneself over to the doctors, who were in those days only one degree removed from the plague itself as a form of human disaster. A patient already weakened with fever they cupped and bled until what little strength he might have, dripped out at the thrust of the lancet. Cornaro remarks upon this and asks why not prevent the body from getting into such a state that it will have to be treated in this manner? Why not eat merely to keep the body alive and not to increase blood pressure and induce indigestion?

It was new doctrine for the fashionable world of Italy in 1558, and there is room for the same gospel of the dinner table at the present day. True we don't build "vomitoriums" adjoining our dining rooms; we have progressed a little toward the refinements of life, but 250,000 bottles of champagne are still consumed on New Year's eve on Fifth avenue, and nearer home than that young men still linger at midnight over "cold bottles and hot birds," to the ruination of their digestion, their family peace and their jobs. So perhaps, Cornaro's rule of eating may find a lodgement in some brain of the twentieth century. Here they are:

1. Be satisfied with little.
2. Live temperately and regularly.
3. Study what food agrees with you and take only as much as the stomach can digest.
4. Guard against extreme fatigue and excesses of any kind.
5. Avoid poorly ventilated rooms.
6. Indulge in no anger, hatred, envy or melancholy.
7. Do not allow sleep or rest to be interfered with.
8. Eat but little at a time and oftener as you grow older.

These as general rules. For his own regimen they were more definite. He ate but 12 *ounces at a meal.* Once when importuned by his family to eat a larger amount, he increased it oo 14 ounces and immediately fell sick. He found that four small meals a day agreed with him better than three large meals. He favored one dish to a meal and no sauces. What saves him from being a crank is the fact that he realized that people differed in their digestive powers and that he could not prescribe definitely for any man but himself. What he impressed upon sufferers from over-eating was that they should carefully study foods with reference to their own bodies and having found what agreed with them to keep to that food and little of it.

The limitation of nourishment was what saved him for a patriarch. His bodily ailments gradually disappeared. He found that plain food was delicious; that he could walk miles without fatigue; that he could mount a horse from the ground without help. Finally, that the world was good and beautiful. His wife presented him with a daughter, who married and had 11 children. So Cornaro's life hope of being the head of a family was realized.

But we have talked too long about this great gastric reformer and must now let him speak for himself. Here are some of his reflections, as they appear in either of the three articles for which his name will stand posterity.

"I never knew the world was beautiful until I reached old age.'

"I have seen many of my dearest friends, men endowed with splendid gifts of intellect and noble qualities of heart, fall in the prime of life, victims of intemperance in eating, who, if they were yet living, would be ornaments to the world."

ORDERLY LIVING IS THE POITIVE LAW AND FOUNDATION OF A LONG AND HEALTHY LIFE.

—Cornaro.

"Now Nature does not deny us the power of living many years. Indeed, old age, as a matter of fact, is the time of life to be most coveted because it is then that the fruits of all the other virtues are best enjoyed."

"The food from which a man abstains after he has eaten heartily is of more benefit to him than that which he has eaten."

"Having lived the temperate and regular life for 43 years, now at 83 my senses are yet perfect, especially the sense of taste, for now I find more relish in the simple food I eat than I formerly found in the most delicate or elaborate dishes. Neither does the change of bed affect me for I always sleep soundly and quietly in whatsoever place I happen to be in; nothing disturbs me and my dreams are always happy and pleasant."

"Divine sobriety! pleasing to God the friend of Nature, the sister of virtue, the companion of temperate living! From her spring life, health, cheerfulness, industry and all those actions which belong to a noble soul. To the rich she teaches modesty, to the poor thrift, to the man continence, to woman chastity, to the old how to guard against death and to the young how to hope for length of days."

"*The orderly and temperate life consists solely in the observance* of two rules relative to the quality of the food we use.

The first consists in eating and drinking only such things as agree with our stomach and second using only such an amount of them as can be easily digested.

"And thou mother nature, so loving to thy old man! (Cornaro was then 95). As thou showest me so I do observe. In consequence of which my spirits (*never oppressed by too much food*), *are always* cheerful and their energy is never greater than after meals. For I feel when I leave the table that I must sing, and that after singing *I must write.*

"It is beyond doubt that the orderly and temperate life has the power to remove the causes of illness."

Cornaro was not the only prophet of the simple life. There were others after him; Lord Bacon, Addison, *Sir William Temple*, our own Roosevelt (who began life as a frail under-sized boy and built up by exercise and diet a constitution which served him well for many years). *Later are two present day* teachers of dietetics, Horace Fletcher and Dr. Kellogg, of Battle Creek.

MAN'S RICH WITH LITTLE WERE HIS JUDGMENT TRUE
NATURE IS FRUGAL AND HER WANTS ARE FEW;
THESE FEW WANTS ANSWERED BRING SINCERE DELIGHTS
BUT FOOLS CREATE THEMSELVES NEW APPETITES.

—Edward Young.

The latter by his writings has established a sanitarium that is world-famed in its reputation for making old people over into new ones. Where Cornaro *taught as to the proper quantity of food to be* taken, Kellogg teaches what the quality of the food should be. He has promoted the use of cereals, bran, fruit juices, nuts, buttermilk, yogurt, koumyss, whey, and has introduced to the markets of the world his own preparations of health-giving foods such as puffed rice and wheat, wheat flakes and corn flakes, peanut butter, prepared bran and malted nuts.

He has warned against the common habit of meat eating, showing that the prevalence of auto-intoxication, chronic intestinal catarrh, anemia over-worked heart and many skin disorders are due to over-*indulgence in meat. His gospel of sobriety has gone farther than* Cornaro's because the world is smaller than it was then and printing more abundant.

While Cornaro taught the quantity we should eat and Kellogg taught the kind of food best suited to the human body, another prophet of thorough mastication. He has discovered that even if we eat the proper food and in the proper quantity and bolt it down there will be trouble.

So the word "Fletcherizing" has come into vogue. If it was used as a joke in the beginning the principle is none the worse for it. To *Fletcherize you must chew each mouthful of food until it is quite dis*solved and sinks into the stomach as an almost predigested element, thus relieving that organ of much unnecessary labor. Fletcher finds that as a result of this new habit of eating four things arrive:

1. A better appreciation of food.
2. Better digestion.
3. Economy in the amount of food taken.
4. *Meat can be almost entirely eliminated* (and with it the toxic poisons that make so many digestive disorders).

At one time Horace Fletcher was allowed to try an experiment with the students of Harvard. A number of young men were detailed for the eating experiment. They were allowed to eat anything they pleased and as much as they pleased, but all were under strict orders as to mastication. They were to keep each mouthful of food in their mouths *until it was dissolved* and swallowed automatic. The result was that those who had had intestinal trouble were cured; those who ate quantities of rich food felt no bad symptoms, while those who ate sparingly and in the new way actually gained in weight.

It will be well worth while to follow either or *all* of these food prophets. No one wants to grow old. An old poet once wrote, "Death is a stupid blunder merely and not a necessity of our lives." To live cleanly and healthfully, to use the last two or three decades of life in valuable service to the public good, to love life and find the world beautiful at 85, to be friends and companions with one's grandchildren, to enjoy refreshing sleep, have an appetite for bread and butter and climb a *hill like a boy of 20 surely this were better than to find the* adding years bringing headaches and grouchiness, nightmareish nights and useless days and to drop into one's grave like a broken bit of machinery. If it can be done by the simple rules that Cornaro laid down, that Roosevelt practiced, Fletcher advised or Dr. Kellogg prescribed the world will be a better place because inhabited by young old men instead of old young men.

BANQUET AT LAKE FOR DR. KELLOGG

Sanitarium Faculty and Heads of Departments Had Most Enjoyable Event Yesterday.

July 23, 1919.

The faculty of the Sanitarium, together with a few heads or departments, journeyed to Pine lake last evening for a banquet to Dr. J. H. Kellogg in honor of his return from his stay in Florida. Between 50 and 60 physicians are now on the staff of the institution, but of course all of these could not be spared at one time. Those who went, however, took their wives, so that the big hall of the resort contained nearly a hundred people when the repast was anounced. The automobile ride and the preliminary swim gave a zest for the meal. This was in the best style of the Sanitarium and won a vote of thanks to Miss Lurent Van Doren, the youthful head dietitian, under whose direction it was prepared.

Dr. E. L. Eggleston presided wittily. He first called in Dr. M. A. Mortensen to answer the toast "What Has Been Done." From his long association with the Sanitarium, he spoke from personal observation on the great work which Dr. Kellogg had accomplished. He told how the doctor after a long day in the operating room, wuld work until after midnight seeing patients. This was not an exceptional record, but a frequent one. Besides the huge labor of conductingthe general affairs of the institution,, Dr. Kellogg had done an amount of literary composition which would in itself have been a creditable life work. In all his activities, Dr. Kellogg had one dominating thought the helping of other people and was happiest when he was lifting the burdens and increasing the joys of fellow men.

Dr. Mary F. Dryden read an amusing versified biography of the guest of honor. Dr. J. S. Pritchard was introduced as a Canadian and a Scotchman, and retorted that Dr. Kellogg's greatness was chiefly due to the fact that his ancestors came from the highlands of Scotland. Dr. C. E. Roderick spoke on "The Present" and Dr. J. T. Case on "The Future." The latter read extracts from a newspaper of 1929, telling of the improvements at the Sanitarium in the preceding decade.

Dr. Kelolgg spoke his gratitude for the kind words of his friends, but declared that the growth of the Sanitarium was primarily due to team work, in which has had the coooperation of Dr. W. H. Riley and all the other physicians and employes. He drew some amusing pictures of the customs and costumes at the Sanitarium 43 years ago, when he first became associated with it. At that time, instead of one-half a hundred physicians, there were only two.

At intervals, the party sang parodies on popular songs of the day, written by Miss Jeannette Martin, the young danughter of Dr. W. F. Martin. The last named, with Drs. Paul Roth and C. Ward Crampton, comprised the committee of arrangements.

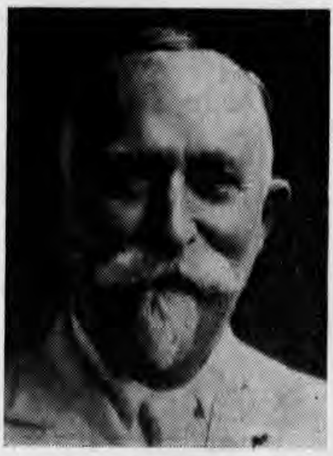
aug 14 1926.

"Know Thyself"

Battle Creek Food Company

"Music and Food"

IT MIGHT at first seem to be rather a far cry from music to food, yet we all know that no modern banquet is considered as complete in its arrangements without plenty of music, and the finest dining-rooms in the country employ skilled orchestras to round out the enjoyment of those who are partaking of their menus.



Dr. John Harvey Kellogg

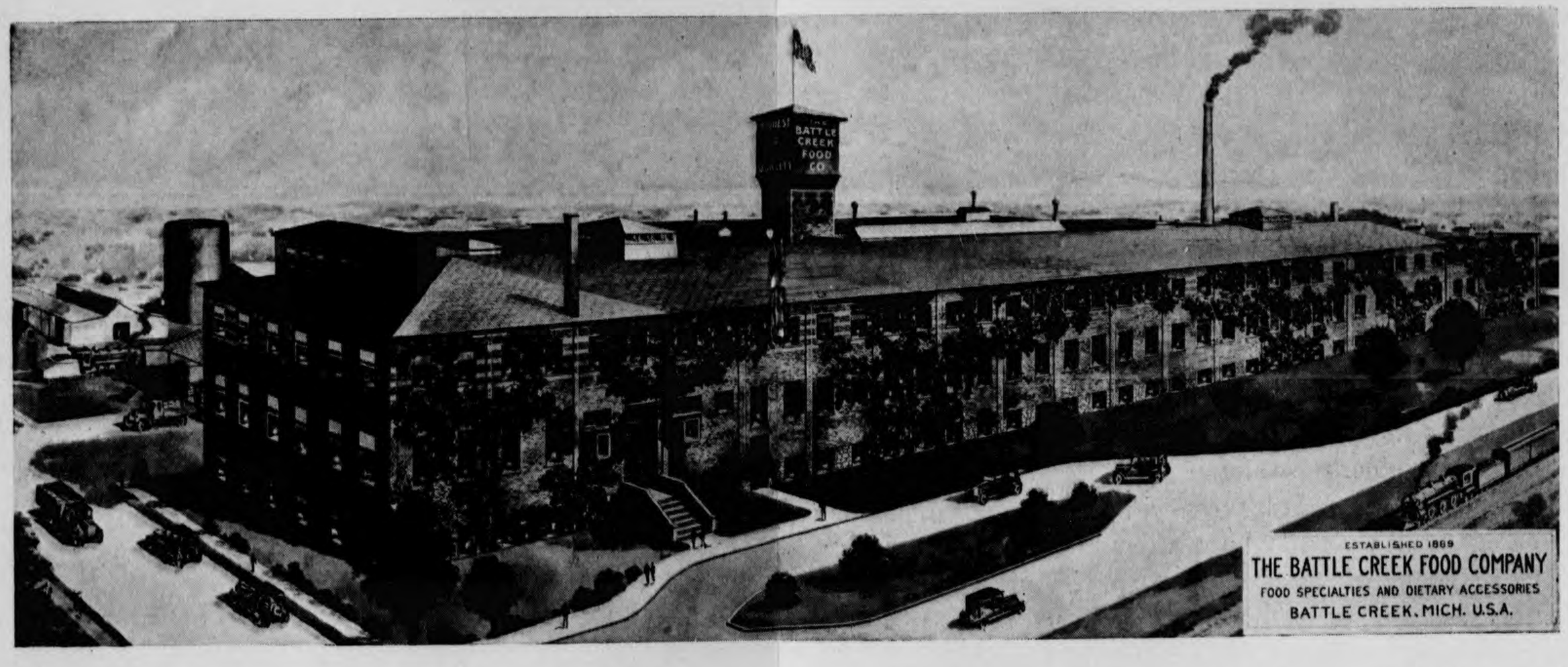
All this might seem to have little reference to the rapidly-growing Battle Creek industry to which we give space in this issue, but as a matter of fact, the attractive building shown on the following pages, and now occupied by the Battle Creek Food Company, was built for and used for several years as a pipe organ factory.

This — the pioneer food-making company of Battle Creek — was founded by Dr. J. H. Kellogg of the Sanitarium in 1880, being formerly known as the Sanitarium Health Food Company.

This company is unique among all those that have started or are operating in Battle Creek, in that it makes not only cereal foods of all kinds, but also the various meat substitutes which have for many years been prominent in the dietary of the Battle Creek Sanitarium.

For many years the operations were conducted in buildings north of the present Sanitarium, and without question practically all the cereal food there is made in Battle Creek can be traced back to the successful operation of this company, making, as it did from the start, a coffee substitute, and various special dietetic foods, in addition to a very wide line of cereal foods.

The constant growth of the business made neces-



sary larger quarters, so in 1914 the present building was purchased and succeeding years have seen a number of very substantial additions made to take care of the constantly growing business enjoyed by the company.

Here are manufactured the special foods which were originated and developed by Doctor Kellogg in his many years' direction of the Battle Creek Sanitarium, and it is safe to say that their continued use by thousands of patients after they have returned to their homes has added materially to the years of their lives as well as to the fame of our city.

One hundred and ten different foods are made by the Battle Creek Food Company, and we show, on these pages, reproductions of a few of the attractive packages in which they reach the consumer.

Many of these, as has been intimated, are very definitely of medical as well as food value, but like all the rest on the list, they are toothsome and palatable.

In the cereal preparations, predigestion by thorough dextrinization greatly lessens the work of the digestive organs, encourages easy assimilation, and in a large measure prevents autointoxication, that widely prevalent malady to which so many ills are attributed.

For those who have been educated to like meat as a part of their dietary, various meat substitutes are made by this company, from nuts, grains and vegetable oils. Among these are Protose, Nuttose and Nuttolene, all of them rich in nutritive value.

Minute Brew is a coffee substitute, instantly prepared for use, and absolutely free of the poisons found in ordinary coffee.

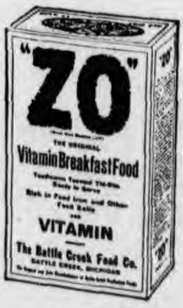
Lacto-Dextrin is a special food possessing certain extraordinary properties which enable it to drive out of the body those pernicious organisms which, as the celebrated Metchnikoff has shown, are the cause of premature old age and an assortment of troublesome ailments.

Another very interesting food product is Colax, which is made from certain varieties of seaweed found on the coasts of Japan and Ceylon, and which possesses valuable laxative qualities with none of the habit-forming drawbacks of ordinary laxatives.

Modern science has demonstrated that cooked and sterilized bran is not only a useful laxative but is rich in phosphates and other salts, as well as in iron and in protein. It is also rich in vitamins, which is one reason why the ordinary fine white flour, from which the bran has been taken, is so deficient in certain respects.

Malt Sugar, another remarkable product, is a sweet made wholly from cereals, and differing from cane sugar in its chemical constituents, as well as its dietetic value.

With all these and many other valuable food products which we have not attempted to list here, the Battle Creek Food Company, with no extraordinary advertising methods, but rather through the tremendous value of "pleased customers," has built up a splendid business.



Under the efficient management of Mr. B. C. Kirkland, the business of this company has increased five hundred per cent in five years. About two hundred and fifty employees are kept busy in office and factory, and, as before stated, their product goes to practically every quarter of the globe. And, of course, their foods are used exclusively in the great Battle Creek Sanitarium.

Mr. B. C. Kirkland

So when you think of Battle Creek as "the Breakfast Food City," remember it as peculiarly "the Health Food City," for more and more it is being recognized by medical men and the laity that a great share of human ills may be traced to improper eating, and if you would "keep well" you must also "eat well."

The Battle Creek Food Company offers a wide range of foods that makes proper eating a pleasure as well as a duty, and this, too, with no monotony in diet.

(From - The New York Tribune-Herald, May 4, 1924.)

A Book on Dietetics From A Famous Sanatorium

Shift Your Food Problems to the Broad Shoulders of an Expert by Keeping Dr. Kellogg on a Handy Shelf

By Anne Pierce

"A Thousand and One" pages of detailed information that anyone might want to have about every kind of food imaginable, combined with a thorough discussion of what different foods and food ingredients mean in the body economy, what part they play both in normal nutrition and in diseased conditions.

Even though you may not agree with all of Dr. Kellogg's conclusions in full they move along the lines of the best and most modern thought and are illuminating for guidance; the facts given answer just the questions that are asked us over and over:

Just what foods to eat for lime and iron, for building strong children, making sound teeth and bones. The vitamine value of different foods, what's in them and what they lack, from the standpoint of body building or energizing.

Dr. Kellogg's rather puritanic thesis is that he has experimented scientifically (and he has done that, all admit) with all foods, stimulants and narcotics and anything that has any bad physiological reaction he discards! He advocates only foods that never sin positively against the body in any way! This means a drastic prohibition of meats, tea and coffee, while even salt, sugar and condiments get rather a short shrift. While we may not go all the way with him his work highlights our leading excesses and shortages in the American diet very convincingly—we eat six times as much white sugar as other nations; no other people eat so much meat, largely because they can't pay for it, and so we may well moderate our diet according to Dr. Kellogg's findings, though we may not become the saltless, sugarless, vegetarian that he pictures!

Inside Information

The book not only tells what to eat and why, but explains how the body acts in solving its food problems. Doctors are apt to give very sketchy instructions about feeding the sick, and often the house mother is in a quandary as to feeding the family when they are subnormal or show certain unhealthy tendencies which do not call for a doctor's constant care, but should be watched and checked. In all such cases a load of fruitless worry and inefficient striving may be transferred to capable shoulders by having Dr. Kellogg's book on "The New Dietetics" to consult. Technical in spots it may be, but it is for the most part a closely indexed encyclopædia of all sorts of definite and simple facts about our foods, what they are and how they serve us to prevent disease, assure vigorous, painless and efficient bodies and to re-establish normal conditions when ill.

Take, for example, these headings: "Diet in Simple Goitre," "Diet in Digestive Disorders" (the treatment of a "chronically crippled colon" is of interest to thousands, unhappily, under conditions of modern life with overrefined foods and sedentary occupations) and "Diet in Disorders of Nutrition: A Chapter on Wholesome Foods"—which, by the way, may not mean foods of a large amount of nutrition at all, for there are "special service" foods without which the "solid" foods cannot be advantageously used.

The Unprogressive Colon

In an amusing introduction to this chapter Dr. Kellogg says: "There is probably no other animal that includes in its dietary so large a variety of substances as does man. . . . And man essays this complex and varied bill of fare without a digestive apparatus adapted to so complicated and difficult a task. . . . His digestive system includes no mechanism corresponding to the gizzard of the barnyard fowl, the quadruple stomach of the bovine or the seven gastric power digestive machine of the whale. He has only the simple, rather feeble, stomach of the primate, the aristocrat of the animal kingdom, adapted to the digestion of the choicest and most delicate of nature's tidbits, to dine on the top shelf of Mother Nature's pantry, so to speak, and yet with this delicate simian stomach he does not hesitate to tackle the world's bill of fare, to do gastronomic stunts from which the hardiest beast of the forest might well recoil. . . . A return to biological living [i. e., eating scientifically and normally] is the most pressing economic as well as the most necessary physiologic reform required at the present time."

To Dr. Kellogg's mind the diet of the man-like ape is ours by heredity and virtue of a similar digestive apparatus—and that is, in the main, fruits, nuts, soft grains, juicy roots, eggs and milk. Though truth to tell the ape has one advantage that we have not, and that is tree climbing and scampering in search of food, which aids so materially in its digestion, use and elimination. Even an ape on proper diet, if he rode in motors and subways, was waited on at table and sat at a desk eight hours a day, might not qualify under one of Dr. Kellogg's colon tests!

So we commend to you this tome—if you are interested in the food you eat and serve, in relation to the health and wellbeing of yourself and your family.

(The Modern Medicine Publishing Company, Battle Creek Publishing Company, Battle Creek, Mich.)

Reminiscences of Charles A. Dana and the Old New York Sun

By Chester S. Lord

Member of the Sun's Staff Forty-One Years and for Thirty-Two Years its Managing Editor

NEWSPAPERS have fascinated me always. During the antislavery agitation that preceded the Civil War, and during the great strife itself, my father had the New York Tribune, and I devoured it as a boy devours food. The Tribune was at full speed in those days. Greeley was leading the fight against slavery and for the Union cause with editorial articles that moved the nation. Charles A. Dana was the Tribune's managing editor for ten years, until the war was well under way, and he gathered about him a brilliant group of writers—Bayard Taylor, George Ripley, Charles Congdon, Moncure Conway, George William Curtis, Fitz-Henry Warren, Amos J. Cummings, Richard Hildreth, Margaret Fuller—the brightest and best newspaper staff the country had known.

Greeley was interested chiefly in politics, prohibition and potatoes—in agriculture especially—and he didn't bother much with other topics. Dana also was thick in politics, but everything else of human interest seemed to entrance him, and he crammed the Tribune with most interesting reading. The Tribune was famous not alone for Greeley's politics, but also far beyond other newspapers of the day for its articles on literature, music, the drama, science and progress in general, and in all these succeeding years it has not ceased to reflect these impulses. It was Dana who gave to the Tribune its reputation for literary excellence.

Greeley and Dana worked together on the Tribune for fifteen years. Dana went there in 1847 on leaving the famous Brook Farm community.

I once asked him why he went to Brook Farm, and he answered: "I wanted to be associated with the bright men and women there. I was very young. I had myself appointed as waiter at the common table in order that I might hear the bright things said."

Greeley was a great writer of political editorial articles, but he was not especially able in editing the other part of his sheet. He was away on lecture tours much of the time. He was not greatly interested in social life, in the fine arts, in games or contests or popular amusements. But he was intensely practical, was of kindly disposition and rather inclined to be conservative. He was quite willing to have Dana run the paper, and they got on together very well until the war began, and then came an estrangement that separated them. They made a great newspaper. I began to read it when I was eight years old, and I have been quite familiar with it ever since. All through my boyhood and youth I was fascinated and influenced by it.

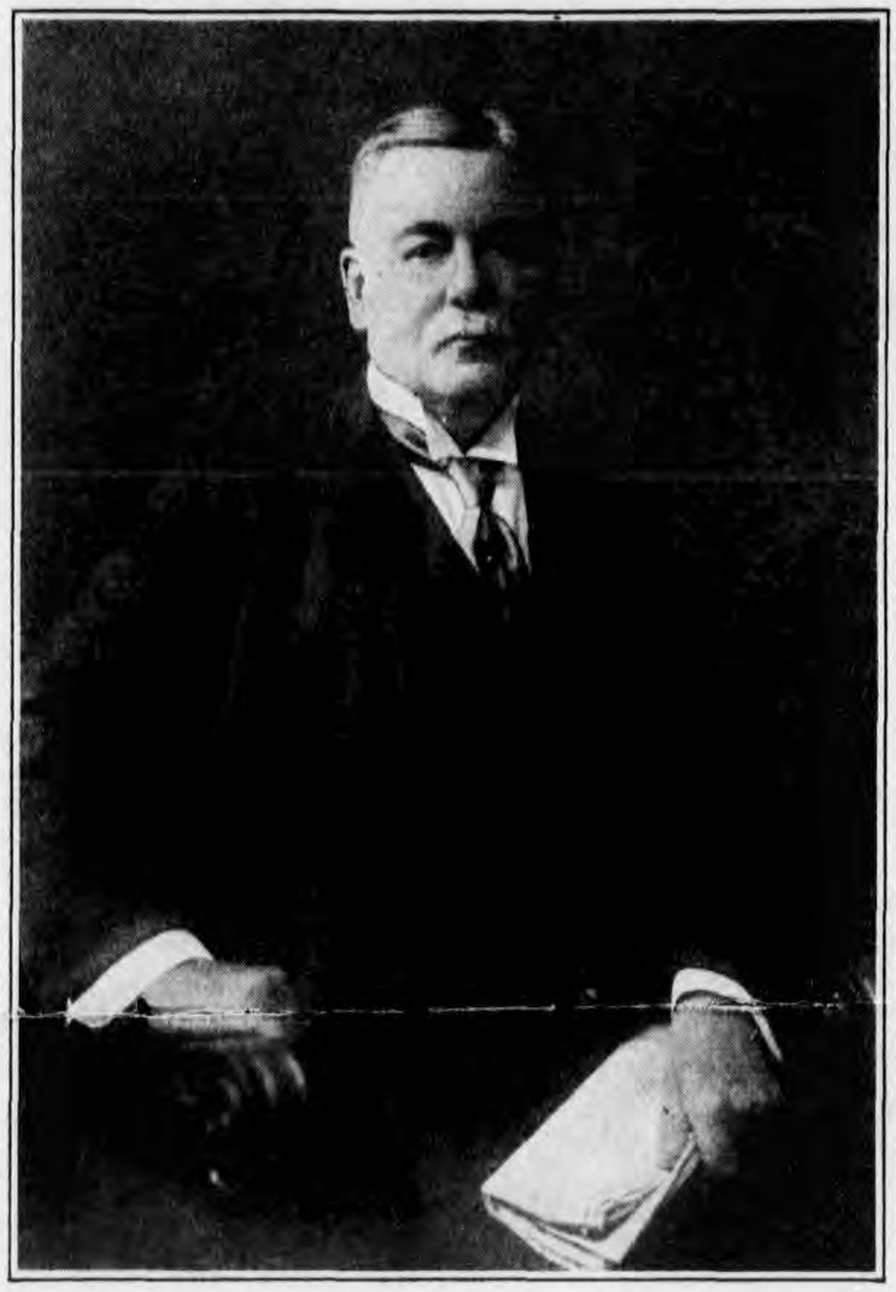
Getting a Toe-Hold in New York

I QUIT college at the age of twenty, and reached Oswego, New York, where I was to begin for myself, with just two dollars in cash and not a red cent's worth of fitness for newspaper work. I was to be the associate editor of the Advertiser, now the Oswego Times—was to write minor editorial paragraphs and help to fill out the editorial page, and I was to have ten dollars a week. I reported for work about noon. Someone was ill, and they asked me to do the horse races that were to begin that afternoon. I had never seen a horse race of any account, and I hadn't a notion of how to report one—and this was to be my first newspaper article!

They gave me a desk in a cubby-hole made by putting two low wood-screen partitions at right angles to the wall. The desk was a pine table without even a drawer. On it was a bunch of news-print paper cut in squares. All copy was written with pencil in those days. Also there was a big pot of rancid printer's paste made of flour and water, with a little gum added, into which had been thrust a large paintbrush with a besmeared handle, and about which hovered a swarm of flies.

In my college hours of pleasurable anticipation I had pictured myself seated in the easy-chair of a comfortable editorial sanctum with its shelves of volumes of history and reference, its ample rug on the floor, its big geographic globe, its luxurious comfortable desk with pigeonholes and trays and ample blotting pad. Gracious!

I sat down to reflect over this horse-racing assignment. My father was a clergyman, and he hadn't let me go to horse races. I remembered seeing one at an agricultural fair that had ended in a row and a fist fight, but there my experience had ended. I hadn't been interested in racing.



Chester S. Lord

Then came a happy thought that I imagined was original and smart. In a New York Herald of recent date I found a long report of races on a metropolitan track. It was the regulation routine account—the weather, the condition of the track, the gathering of the crowd, the presence of the ladies, the betting, the names of distinguished people there, the races themselves, the summaries. I cut out this article and referred to it all the afternoon at the races as I watched everything. It served me in good stead, for I wrote a report in structure and otherwise as nearly as possible an imitation of it, changing names and figures.

The report was satisfactory to the office; the new man had made good. But the new man had been guilty of imitation, and imitation is perhaps the most serious habit that affects writers for the American press. It is easy for a lazy hurried editorial writer who must fill a column or two of space to grab a newspaper from a far-distant city and, finding an article that will do, to rewrite it, using its ideas freely and its language unconsciously; and this sort of imitation is done constantly and brazenly all over this broad land. It is easy for a writer of news who is in doubt how to treat his piece to refer to an article in the same line, as did this youngster in Oswego.

But since the article of imitation is not so able as the article imitated, it follows that the net result must be the deterioration of the editor and of the newspaper that prints the flabby stuff.

It soon dawned on me that as associate editor I was expected to furnish nearly all the matter for the editorial page. I sailed into the task with all the confidence and enthusiasm of verdant youth. At this mature age of twenty years I wrote articles on the conduct of the Franco-Prussian War, then raging, reproved Bismarck for diplomatic inefficiency and advised the crowned heads as to terms of peace. It was the period of reconstruction following our Civil War, and I cheerfully and confidently instructed Congress and the President just how to accomplish it. It is quite impossible for me to explain the consternation with which I now read these articles.

A little later they were persuaded to give me fifteen dollars a week, for I wanted to marry, and after we were married my wife and I began to reflect on our prospects in life. John Barry was getting twenty-five dollars a week as editor in chief of the Palladium. John A. Place was getting twenty-five as editor in chief of the Advertiser. Clark Morrison had seventeen and Ben Wells, then city editor of the Oswego Press, was earning fifteen. Twenty-five dollars a week surely was the highest newspaper reward that Oswego could offer. It seemed wise to seek a city of better opportunities.

With an introductory letter from one of his old Tribune associates, I approached Amos Cummings, the managing editor of the Sun, in New York. Amos greeted me with a flight of profanity directed toward the writer of the letter for sending me, then toward myself for wanting to get into the newspaper business in New York City. I might come on trial for ten dollars a week if I wanted to, but I was a damned fool if I did, he said. So we threw up the fifteen-dollar-a-week job in Oswego and started in all over again in New York for ten dollars.

A Tilt With Amos Cummings

I THINK it was a wise thing to do. New York is the best newspaper town in the world, pays the biggest editorial-work salaries, offers the best advantages to a man who, without capital, is compelled to live by his pen. Hundreds of magazines and other periodicals are published there that pay cash for what they print, and a good reputation established there is a recommendation for better things elsewhere. Hundreds of technical publications, literary journals and miscellaneous sheets want editors and helpers and pay fairly well for them. Writers of ability are in constant demand.

I started in New York as a news reporter, and in about a week Cummings warned me that if I wished to stay I must get over my country way of doing things. My composition was slovenly, he said; I was pushing my own opinions into news reports which should be free from opinion; I was wasting space on introductions and I had a lot of other faults. I realized that my Oswego experience of two years or so had not been especially instructive. I had written whatever I pleased just as I pleased, for no one there had either time or inclination to teach me otherwise. This condition prevails in almost all offices where the staff is small, and it is to the great disadvantage of the beginner. For the newspaper business is a business that has to be learned just as law or medicine or theology is to be learned, and it cannot be learned in a week or a year. Occasionally a journalistic genius treats us to a sudden illumination by quick deeds or quick inspiration, but for the most part good newspaper work is accomplished only after patient laborious study along established lines. The adage that self taught is ill taught remains distressingly true of the newspaper business.

Cummings was a newspaper genius. He was managing editor of the Sun for a short time only, less than three years, but he was the great inspiration of its news-getting excellence. He had keenest appreciation of the value of news, and, as he had also a terrible temper, he made it painfully unpleasant for the reporter who missed a point.

A bunch of freethinkers, in solemn convention, nominated Mrs. Victoria Woodhull for the presidency in the Grant-Greeley campaign of 1872. A new reporter returned to the office full of the fun and absurdity of the thing, and he wrote two columns about it. The edition was crowded and the copy reader cut it to half a column.

Next day Cummings stamped into the office shouting, "Who wrote that Woodhull stuff?"

"I did, sir," replied the unfortunate young man.

"Damn you, why didn't you write two columns, you ——"

The young man jumped to his feet, and grabbing his chair poised it high in air and cried, "You call me that name again and I'll knock your damned head off!"

Cummings looked at him in astonishment for about five seconds, and then with a grin said in the most assuring and friendly tone, "Oh, sit down, you little fool! No one has called you any names."

The Woodhull report was then explained, and Cummings went in search of the copy reader to have it out with that wretched man.

It was the beginning of a glorious friendship between Cummings and the young reporter—a friendship that lasted as long as Cummings lived, I am pleased to say.

Just about then the New York Times and the Sun were having an angry controversy over something, and the Times sent a reporter to the Sun office to interview Cummings. The young man, approaching Cummings, mentioned his mission and asked a question. Cummings sprang from his desk chair, grabbed the young man by the neck with both hands, dragged him to the stairway, down the two flights to the street door and flung him out. Cummings then returned and resumed work at his desk, having not spoken a word from the time the young man asked the question.

The interview did not appear in the Times.

Cummings, like Greeley, believed that compositors made good editors, and he drew generously from among his old Tribune associates to fill the staff of the old Sun. At one time the working news staff included Cummings, managing editor; John B. Wood, night editor; William Young, city editor; Samuel Homan, night city editor; William H. Bodwell, Albany correspondent—all formerly Tribune printers; also, Amos B. Stillman, telegraph editor, who had been a printer on the Hartford Courant. The idea prevailed in those days that printers were familiar with the way to prepare copy, with condensation, and were wise to the value of news.

My first glimpse of Horace Greeley was on the afternoon of his nomination for the presidency. Amos Cummings, passing me, said, "Come along. I'm going over to see how Horace takes it. I may need you," and presently he added, "You write a description of Greeley's office and his personal appearance and I'll do the rest."

Cummings was an old Tribune man with Greeley and Dana. He went to the Tribune as a compositor and attracted Greeley's attention while the great editor was fussing around the composing room, as he delighted to do. Greeley was a printer by trade, and he had set type in several cities, as well as in New York, before he started the Tribune. He never could keep away from the printers. He believed that they made good editors, and often he put them on the editorial staff. Cummings was thus promoted, and ere long he was the city editor of the paper. He was one of the best news editors, as well as writers of big news events, that journalism has ever known. But he had a testy temper and a troublesome tongue, and he was asked to quit the Tribune because of his insolence and profanity. Mr. Dana promptly made him managing editor of the Sun and afterward editor of the Evening Sun. He served in Congress also.

Horace Greeley in His Sanctum

WE CLIMBED the Tribune stairway and found Greeley in great glee. He was much pleased over his nomination and couldn't conceal it. He had been writing an editorial article when the news came, and the unfinished sheets were yet on the desk. The editorial room was on the second floor of the old edifice, and Greeley's desk was close to the window, and Greeley could be seen from the street as he sat at his work. People used to stand in the street and watch him, for he was one of the sights of the town. A great crowd was gathering as we went in.

The room was quite plainly fitted. It contained three chairs, two desks and a high stool and an old sofa. An immense map of the world covered one wall, and on another were maps of New York and New Jersey. Also a framed print representing the landing of the Pilgrims and a plate of President Lincoln's Emancipation Proclamation were hanging there. The editor's desk was littered with newspaper clippings and manuscripts. Some of them looked as though they had been there since the time when Henry Clay ran for President. A box of common red wafers was half upset on one side and an old-fashioned sand box used for blotting was standing guard over the accident. Postage stamps, envelopes, letter paper and pamphlets seemed ready to fall out of the drawers. The entire desk was a mass of confusion. Two brass-bound copies of the Tribune Almanac and a pair of disreputable shears were chained to it. Greeley's hat lay on the desk.

Greeley was neatly dressed in black. His necktie was smoothly placed and his pantaloons were drawn over his bootlegs. The legend that he habitually went around with one trouser leg thrust in his boot top is a fable. He used to wear a white topcoat and a wide-brimmed soft hat that were a bit conspicuous, but in general he displayed few eccentricities of dress.

Cummings led him into conversation and a half score of visitors chimed in. Greeley did not say that he expected to be elected, but it was plain that he thought he would be. He was anxious to know what the convention platform was to advocate, saying that he could not accept the nomination if the platform were to declare for free trade. To a colored clergyman who shook hands with him he said, "The colored people know me pretty well by this time. My record never has been hidden."

They began firing a salute in City Hall Park just then, and Greeley went to the window and bowed to the crowds that were shouting and gesticulating. He rubbed his hands and smiled expansively. He then returned to his visitors and entered into an extensive and bitter criticism of the Grant Administration.

The nomination of Greeley for the presidency made the Sun's staff smile. General Grant was the opposing candidate, and the Sun had been attacking him ferociously. Dana and Greeley had not attacked each other in print, but everybody knew that they were not on good terms. Somebody laughingly asked Dana which candidate he would support, and he replied with a twinkle of eye that he thought we were likely to have a little fun.

Greeley had arranged to deliver some lectures on temperance, and he announced that his nomination was to make no difference; he would deliver them all the same. Dana thought it a mirthful situation for a Democratic candidate to be making assaults on the liquor habit, and he directed that Greeley's temperance talks be reported in the Sun. I wrote several of the reports.

At the conclusion of one lecture Greeley beckoned to me, and as I approached he said, "Are you the young man who has been following me around and putting my lectures in the Sun?"

I was obliged to say that I was.

"Who sent you?" asked Greeley. "Was it Amos Cummings or old Dana?"

"It was the city editor, sir," was the reply.

"Well, it must be old Dana told him to," commented Greeley as he turned away.

Greeley's lectures were interesting. They were delivered with great earnestness and much feeling. He was far from possessing a spark of oratory, but he pleaded with his hearers to avoid strong drink as a father might plead with a wayward son to cease disgracing himself. He began his paragraphs in quiet tone, and as he became interested his words came faster and his voice raised into a shrill falsetto, almost a squeak, and he was not so clearly understood. Becoming yet more interested, he began to gesture, and as he raised his arms he extended or separated his fingers like a fan, at the same time throwing his head and shoulders violently forward and backward. Then of a sudden, as though it had come to him that he was getting excited, he relapsed into ordinary calm, only to repeat the same thing as he again warmed to the subject.

Great Men of the Sixties

I RECALL his telling that the word "intoxication" came from the Greek word that meant "poison"; that when the Greeks saw one of their number reeling down the street they cried, "Toxicon"—"Poison, poison! He is poisoned"—and Greeley continued shouting the word "poison" until it became a shrill word of admonition to his hearers. He told them that he had taken the pledge in the year 1824, when he was thirteen years old; also how in those days the good clergymen used to make twenty calls a day and take a drink at each stopping place; how the entire community got drunk when one pastor was installed, and how everybody chided a poverty-stricken fellow who did not furnish drinks at his child's funeral. At this his listeners laughed, and Greeley told them in all seriousness that it was no laughing matter.

When I went to the Sun, in the early days of 1872, the entire staff was talking about Dana, and so was all newspaperdom, for that matter, and all continued to talk about him until the day of his death, twenty-five years afterward. It was my good fortune to be there during those twenty-five years, eighteen of which I was his managing editor.

Dana was the Sun and the Sun was Dana, and it is quite impossible to say much about the old Sun without saying more about Dana. He was one of that group of journalists who are constantly referred to as the greatest editors of our newspaper history—Greeley, Raymond, Brooks, Bryant, Bowles, Medill, Watterson. It is easy to maintain that he was the ablest of them. The others were great editorial writers. They wrote under the inspiration of the events of the Civil War, when the country was aflame with excitement, when party politics and partisan prejudice were uppermost. They were the champions of their cause, champions of a people whose very existence was threatened.

Present-day readers have little conception of how the war moved and agitated every inhabitant. The editors

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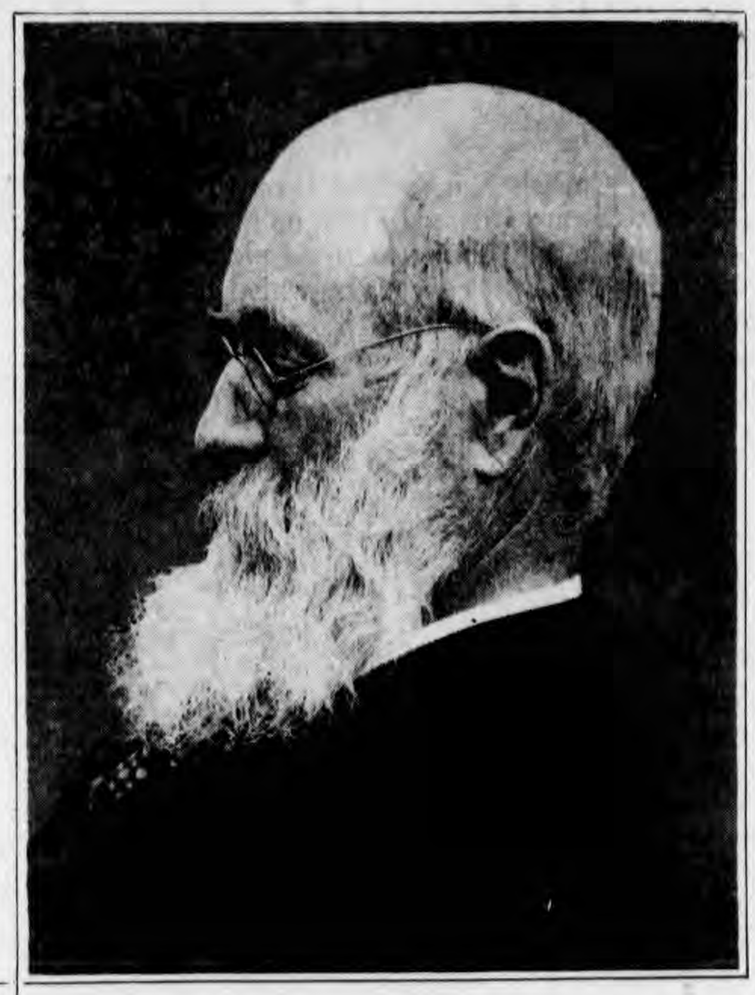

Charles A. Dana

THE SUN

NUMBER 1.] NEW YORK, TUESDAY, SEPTEMBER 3, 1833. [PRICE ONE PENNY.

PUBLISHED DAILY,

AN IRISH CAPTAIN.

PHOTO. FROM UNDERWOOD & UNDERWOOD, NEW YORK CITY

Horace Greeley

Long Life All the Way 'Round

EVERY inch of Ivory Garters is long-life elastic. They fit any shape leg without binding. And the harder your sock pulls, the better a light, airy pair of Ivories hold. The Ivory clasps fit easily and quickly. There is no metal to corrode and eat the fabric—no pads.

Ivories never leave a mark on your shin, because they can be worn loose without slipping. They will last almost indefinitely. You can wash them in cold water.

Compare the scientific construction of Ivory Garters. Light weight; no metal; no pads; elastic all the way 'round; no fixed angle—fit any leg or sock; washable; long life—these are the big reasons why Ivory Garters make you happy below the knees. And this construction is patented—Ivories cannot be copied. Get this wonderful garter comfort today. Your legs will surely be grateful. Ask for "Ivory Garters."

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SINGLE GRIPS 35c and up

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Ivory Garter
REGISTERED U.S. & FOREIGN

REMINISCENCES OF CHARLES A. DANA AND THE OLD NEW YORK SUN

(Continued from Page 9)

had their cause just, and what they wrote had its great influence and begot unstinted gratitude. That is one reason why the editors became so famous.

Greeley was a great leader and a great writer, but in the years of his greatness he wrote of little else than politics. Raymond was a politician by interest and by practice, and his writing was almost entirely on political topics. The same may be said of the others. A careful examination of their newspapers discloses no extraordinary merit outside their individual political writings. Bennett was an exception in that his news columns ran wild with scandalous personalities. He made great reputation for the Herald by using the Atlantic cable at its opening for sending European news. As a writer of influential editorial articles he was not famous.

But Dana was far better equipped for editorial efficiency than any of them. He was vastly better informed. He was master of many languages, conversing in five or six and reading as many more. It is related of him that while a boy in Buffalo he became interested in the language of the Six Nations Indians, and that twenty years afterward in the siege of Vicksburg he met Capt. Ely S. Parker, a Seneca Indian who was assisting General Rawlings, and Dana astonished the staff by talking to Parker in the Indian dialect. And it may be added that Dana's last two trips abroad were to Russia to perfect himself in the Russian language. Not less interested was he in music, in art, in philosophy, in science, in the study of religions, in every development of human progress. His collection of Chinese porcelains was the admiration of those versed in Chinese ceramic art, and he was an authority on the subject. On his forty-acre Dosoris Island at Glen Cove he carried arboriculture to a climax of perfection, and he knew by name and by sight almost every tree and shrub and flower that grows in America. He had half a dozen reporters sifting the city libraries one afternoon to get the correct spelling of the name of a perennial plant. His memory was exceptionally fine. Few men have lived who knew more facts. The compiling of Dana's The Household Book of Poetry involved familiarity with the poetry of all time.

"Make the Sun Interesting"

He was a man of scholarly attainment, of inborn refinement, of supreme ability as an editor to transfer his great knowledge to every column of his newspaper. He had the great advantage of familiarity with every part of newspaper making, having been reporter, general writer, city editor and managing editor of the Tribune. He had edited the Tribune for months at a time in Greeley's absences or while Greeley was absorbed in his specialties. As managing editor he had to supervise every column of the edition, for it is the managing editor's duty to obtain the news and other reading matter and oversee all departments except the writing of editorial articles—the editor in chief looks out for these. The managing editor is the executive who carries out the policy of the editor in chief or the owners.

Dana was not less able than his contemporaries as a political writer. He was responsible for much of the Tribune's aggressive urgency in pushing the war, and always to the end of his brilliant career were politics and topics of national importance of foremost consideration in his newspaper discussions. In all other newspaper activities he excelled them for the reason that he was vastly better informed and had the instinct and genius for imparting his information. Few, indeed, were the topics of public interest that escaped his attention or the attention of his readers.

Greeley's information was of the more rugged sort; was of a contemporaneous nature. He had little schooling in schoolhouses. When a mere boy he began as printer's apprentice, and he continued as a typesetter in various cities for twelve years or so before he became an editor in New York. But he had inordinate greed for reading, and he devoured every book on which he could put hand, and in this way he educated himself. To him is attributed the saying that "A printer's case is a better educator than high school or college," also that he had rather have a printer than a college graduate to help him edit. I cannot learn that these remarks were ever verified as his; but it is quite true that he took many printers on his editorial staff. Being a printer himself, it is likely enough that by some false perspective he mistook the influence of his own industry and his reading for the influence of the printing office. American history does not furnish a more striking example of self-education, of rise from obscurity to greatness and influence and the unbounded respect of his fellow men.

What were Mr. Dana's ideals of newspaper excellence? What kind of newspaper did he want to make?

He believed in the newspaper as a great educator, greater as an educator of the masses than the pulpit or the lecture room, greater than any other educational factor. He believed the newspaper is read by children and youth as well as adults, and that its influence should be wholesome and safeguarded; that its fundamental purpose should be the spread of useful information. To him the interests of the nation were of foremost consideration, for he was a patriotic American. He took the part of oppressed peoples, was the friend of Kossuth, Mazzini, Garibaldi and José Marti. He assailed public corruption. He championed political independence and liberty. His sympathies were with the people. He favored free speech. He was independent in politics. These were some of his principles. There were many others.

On this solid foundation Dana reared the structure; but the embellishments were what attracted attention.

"Make the Sun interesting," was the reiterated cry. "The people will not read dull, prosy, porous stuff—hoot it out of the place."

He attracted brilliant writers. They admired his genius, his confidence in his own conclusions, and they felt the inspiration of his great leadership. He mingled with the staff, encouraged, suggested, praised and criticized with kindly purpose. Everybody had confidence in his supreme newspaper ability and judgment, and everybody rejoiced in his comment. His praise was sweet, his criticism welcome, because so wise and just; to be criticized by him was to be instructed. The staff adored the chief and sought above all to please him. His criticism was frequent, but rarely harsh. Once when the managing editor had made a serious error of judgment in printing a bit of gossip the chief said casually: "I think I would have killed that paragraph if I had been running the paper last night."

The Great Man's Praise

The Sun was running a column of chatter called Interesting Gossip of the Day. Dana clipped the heading, and pasting it on a scrap of paper wrote underneath: "This title is no good. It is too commonplace. There is no poetry in it. A blockhead might invent it. Let us have another—What We are All Talking About. C. A. D."

He was much disturbed one morning over the report of a prize fight in Hoboken between third-rate pugilists.

"It is a miserable account of a bully good fight," he said. "Don't send a boy to do a man's work."

He took personal interest in the youngsters of promise. Repeatedly he sought out or summoned a reporter to praise a bit of writing. To one he said, "I wish I could write as well as you have written this."

My own first interview with him gave me great pride and encouragement.

The city editor had said, "Mr. Dana wants to see you; go right into his room." I had been with the Sun a short time only.

"I understand you wrote this," Mr. Dana said, handing a slip cut from that day's edition. "It is very nicely written, very nicely expressed. I congratulate you and I thank you for writing it for my newspaper," and he resumed attention to his desk.

It was a report of a breach-of-promise case in which a young man had been quite affectionate, although he had not in words actually popped the question. But the judge had charged that "the glance of the eye, the modulation of the voice, the caressing touch of the hand were in themselves overtures that the young woman might reasonably accept as proposals of marriage."

Dana's office was a small room on the third floor of the old Sun building in the Nassau and Frankfort Street corner, looking out on City Hall Square. His desk was in the middle of the room, and its chief attraction was a small revolving bookrack filled with precious reference titles. In the corner was a small round table at which he preferred to work because the light was better. He had harmed his eyes while a student and always afterward had to favor them. This was his only physical defect. He knew not an hour of illness until just before his death.

It was possible to see Dana from the street sitting at the little table; and in the next building, in plainer sight, the same spectator might see Greeley. Dana sat with erect pose, but either Greeley's desk was very high or his chair was very low, for his chin was down close to the desk top as he wrote. Had there been rubberneck wagons in those days they surely would have made these great editors a feature.

Three of the editorial writers occupied a little room adjoining; but the door between, almost always open, made it like one room. It was easy for Dana to talk to these assistants while at his desk. The other door led into the library.

The Editorial Page

One of these assistants in the old days was Mr. Edward Page Mitchell, whose literary accomplishments had attracted Dana's attention in 1875 while Mitchell was a young writer for a Lewiston, Maine, newspaper. Mitchell caught the full spirit of Dana's journalistic spirit and ambition, and the two became intimate coworkers. For twenty-seven years he wrote articles that were attributed to Dana, and repeatedly he was in editorial charge of the Sun in Dana's absence. Dana used to say that Mitchell was the best editorial writer in the business. All newspaperdom recognizes his great ability. He has been editor in chief of the paper since the retirement of Mr. Paul Dana in 1903.

Dana was methodical in his work. He began at nearly the same hour every forenoon and ended in the later afternoon, with few minutes of variation month after month. He supervised everything that went into the editorial page, read almost all of the editorial articles in manuscript and revised all with careful attention in proof sheet. He abhorred editorial haste, encouraged to deliberation and painstaking revision. I have known him to revise one of his own articles every day for a week, and then express dissatisfaction with it. He thought it unnecessary to have instant editorial comment on an important event; sought rather to reflect before uttering a conclusion. He preferred that the editorial page should not be profaned with news articles; preferred that it be given to discussion, to literary articles, to good thought from other publications and embellished with all sorts of odd, queer, strange things that blew in from anywhere.

The unsatisfactory condition of his vision led Dana to avoid night work. He did not go to the office in the evening. He directed that he be not disturbed by messages from the office. Apparently he had no thought of to-morrow's edition after he quit the office. Whoever was in charge had to take full responsibility.

One night a telegram came from Dana which read, "In Butler article please change 'saw mill' to 'law mill.'"

He had tucked a revised proof sheet in his pocket and along toward bedtime had asked one of his grandchildren to read it to him, and the error had been disclosed.

But his evenings were not spent in idleness. His activities were constant, with barely a wasted minute night or day. The theater, the opera and the concert hall were greatly enjoyed in his earlier days, but latterly the home had greater attractions. His four children and half a score of grandchildren found great delight in listening to his elucidations as they read to him. His wisdom of comment and explanation often

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exceeded the wisdom of the author, and had superior educational value. The benefits of the old-fashioned family-circle way of instruction never found finer verification than in this household. The leader was full of fun and frolic between his serious moments.

The Dana town house was made attractive to literary men and women, musicians and artists.

For many years a class gathered there for the serious study of something worth learning. One winter was given to a survey of Iceland and its language, another to a critical consideration of Dante, and again some masterpiece of literature was the topic.

Though he rarely sipped more than a few drops from his glass, Dana became greatly interested in wines, and he delighted to talk about them. The guests at a certain one of his dinner parties cannot recall without pleasure his discourse on sherry and Madeira, and how he ordered back to the table the decanters of both wines and had his friends taste first of one and then of the other as he explained their difference. He told how their excellence was affected by the degree of sunshine, moisture and temperature absorbed by the grape in its growing, as well as by artful treatment after compression.

The summer home was more enjoyed by him, perhaps, than the city house. The spacious old-fashioned dwelling on Dosoris Island in the Long Island Sound was surrounded by forty acres of garden in which was cultivated every manner of tree and shrub and flower and plant and fruit from every part of the world that could be made to grow there. There was a learned gardener, and the two trudged by the hour from one part of the place to the other, for they loved every growing thing. Also there was a mushroom cellar. It was a pleasure, indeed, to have his friends there, and an added delight to drive them himself behind his fine span, not to the near-by railroad station, but through shady lanes and beside fragrant meadows to Garden City, twelve miles away. And always the guest took with him a basket of priceless fruit and flowers.

Dana's Sun counted not the financial cost of its sayings or policies. It deliberately persisted in policies toward public men and parties and principles when its editor and everyone else knew that thousands of readers must be lost to it in consequence.

It attacked President Grant when Grant was the idol of the nation, the most popular and best loved man in America from having led our armies to victory and triumphantly ended the war; and it continued the attacks throughout the years of Grant's Administration with a bitterness that called forth widespread public resentment and that estranged permanently many of the editor's personal friends.

How to Lose Readers

To one associate of years' standing who remonstrated Dana replied, "Having taken my course conscientiously, I shall follow it to the end and shall be content with your judgment six years from now."

Dana did not criticize General Grant's military record, but he unceasingly attacked his administration of public affairs while President.

Again, with a ferocity of attack almost without parallel in public print, the Sun attacked Henry Ward Beecher when Beecher was beloved by the nation for his magnificent service to the Union cause and when his popularity as a clergyman and a man of letters was at its height. It is difficult for present-day readers to appreciate how strongly the events of the war had moved the people and with what esteem and affection and loyalty they reverenced the champions of the Union cause. Following every savage editorial article against Beecher came a drop in the Sun's circulation of several thousand—sometimes five or six thousand—yet the attacks were continued with increased vigor.

Likewise it is difficult for present-day readers to appreciate the public excitement that attended the Beecher-Tilton scandal. Whether the great Plymouth Church pastor was guilty or not guilty was discussed for months before the trial began, and the trial itself dragged for nearly six months. Everybody took sides. It was a common sight in Brooklyn to see old-time friends and neighbors shaking fists in each other's faces on street corners and shouting denunciations. Feeling ran so intense that it became a religious contention, Beecher's friends charging that his opponents were the enemies of religion and urging church people to rally to his defense.

Dana was convinced of Beecher's guilt. He believed that public opinion and the public press should rebuke the Plymouth pastor in severest expression. His own rebukes were so severe that those who sided with Beecher quit reading the Sun, but that made no difference to the editor.

Well do I remember that one afternoon in the campaign of 1884 he came alongside the managing editor's desk with a cheery "And what is going on to-day?" and the answer was, "Everybody seems to be excited because the Times has bolted Blaine and is going to support Grover Cleveland."

"Yes," was Dana's reply, "and it is going to cost them half their readers. If you attack a man's politics or his religion you make that man your enemy and he will cease to read your newspaper. The Times has been always a Republican newspaper, and now it refuses to support the Republican candidate for the presidency. It surely will lose. I have noticed it many times. In 1868 the World bolted the Democratic nominee and it lost half of its Democratic readers. In 1872 the Tribune and the Cincinnati Commercial and the Chicago Tribune, all Republican newspapers, bolted General Grant's second candidacy and came out for Horace Greeley, the Liberal-Democratic candidate. They lost half their readers. Watch! You will see the Times' circulation take a tumble."

Mr. Dana's Fondness for Poetry

Dana's prediction was correct, for the Times lost heavily. But mark what happened! Three weeks afterward, when Cleveland was nominated against Blaine, Dana did that same thing. He bolted the Sun, which had been Democratic, and refused to support Cleveland. Dana's attention was called to his remarks about the Times, and he laughingly replied, "Oh, yes, we will lose a lot of circulation; but we will get a lot of it back in good time if we make the paper interesting."

The Sun's circulation just then was 158,000. It declined during the campaign to 78,000. That word "interesting" expressed Dana's notion of supreme newspaper excellence. His other key word was the word "important." If an article was interesting or important objection to it vanished.

The same disregard of business considerations was attested in the campaign in which General Hancock ran against Garfield in 1880. This time there was not severity of attack of the candidate; but a snickering contempt of "Hancock the Superb" was expressed, a mocking comment on his letter of acceptance, which was described as "Broad and comprehensive as the continent, as elastic as India rubber and as sweet as honey." And then came the conclusion—"General Hancock is a good man and he weighs 250 pounds." The Sun's circulation was not seriously reduced by this, but its growth was retarded for some time.

The old Sun was strikingly original. It was a leader, not a laggard. It invented things now featured in half our newspapers. It printed the pioneer woman's page. It was the first to make a great spread of baseball games. It was first to develop the sporting page as such. It gave the first Sunday page devoted to art, and the first hunting-and-fishing page. It invented the method of collecting election returns now in general use. The other sheets scattered verse all over their editions. Mr. Dana compiled a column under the title Poems Worth Reading, making the selections himself. His joy in good verse was pleasant to behold. He used to say that poetry stimulated the intellect, had a soothing and refining influence, gave great impulse to thought, tickled the intellectuals in different manner than did prose, gave the mind diversion. But curiously, though he was liberal to excess in paying for prose, he put a ridiculously low price on the products of the poets, and he kept the managing editor in constant contention with them over compensation. Somehow he clung to the Tribune rate of 1850, one dollar a verse for the first five verses and fifty cents apiece for all that followed—and he was not to be moved from it.

Mr. Dana appreciated good newspaper work. He possessed a kindly spirit also. Likewise he seemed to care not so much who wrote the good matter so long as the Sun got it. Along about 1885 an especially bright young man was writing for the editorial page at space rates—that is, he was paid so much a column for what was printed. It was discovered that he was cutting from the files and was pasting up as vouchers not only his own matter but the articles of other men. Mr. Dana's attention was called to the facts.

"He is a fine writer, is he not?" asked the chief.

"Yes," was the reply. "But he is a scamp, he is dishonest, he has swindled us out of forty or fifty dollars a week for nobody knows how long. He should be sent to the Tombs, or at least he should be discharged."

The chief rose from his chair, turned and looked out on Printing House Square, pushed his hands into his trousers pockets, whistled softly for a few seconds and then said, "Mr. Lord, it takes all kinds of men to make a newspaper staff. Suppose you tell him not to do so any more."

This suggestion of Dana's was something of a lesson to his young managing editor. Sure enough, the Sun's staff was made up of all sorts of people; and what mattered their eccentricities or their habits, or indeed their wanderings from wisdom's straight-and-narrow path, so long as they did good work? It matters not on a large city newspaper, where all the articles are carefully revised by copy readers or editorial-staff men, whether a writer is a saint or a sinner; but in small newspapers, where there is little if any revision, where the writer's articles are printed just as he writes them, it behooves the management to employ writers who are to be trusted. Experience has attested that men of eccentricity or prejudice or rum drinking or bad habits are dangerous contributors, for the newspaper does not rise above its editor. If he stands for honesty his newspaper will be honest. If he stands for integrity his newspaper will be on a lofty plane. If he be ill-minded or ignorant or careless of morality his newspaper will be like himself—cheap and slippery and of distressing influence.

"It takes all sorts of men to make a newspaper staff!"

Barber-Shop Inspiration

There was that fine writer of editorial articles who had his desk in the next room to Mr. Dana's. He imagined that he could not write until after he had taken a drink of inspiring stuff; and having absorbed one drink he thought well of having another, and then a third. Then he conceived the notion that he should be shaved, so he went over to the barber shop in French's Hotel, next door, and was lathered and shaved with all ceremony. Returning to his desk, he addressed himself to preparing an article; but in about half an hour he was seized with a fresh desire to be shaved, and back to the shop he went, and again he was lathered and the razor was drawn over his face; he was doused with bay rum and scrubbed with hair tonic and sprayed with rose water. The barbers knew his habits—knew just what to do with him. With very great dignity he paid his account, tipped the barber and the boy who brushed his coat and hat and returned to the office, only to repeat the performance again within another hour. He was known to have been shaved five times in a single day, and between events he diluted his memory with another drink. He repeated this performance very many times each month, but so far as is known Mr. Dana never reproved him. His articles were bright and useful, but he died of the rum habit.

This notion that alcohol stimulates to more brilliant thought is very common among newspaper writers. It easily becomes a habit to start work with a drink. The habit prevailed to a far greater extent forty years ago than now. Indeed, what then passed almost without notice will not be tolerated in the newspaper offices of today.

And there was that dear boy, so long with the Sun, who wrote delicious articles but whose bewilderment in the ordinary affairs of man was distressing. The managing editor wanted a big article on Jay Gould's career, and he asked our friend to go to Gould's birthplace and write the chapter on the financier's early life. He started out in the early afternoon.

At midnight a telegram came from Albany reading, "Where is Jay Gould's birthplace?"

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Miami Herald
Sept. 11 '32

ND EVENING NEWS

Gossip, if Necessary, but Keep Young By Doing Things, Dr. Kellogg's Advice

Annual Meeting of Three-Quarters Century Club Hears from Its Founder and Capt. Frank Boult; Mr. Shuart Would Be Teacher Again.

"Start a bit of gossip if you have to, but keep busy," Dr. John Harvey Kellogg, president, told 250 members of the Three-Quarters Century club who were his guests at their annual meeting on the Sunshine Center lawn Wednesday afternoon.

Dr. Kellogg said that each member of the club, all of whom are at least 75 years of age and several in their nineties, had a job. "Your job is taking care of yourself and fighting off old father time." In advising them as to how to do this he said, "Don't worry. Think all the time how you can take care of the energy you have left."

While they must not undertake things that would tax their strength, Dr. Kellogg advised the members not to "sit down in a corner and let yourselves wither up. Keep your head up, keep busy. Spread joy."

Although the program yesterday did not begin until 2:30 there were more than 50 members of the club there shortly after 2. Many of them had pieces of smoked glass or developed photographic film with which they watched the sun's eclipse. After the program started the eclipse lost its interest as members in their '80s and '90s sang, played the violin and danced for the entertainment of the group.

Through Dr. Kellogg's invitation Capt. Frank Boult of London, England, addressed the group, congratulating them on the results they have obviously achieved and on the founder of the club, Dr. Kellogg, "whose name I think will go down through posterity as one of the greatest benefactors of mankind."

When he reached this country Captain Boult said he found a spirit of pessimism, but he proceeded to show how much more fortunate Americans are than Englishmen. The Americans may think they are heavily taxed, he said, but in England five shillings in the pound, or about one-quarter of a man's income, goes to income tax. The very wealthy man pays even more than that in a surtax.

"You are fortunate too that your drink bill is not so large as ours in the Old Country. In England they spend a little more than three dollars per week per family for strong drink. You can readily see the unwisdom of that." A further advantage in America is the fact [illegible] has the greatest free trade [illegible] the world in its own coun- continued. "We are all [illegible]ndent," he said, "and I [illegible]ghted to see the United [illegible]as [illegible]minished its intention [illegible]cipate in the next world [illegible]e."

J. Maveety, chairman of [illegible]nshine Circle of the Three-[illegible]ters Century club, presided at [illegible]esterday's program and called on Mrs. Viola Rector, secretary, to explain something of the club. Mrs. Rector regretted the death last winter of Charles H. Wheelock, who organized the club with Dr. Kellogg, and for 10 years had contributed generously of his time, energy and money to it. "Through the efforts of our president and the hearty cooperation of every member we have been able to go on through," she said. She announced that there were 1,017 names on the roster, and before the meeting closed Dr. Maveety announced the names of four more new members, the Misses Susan and Marian Reese, Mrs. W. L. Shuart and T. T. Thompson.

Dr. Kellogg presented large bouquets to Mrs. Mary Bird, 94, and John Robinson, 96, oldest woman and man present. Prof. E. E. Thresher, who will be 93 tomorrow, was next to the oldest man present. He walked to the meeting and contributed to the program, singing The Harvest in a voice which is still strong.

Mr. and Mrs. T. P. White, who were the club's bride and groom about two years ago, sang a duet, Keep Sweet; Mrs. W. H. Allen and Mrs. Mary Hills sang Silver Threads Among the Gold, and Charles Ranger sang Marching to Zion. "I am not an old man yet," Mr. Ranger said, "but I am getting up in years. I'm 87 now."

Worthy L. Shuart, Central high school teacher, who at the age of 80, was given an honorary M. A. degree by Battle Creek college this year, was called on. "If I had my life to live over I would be a school teacher," he said. Mr. Shuart began teaching 61 years ago.

At the close of the meeting refreshments of broth, sandwiches, grape juice and fruit were provided by Dr. Kellogg. Because of yesterday's meeting of the entire club the Sunshine Circle meeting will be omitted this week.

During the serving of refreshments Horace ronk, who had appeared on the regular program also, played some old-fashioned jig numbers on his violin and Mrs. Arminda Aldrich and Mrs. Mary Hoag danced. Both women are in their '80s and Mrs. Aldrich will be 90 on November 20.

The Chamber of Commerce mailed invitations to all members to attend the meeting and provided transportation for those who needed it.

HUMAN RACE I[illegible] DETERIORATING VERY RAPIDLY

Miami Metropolis
Jan. 10, 1923

Dr. John Kellogg Declare Insanity and Cancer In creases Are Alarming Simonds Praises Mos quito Campaign.

"The human race is going down hill very fast," was the startling statement made by Dr. John Harvey Kellogg, the man who built Battle Creek at the open meeting of the American Academy of Applied Dental Science held last night in the Central School auditorium. The building was crowded with people obviously glad to have an opportunity of hearing the greatest expert on diet in the country.

Dr. Kellogg has a big purpose in life and he is devoting his life to the job of "saving the human race." "I come to preach a new religion," said Dr. Kellogg, "that of being good to yourself."

Among the startling statistics compiled by the great scientific men of America, Dr. Kellogg said that in the last 50 years insanity had increased 300 per cent, and cancer 600 percent. He showed that if things kept up at this rate in 150 years the human race would all be imbeciles. At present the average intelligence in America is that of a 13-year-old child, he said.

"Man is an old-fashioned animal trying to live in a new-fashioned way" said Dr. Kellogg. "Eventually, scientists tell us, the human race will become extinct like thousands of forms of animal life have already become extinct, but by proper living, which means proper diet, we can postpone the catastrophe several thousand years.

Can Evolve New Race

"In six generations, Luther Burbank says, we can evolve a new human race. In schools, attention should be given to developing a splendid animal as well as a brilliant brain. Every child should be thoroughly examined before being allowed to attend school," said Dr. Kellogg.

"Besides the deaths from cancer and other chronic diseases, many people die of old age while they are young, because they live unbiologically. It is dangerous to live in houses, and it is a dirty habit to wear clothes."

Correct posture was another thing Dr. Kellogg stressed. Train the coming generations, he said, to cure the disease before it comes. "Disease is hard to catch, really," said Dr. Kellogg, "while we catch health with every breath of pure air we draw, from the sunlight and from the proper food."

Teach children to chew their food, give them dry food to stimulate the flow of digestive fluids, and give them some raw food for vitamines, are among Dr. Kellogg's rules for healthful living. In his talk Dr. Kellogg said that cane sugar, polished rice and white flour were actually poisonous to the race.

"Miami is doing a wonderful work in providing tomatoes and Florida oranges, which are the best in the world, to the country. You have a great opportunity to set an example by making Miami the healthiest city in the country, and to do that, every person must make himself healthy."

Dr. Kellogg is a vivid and forceful speaker whose apt illustration and delightful anecdotes added much to the enjoyment of his listeners.

E. G. Sewell, who introduced Dr. Kellogg, told something of his month at Battle Creek last summer, and of the great things Dr. Kellogg has done, not forgetting to mention that Miami has the healthiest climate in the country.

Simonds Praises Miami Campaign

The first speaker on the program last night was George Simonds, Jr., State Sanitary Engineer, who told of the advancement in modern sanitary science in the active period from 1875 to 1900 which was filled with interesting and important discoveries, among them Pasteur's discovery in 1877, which was the beginning of the germ theory of disease. In this period, the typhoid bacillus and how it was carried by flies was discovered, also the plasmodium of malaria, the tuberculosis plague and yellow fever bacillus, and how they were carried by flies and mosquitos. "This is a day of disease prevention," said Mr. Simonds, "not a cure."

Among the advances made have been the purification and sterilization of drinking water, prevention of soil pollution, and mosquito control.

Mr. Simonds said that Miami's anti-mosquito campaign which cost the city $12,000 actually saved Miami ten million dollars. He said that the story of the campaign had been echoed from one corner of the state to the other, and by reason of it, while every other city in the state had thousands of cases of dengue fever, Miami escaped the epidemic entirely. He highly commended the city government for its effective work.

Other numbers on the program last evening were [illegible] songs by Mrs. Lillian Griffioen, two readings by Margaret McDonald Lincoln, and three songs by the Miami Ad Club Quartet which were enthusiastically received.

(By Associated Press)

WASHINGTON, Jan. 10.—The house ways and means committee decided today that no bills affecting revenues would be reported at this session except those of a purely emergency nature or of direct assistance to the treasury in the administration of the fiscal affairs.

A Boy Who Knew Horace Greeley

By WILLIAM S. BAILEY

Illustrations by WILL CRAWFORD

He was sure to be the center of a group at Steve Steward's store, and there would be plenty said that would be worth hearing

JUST why it should have taken twenty-five years to put two and two together, when the equation connected my old friend the lumberman and Horace Greeley, I shall not attempt to explain. Yet it was only the other day it occurred to me that the lumberman was a boy of the near-by Chautauqua County village when Zaccheus Greeley lived on his hill farm two miles away over the Pennsylvania line, and my friend must therefore have seen the son, Horace, when the founder of The New York Tribune returned, as he often did, to the home which his parents years before had built in the primitive forest.

The answer to my question came quickly enough the next time I saw the old lumberman in my office door:

"How could I *help* knowing Horace Greeley? Didn't I win that lawsuit of his for him after he'd been fightin' it eleven years? And you didn't know I knew Horace Greeley!"

Well, I hadn't known it and admitted my ignorance with the humility I hoped would encourage an untold story of Horace Greeley among his Chautauqua County friends.

"It was a mighty long time ago, 'way back in the '60s, but I can see Horace Greeley yet, with his big white lambskin hat, which was so hot to wear he generally carried it in his hand, his bald head shinin' above his rim of hair. He had a sort of an odd way about him, but everybody in the village liked him, for he was always polite and good natured.

"Yes, sir, Horace Greeley was certainly a kind-hearted man. You never have known how kind-hearted that man was if I didn't tell you what he did for me. My father was down at Fortress Monroe after the war. He was one of the soldiers guarding Jefferson Davis. Well, my father got sick and when Mr. Greeley heard of it he went to Fortress Monroe to see him. And what's more he gave us money to bring him home. I guess you'll call that being kind-hearted!

"Oh, that lawsuit?

"Well, it was one of those old-time village rumpuses over a party line. It meant twenty-two acres to the other farmer if he won, and he and Mr. Greeley fought that suit for eleven years. They had a fine lawsuit while it lasted, but when it was over I guess it had cost both of 'em twice what the land was worth.

"I was only a boy, but I was old enough to handle an ax and had worked as axman for the village surveyor. Occasionally, while wandering through the woods, I had come across trees with Roman figgers that had been cut in the bark years before. I was just boy enough to chop out the figgers, and finally I had a bagful of the numbered blocks.

"Well, one day Mr. Greeley came to see me; said he wanted to look at those blocks he'd heard people tell about. Next he wanted to borrow them, and then, do you know, he wanted me to take the blocks over to Erie, where they were tryin' that lawsuit. You see, they couldn't fix that party line until they could tell where the old state line ran before it was shoved south two or three miles, when New York State gave Pennsylvania that little notch at the northwest corner so Pennsylvania could have a harbor on Lake Erie, and Horace Greeley and his lawyer had found that I had part of that old state line in my bag of blocks.

"Yes, sir, that's what them old Roman figgers were. And they got out their old surveyor's records that told 'em what kinds of trees the surveyors had cut those figgers in seventy or eighty years before when they surveyed the state line, and they matched 'em up by the kind of wood my blocks were, and they figgered their age by the bark that had grown into the figgers. So I testified about my numbered blocks and where I had chopped 'em out of the trees, and the judge he let the jury have 'em to look at, and those twenty-two acres are part of the Greeley farm to-day."

By this time the old lumberman was again the boy of the '60s, back in Clymer village, and seeing the editor "with the face of an angel and the walk of a clodhopper" as he saw him then, his stature grown to the heroic with the sixty years that were gone. For the boy had idealized Horace Greeley as a boy will idealize an older man from a different world who shows him friendship of a kind before unknown. And apparently Horace Greeley, in the long drive to Erie with the lad and during the time the boy was with him at the trial, had seen something out of the ordinary in this village youngster. The boy of course knew that Greeley was a man of fame in the world of which he dreamed—he knew the deference his elders of the village felt toward the editor—and the friendship *soon became the boy's great possession.*

"I suppose you never knew I was in business with Horace Greeley? Well, 'twasn't long after we won that lawsuit that Mr. Greeley gave me a third interest in workin' the sugar bush on his father's farm. There wasn't nobody around that part of the country had the ideas he did. Why, he'd sent and got a sap boiler from Louisiana—one of those long pans they used down there for makin' sugar out of sugar cane—and that put us ahead of all the other maple sugar makers, for in those days all they had were the old-fashioned iron kettles. With our big pan we made more maple sugar than anybody else, and made better sugar, too. Horace Greeley beat 'em all in bein' up to date, and he wanted you to have your full share, too.

"I got to reading The New York Tribune in those days to Zaccheus Greeley, Horace's father. Zaccheus Greeley was too old to be much of a hand at readin' himself, but he wanted to hear everything that Horace wrote in his paper.

"What's more, I read some of those editorials Horace wrote before he printed 'em. One day up at his father's house he gave me a sheet of paper to read. I guess it surprised him when he found I read his writin', for he said there was only one man in New York who could read what he wrote—he told me he couldn't read it himself.

"After that he'd have me read his writin' by the hour—he wanted to know how it sounded, I guess. It was

a sight to see him when he was writin' —you never saw any one who could write so fast, and I've heard him keep up a three-cornered argument and be writin' at the same time."

"One day Mr. Greeley told me he wanted to see me get on, and that was the way I got my start in lumbering; I went into the business with Horace Greeley. I was to cut all the cucumber trees in the woods on the Greeley farm and was to have half what we made, although he said he didn't know what I could do with the lumber. Well, I made those cucumber trees up into clapboarding and sold it all. All the houses around there was made of logs and people was just beginnin' to use clapboard siding. The Greeley home of that day wasn't any log house. It was the first clapboarded house around there, painted red with a white cornice.

"There was one big cucumber tree on the farm that was a whopper, and I thought I'd buy that outright after he'd said he'd take $5 for it. That tree made $140 worth of clapboardin' for me, and how he did laugh when I told him. Yes, sir, he said he wanted to see me get on and I reckon he was glad to have me show I could do it.

"Then again I worked for Mr. Greeley splitting out white ash oars of flatboat sweeps, some of 'em thirty feet long. There was plenty of the right timber in the woods in those days and the oars sold quick enough over at Lake Erie. And just as he did in the other things, Mr. Greeley gave me my full share.

"I suppose you didn't ever hear of Mr. Greeley's pumpkin pie flour, did you? On one of his visits to the old home he said he'd fix it so I could make some money. He told me the plan and then I started out and got everybody I could to raise pumpkins. The plan was to have the farmers cut the inside of the pumpkins into rings and dry 'em. Then we arranged with a grist mill to grind the dried pumpkin into flour to be sold in New York for makin' pumpkin pies.

"We certainly got a great crop of pumpkins that year, and when they had 'em all dried we had 'em ground into fifty-pound cloth sacks of pumpkin pie flour. I hauled those sacks to Barcelona Harbor on Lake Erie and sent 'em to New York over the Erie Canal. I tell you that pumpkin flour sold in New York when nothing else would, and pumpkin raising prospered in Clymer."

I knew that spiritualism, then at the beginning of its modern form, had interested Horace Greeley. Ten years before the period of which the old lumberman was talking Mr. Greeley had entertained the Fox sisters, who carried their spirit rappings to New York, in his home in the city, and with other famous men of that day had attended their seances. Furthermore, the Kiantone movement, that strange mixture of communism and spiritualism, had started, a few years before, what was to have been its wonder city of Harmonia at Spiritual Springs, a few miles from the old Greeley homestead. No farther away, Thomas Lake Harris, the spiritualist poet Mr. Greeley had heard preach in New York as a Unitarian, was at that very time in stern control of his followers, including Lawrence Oliphant and his aristocratic mother, at his Brocton community on the nearby shore of Lake Erie. So I asked my friend if Mr. Greeley ever talked of his spiritualistic investigations.

"I don't suppose you ever heard of Lucindy Colton, did you? Well, Lucindy lived up on Spirit Hill, near the Greeley farm, and she was quite a 'medium.' Why, she could do things in those trances of hers that no one ever heard of and nobody understood. There wasn't any road through the woods to her house, but the people used to come by short cuts. 'Twas only a mile from the Greeley farm and Horace used to go to the meetin's, but not so often as his brother Barnes, who was a convert. Yes, Mr. Greeley was interested a lot in Lucindy Colton's meetin's. He was kind of skeptical, but he said there might be something in it.

"But those spirits up on Spirit Hill used to make those people an awful lot of trouble. They'd follow 'em home through the woods after the meetin's, screechin' and howlin', and when the folks got to bed the spirits 'd stay 'round makin' trouble all night so nobody could sleep.

"He'd have me read his writin' by the hour—he wanted to know how it sounded, I guess"

"One day in particular they had an afternoon spiritualist meetin' out under the trees in the orchard, with everybody sittin' around a long table covered with blankets. The daylight didn't seem to make no difference to the spirits up on Spirit Hill, for there was plenty of rappin's that day. The more the spirits rapped the more het up the people got, and finally one woman started a kind of war dance around the table, tellin' 'em she was the spirit of some old Indian chief. Mr. Greeley was home that day and had come to the meetin', but I could see he didn't think much of their goin's on. Fact is, he told 'em as much himself, for I can remember yet the talk he gave those spiritualists out under the apple trees that summer afternoon, after the spirits got through with their racket."

According to this boyhood friend of Horace Greeley, Zaccheus Greeley and his sons, Horace and Barnes, owned between 300 and 400 acres of the hill country of northwestern Pennsylvania at the New York line. Horace was the family mainstay through his father's last years, and it was he who in largest measure maintained the old home as long as his father lived.

Like Horace, Barnes Greeley, who was named after a Calvinist deacon, must have been a "character," although having little in common with the knight errant of journalism. My historian admitted that Barnes "had no polish and he wasn't like Horace.

"Horace Greeley used to send books to the children on the farm, who were smart youngsters and liked to read, but the children never got the books—Barnes took the books and sold 'em."

None of the odd sketches my old friend drew of "the philosopher in the white coat" appealed to my interest in the strange personality of Horace Greeley as much as the picture of him as the village oracle of Clymer. How frequently Greeley came back to the old homestead none of his writings reveal. My local historian remembers him as returning "every month or two" during the last years of his father's life.

But, frequent or otherwise, as his visits may have been, these visits were occasions in the life of that day in Clymer Village and thereabouts. "Horace Greeley's home!" and as the word passed from farm to farm and from one four-corners to another, the little village in the valley, overlooked by its Spirit Hill across the Pennsylvania state line and the Chautauqua hills to the north, dropped its homely tasks for the day. For the editor of The Tribune was sure to be the center of a group at Steve Steward's store at Clymer, and there would be plenty said that would be worth hearing, because "Greeley liked an argument better'n anything else and there wasn't anything he couldn't talk about."

If the day was fair his hearers would gather from four or five townships and a session would be held under the village trees, antedating the "Chautauqua [illegible] yet inspired by that common spirit that a decade later called the throngs to listen to teachers on the shore of the lake but a few miles away. The theme might be the national problems following the Civil War, or it might be advanced methods in agriculture or cattle raising. Although Horace Greeley "warred not upon others' convictions," more than once the religious views of the day were brought into the forum; it seemed to make no difference to Mr. Greeley for "he could talk on anything" and "controversy was his perpetual panoply."

Nor was the occasion of the homecoming one to be neglected by the small-town politicians, who found matters of importance to be discussed with the editor of The Tribune. And so this "unmanageable politician" received these crafty workers in the public vineyards, who besought him for advice and guidance, and then went away honored sharers of his editorial secrets—in their own eyes and, they hoped, in the eyes of the villagers.

To-day there is nothing left to connect the life either of Horace Greeley or his father with the farm on the top of windswept Spirit Hill. The old home has been replaced by a house of more modern construction and all of the other old landmarks are gone. Nor in the near by village of Clymer are any to be found who sat with Horace Greeley around the stove in Steve Steward's store, or under the apple trees on Spirit Hill.

The Assumed Name

By ALBERT ACREMANT

Translated by William L. McPherson

LEONIDE PANTIN-RACOUX, of the Opera, had been married several days.

"I understand, my dear," he said to his wife, Arlette, "how delighted you are to have married so celebrated a man. If I were in your place it seems to me that I should be very much overcome with the honor."

"I am, my dear, very much overcome by it," the young wife replied.

"Unfortunately, glory has its inconveniences. It is my duty to warn you. I am well known, very well known, too well known. Thousands of auditors in the course of evenings, which will certainly remain among the most inspiring of their lives, have riotously applauded me. Millions of newspapers have vulgarized my picture, if I may put it that way. Very often I would prefer to be unrecognized by the crowd. But it is enough that I appear in the street to make people point at me."

"It is very flattering."

"But how tiresome! I am afraid of not being able to be alone with you enough during our honeymoon. What would you say if in every town delegations come to greet me?"

"I would say: 'It is magnificent.'"

"Yes, at first. Then you would become very tired of it."

"Do you think so?"

"Well, listen. At Bourges, where we make our first stop, I sang two months ago. It was a wonderful success, such as the town had not known in years."

"How beautiful that is!"

"No, how boresome it is! But how are we going to avoid all this?"

"Take an assumed name."

"Is it possible that you should suggest such a thing?"

"Yes, it is possible. I suggest it."

"The questions then arises: What pseudonym shall I take?"

"Dupont? Durand?"

"No, thank you. I should then have too many relatives."

"Bernard?"

"So be it!"

"Henri Bernard!"

"It is as commonplace a name as anybody could wish for."

Some days later M. Léonide Pantin-Racoux, of the Opera, entered the largest hotel in Bourges and inscribed the name of Henri Bernard on the register.

At first the young woman clerk, who was nearsighted, showed no astonishment. But on looking more sharply at the new guest, she seemed to be greatly surprised.

The artist, who had not failed to notice her sudden change of expression, was able to say presently to his wife:

"You see, I was recognized."

Continued on page fifteen

The World
EDITORIAL SECTION
NEW YORK, SUNDAY, DECEMBER 21, 1924.

Dr. John Harvey Kellogg, Famous Dietician, Warns the Human Race That Extinction Threatens It if It Does Not Mend Its Habits—Prescribes a Milk-Vegetable Diet as the Way of Salvation

DESTRUCTIVE TENDENCY OF MODERN LIFE.

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This pronouncement is the outcome of conversations between Dr. Kellogg and Albert Henry Wiggam, author of "The New Decalogue of Science" and "The Fruit of the Family Tree," the doctor having been aroused to restate with characteristic vigor his theories about life and living by the publication of an unauthorized interview.

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SOME time ago a Chicago advertising firm sent out a fake interview in which I was made to say that the average American has lost two and one-half inches in stature because he does not take time to chew his food. I knew nothing of the so-called interview until after it had been given to the press and was in wide circulation and clippings began to come to me from all parts of the country. I had had no interview with any one upon the subject and had never stated or written anything which would justify the statement.

But there is no doubt the American people are losing in stature. Davenport has shown a falling off in stature within the last fifty years of at least half an inch and Dr. Henry Fairfield Osborn states that "investigations made during the World War" led to the discovery "that our people on the average had lost two and a half inches in stature since the Civil War."

Some of this loss of stature may be due to immigration, but I believe with Dr. Sargent, physical director of Harvard University, that other causes are at work—causes which are producing not only loss of stature but general race deterioration. Dr. Sargent, for example, calls attention to the fact that the greatest loss is shown in those portions of the country where city dwellers are the most numerous, as in New England, for example, where two-thirds of the population are town dwellers.

Out-of-door life and the physical exercise associated with it promote bodily development—the growth of muscles and bones which determines the stature. McClellan, a famous English trainer, gives an account of a young recruit who took a new start in development and grew four inches after he was twenty years of age as a result of setting-up drills.

Modern Civilization Promotes Disease.

There is no doubt that the tendency of our modern civilization is to produce race deterioration both physical and mental. In the old European countries, especially in Southern Europe, this deterioration is more evident than in this country and has progressed so far that such eminent scientists as Major Leonard Darwin of London, son of Charles Darwin and the eminent leader of the English eugenics movement, Dr. Charles B. Davenport of the Carnegie Foundation, and numerous other men who have given special study to the subject have abandoned all hope of an endless future for the human race. Indeed, Major Darwin said at the late World's Eugenics Congress, "If our present civilization survives, and I fear it will not, it will have to be the United States that saves it."

There can be no doubt that we are going down hill. Insanity is increasing; crime is increasing. Diseases which result from degeneration, such as heart disease, arteriosclerosis, Bright's disease and cancer are steadily increasing. The draft examinations showed that more than half the young men of the country are physical milksops and mental mollycoddles and verified the prediction of Galton that the intelligence of the average man is only a shade above imbecility. If the average American at the present time is not a moron he is only a little above that degree of mental deficiency. Taken as a whole, modern civilization evidently promotes disease and degeneracy more than health and race improvement, and we are falling into a terrible slough of degeneracy, physical, mental and moral.

Danger of Race Extinction.

The problem is not a simple one. Many eminent scientists believe, as did the late Prof. Hyatt of Boston University, that "retrogression ending in extinction" always follows great race development. If this philosophy is true there is no chance to escape physical degeneration and race extinction. The race of men must become extinct as have already most of the higher vertebrate animals who were man's contemporaries in the cave-dwelling period. This is certainly a very pessimistic outlook.

I am glad to be able to take a more optimistic view. Those who see nothing but race extinction ahead evidently take it for granted that the entire human race is going to continue drifting downward as the civilized races are now doing, but I am convinced that this is an error. Man differs from all other races of animals in the superiority of his intelligence, by the exercise of which he may seek out the causes of race degeneracy and find means not only of escaping them but of setting in operation a counter movement upward. Through his intelligence man has subdued many of the great forces of Nature, tamed and harnessed them, and made them useful servants. Thus he is able to escape the usual operation of physical law, to defy gravitation, to soar in the heavens like a bird, to dodge the terrors of the thunderbolt, and to harness the lightning and make it pull trains and propel ships. Likewise, by an equally intimate study of the laws of eugenics and euthenics, and by whole-hearted effort to conform himself to the biologic laws which govern his being, man may escape the destructive influences which have exterminated other races of animals, and which with equal certainty will destroy man unless he intelligently and persistently combats the exterminating forces to the operation of which every living creature is exposed.

The Things That Blight.

Undoubtedly unbiologic habits are the chief factors in race deterioration. A boy born into the world with the capacity to become a giant may be dwarfed and weazened by wrong feeding. The blighting influence of syphilis, of alcohol, tobacco, and other drugs, gluttony, sensuality and other vices, cannot be questioned, and these destructive influences are multiplying. Our daily poison-dose, through drug habits, has steadily increased from year to year until now the average person living in the United States, including women and children as well as men, swallows daily nearly 800 grains of poison, alcohol, nicotine, caffeine and opium. This alone would be enough to produce profound symptons of degeneration, if no other causes were in operation.

Within the last fifty years there has been an enormous increase in the use of tobacco, particularly in the form of the cigaret, which was brought into this country from France at the time of the Centennial Exposition. The consumption of cigarets has steadily increased since that time until now we are consuming about 60,000,000,000 cigarets a year. That tobacco has a decided influence upon growth has been definitely proven. Tobacco produces a grave disturbance in nutrition, as indicated by loss of weight. Roger showed that a solution of nicotine, two parts to the thousand, stopped the growth of plants.

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Smoking has the same effect upon boys.

In 1906 a special committee of the House of Lords of the English Parliament, reported a drastic bill to prevent juvenile smoking. The committee called especial attention to the fact that while boys showed many evidences of deterioration, lessened height, and as Prof. McKeever informs us, were often observed to be "sallow, sore-eyed, puny, squeaky-voiced, sickly, short-winded and nervous," the same signs of deterioration were not noted among girls.

Seaver, who studied Yale students, found that non-smoking students increased in height and in chest girth one-fourth more than the smokers. The increase in chest capacity of the non-smokers was most notable, exceeding that of the smokers by 77 per cent.

A professor of physiology of Johns Hopkins University a few years ago made an experiment which clearly demonstrates the injurious effects of tobacco upon growth. He exposed rats for definite periods, daily, to the influence of tobacco smoke, which was described as having a degree of density about equal to that of the smoke-ladened air breathed by the participants in a "college smoker." Little effect was observed upon the rats of the first generation, but the second generation showed very pronounced retardation of growth. At the age of six weeks, the smoking rats had attained only about half the size of rats of the same age which had not inhaled tobacco smoke.

Sixty years ago smoking was nothing like as nearly universal as at the present time. An army officer who had command of a large force in the Civil War told me that he did not think more than 10 per cent. of the men of that time were habitual smokers. It is well known that at the close of the late war less than 10 per cent. of the soldiers were non-smokers. A large proportion of those who went into the army non-smokers came out cigaret addicts. In view of all the facts which have been presented, it seems not unfair to charge tobacco with being one of the causes of the loss of stature which has occurred since the Civil War, and it may be the largest factor.

Our Limitless Rations.

Two other factors are certainly worth considering: One is the deficiency of lime in the diet. Lime is an essential element for bone building. Every growing child needs at least twenty or thirty grains of lime, or a third to a half dram of lime daily for the construction of the skeleton, the framework of the body which determines the height. The average American breakfast is exceedingly deficient in lime. A diet consisting of white bread, meat and potatoes contains almost no lime at all. A full day's ration made up of such foodstuffs will furnish less than one-fourth of the amount of lime daily required by a growing boy or girl. About the only widely used foods which are rich in lime are oatmeal and milk. Milk contains lime in abundance; oatmeal is fairly rich in lime. But, unfortunately, oatmeal, which was formerly in much more general use than now, has been largely replaced by breakfast foods, often denatured products which are almost wholly lacking in lime and other food salts which are essential for the growth of the body. Coffee, butter, sugar, meat, fruits, and of course pastry, sweet cakes and desserts are all deficient in lime. Greens, such as spinach, dandelion, kale, beet tops and turnip tops are rich in lime, but these excellent foodstuffs are unfortunately little used. **A larger use of greens and the addition of a pint of milk a day to the average dietary would without doubt result in a marked improvement in American physique.**

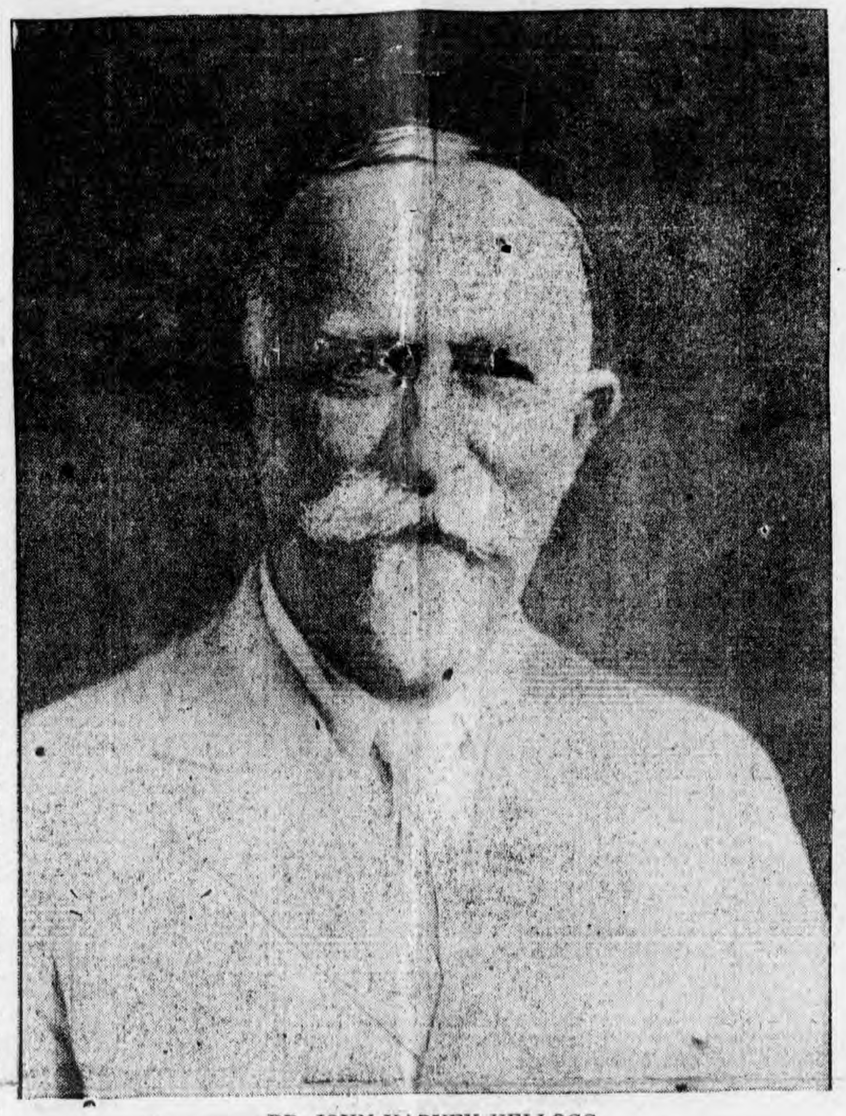
This very important change in the American diet can be made at no expense; indeed, such a change would lower the cost of living. Greens are readily available at practically no cost during the summer season. Many garden weeds, such as purslane, curly leaved dock and pigweed or lamb's quarters are excellent greens, while kale, cabbage and cauliflower supply an abundance of this bone-building element. The additional pint of milk would cost practically nothing, for we are throwing away or feeding to pigs, which is almost the same thing, enough skimmed milk every year to supply a pint a day to every man, woman and child in the country. As a matter of fact, nearly half of all the milk the country produces goes into the feeding trough or down the sewer, a yearly waste about equivalent to seventy-six pounds of beef per capita. In fact, if this skimmed milk which is now thrown away were used as human food, it would insure an ample supply of protein and such an abundant supply of lime for bone-building as would not only give our boys and girls stronger bodies but also better teeth.

Are We Becoming Toothless?

We are rapidly becoming a toothless nation largely because the average diet is lacking in the material needed for the construction of teeth and bones.

The economic advantage of saving the skimmed milk which is now wasted is really startling. If the pint of milk per capita equal to 100,000,000 pints a day in the United States, now thrown away were eaten, meat consumption would necessarily be cut down and might, in fact, be eliminated altogether to the immense benefit in my judgement of the health and physique of the American people.

The annual per capita cost of meat, according to the United States Bureau of Statistics, is $80 or more than $9,000,000,000. The elimination of this item of expense would pay our great war debt in less than three years and the whole population would be better off.



DR. JOHN HARVEY KELLOGG.

That such a change of diet would be not only safe but desirable is clearly shown by the replies made by the leading physiologists of the United States to a questionnaire sent out by the board of trustees of Beth Israel Hospital of New York, when they decided to adopt a meatless regimen, with the opening of their new great hospital, finest institution of the sort in the world.

Said Dr. Chittenden of Yale University on this occasion:

"With vegetables of all kinds, and milk, bread and butter, you have at your command all the necessary resources for a nutritious diet."

Said Dr. McCollum of Johns Hopkins University:

"I have not the slightest hesitation in saying that a vegetarian diet, supplemented with fairly liberal amounts of milk, is the most satisfactory type of diet that men can take."

Said Dr. Mendel of Yale University:

"I have given some thought to the advisability of introducing a meatless dietary into your hospital regime, and have reached the conclusion that there will be no objection to this upon physiologic grounds."

Another factor which no doubt has had some influence in lessening the stature of the American people is a deficiency of vitamins, the subtle element which is essential for the growth of both animals and plants. Vitamins are produced only by plants and are found only in vary small quantities in those parts of animals which are usually eaten. These essential vitamins are, however, found in abundance in the green parts of plants and fresh vegetables. A diet which supplies an abundance of lime, iron and other salts is almost certain to contain likewise a sufficient amount of vitamins.

Heavy Demand for Sweets.

It is quite possible there may also be a causative relation between the enormous consumption of cane sugar, largely in the form of candies and other sweets, and the shrinking of stature in America. The Americans consume more cane sugar than any other people in the world. The amount consumed has steadily increased during the last fifty years and now amounts to about 100 pounds per capita, or more than a quarter of a pound daily, or about one-fourth the total food supply. Cane sugar, either in its ordinary form in which it appears on the table or in the form of confectionery, is wholly lacking in lime, iron and vitamins, three food essentials. It is evident, then, that such an inordinate use of sweets in connection with a dietary already lacking in food salts and vitamins greatly accentuates the danger from this dietary deficiency.

Fruits, such as dates, figs and raisins are rich in lime and iron and ought to take the place to a large extent of the cane sugar and confectionery which is now used. Such a substitution of natural sweets for the concentrated artificial products which are now consumed in such inordinate quantity would undoubtedly result in a great improvement in the national physique.

Dr. Bunge of Switzerland and Dr. Sherman of Columbia University, New York, years ago called attention to the almost universal lime starvation which exists in civilized countries which might easily be corrected by the dietary reforms suggested, which would include the discarding of fine flour bread from our tables, the free use of coarse cereals, including oatmeal, which might well take the place of many of the popular breakfast foods now in use, and the freer use of roughage in various forms, including greens, fresh vegetables and the coarser cereal products. Such a change would not only give our boys and girls a better chance to grow into well developed men and women but would insure an enrichment of the blood by supplying a sufficient amount of the needed food iron.

MAN'S POWER TO IMPROVE THE RACE.

IT is within the power of man to improve desirable qualities and eliminate defects and undesirable characteristics, and so in time produce a race of human thoroughbreds which will be as much superior to the average existing man as is the thoroughbred horse to the average horse of the farm.

Blood Quality Below Par.

We are becoming an anemic nation by depending too largely upon foods which are deficient in iron as well as lime and vitamins. The tremendous significance of anemia is recognized when we recall the dictum of Holy Writ, "The blood is the life." Modern physiology has demonstrated the scientific accuracy of the ancient belief that the blood is the creative agency in the body which builds and energizes every cell and tissue. A man whose blood is only 50 per cent. of the normal is only half alive. A person whose blood is depreciated is an easy prey to disease. His vital resistance is lowered. His fighting power against germs is lessened so he is likely to be an easy prey to influenza, pneumonia or any other germ enemy he happens to encounter. **There is good ground for believing that the average American is 20 to 30 per cent. below par in the quality of his blood.** Rich red blood is necessary to vigorous individual life as well as to national life and is an essential foundation for mental as well as physical health. Some day we shall have new aristocracy, the basis of which will be clean red blood instead of the tainted blue blood aristocracy which has so long dominated certain phases of modern life.

Bichat's declaration that civilization "is nothing more than the environment which tends to destroy humankind" was perhaps too sweeping, but it is now generally admitted that the conditions of civilization are in general such as tend to race destruction rather than race betterment. **Really, the greatest problem before the world to-day is how to save the human race.**

Hope in Biologic Living.

The one hope is in biologic living; that is, in a straightforward and thoroughgoing regulation of our life habits in harmony with the known facts of human physiology. We compel our horses, cows, sheep, even our pigs and poodle dogs, to live physiologically, and as a result we have the fleetest horses that ever lived, cows that give more milk, chickens that lay more eggs, pigs that fatten faster, and sheep that produce more and better wool than our ancestors ever dreamed to be possible. All our domestic animals are improving and at really an amazing rate, but we ourselves are going down.

The time has certainly come when the human race should take itself in hand and mark out for itself a regime which will lead toward race improvement to replace our present reckless self-indulgent mode of life which is driving us down to race extinction.

If anything is accomplished in the direction of race betterment, it will have to be through education. The public school is the last great hope of the world, but there must be a change in our educational ideals. The average child, when he begins school, starts on a down-hill slide toward invalidism, and the sanitaria of the country are rapidly becoming asylums for college-maimed and crippled young men and women who, through the deficiencies of our educational system, have become, as said the immortal poet, "sicklied o'er with a pale cast of thought." Instead of being improved in body as well as in mind, the average college student is physically damaged by the conditions to which he is subjected during college life. A few colleges are giving some attention to gymnastics and other forms of exercise, but the consideration accorded to this feature of hygiene, even by the schools most advanced in this direction, is most inadequate. The average student's participation in school athletics is rooting for the gladiators representing his college in their fights with the giants of some rival college. He takes his exercise by proxy. The graduate from college should carry away his diploma with the proud bearing of a soldier instead of the "student's stoop," which indicates a flattened chest and cramped lungs and a strong bent toward a consumptive's grave.

Need of a New Living Code.

We need new ethical standards, a new conscience, a broader religion, a code of ethics which will place the canons of biological law alongside those of the Decalogue and make man's responsibility to the human race—to those who come after him—the ruling influence of his conduct.

We need a new religion, which will recognize the sanctity of human flesh and the nobility of our physical life—a new moral code which will recognize the rights of the generations unborn to inherit from the present generation, without impairment, the vital energy and stamina, aptitudes and fine acquisitions of every kind accumulated in the countless generations from which they have been received. No new gospel is needed. The teaching of Christ was so comprehensive and catholic as to fit the spiritual needs of all races, at all times. It is only necessary to extend the Golden Rule, as Mr. Wiggam has done, to fit the broader vision which modern research has opened to us. Doubtless, as he suggests, if the Great Teacher were on earth to-day, he would say, "A new commandment I give unto you—the biological golden rule. Do unto both the born and the unborn as you would that both the born and unborn do unto you."

The menace of race decay is a dark cloud hovering over the world; but, though the present outlook is dark, it is my confident belief that race hygiene, or eugenics, and personal hygiene, euthenics, applied with liberal intelligence, will save the race from the destruction which race degeneracy threatens. Other races of the animal kingdom are helpless to combat the influences which produce environment changes inimical to their existence; hence every one, sooner or later, must succumb to the destructive action of cosmic forces. The same fate must necessarily await the human race as a whole, unless man, through his intelligence, finds some way to avert the disaster. He can do this if he will. Unfortunately he has to a large extent neglected to recognize the necessity for preserving, so far as possible, the essential conditions of his primitive life. He has allowed himself to drift. He has formed habits by chance. Instead of laboring to preserve amid the conditions of civilized life the essentials of his primeval environment, he has done the opposite. He has allowed his fancy and his impulses to lead him into by and forbidden paths, and has undertaken to compel his body to adjust itself to impossible conditions; and the result is, instead of lessening, he has intensified, the evil effects of a bad environment.

Call for Correction of Habits.

The same forces which have destroyed other creatures, other genera and species, and which are preying upon man as a member of the animal kingdom, instead of being mitigated and neutralized by man's intelligence, have actually been increased and exaggerated by his perversions and vagaries. **Man has thus forced upon his body conditions which are so far removed from his biologic and physiologic requirements that, at the present time, he is actually accentuating by his daily habits of life the influence of those destructive forces which have wiped out thousands of species of animals.**

But we may change the situation by the intelligent application of eugenics and euthenics. By a careful study of our biologic needs, our physiologic requirements, we may reverse the process, and compel the forces which are dragging us down to lift us up, so that each generation may be superior to that which preceded it.

That there will some time be a new human race, a race far superior to the present, is believed by many scientists. It is within the power of man so to modify his environment and so to control the evolutionary forces which are working upon him as to eliminate the degenerative, destructive tendencies and to promote, encourage and intensify the forces making for race betterment, and thus to improve desirable qualities and eliminate defects and undesirable characteristics, and so in time produce a race of human thoroughbreds which will be as much superior to the average existing man as is the thoroughbred horse to the average horse of the farm.

Broad Education Essential.

The intelligence of the world should be set to work to multiply existing agencies and to create new agencies for the betterment of the race. A biologic survey should be made of every civilized community and of savage communities as well, for purposes of comparison. The laws of eugenics and euthenics should be taught in every school and preached from every pulpit. Every teacher, every leader of human thought, every publisher, all professions, all serious minded men and women, should join in making known to every human being in every corner of the globe the fact that **the human race is dying and co-operate in seeking to discover and apply the remedies necessary for salvation from this dismal fate.**

We must provide compensation for the departure from normal conditions of life which civilization necessarily involves. We need not return to savagery to be healthy, but we must see that the air we breathe is as clean as that which the savage breathes, that the food we eat is as wholesome and pure as the water we drink. We must encourage out-of-door living and sleeping. We must provide in every city out-of-door gymnasia with swimming pools for boys and girls. We must inculcate the principles of biologic living, and respect for the body, and appreciation of the value of physical fitness. We must give our pale skins more contact with the sun and air; we must keep the insides of our bodies as clean as the outside. We must cultivate clean blood. Society must establish laws and sanctions which will check the operation of heredity in the multiplication of the unfit. Eugenics and euthenics must become dominant matters of study and concern. Thus, and thus only, may we hope to check the mad rush of the race down the hill of decadence and slowly climb back and up toward the proud eminence where the race of man as the handiwork of God and the masterpiece of creation, by the aid of his unapproached intelligence and through implicit obedience to biologic laws, may defy the ravages of time and the perturbations of physical forces, and endure forever, indestructible and triumphant among the millions of animal forms now living and their predecessors buried in the crust of the earth.

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In 1906 a special committee of the House of Lords of the English Parliament, reported a drastic bill to prevent juvenile smoking. The committee called especial attention to the fact that while boys showed many evidences of deterioration, lessened height, and as Prof. McKeever informs us, were often observed to be "sallow, sore-eyed, puny, squeaky-voiced, sickly, short-winded and nervous," the same signs of deterioration were not noted among girls.

Seaver, who studied Yale students, found that non-smoking students increased in weight and in chest girth one-fourth more than the smokers. The increase in chest capacity of the non-smokers was most notable, exceeding that of the smokers by 77 per cent.

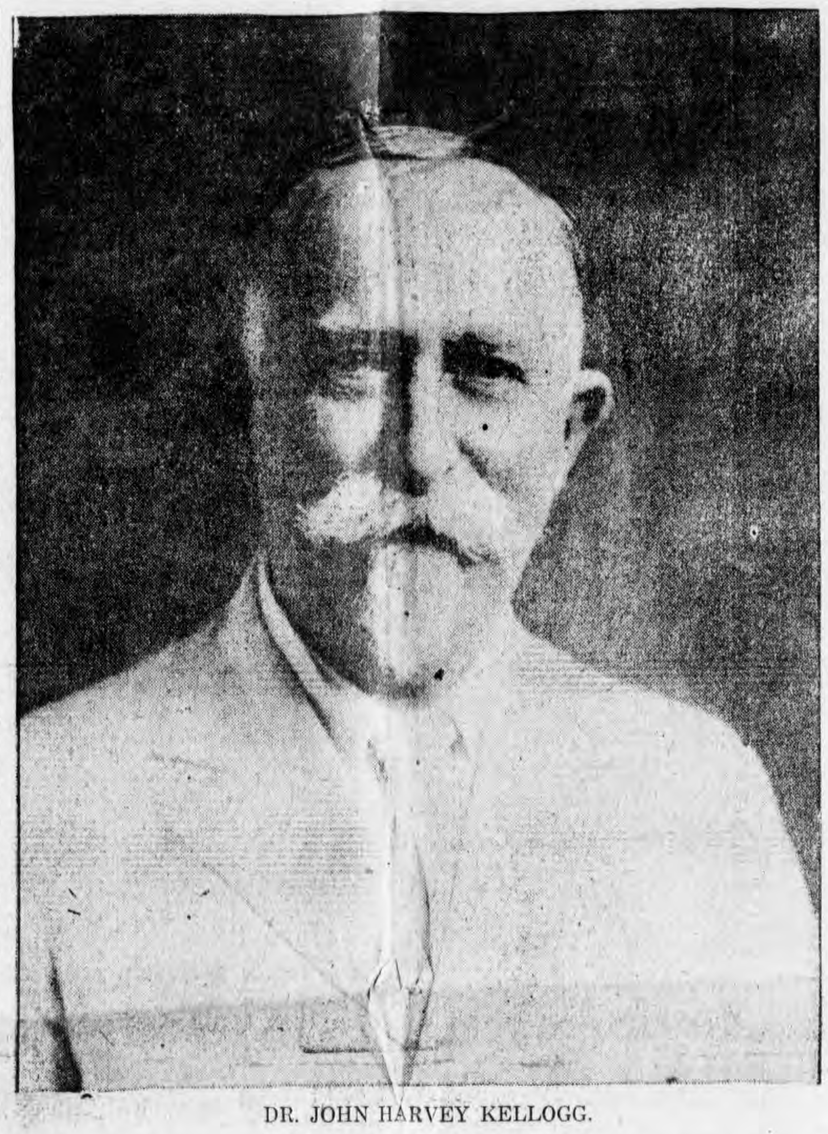
A professor of physiology of Johns Hopkins University a few years ago made an experiment which clearly demonstrates the injurious effects of tobacco upon growth. He exposed rats for definite periods, daily, to the influence of tobacco smoke, which was described as having a degree of density about equal to that of the smoke-ladened air breathed by the participants in a "college smoker." Little effect was observed upon the rats of the first generation, but the second generation showed very pronounced retardation of growth. At the age of six weeks, the smoking rats had attained only about half the size of rats of the same age which had not inhaled tobacco smoke.

Sixty years ago smoking was nothing like as nearly universal as at the present time. An army officer who had command of a large force in the Civil War told me that he did not think more than 10 per cent. of the men of that time were habitual smokers. It is well known that at the close of the late war less than 10 per cent. of the soldiers were non-smokers. A large proportion of those who went into the army non-smokers came out cigaret addicts. In view of all the facts which have been presented, it seems not unfair to charge tobacco with being one of the causes of the loss of stature which has occurred since the Civil War, and it may be the largest factor.

Our Limitless Rations.

Two other factors are certainly worth considering: One is the deficiency of lime in the diet. Lime is an essential element for bone building. Every growing child needs at least twenty or thirty grains of lime, or a third to a half dram of lime daily for the construction of the skeleton, the framework of the body which determines the height. The average American breakfast is exceedingly deficient in lime. A diet consisting of white bread, meat and potatoes contains almost no lime at all. A full day's ration made up of such foodstuffs will furnish less than one-fourth of the amount of lime daily required by a growing boy or girl. About the only widely used foods which are rich in lime are oatmeal and milk. Milk contains lime in abundance; oatmeal is fairly rich in lime. But, unfortunately, oatmeal, which was formerly in much more general use than now, has been largely replaced by breakfast foods, often denatured products which are almost wholly lacking in lime and other food salts which are essential for the growth of the body. Coffee, butter, sugar, meat, fruits, and of course pastry, sweet cakes and desserts are all deficient in lime. Greens, such as spinach, dandelion, kale, beet tops and turnip tops are rich in lime, but these excellent foodstuffs are unfortunately little used. **A larger use of greens and the addition of a pint of milk a day to the average dietary would without doubt result in a marked improvement in American physique.**

This very important change in the American diet can be made at no expense; indeed, such a change would lower the cost of living. Greens are readily available at practically no cost during the summer season. Many garden weeds, such as purslane, curly leaved dock and pigweed or lamb's quarters are excellent greens, while kale, cabbage and cauliflower supply an abundance of this bone-building element. The additional pint of milk would cost practically nothing, for we are throwing away or feeding to pigs, which is almost the same thing, enough skimmed milk every year to supply a pint a day to every man, woman and child in the country. As a matter of fact, nearly half of all the milk the country produces goes into the feeding trough or down the sewer, a yearly waste about equivalent to seventy-six pounds of beef per capita. In fact, if this skimmed milk which is now thrown away were used as human food, it would insure an ample supply of protein and such an abundant supply of lime for bone-building as would not only give our boys and girls stronger bodies but also better teeth.



DR. JOHN HARVEY KELLOGG.

Are We Becoming Toothless?

We are rapidly becoming a toothless nation largely because the average diet is lacking in the material needed for the construction of teeth and bones.

The economic advantage of saving the skimmed milk which is now wasted is really startling. If the pint of milk per capita equal to 100,000,000 pints a day in the United States, now thrown away were eaten, meat consumption would necessarily be cut down and might, in fact, be eliminated altogether to the immense benefit in my judgement of the health and physique of the American people.

The annual per capita cost of meat, according to the United States Bureau of Statistics, is $80 or more than $9,000,000,000. The elimination of this item of expense would pay our great war debt in less than three years and the whole population would be better off.

That such a change of diet would be not only safe but desirable is clearly shown by the replies made by the leading physiologists of the United States to a questionnaire sent out by the board of trustees of Beth Israel Hospital of New York, when they decided to adopt a meatless regimen, with the opening of their new great hospital, finest institution of the sort in the world.

Said Dr. Chittenden of Yale University on this occasion:

"With vegetables of all kinds, and milk, bread and butter, you have at your command all the necessary resources for a nutritious diet."

Said Dr. McCollum of Johns Hopkins University:

"I have not the slightest hesitation in saying that a vegetarian diet, supplemented with fairly liberal amounts of milk, is the most satisfactory type of diet that men can take."

Said Dr. Mendel of Yale University:

"I have given some thought to the advisability of introducing a meatless dietary into your hospital regime, and have reached the conclusion that there will be no objection to this upon physiologic grounds."

Another factor which no doubt has had some influence in lessening the stature of the American people is a deficiency of vitamins, the subtle element which is essential for the growth of both animals and plants. Vitamins are produced only by plants and are found only in vary small quantities in those parts of animals which are usually eaten. These essential vitamins are, however, found in abundance in the green parts of plants and fresh vegetables. A diet which supplies an abundance of lime, iron and other salts is almost certain to contain likewise a sufficient amount of vitamins.

Heavy Demand for Sweets.

It is quite possible there may also be a causative relation between the enormous consumption of cane sugar, largely in the form of candies and other sweets, and the shrinking of stature in America. The Americans consume more cane sugar than any other people in the world. The amount consumed has steadily increased during the last fifty years and now amounts to about 100 pounds per capita, or more than a quarter of a pound daily, or about one-fourth the total food supply. Cane sugar, either in its ordinary form in which it appears on the table or in the form of confectionery, is wholly lacking in lime, iron and vitamins, three food essentials. It is evident, then, that such an inordinate use of sweets in connection with a dietary already lacking in food salts and vitamins greatly accentuates the danger from this dietary deficiency.

Fruits, such as dates, figs and raisins are rich in lime and iron and ought to take the place to a large extent of the cane sugar and confectionery which is now used. Such a substitution of natural sweets for the concentrated artificial products which are now consumed in such inordinate quantity would undoubtedly result in a great improvement in the national physique.

Dr. Bunge of Switzerland and Dr. Sherman of Columbia University, New York, years ago called attention to the almost universal lime starvation which exists in civilized countries which might easily be corrected by the dietary reforms suggested, which would include the discarding of fine flour bread from our tables, the free use of coarse cereals, including oatmeal, which might well take the place of many of the popular breakfast foods now in use, and the freer use of roughage in various forms, including greens, fresh vegetables and the coarser cereal products. Such a change would not only give our boys and girls a better chance to grow into well developed men and women but would insure an enrichment of the blood by supplying a sufficient amount of the needed food iron.

MAN'S POWER TO IMPROVE THE RACE.

IT is within the power of man to improve desirable qualities and eliminate defects and undesirable characteristics, and so in time produce a race of human thoroughbreds which will be as much superior to the average existing man as is the thoroughbred horse to the average horse of the farm.

Blood Quality Below Par.

We are becoming an anemic nation by depending too largely upon foods which are deficient in iron as well as lime and vitamins. The tremendous significance of anemia is recognized when we recall the dictum of Holy Writ, "The blood is the life." Modern physiology has demonstrated the scientific accuracy of the ancient belief that the blood is the creative agency in the body which builds and energizes every cell and tissue. A man whose blood is only 50 per cent. of the normal is only half alive. A person whose blood is depreciated is an easy prey to disease. His vital resistance is lowered. His fighting power against germs is lessened so he is likely to be an easy prey to influenza, pneumonia or any other germ enemy he happens to encounter. **There is good ground for believing that the average American is 20 to 30 per cent. below par in the quality of his blood.** Rich red blood is necessary to vigorous individual life as well as to national life and is an essential foundation for mental as well as physical health. Some day we shall have new aristocracy, the basis of which will be clean red blood instead of the tainted blue blood aristocracy which has so long dominated certain phases of modern life.

Bichat's declaration that civilization "is nothing more than the environment which tends to destroy humankind" was perhaps too sweeping, but it is now generally admitted that the conditions of civilization are in general such as tend to race destruction rather than race betterment. **Really, the greatest problem before the world to-day is how to save the human race.**

Hope in Biologic Living.

The one hope is in biologic living; that is, in a straightforward and thoroughgoing regulation of our life habits in harmony with the known facts of human physiology. We compel our horses, cows, sheep, even our pigs and poodle dogs, to live physiologically, and as a result we have the fleetest horses that ever lived, cows that give more milk, chickens that lay more eggs, pigs that fatten faster, and sheep that produce more and better wool than our ancestors ever dreamed to be possible. All our domestic animals are improving and at really an amazing rate, but we ourselves are going down.

The time has certainly come when the human race should take itself in hand and mark out for itself a regime which will lead toward race improvement to replace our present reckless self-indulgent mode of life which is driving us down to race extinction.

If anything is accomplished in the direction of race betterment, it will have to be through education. The public school is the last great hope of the world, but there must be a change in our educational ideals. The average child, when he begins school, starts on a down-hill slide toward invalidism, and the sanitaria of the country are rapidly becoming asylums for college-maimed and crippled young men and women who, through the deficiencies of our educational system, have become, as said the immortal poet, "sickled o'er with a pale cast of thought." Instead of being improved in body as well as in mind, the average college student is physically damaged by the conditions to which he is subjected during college life. A few colleges are giving some attention to gymnastics and other forms of exercise, but the consideration accorded to this feature of hygiene, even by the schools most advanced in this direction, is most inadequate. The average student's participation in school athletics is rooting for the gladiators representing his college in their fights with the giants of some rival college. He takes his exercise by proxy. The graduate from college should carry away his diploma with the proud bearing of a soldier instead of the "student's stoop," which indicates a flattened chest and cramped lungs and a strong bent toward a consumptive's grave.

Need of a New Living Code.

We need new ethical standards, a new conscience, a broader religion, a code of ethics which will place the canons of biological law alongside those of the Decalogue and make man's responsibility to the human race—to those who come after him—the ruling influence of his conduct.

We need a new religion, which will recognize the sanctity of human flesh and the nobility of our physical life—a new moral code which will recognize the rights of the generations unborn to inherit from the present generation, without impairment, the vital energy and stamina, aptitudes and fine acquisitions of every kind accumulated in the countless generations from which they have been received. No new gospel is needed. The teaching of Christ was so comprehensive and catholic as to fit the spiritual needs of all races, of all times. It is only necessary to extend the golden itule, as Mr. Wiggam has done, to fit the broader vision which modern research has opened to us. Doubtless, as he suggests, if the Great Teacher were on earth to-day, he would say, "A new commandment I give unto you—the biological golden rule. Do unto both the born and the unborn as you would that both the born and unborn do unto you."

The menace of race decay is a dark cloud hovering over the world; but, though the present outlook is dark, it is my confident belief that race hygiene, or eugenics, and personal hygiene, euthenics, applied with liberal intelligence, will save the race from the destruction which race degeneracy threatens. Other races of the animal kingdom are helpless to combat the influences which produce environment changes inimical to their existence; hence every one, sooner or later, must succumb to the destructive action of cosmic forces. The same fate must necessarily await the human race as a whole, unless man, through his intelligence, finds some way to avert the disaster. He can do this if he will. Unfortunately he has to a large extent neglected to recognize the necessity for preserving, so far as possible, the essential conditions of his primitive life. He has allowed himself to drift. He has formed habits by chance. Instead of laboring to preserve amid the conditions of civilized life the essentials of his primeval environment, he has done the opposite. He has allowed his fancy and his impulses to lead him into by and forbidden paths, and has undertaken to compel his body to adjust itself to impossible conditions; and the result is, instead of lessening, he has intensified, the evil effects of a bad environment.

Call for Correction of Habits.

The same forces which have destroyed other creatures, other genera and species, and which are preying upon man as a member of the animal kingdom, instead of being mitigated and neutralized by man's intelligence, have actually been increased and exaggerated by his perversions and vagaries. **Man has thus forced upon his body conditions which are so far removed from his biologic and physiologic requirements that, at the present time, he is actually accentuating by his daily habits of life the influence of those destructive forces which have wiped out thousands of species of animals.**

But we may change the situation by the intelligent application of eugenics and euthenics. By a careful study of our biologic needs, our physiologic requirements, we may reverse the process, and compel the forces which are dragging us down to lift us up, so that each generation may be superior to that which preceded it.

That there will some time be a new human race, a race far superior to the present, is believed by many scientists. It is within the power of man so to modify his environment and so to control the evolutionary forces which are working upon him as to eliminate the degenerative, destructive tendencies and to promote, encourage and intensify the forces making for race betterment, and thus to improve desirable qualities and eliminate defects and undesirable characteristics, and so in time produce a race of human thoroughbreds which will be as much superior to the average existing man as is the thoroughbred horse to the average horse of the farm.

Broad Education Essential.

The intelligence of the world should be set to work to multiply existing agencies and to create new agencies for the betterment of the race. A biologic survey should be made of every civilized community and of savage communities as well, for purposes of comparison. The laws of eugenics and euthenics should be taught in every school and preached from every pulpit. Every teacher, every leader of human thought, every publisher, all professions, all serious minded men and women, should join in making known to every human being in every corner of the globe the fact that **the human race is dying and co-operate in seeking to discover and apply the remedies necessary for salvation from this dismal fate.**

We must provide compensation for the departure from normal conditions of life which civilization necessarily involves. We need not return to savagery to be healthy, but we must see that the air we breathe is as clean as that which the savage breathes, that the food we eat is as wholesome and pure as the water we drink. We must encourage out-of-door living and sleeping. We must provide in every city out-of-door gymnasia with swimming pools for boys and girls. We must inculcate the principles of biologic living, and respect for the body, and appreciation of the value of physical fitness. We must give our pale skins more contact with the sun and air; we must keep the inside of our bodies as clean as the outside. We must cultivate clean blood. Society must establish laws and sanctions which will check the operation of heredity in the multiplication of the unfit. Eugenics and euthenics must become dominant matters of study and concern. Thus, and thus only, may we hope to check the mad rush of the race down the hill of decadence and slowly climb back and up toward the proud eminence where the race of man as the handiwork of God and the masterpiece of creation, by the aid of his unapproached intelligence and through implicit obedience to biologic laws, may defy the ravages of time and the perturbations of physical forces, and endure forever, indestructible and triumphant among the millions of animal forms now living and their predecessors buried in the crust of the earth.

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World
New York City
DEC 23 1924

THE STATE A BEE-HIVE?

To the Editor of The World:

On Sunday there appeared in The World an apocalyptic discourse by Dr. John Harvey Kellogg, director of the Battle Creek Sanitarium. Dr. Kellogg is alarmed for humanity in general and posterity in particular. He says the race is going to pot for these reasons: It doesn't eat enough lime, vegetables and vitamins; it eats too much candy, smokes too many cigarets and drinks too much liquor.

Now at first sight this appears a most harmless thesis. But let us have a look; it may develop unexpected possibilities. Isn't this concern over posterity something new under the sun? Other civilizations have been content to sweat over the problems of the living, leaving for a later day the problems of the unborn. But in our American scheme of things we have come to include the future generations. They are tacitly conceded to be a party to the dispute, they are represented in Congress, their weal is considered when the bills are drawn and the amendments offered.

This, it is said, is evidence of progress, of enlightenment. Is it? Let us see where it leads us. It hatches, to begin with, an entirely new idea in government. Heretofore, government has been conceived as a necessary evil, as something we had to have in order that we as individuals might attain the maximum of liberty and happiness. But this new angle of departure changes all that. It is now declared that we have a duty to these unborn millions. That is, we legislate not only for our own convenience but also so set aside a sinking-fund of welfare for those who are to come. We are no longer individuals but cells in a body social, each working to glorify this nebulous, projected thing that we call progress, enlightenment, welfare. The state has become a bee-hive, and we are its little biological queens and drones and workers making up a whole.

With such a conception, obviously many strange things may come to pass. A law obnoxious to the majority can be defended on the ground that the superconcept is served by it. If it can be argued that alcohol is injurious to the hive as a whole, then away with alcohol, no matter how many like it. So also cigarets, corsets, tight shoes and cross-word puzzles. So also vitamins; there is no logical reason why there should not be a law compelling us to eat spinach. Of course, some fellow like Dr. Raymond Pearl may come along and prove that alcohol has no effect either on posterity or longevity, but that is beside the point. It is thought to be harmful now, so we have a law about it. When the unborn generation comes along it will probably discover that alcohol is beneficial to the digestion—but progress must be served by such lights as we have.

Does this seem unjust to Dr. Kellogg, to hold him and his kind responsible for our twentieth-century philosophy? Then hearken to his final summing up, that logical conclusion that had to be there:

"The intelligence of the world should be set to work to multiply existing agencies and to create new agencies for the betterment of the race. A biological survey should be made of every civilized community, and of savage communities as well, for purposes of comparison. The laws of eugenics should be taught in every school and preached from every pulpit. * * * Society must establish laws and sanctions which will check the operation of heredity in the multiplication of the unfit."

What price posterity? J. R.

New York, Dec. 22.

Culinary Note

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NEWS OUTSIDE THE DOOR

HOW TO HAVE A CLEAR HEAD.

BY J. H. KELLOGG, M. D.

For the student, the most essential of all mental qualifications is the ability to think clearly and consecutively. Clear-headedness is certainly, to some degree, a matter of heredity and training; but it is nevertheless true that intellectual acumen and mental activity are most of all dependent upon physical conditions which are closely connected with ordinary habits of life.

Most important of all, in this relation, are exercise and diet. And these, too, are very closely associated. The Bible maxim, "He that will not work shall not eat," is supported by the physiological fact that physical exercise is an essential condition for good digestion and normal appetite. Much of the ill health among students is certainly due to the lack of vigorous physical exercise properly combined with mental activity. The divine instruction to Adam that he must earn his bread by the sweat of his brow, though apparently a penalty inflicted upon him for transgression, was nevertheless an inestimable blessing in disguise. Daily physical exercise in sufficient amount to produce active perspiration is one of the conditions most essential to the maintenance of health.

John Wesley declared that he owed his good health while a student to the fact that he had scrupulously obeyed the instructions of his father, who, on the occasion of his son's leaving home to enter school in London, requested him to run three times around Charter House Square every morning — an injunction which young Wesley obeyed to the letter. Mr. Gladstone, at the age of eighty-seven still recognized as the greatest living Englishman, owes his good health to his active physical habits. During the half-century that he has been active in public life, it has been his regular habit to run away to his home at Hawarden every few days and spend a day in wood-chopping. William Cullen Bryant, one of the sweetest of our American poets, and a man of great mental activity, maintained good health and the full command of his faculties to a very advanced age, by spending a half hour in the morning in vigorous exercise in his chamber, hopping up and down, swinging by his hands, supporting himself between two chairs, and similar exercises. Ericsson, the inventor of the monitor war-ships, and a man of great genius, was still active as ever at an age when he could look back over two generations, as the result of his temperate life and the habit he had of spending one or two hours in vigorous walking exercise every day.

Exercise increases the activity of the lungs, strengthens the heart, and purifies the blood, by encouraging elimination and the burning up of the waste elements of the body. The bright eye and the ruddy face of the wood-chopper afford a pleasing contrast to the sallow, sunken cheek and lusterless eye of the bank president or the professional man who spends his days in a musty office, and his nights in an air-tight brown-stone residence, oscillating between the two by the aid of a cab or a street-car. The painful contrast in appearance between the rosy-cheeked boys and girls seen trooping out from the country schoolhouse, and the pale-faced, weazened urchins who crowd the sidewalk in front of a city school building at the closing hour, is, on the one hand, an evidence of the good effects of an abundance of out-of-door exercise, and on the other, of

the baneful influence of the lack of this important means of physical grace. Dickens, although a gormand in diet, was nevertheless enabled to do a vast amount of literary work through his daily habit of walking nine or ten miles before breakfast, sometimes prolonging his walk to twenty or thirty miles.

Many children who are accounted dull by their teachers are simply suffering from a lack of exercise. The accumulation of waste and poisonous matters in the tissues produces a sort of paresis, or semi-paralysis, of the brain, whereby its normal activities are suspended. The boy who finds himself unable to think, unable to fix his mind upon his studies, and who cannot comprehend the problems placed before him for solution, is doubtless laboring under the influence of tissue poisons which might be easily eliminated by a half-hour's vigorous exercise in the open air.

A wonderful advance has been made, within recent years, in the introduction of gymnastics as a part of the school-day program, but, as yet, comparatively few schools are supplied with regular and systematic work of that kind, and the amount of attention given to the subject is entirely inadequate, when its importance is considered. The all-round development of the body is quite as important a matter as the development of the brain. A mind stored with knowledge is really of but little value to the possessor who has only a frail, weak body to support his highly cultivated brain. Intellectual activity depends as much upon physical conditions as it does upon mental training. Indeed, we are coming to see that so-called "mental training" is really not so different from what is ordinarily termed "physical training" as we were formerly taught to believe. In other words, mental training consists in an actual physical change in the brain structure. Modern physiology includes the histology and structure of the brain as well as its various modes of activity. On the other hand, it is equally true that muscular activity involves mental and nervous action and development.

The progress which has been made within recent years is certainly in the right direction, but much more needs to be done in the same line. A most admirable missionary work in the interest of the students of our public schools is being done by Drs. Seaver and Anderson, in their splendid schools for physical training at New Haven and Chautauqua; by Dr. Sargent at Harvard; by Nebuske and Hartwell at Boston; and by others who are laboring in similar lines. The physical education of teachers is coming to be regarded as an essential feature of equipment for the instruction of the young. As yet, the majority of them have but little appreciation of the importance of the relation of physical exercise to mental and moral health, and of the extent to which muscular activity should enter into the training of the young. In the writer's opinion it is a mistake to confine gymnasium work to one, two, or even three hours in the week. The student requires a certain amount of muscular work daily to secure proper muscular development, just as he needs his daily intellectual tasks to secure proper mental development. The writer would have, in addition to the daily hour for systematic work in the gymnasium or active exercise on the playground, a short series of exercises after each class-hour. Five minutes spent at the end of each recitation, or at each change of program, in breathing-exercises, and in other exercises calculated to correct the standing and sitting poise of the student, would be of inestimable advantage to the boys and girls growing up in our schools. The majority of students, even though constantly admonished by an intelligent teacher, are continually falling into incorrect attitudes, which are certain to result in more or less permanent deformity unless corrected by proper gymnastics.

The influence of exercise upon the growth and development of young persons is far greater than would be imagined by a person not familiar with this subject. Maclaren, for example, relates an instance in which twelve army officers averaging over twenty years of age, developed to such an extent by six months' gymnastic work that they were unable to get into their old clothing, and were obliged to obtain complete new outfits. In the case of one man the chest circumference increased in measurement five inches. He also tells of a youth who, though he had ceased to grow, under the stimulus of exercise gained four inches in height within a few months. Another boy who had ceased to grow, in consequence of an injury received from a fall, increased in height at the rate of an inch a month for nine months. Country boys are recognized as being, on an average, considerably larger and stronger than city boys, a difference which is doubtless chiefly due to this influence of exercise upon growth and development.—*Education Extension.*

A HINDUSTANI work on music says that "singing is the painfully acquired art of speaking very loud in a shrill voice."

THE king has left his counting-house, and wisely spent his money;
The queen and he are bicycling, forgetting bread and honey;
The maid has bought a wheel too, and left her hanging clothes.
'T would take a nimble blackbird now to nip off half her nose.—*Set.*

benefit from the exercise, for in addition to the above hygienic elements, the wheelman must develop, whether he will or not, his will, his independence and self-reliance, and the accurate control of all his muscles. Those of rheumatic tendencies will find that regular riding will do much to keep the disease under control, and will even act as a cure. Some one has said that every muscle is a little heart, and surely no better means can be devised of eliminating waste matter from the system than the general and active use of all the muscles, both voluntary and involuntary.

The use of the machine by women is rapidly extending, and has been the means of making hundreds of weakly women strong and robust. It gets them out of doors, gives them a form of exercise adapted to their needs, neither too violent nor too passive; one very pleasant, one that they may enjoy in company with others or alone, and one that goes to the root of their nervous troubles; for we are beginning to realize that these do not for the most part have their origin in woman's peculiar anatomy and physiology. Even the orthopedist may employ the wheel with benefit in certain cases, as by proper adjustment of the parts, more or less work may be given to the limbs and muscles of either side.

The use of the bicycle as a form of bodily recreation is in itself no doubt wholesome. But one great danger to be guarded against is the tendency to overdo the exercise before the system has become accustomed to the new demands on its resources. Beginners, tempted by the ease of movement, combined, as a rule, with attractive scenery, are apt, in the flush of their enthusiasm, and wooed possibly by the delights of social communion under novel and exciting conditions, to take journeys beyond their strength, and thus to counteract much of the benefit they would otherwise enjoy. But judicious forbearance and steady practise will soon carry the young bicycler beyond the region of this possibility, and then journeys which before would have been positively injurious can be taken with healthful enjoyment.

Of course it is understood in the foregoing remarks that the rider will have a wheel adapted to his or her weight and strength, properly adjusted in all its parts, but especially in the relationship between the saddle and the handle bar and pedals; and, above all, that the rider takes pains to maintain a correct position and to do all he can to benefit his health and bodily development. There can be no question as to the erect posture's being the correct one, and if this be maintained, cycling tends to develop the chest by increasing the lung capacity, and to exercise the muscles passing from the trunk to the upper limbs. But if the tall, lanky lad with a narrow chest and stooping back, or any other person, persists in maintaining a posture resembling a half-opened jack-knife, the faults and evils resulting therefrom cannot be fairly attributed to the use of the wheel.

It requires muscular effort to sit erect on a bicycle or elsewhere, and that effort means, as every one knows, the continued exercise of all the muscles of the back and neck. The arm muscles are brought strongly into play in hill climbing, and whenever the speed is considerably increased, and the augmented depth and frequency of breathing that even the smallest amount of exercise induces, makes a new demand upon the chest muscles and the diaphragm. On the other hand, an improper position, especially the one so commonly seen, not only tends to cramp the chest and to interfere with the proper oxygenation of the blood, but by compressing the iliac vessels it also interferes with the flow of blood to and from the lower extremities, whose muscles are all being most actively exercised, and therefore most in need of an unimpeded current at this time.

The excessive use of the bicycle or tricycle by very young children is not advisable. Bad habits of position and carriage are easily acquired at this age, and there is danger of muscle strain and nerve injury. Persons suffering from rupture should not do much riding. Persons with organic heart disease should either not ride at all or do so with caution. Even those whose hearts are functionally weak should be careful, though the riding will probably benefit them by improving the general health. Several deaths have occurred from heart failure, and there is danger from hard or rapid riding for persons with any grave organic trouble, as it might be too heavy a task on the already weakened heart. Care should be taken on cold days to breathe through the nose, as by breathing through the mouth there is danger of incurring laryngitis or bronchitis. Also after riding and becoming heated, avoid drafts, and put on more clothing till the body is cool and rested. — *W. F. Prather, M. D., in Young Men's Era.*

WHAT WE NEED. — What the man of to-day needs most is not athletics in a gymnasium, but plenty of fresh air in his lungs. Instead of a quantity of violent exercise that leaves him weak for several hours afterward, he needs to learn to breathe right, stand right, and sit right.

Chautauqua School of Health

EXERCISE

BY J. H. KELLOGG, M. D.

IT is well-known that exercise, especially very active effort, greatly accelerates the breathing movements, and increases the depth of respiration. At first the breathing is slightly difficult, but after a short time, when the runner has his "second wind," respiration becomes easier, due to the fact that the entire lung surface has been brought into action by the complete distention of every part of the lungs. This fact has in it an important lesson, namely, that in ordinary breathing the entire lungs are not brought into use, and hence are likely to become diseased unless brought into full and active movement by taking daily such exercises as necessitate deep and full respiration. Such exercises should be taken several times a day.

Running or rapid walking in the open air is the best means of securing the necessary lung capacity. If this is not convenient, however, the same results may be secured by exercise taken indoors with doors and windows widely opened so as to secure free ventilation. It is not even necessary to run about the room. One may "run in place," executing the movements of running by throwing the weight first upon one foot and then upon the other, lifting backward the foot which is not in use. Various other exercises may be employed to excite the lungs, but active movements of the legs are, on the whole, of the greatest service. Very rapid running, carried to the extent of extreme breathlessness, is likely to be injurious to persons who have passed the age of twenty-five years. So-called "sprinting" is injurious to the heart, and in time leads to other injuries. The deep breathing induced by running continues for some time afterward. Those who habitually walk or run much or who engage in mountain climbing daily or several times weekly, breathe deeper even in sleep than do persons of sedentary habits, and in consequence introduce into their bodies a larger amount of oxygen, and live on a higher plane, physically, than do others.

Exercise aids digestion by creating an appetite, promoting the secretion of the digestive fluids, and increasing the peristaltic movements of the intestines. When God said to Adam, "In the sweat of thy face shalt thou eat bread," the command was given to the entire race to engage in active muscular labor. Those who seek to avoid sweating, or who neglect to take habitual active exercise, are punished by ill health. The apostle Paul said, "If any will not work, neither let him eat." Nature says the same by removing the desire for food or the power to digest it. The inactive man who is still able to eat and digest, runs great risk from the

accumulation in his body of unnecessary or unused material, which clogs the vital machinery and fills the blood with poisons, whereby its resistance and that of the body are diminished. Nature takes away the appetite and lessens digestive vigor to avoid this danger. When an idle or sedentary man throws away this protection by stimulating the palate by means of condiments and a constantly renewed variety of stimulating foods, he is working at cross purposes with God, and will certainly suffer the penalty of disobedience.

Thus we may see that the wise man uttered a profound physiological truth when he declared, "By much slothfulness the building decayeth." (Eccl. 10:18.) The body is worn by work, but is at the same time renewed, so that work is a means of constant body change or renovation.

The value of a brisk walk on a cold, frosty morning in developing the appetite for breakfast, is well known by every one. Life out of doors may be justly regarded as one of the most important means of promoting health and securing sound digestion and proper assimilation of the food. Exercise also aids digestion by promoting activity of the bowels, whereby the body rids itself of waste matters, lack of attention to which may result in chronic poisoning, a condition from which thousands constantly suffer who might find complete and entire relief by the simple means indicated.

Exercise quickens the stream of life, increases the action of the heart, lungs, stomach, liver, and every vital organ; and by cleansing away the rubbish which accumulates in the tissues as the result of work, prepares the way for new material, and so is one of the greatest of all means of promoting life and health. All examples of extraordinary longevity which have been reported have been of persons who had led active, even laborious, lives, and whose habits in diet and in other respects were simple and regular.

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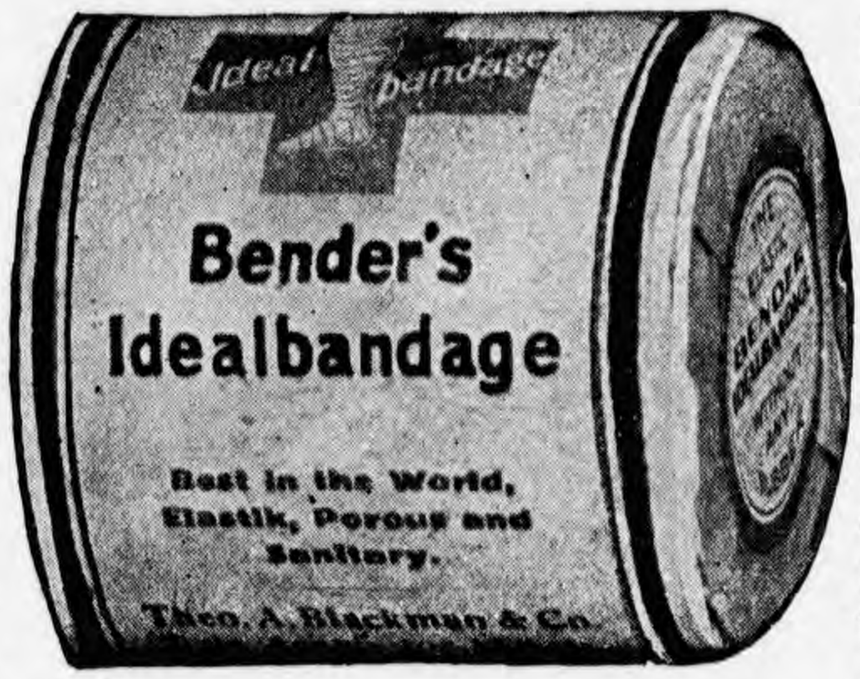

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EGGS

ND p 417,418, 419, 420, 421 a

The egg is a highly nitrogenous food. The whole egg affords 15 calories of protein to the ounce and 31.7 of fat, a total of 46.7 calories, or two-thirds that of porterhouse steak and more than double that of milk.

A hen's egg of average size weighs a little less than two ounces. Approximately, the egg consists of one part shell, six parts white, and three parts yolk.

A single egg furnishes about 30 calories of protein. It is evident, then, that four or five eggs supply protein sufficient for an ordinary day's ration. But it is to be remembered that cereals are rich in protein and all vegetables contain some of this element, while milk contains an excess, and supplies in one-half pint more protein than does an egg. A dietary which includes two glassfuls of milk with a sufficiency of other foods not of animal origin will afford an abundance of protein without the addition

of eggs. Even if neither meat nor milk is included in the bill of fare, not more than two eggs at most will be needed to supply all the supplementary protein required for one day.

Milk lacks iron and so is not a complete food; but on account of its great excess of protein, the egg is less suited to serve as an exclusive diet, and should not be too freely used. Its proper place in the dietary is to round out a diet otherwise deficient in complete proteins, vitamins and lime.

As a source of complete proteins, the egg is inferior to milk because less digestible and also because very liable to be rendered unfit for food by putrefaction. Milk ferments or sours when stale, while eggs putrefy. A stale egg is certainly one of the most disagreeable as well as most dangerous of unwholesome foodstuffs, while sour milk is actually more digestible and really more wholesome for most persons than is fresh milk. This property of milk is due to its carbohydrate, sugar of milk, an element which in eggs is lacking.

Egg Yolk.

Egg yolk is a very remarkable substance prepared by Nature for food, and hence contains all the elements necessary for complete nutrition, including a rich store of lime and iron and other salts, with an abundant supply of vitamins. Nothing is forgotten. The yolk is the sole food of the young chick while it is undergoing development in the shell, and when it leaps out of its prison house it is fully equipped to enter upon its life career, and to thrive upon the foodstuffs which it finds ready at hand. It does not have to be nursed or brought up on a bottle. It needs only to eat, exercise and grow. The yolk of the egg has supplied it with everything needful for its complete life equipment.

It is sometimes well to ~~advise the~~ use ~~of~~ egg yolks alone, excluding the white when the object is to increase the intake of lime salts. The writer has followed this plan for many years.

To insure the utilization of eggs it is highly necessary that they should be properly cooked. Raw eggs are indigestible. ~~Half cooked~~ eggs are ~~half~~ digestible. Fried eggs and omelets are hard of digestion, and the undigested fragments which appear in the stools carry away a considerable part of the precious lime which should be retained and absorbed. This difficulty may be obviated by cooking the egg at a low temperature, 150° to 160° F. Cooked in this manner, the egg is soft and jelly-like or coddled, and is

presented to the stomach in most digestible form. When egg yolks alone are eaten, they may be separated either before or after cooking. Hard-boiled yolks are easily digestible, which is not true of the whites.

Egg White.

Raw white of eggs has long been regarded as among the most easily digestible of all food substances. This idea was chiefly based upon the observation by Beaumont in his experiments upon Alexis St. Martin. Beaumont noted that raw egg white left the stomach very quickly, in less time in fact than any other foodstuff which he investigated. More recent investigations, however, by Pavlov and others have shown that this interpretation of Beaumont's observation is incorrect. Pavlov, for example, showed that the raw white of egg does not stimulate the flow of gastric juice. In this respect white of egg differs from other proteins. The effect of which is to cause the stomach to pour out an abundant supply of a highly acid gastric secretion.

Steinitz noted that raw egg white caused vomiting and diarrhea in dogs. Five egg whites given to a fifteen pound dog caused very severe diarrhea. The stools were not only loose but had an extremely offensive odor and contained a great deal of mucus, indicative of very active putrefaction and marked infection. Even when small amounts of raw white of egg are fed, the egg albumen can be recovered from the stools unchanged.

These peculiarities of raw egg white disappear when it is cooked at a temperature of 160° F. At this temperature the egg

white is thoroughly coagulated but remains soft and jelly-like. Egg yolk on the other hand was found to be very easily digestible when eaten either raw or cooked. Careful experiments have shown that raw egg white has no food value when introduced into the colon and hence it should not be used in rectal feeding. Another objection to the use of raw egg white is the readiness with which this substance is absorbed into the blood, producing anaphylaxis.

The peculiar effect seen in persons who are sensitized against egg is said to be due to ovo mucoid which the egg contains. Egg white contains also three other substances, ovo globulin, ovo albumin and con albumin. Albumin is shown to be the cause of diarrhea. The amount of white of egg required to give rise to anaphylaxis is extraordinarily small. This effect was produced in guinea pigs by less than one-millionth of a grain of egg white.

From the above facts it is evident that the practice of giving raw eggs to invalids with or without milk feeding and the use of raw white of egg in the feeding of babies are certainly of less value than has been supposed and are really more or less dangerous procedures.

Recent experiments by Rose and MacLeod seem to indicate that the raw white of egg is well digested if lightly beaten.

THE COOKING OF EGGS

ND 421, b,c,d

425, 426 (use cut of eggs)

427, 428

When boiled two minutes the white of egg next to the shell is coagulated; the yolk remains fluid. In a three-minute egg the white is coagulated and the yolk is thickened. A ten-minute egg is hard boiled.

According to Penzoldt, the time required for the gastric digestion of eggs cooked in different ways is as follows:

Lightly boiled	1¾ hours
Poached	2½ hours
Hard boiled	3 hours
Omelet	3 hours

The greenish black color which is sometimes seen on the surface of the yolk of a hard boiled egg is due to the formation of sulphide of iron (Tinkler). If the egg is cooled at once after boiling, the chemical change does not occur.

Influence of Food on Eggs.

Eggs are greatly influenced by the food of the fowls by which they are laid. Meats and putrefying substances give to eggs a strong flavor. Milk, sunflower seeds, and other clean and wholesome foods insure a very superior flavor.

When chickens have plenty of green feed and yellow corn the yolks have a much deeper color, due to the presence of carotin, which is often associated with the fat-soluble vitamin.

Bad Eggs.

Eggs are not eaten in this country unless supposed to be fresh or well preserved. The decayed egg is rejected at once. The Chinese gourmand, however, has a great penchant for stale eggs. His highly cultivated palate delights in the pungent aroma of an egg two or three years advanced in putrefaction. The American turns in disgust from the stale egg, but curiously enough, requires in his beefsteak the same condition that the Chinaman demands in his egg.

It was formerly supposed that if the fresh egg were kept free from contact with bacteria it would remain sterile, but since the investigations of Rettger it is known that quite a large proportion of all eggs show bacteria when carefully examined. This is especially true of the yolk of the egg, which is infected much more often than the white. According to observations made by the United States government, one egg in seven, on the average, is infected with harmful bacteria, which are only destroyed by very thorough cooking.

Doctor Rettger, who has investigated the subject, has found that eggs are often badly infected, showing a high bacterial count

95

and much ammonia from putrefaction, notwithstanding the fact that they pass the candle test well and give no great evidence of decomposition. New and better standards for examination of eggs, milk and meat are urgently called for.

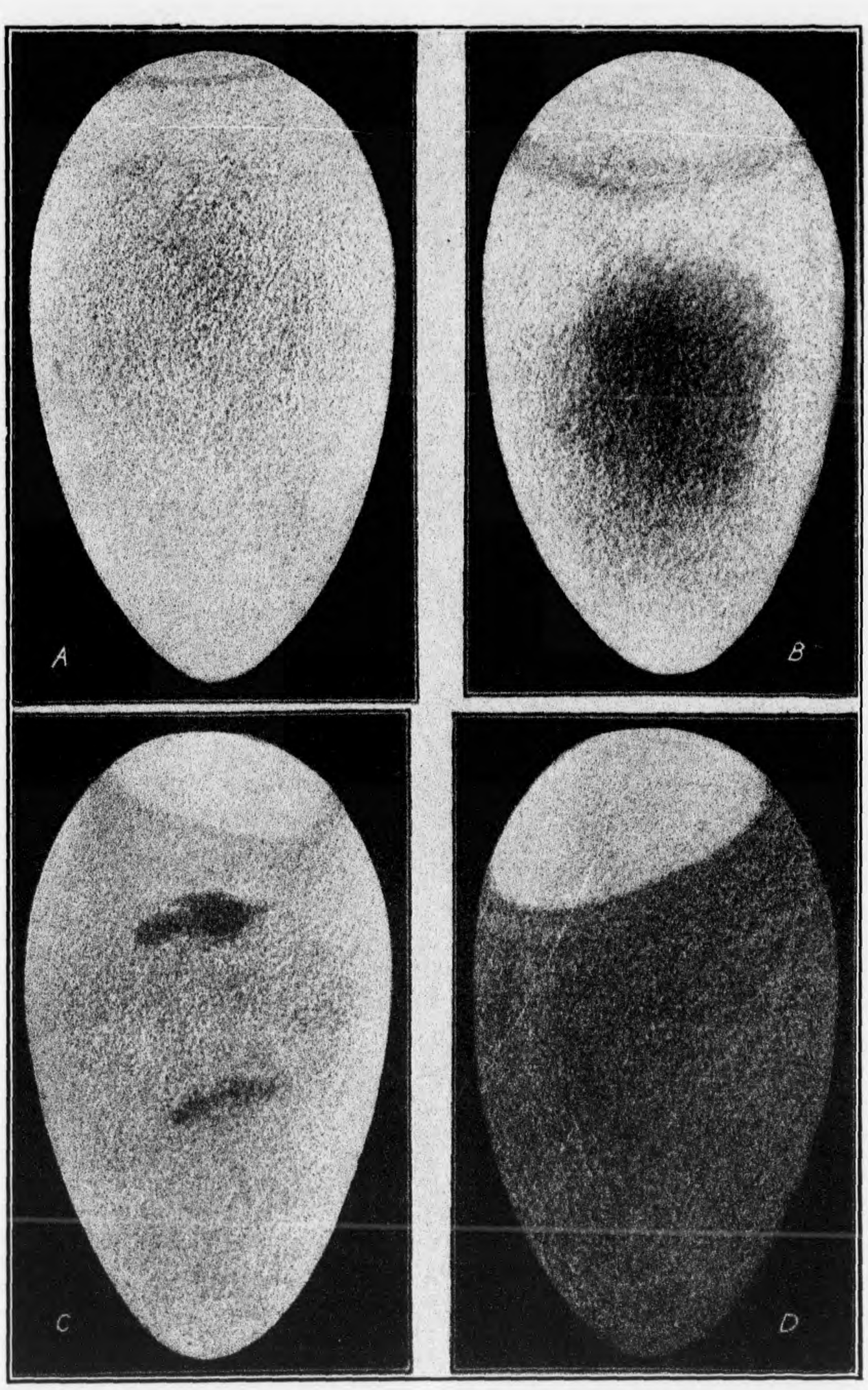
M. E. Pennington, of the United States Department of Agriculture, some years ago (1911) made a careful study of eggs, especially with reference to the presence of bacteria. Here are some of the facts discovered:

> The fresh, sound, shell egg is for practical purposes free from bacteria, though it is not always sterile. It is free from organisms of the colon group so far as we know. "Stuck spots," "mold spots," definite "blood rings," "white rots," eggs with a pronounced odor, "grass eggs" (those having a greenish color in the egg white), "musty eggs," and "sour eggs," that is, eggs having a pungent quality which is difficult to describe but which is recognized by the trained sense of smell, are ordinarily possessed of a high bacterial content. "Grass eggs," "musty eggs," "sour eggs," and eggs having a pronounced odor cannot always be excluded by the candler. The others can and should be. The great majority of "seconds," "heated eggs," dirty shell eggs, and cracked eggs (not those from which the contents are escaping) show but few bacteria present when studied in the producing section. When cracked-shell eggs are kept, even for a few days, they frequently become infected with molds and bacteria. Cracked eggs, or "checks," as they are called in the trade, dirty shell eggs, and "seconds," which signifies a grade including undersized, soiled, "checked," and stale eggs, are commonly used by egg breakers. No "spot" eggs of any sort are used by reputable breakers.

Pennington, to whose work we have above referred, and Kossowitz, of Vienna, have found that fresh eggs often contain molds, yeasts and various other micro-organisms. Pennington found only 12 per cent. of the eggs examined entirely free from bacteria. Kossowitz found most eggs sterile when first laid, but discovered that infection readily occurs through penetration of the shell by various bacteria if the eggs by careless handling are exposed to contamination.

Candling of Eggs.

Eggs, even when known to be fresh, should be candled before using, as eggs are sometimes infected before they are laid and are also in other ways defective. The Bureau of Chemistry of the United States Department of Agriculture has prepared an egg chart which is shown herewith, together with an explanation of the same.



APPEARANCE OF EGGS WHEN CANDLED

A Fresh Egg; B Stale Egg; C Egg Showing Fungous Spots; D Rotten Egg.
(*Ycarbook U. S. Dcpt. of Agric.*, 1911).

77

Egg Poisoning.

Some persons are sensitized to eggs and cannot eat even a small fraction of an egg without suffering most unpleasant consequences. Nausea, vomiting, purging, headache, and a distressing nettle rash or urticaria are a few of the symptoms which result from the use of eggs by sensitized persons. Similar symptoms have been observed to follow the use of milk and of various other foodstuffs in different persons.

When Eggs Should Not Be Eaten.

Claude Bernard observed that albumin appeared in the urine after the eating of a considerable quantity of white of egg. On this account many physicians forbid the use of egg by persons suffering with disease of the kidneys. Recent investigations lead to the conclusion that the healthy kidney never permits the passage of albumin and that when albumin appears in the urine it is evidence that the kidneys have been damaged. Persons suffering from Bright's disease, or who have albumin in the urine, should avoid the use of eggs, or at least should use eggs very sparingly, eating the yolks only.

Persons who are subject to so-called bilious attacks, sick headaches, or who have bad breath or other marked symptoms of autointoxication, would do well to avoid the use of eggs because they encourage the development of putrefactive flora in the colon. This is especially true of the white of egg. Egg white, when raw, leaves the stomach quickly but is not well digested, and soon finds its way to the colon, where it readily undergoes putrefaction. When boiled, egg white is digestible, but digests slowly when hard boiled, and when not well masticated, as is generally the case, it is likely to reach the colon and there undergo putrefactive changes. The yolk of egg is readily digestible, even when hard boiled, and so is greatly to be preferred to the whole egg in cases in which it is desirable to restrict putrefaction as much as possible; but even yolks should be eaten sparingly. There is rarely ever real necessity for the use of eggs, for protein of equal if not superior quality may be obtained from milk, the soy bean and from nuts, including the humble peanut.

Cholesterol, a resinous substance of which gallstones are formed, is normally present in the blood in the proportion of one part in 2,000 parts of blood. The blood of a person of ordinary size contains about 20 grains of cholesterol. Laroche has shown that in persons suffering from gallstones the amount of cholesterol in the blood is considerably increased. A single egg contains about 4 grains of cholesterol. A couple of eggs would thus increase the amount of cholesterol in the blood to the extent of 40 per cent. From these facts it appears that persons who have undergone operations for the removal of gallstones, or are believed to be suffering from this disease, should carefully avoid the use of eggs.

9-6-24

ANIMAL FOODSTUFFS

Milk, eggs and the flesh of animals and their derivatives are the only animal foods, and these are indirectly derived from the vegetable kingdom, which is the real source of all nutrient material.

ND p 380 a,b,c
381 a, 382, 383
383 b,c,
384 a,b
384 c,385,386, 387

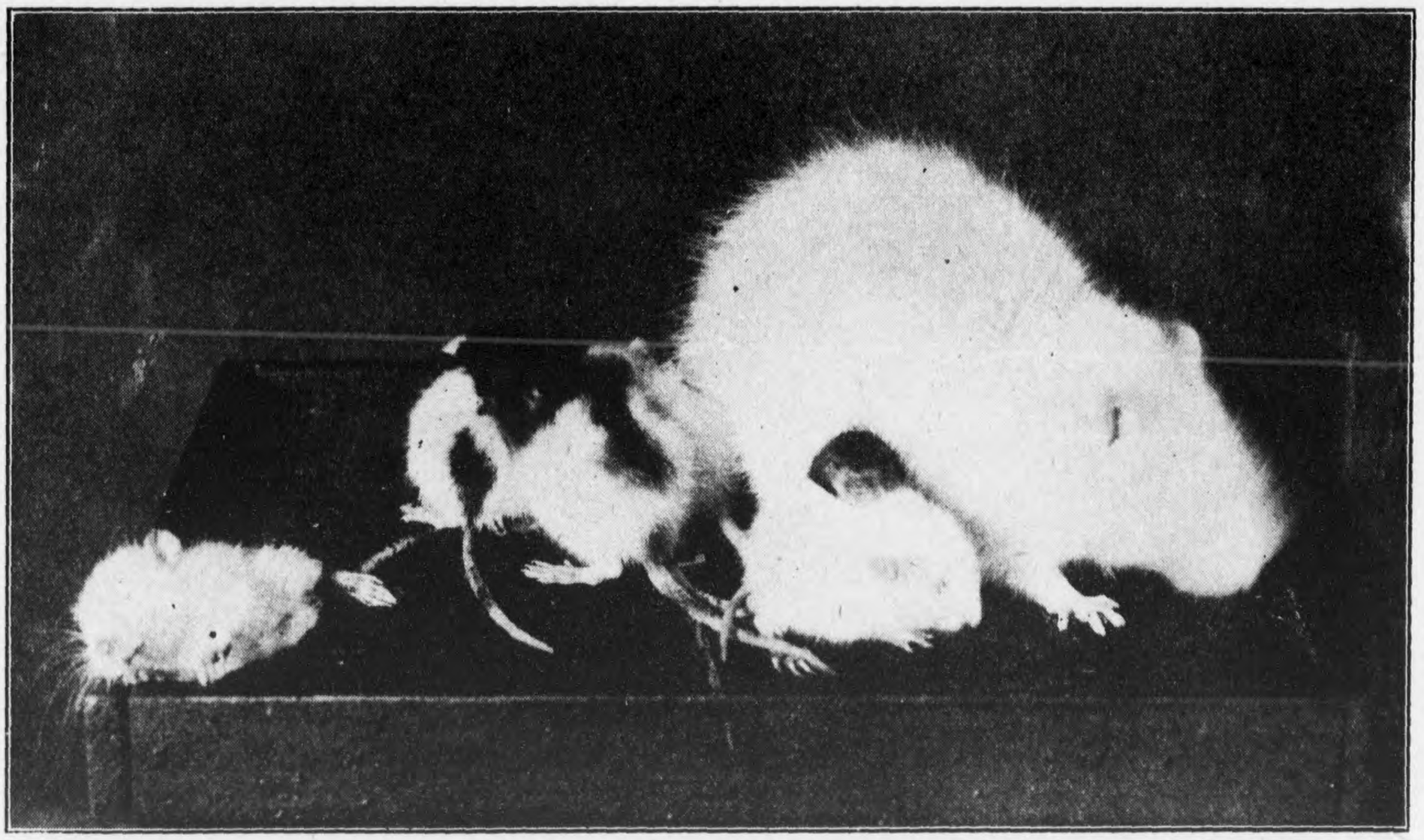
The chlorophyl grain of the green leaf is the mystic laboratory in which the lifeless inorganic elements of the mineral world are endowed with life. The green parts of plants are factories in which are woven the living fabrics known as organic substances, of which the actinic rays of the sun constitute the warp while nitrogen, carbon, hydrogen, oxygen, calcium and other elements which enter into the composition of living things form the woof.

Animals cannot originate food; they only utilize food principles which have been produced by plants. In passing through the bodies of animals, food materials undergo changes of form, but are not produced.

In the economy of Nature, while it is true that muscle tissue is largely used as food by animals, it is clearly evident that its first and primary purpose is to serve for force transformation through food consumption. The only animal substances specifically prepared by Nature as food for animals are milk and the yolk of eggs, both of which are intended to be used by the infant animal while attaining the development necessary to enable it to gather food for itself.

In the yolk of the egg is found not only fat, protein and a small amount of carbohydrate but the lime, iron and other salts and vitamins—everything which the young chick needs for the building of blood, flesh and bones. It is a little luncheon provided by Nature to support the young creature during its period of helplessness. Milk is supplied day by day and hour by hour to meet the current demands of the young mammal.

LITTER OF ELEVEN RATS, ONE MONTH OLD, ALL SURVIVING. DIET: STOCK FOOD CONTAINING WHOLE WHEAT BREAD, GREENS, MILK POWDER, CORN, OATS AND POTATO; *NO MEAT*



SEVEN RATS SURVIVING FROM A LITTER OF THIRTEEN, ONE MONTH OLD. DIET: FRESH RAW MEAT, HALF MUSCLE MEAT, HALF LIVER

16

16. **Cane-sugar should be eaten only in small quantity.** Large quantities cause acidity and give rise to gastric catarrh and indigestion. Sweet fruits, such as raisins and figs, honey and meltose or malt sugar, are natural and wholesome sweets and may be eaten freely.

Sugar as a Human Food

Cane sugar is a root sugar, a tree sugar, a grass sugar. It is found in the roots, not only of the beet, but of various other plants. It is found also in the sap of most trees, in the stalks of grain and grass plants.

Carnivorous animals have a ferment in one of their numerous stomachs by means of which they are able to digest cane sugar but human beings are supplied with this ferment only in very limited amount.

When cane sugar is eaten, it is several hours before it can be digested. Some people have no digestive ferment in the body that is capable of converting cane sugar into "invert sugar," a form of sugar into which it must be changed before it can be utilized by the body.

The body lives largely on sugar. Every muscular movement requires the burning of some sugar. We work with sugar, we talk and walk by means of sugar. Every heart beat requires the burning up of a small fraction of sugar, one one-thousandth part of an ounce. An ounce of sugar contains about one hundred calories, or about one-twentieth the total number of food calories needed to support the ordinary body in health.

Sugar, of course, is necessary to the body, but the sugar which the body can use is not cane sugar at all, but "dextrose," or "grape sugar." This is produced in the body out of the various kinds of starches that we eat. Another kind of sugar is known as levulose, which constitutes about half the sugar found in fruits and in honey. Honey is half dextrose and half levulose. The body must have dextrose in order to do its work. It cannot live on levulose or starch, or utilize cane sugar. These must all be converted into dextrose.

In the process of digestion the saliva converts starch into malt sugar, while another ferment, "maltase," converts the malt sugar into dextrose. Cane sugar is not acted upon by the saliva, by the gastric juice, by the pancreatic juice or by the ordinary intestinal juice. But far down in the lower part of the intestine there is produced a small amount of ferment known as "sucrase," which converts the cane sugar into dextrose and levulose, the same forms of sugar we find in honey.

A pound of cane sugar when taken into the body is converted into a pound of honey. But—it takes four times as long to digest, absorb and utilize an ounce of cane sugar as it does an ounce of malt sugar or an ounce of starch. This is a serious objection to the use of cane sugar, but there is this other and much more serious objection, that cane sugar is an irritant.

When we take starchy foods, the saliva begins acting upon the starch as soon as it is taken into the mouth. It rapidly converts it into malt sugar which is little by little converted into molecules of dextrose and passed on as fast as formed into the small intestine.

This process is a gradual one. The action of saliva upon starch is very prompt but the amount produced is very small—and it is absorbed as it is produced.

Starch itself is bland. All farinaceous foods that have been well chewed are much like a poultice in the stomach, soft and unirritating, and the sugar that is produced from the starch is carried off as fast as it is produced. Thus the stomach is not accustomed to the contact of a strong solution of sugar.

Irritating Effects

But when one takes cane sugar the effect is different. Cane sugar is an irritating substance. Try this experiment: make a strong solution of cane sugar. Put a lump of rock candy or loaf sugar into a tablespoonful of water and dissolve it. Dip your finger into the solution and put a small drop in your eye. You will be astonished to find how it smarts. Or put some of the solution on a raw sore place on the skin, and you will be amazed to find how it burns.

Not a Food for the Human Body

Cane sugar was never intended to go into human stomachs. Cane sugar is cattle food, not human food. It is found in the things that herbivorous creatures eat. The green grass of the meadow has sugar in it but it is cane sugar, and, as previously stated, the cow has a stomach adapted to the digestion of cane sugar. It is supplied with the animal ferment necessary for this purpose, whereas human beings do not have any such ferment, except in very small amount and in the small intestine far down.

Cane sugar is also found in the sap of nearly all trees. In the process of the ripening of fruit, cane sugar is converted into fruit sugar, which is adapted to the needs of the body. As the sap is coming through the little stem of the cherry, for example, and enters into the green cherry, it meets a ferment similar to that which the cow had in one of her stomachs. This ferment converts that cane sugar into fruit sugar and thus adapts it to human use.

There is nothing more absurd than the free use of ordinary sugar. A person, for instance, takes his breakfast food, oatmeal or cream of wheat on his plate and the first thing is a teaspoonful of sugar, sometimes two or three teaspoonfuls of sugar; and over all is poured a quantity of cream. This is like carrying coals to Newcastle. Adding sugar to oatmeal, corn meal, cream of wheat or any of those things is superfluous, because corn meal is chiefly sugar, cream of wheat is nearly all sugar and oatmeal is nearly all sugar. The starch of which these substances are chiefly composed in the process of digestion is all converted into sugar. That heaping dish of oatmeal onto which one puts a spoonful of sugar for breakfast is converted into dextrose, the sweetest of all sugars before it gets through the process of digestion. It is the sugar that comes from bread if one chews it enough. The common use of cane sugar leads to irritation of the stomach and to gastric catarrh.

Cane sugar is the most common of all causes of teeth decay. Yet sugar itself does not attack the teeth. It irritates the stomach and causes it to pour out a large amount of acid gastric juice—and that is where the mischief lies.

Decay of the Teeth

Cane sugar causes decay of the teeth also, in another entirely different way. Teeth require lime, and the amount of lime required by the body is fifteen to twenty-five grains a day. This amount of lime is carried out of the body chiefly through the bowels, although to some extent through the kidneys. We must replace that lime every day. If we do not, the body will be gradually drained of lime.

A certain amount of lime is needed for our intellectual processes. There is a little lime in the brain and in most fluids and tissues of the body, but the lime is chiefly in the bones, to the extent of one hundred ninety-nine parts out of two hundred and the teeth contain a considerable proportion of this lime.

When we do not supply the body with lime the bones are robbed of their store of lime. If, for instance, one is only eating five grains of lime, the body will take ten to twenty grains out of the bones every single day and it will take but few years for a considerable amount of lime to be taken out. It was found by Professor Virchow that when an animal is deprived of lime it obtains its supply from the least active bones as the bones of the head and

those the least essential to life. It would not do to take the lime out of the arm bones because it would make them flexible, nor to take the lime out of the leg bones, because they would become so limber—so Nature very wisely and sagaciously takes the lime out of the skull bones and the face bones and out of the teeth.

Professor Sherman of Columbia University, New York, a number of years ago made some experiments with monkeys, and he found when he did not give the monkeys any lime their skulls became as thin as paper. The monkey has a skull naturally as hard and tough as the human skull. It requires a great deal of force to crush it, but after the monkey has been kept for some months on food which contains no lime its skull becomes so thin it can be crushed with the hand.

The process of lime starvation is going on all the time with a great proportion of American people. If it were not for the large amount of milk used we would have become a toothless race before this for the reason that the ordinary diet contains practically no lime at all.

The Proper Diet

What should the ordinary diet consist of? Certainly not bacon, and fine flour bread and coffee. We must discard these things and use plenty of those foods from which the body can get a needed supply of the kind of sugar it can utilize, such as fruits. Also we must use each meal some of those foods that are rich in lime—spinach, for example, which contains fifteen or twenty grains of lime to the pound. Also good are turnip greens, which contain thirty grains of lime. Turnip greens, indeed, contain more lime than anything one can eat. The potato is the only vegetable that does not contain a considerable amount of lime, though this has other qualities that make it deserving of the high place which it occupies in the modern diet.

Treatment of Enlarged Spleen

People so seldom hear anything about their spleen that many have come to regard it as somewhat of a myth. Nevertheless, it is a sure enough organ, with very definite functions to perform.

The greatest fault to be found with it is that it sometimes has a bad habit of becoming enlarged. Just what causes this condition is not definitely known. We only know that enlargement is frequently the forerunner of severe autointoxication, and that the same causes that lead to enlargement of the liver also produce enlargement of the spleen.

And more than this, the agencies that cause cirrhosis of the liver also cause cirrhosis of the spleen. Your physician, when he examines your liver to find whether it is enlarged or cirrhotic, also examines your spleen, because the two organs are closely related in their functions—the destruction of poisons, especially those poisons that are produced in the colon.

Doctor Silvestri has found that the spleen plays an important part in defending the body against typhoid fever. Of 147 cases of typhoid fever examined by him, 130 were found to have enlarged spleen. This shows how important it is in the prevention of typhoid to do all in one's power to keep the spleen in working order.

In treating spleen disorder, attention should be given first to removing the cause. Correct your diet at once. This must be anti-toxic—that is, it must consist of those foods that do not tend to produce poisons

poor, tumble-down wrecks of humanity. Why should we not keep our muscles and hearts well developed, so that we can carry heavy loads gracefully and easily? I know the ability to do this is generally referred to a moral state, but I think it may be referred to a physical state as well. Why should we grow old with a bent back and shoulders, and find ourselves in a state of decrepitude? Why not walk up straight, with broad, deep chests, sparkling eyes, a pleasant expression of countenance, and a dignified air, instead of being bent over with age — why not?

Let us cultivate health just as we would cultivate any accomplishment, and consider it just as important to be well as to have any luxury of life; indeed, there is no luxury that can compensate for the loss of health; there is no comfort like that of being well. And almost every one can have that degree of health which will make life a luxury to him if he will only cultivate simple habits of life, and conform to all the laws of health.

THE PHYSICAL TRAINING OF WOMEN.

[Now that women are golfing, cycling, cricketing, etc., the following extracts, translated from a paper in the *Deutsche Revue, Breslau*, by Professor A. Mosso, may be perused with benefit by principals of schools and others in charge of the youth of the nation: —]

The physical training of woman is, in certain respects, more important than that of man. At this moment the question is of peculiar importance to those interested, from the fact that gymnastics in the schools is being actively opposed. There are perhaps fewer difficulties in the way of a reform of female than of male education. No preparation for military service is demanded of women; the only objects of physical training are physiological and hygienic.

Gymnastics is very commonly regarded simply as a means of developing the muscles, without reference to its influence on other organs; its most important purpose, however, is in its bearing on the internal organs and their functions.

It is to be regretted that gymnastics is usually brought to a close at too early a period in a girl's life. It is most beneficial to girls from the fourteenth to the twenty-fourth year, the very years in which girls take the least exercise. Young ladies usually despise gymnastics as something childish.

Gymnasia attract only a few well-read girls or those conscious of exceptional physical gifts. Our duty is to bring the weak under its influence, that they may be trained into strength. Above all things it is necessary to convince the mothers that the design is to secure the healthy physical development of their children.

The fact that poor food, undue mental strain, dejection, or great weakness, all tend to hinder the ripening of maidenhood, should convince us that at this critical period of life our care should be redoubled to provide for the physical development under the most favorable conditions. Many people are of the opinion that a life of repose is beneficial to girls at the age of puberty, but physiologists all tell us that at this period exercise is especially necessary to promote digestion and the circulation of the blood.

Hysteria, of which we hear so much nowadays, is a degeneration of the nervous system. It is a melancholy characteristic of women and feeble men, and a disease which is regarded as a condition of chronic weariness. To avert

THE BOON OF WORK.

HALF the people in the world are busy trying to evade work. Well for them that they cannot wholly succeed. Of all the gifts to mortals, work is among the choicest. It is the great civilizer and balance-wheel of mankind. To the individual it is an incalculable blessing. Nor is this truism meant in the stereotyped sense in which it once figured as a fundamental law of education — the false and unpalatable sense that whatever was difficult and disagreeable was necessarily good discipline. It is meant in a scientific sense. Every advance in the study of mind and body reveals the fact that action is the normal condition of all animate creation. Nature abhors inertia not less than she abhors a vacuum. Decay and death are the penalty of inactivity, and not to use a faculty is to lose it.

"Get work; be sure 'tis better than what you work to get." A wiser epigram was never twisted than this quaint advice of Mrs. Browning's. Man works for bread, for wealth, for fame, or far-off ease. But these are not the real objects of work. They are but lures to lead man on to greater effort. They are no more the purpose of work than an oratorical prize is the purpose of speech. Money and position may be prizes, but the effect of the work upon the worker is infinitely better than the gold or honor that he works to get.

Like breathing and all the processes of nature, the effect of work is so subtle and gradual that few appreciate its value. It is recognized only in striking instances. Yet always it exerts its potent influence for change and growth and energy. It is the motive power of the engine of the heart, and sends the red blood coursing with renewed force through the tingling veins. It is the master-builder of the body and the brain, and daily tears down tissues only to build up stronger muscles, firmer flesh, and healthier nerve-cells. It writes wrinkles on the brow, 't is true, but not more surely than it writes convolutions on the brain. It schools the body to instant, deft, and accurate obedience to the mind. Watching the moral, we cannot fail to see that work is necessary to health and sanity, to growth and culture. It is as certainly an element by which the whole being thrives as air. As well hope to live without eating as to live without working. It is a condition that is imposed upon all life by the supreme Scientist himself.

Not only is work inevitable, and essential to the safety, health, and growth of the whole being, but it is one of the greatest sources of pleasure. Indirectly it adds to enjoyment because the change from effort, application, and monotony lends double zest to recreation. But it gives also direct pleasure. All enjoyment arises in the use of some faculty. Conversely the normal use of any faculty is pleasurable. The man who has found his natural and congenial sphere of work, and who prosecutes it under proper conditions, derives real and constant gratification from it, although, from necessity, he does not recognize it with the same effervescent enthusiasm with which he recognizes the pleasures of a holiday. Taken from his work, he would suffer more from the loss than he ever suffered from drudgery.

There is nothing like hard and systematic work to keep the emotions under proper control. It is the best oblivion in which to bury self or sorrow. It broadens the outlook and distracts the mind from petty personalism. Like a brisk walk or a plunge in the ocean, an exacting duty steadies the nerves, settles the mind, and dispels illusions. No one is

THE INFLUENCE OF EXERCISE UPON RESPIRATION.

Respiration is very closely connected with muscular activity and muscular effort.

The normal activity of the lungs differs in different persons.

During exercise the blood undergoes a change.

The lungs may be considered as both the chimney and the draft of the vital furnace.

Standard of measurement. Table.

The amount of air taken into the lungs is in direct proportion to the degree of muscular activity.

There is a close connection between the exercise of animals and their respiration, or the amount of oxygen which they receive. The frog uses little air.

The bird has an extraordinary capacity for receiving oxygen.

Notice the difference between the temperature of the frog and that of the bird.

The direct effect of exercise is to bring into play the respiratory muscles.

The relation of exercise to heart action.

The heart beat becomes slower than usual a little time after violent exercise.

It is rapid work which brings the heart into greatest activity.

This training may be overdone.

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RELATION OF EXERCISE TO RESPIRATION AND HEART ACTION.

BY J. H. KELLOGG, M. D.

RESPIRATION is very closely connected with muscular activity and muscular effort. Even a slight change of position is sufficient to cause a change in the rhythm of respiration. When a person is lying upon a level, in a horizontal position, the respiration may not be more than ten to twelve in a minute, slow and deep; while in sitting up, it will be increased two or three per minute; in standing it will be increased to eighteen or twenty movements in a minute; while in walking it will be increased still more; and in running, the rate of respiration may be as high as forty or fifty breaths per minute. Respiration is increased by exercise, because the poisons produced by the activity of the muscles excite the nerve centers, and these stimulate the muscles of respiration to greater activity. The effect of this increased activity is, first, to throw off the poisons which are being produced and thrown into the blood; and secondly, to take in a larger quantity of oxygen, the purpose of which is to burn up this poison, and also to furnish to the muscles an element which is indispensable to support muscular activity. It is found that the muscles absorb oxygen much more rapidly while active than while at rest. The lungs eliminate carbon dioxide (CO_2) during exercise in increased quantity, and it is possible that the increased quantity of carbon dioxide in the blood may be one reason for the increased activity of respiration.

The normal activity of the lungs differs in different persons. It is the result of impulses received from the *medulla oblongata*. A curious case has recently been reported from New York: A man was received into one of the hospitals there, who, a year or two ago, received an injury at the base of the brain, and since that time has been compelled

breathe at the rate of 150 times a minute. For more than a year this man has been breathing at this remarkable rate, instead of sixteen or twenty times a minute.

It has been found that during exercise the blood undergoes a change. While at rest, the blood is alkaline, but during exercise it loses its alkalinity, as the result of absorption of wastes by the muscles. The lungs may be considered as both the chimney and the draft of the vital furnace; the fresh air is brought in, and the poisonous gases are poured out, through the respiratory organs. Hence it is necessary, when the wastes are accumulating in the muscles from exercise, that the vital draft shall be increased; so the usual rate of respiration is increased during exercise. Dr. Edward Smith has made a careful study of this subject, and taking the amount of air or oxygen received per minute while lying down, as the standard of measurement, or 1, has constructed the following table:—

Sitting up	1.22
Sitting and singing	1.26
Standing	1.33
Walking at the rate of 1 mile an hour	1.90
Walking at the rate of 2 miles an hour	2.76
Walking at the rate of 3 miles an hour	3.20
Walking at the rate of 3 miles an hour and carrying a weight of 34 lbs.	3.50
Walking at the rate of 3 miles an hour and carrying a weight of 118 lbs.	4.75
Walking at the rate of 4 miles an hour (five times as much as when lying down)	5.00
Running at the rate of 6 miles an hour (seven times as much as when lying down)	7.00
Walking in a treadmill and ascending at the rate of 45 steps a minute	5.70
Swimming	4.33

The amount of air taken into the lungs is in direct proportion to the degree of muscular activity, being increased from 1 to 7 — sevenfold — by increasing the muscular activity from the passive state of lying down, to the active condition of running at the rate of six miles an hour; that would not be a very rapid run.

It has also been observed that there is a close connection between the exercise of animals and their respiration, or the amount of oxygen which they receive. The frog uses so little air, that it is not necessary to supply it with so efficient a respiratory apparatus as in human beings and the higher order of animals. The frog has ribs, but no breastbone, and consequently no diaphragm, so that he cannot breathe as we breathe, by expanding the chest; he simply has an air-bag within the body. When he wishes to fill this air-bag, he swallows air in the same way that we swallow water; the air is taken in through the nostrils, which are guarded by valves; these close, and by compression of the throat, the air is taken down into the air-bag. Just notice the frog when he is taking in air, with his nose out of the water; you will see the throat moving up and down, which is these little valves opening and closing during the process of drinking air.

The bird has an extraordinary capacity for receiving oxygen. It not only has an enormous chest and lungs, but its air capacity is also increased by means of its chest bones, which are hollow; these bone cavities connect with the lungs, so that the bird stores up air in its bones, and thus keeps a large amount of air on hand. The bones being hollow lessens the specific gravity of the bird. The bones of fish are solid.

Now notice the difference between the temperature of the frog and that of the bird. The frog is said to be a cold-blooded animal. It is not really a cold-blooded animal, since its blood is just as warm as the air or water in which it lives. The frog makes so little heat and receives so little oxygen into its body that its temperature does not rise above the surrounding air or water; while in the bird we have a temperature three or four degrees higher than in man, and in some instances it rises still higher than that. This high temperature is due to the great activity of the bird. The bird flying through the air lives a wonderfully active life; the swallow will easily keep up with the swiftest railroad train. Compare the high grade of life of the bird with the low life of the frog, and then remember that the difference between their modes of life is due to the difference in the amount of oxygen which they consume.

The direct effect of exercise is to bring into play the respiratory muscles, and hence to increase their strength. If the subject is a young person, in whom the joints of the vertebræ and the cartilages which join them to each other and to the breastbone, have not become ossified by age or idleness, the *size* of his chest will be increased by exercise which brings the lungs into play as well as the muscles of the chest, and the joints and cartilages being flexible, the ribs are drawn apart and the chest capacity is increased. In old persons, in whom the cartilages and joints have become ossified, there can be no increase in chest capacity, although there may be an increased activity of the muscles of the chest.

Prof. Marey, a prominent English physiologist, has made some experiments as regards lung capacity, through systematic observations of the students of the Joinville school. Examinations were made at the beginning of the term, and after about six months it was observed that the rhythm of respiration had been changed; while asleep, their respiration was slower, deeper, and more profound, and the amount of air taken in was found to be double that which had formerly been observed. The respiration had thus been permanently modified by exercise. So we see that exercise increases the breathing capacity of an individual when idle or asleep, as well as during the moments of exercise.

The relation of exercise to heart action is also a matter of interest. The heart beats, ordinarily, 4 times to every movement of the lungs; so if we breathe 18 times a minute, the heart beats about 72 times a minute. This is the normal relation between the movements of the heart and the lungs, although in disease this relation often changes. So it does not follow that if a person, like the gentleman in New York above referred to, should breathe at the rate of 140 times a minute, his heart would beat 600 times a minute.

The acceleration of the vital activities by exercise usually increases the heart beat from 10 to 30 times a minute. Even such slight movements as a change from a lying to a sitting, or from a sitting to a standing, position will increase the heart beat. For example, suppose a person's heart beats 60 times a minute when lying down; when sitting up, it will beat from 68 to 70 times a minute; standing up, it will beat from 72 to 76 times a minute; if he walks quietly along, the heart beat will be at the rate of from 80 to 85; and if he runs violently, the heart beats may be increased to 120 or 140 beats per minute. I examined a young man some time ago, just after he had been exercising in running up and down

stairs a couple of times, and found his heart beating 176 times a minute. If the heart beat is perfectly regular, with no intermissions between the beats and no irregularity of any sort, the rapid beating is simply the result of the violent exercise, and is not significant of any injury, nor of danger; but if exercise induces irregular action of the heart, then it is a matter which demands the most careful consideration.

Why does the heart beat increase by exercise? It is doubtless in consequence of the need of the muscles for oxygen; the muscles get oxygen through the medium of the blood, and this the heart supplies. The muscles need more oxygen during active exercise, and so it is arranged by nature that the heart shall beat more rapidly to supply the muscles with oxygen sufficient for their nourishment, and also for the purpose of washing away the poisons.

It is necessary, also, that the lungs should be supplied with oxygen to oxidize the poisons in the system, as well as to contribute an element necessary for its support.

It is observed that when a person has been exercising violently, the respiration becomes quiet much before the heart does. Why is this? — Probably because the mechanism which impels the heart to action is within itself. The heart contains little nerve centers stimulating it to activity, so that in many animals it may continue to beat even after removal from the body. I have seen the heart of a turtle, for instance, still beating days after the turtle was killed. The lungs receive their impulses from the *medulla oblongata*, and quickly cease their excessive activity when the necessity disappears. The heart centers become excited during activity, so that the heart returns more slowly to its natural rhythm.

Another fact of importance in relation to the heart is the result of fatigue. The heart beat becomes slower than usual a little time after violent exercise, probably because the heart itself, being a muscle, becomes fatigued, so that it does not act as energetically as it should.

The advantage to the heart of proper exercise is that it increases its size and strength; it becomes larger, stronger, and more vigorous as the result of

judicious physical exercise. In the oarsman, or the man who is training for rowing, the heart as well as the other muscles becomes larger; in fact, this increase in the size and vigor of the heart is one of the essential features of training. If it were not for the increased size and vigor of the heart, the rower would not be able to sustain the violent exertion to which he subjects his muscles during the contest. It is necessary that his heart should grow in order for him to accomplish a certain feat in rowing; he could not do it unless his heart had been prepared for it by previous work.

It is rapid work which brings the heart into greatest activity. A person might make his muscles strong by lifting a heavy weight, and yet his heart might be comparatively weak. So with an oarsman; his muscles may be strong, and yet his heart not be strong enough to pump the amount of blood through the lungs which would be necessary to supply the proper amount of oxygen to the body in rowing, running, etc. Oarsmen and short-distance runners always have large hearts.

This training may be overdone. Training may be carried so far as to produce an over-development of the heart, and thus harm may result. The consideration of this fact is very important, because, as the heart becomes larger and stronger and its activities are increased, all the vital activities are increased with it; digestion improves, etc.; but if the activity of the heart is overdrawn, and it becomes too great, then the natural balance of the vital activities is destroyed. The brain may receive too much blood, and sleeplessness may result. The lungs may be so congested by the increase of blood that the individual, upon lying down, finds it difficult to breathe, so that he must be propped up in bed. The stomach may receive so much blood that it will also become congested. So with many other organs of the body, most serious results may follow. Overtraining the heart is thus very injurious, and may be exceedingly harmful. It has been found that oarsmen and short-distance runners very often become seriously diseased, and die prematurely, in consequence of the damaging effect of excessive work upon the heart.

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LECTURE SEVEN.

The physiology of exercise.

Physiological and therapeutic effects of exercise.

Muscular work.

Oxidation of glycogen, and of nitrogen under the influence of oxydase, or ferment, and the formation of CO_2, sarcolactic acid, uric acid, urea, creatin, creatinin, etc.

Effect on circulation.

Fatigue.

Muscular fatigue.

Exhaustion.

Secondary fatigue.

Respiratory fatigue.

Effect of exercise on respiration, heart action, digestion, body temperature, skin action, kidney action, general metabolism.

Sedentary horse and men.

Effects of work in development of muscles.

Best methods of general exercise are walking, swimming, out of due work, mountain climbing, horseback riding, rowing and skating.

In adapting exercise to individuals, it is necessary to estimate the amount of work done. This is easily done in walking, mountain climbing, or stair climbing. Show how.

300,000 foot pounds required daily for a healthy man.

Divide 300,000 by man's weight, and multiply by 20 to get distance to be walked in feet. Bicycle riding should cover four times the distance. In climbing mountains, multiply the altitude climbed by the weight and subtract from 300,000. Divide the remainder by the individual weight and multiply by 20 to determine the additional distance to he travelled reckoning on a level.

Relation of work to heat production and nutrition. Of 10,000 units of fuel absorbed daily, one fourth is used in work and three fourths

stored. He is now seventy-five years old and can consult the small-type dictionary without glasses. Herr Munch lives on fruit, milk preparations, and vegetables. He drinks only water. Every day he takes a run of a quarter of an hour to keep his skin active and his limbs supple, and says he can outdo in speed most flesh eaters at fifty.—*Vegetarian Messenger.*

TOTAL abstinence from intoxicating drink is not simply the teaching of the church and the temperance society, but of many a railroad corporation and business house. Many of the largest and best of these great companies have laid it down as an absolute and irrefragable condition for their employees that they shall be absolutely temperate. Let these companies be called narrow, severe, fanatical, bigoted, puritanical, straight-laced, or what not, they make it their changeless rule. They cannot afford to have their capital and their business endangered by drinking employees.— *Herald and Presbyter.*

THE New York *Christian Advocate* has made an examination of the Keeley cure cases in that section, and finds that out of 534 reported cures, 251 relapsed into drunkenness.

THE CURSE OF GERMANY. — An abstract from the *German Imperial* statistics shows that one fifteenth of all the cultivated land in that country is devoted to the production of materials for the making of alcoholic drink. The liquor traffic employs directly 1,500,000 men out of the 20,500,000 engaged in German industries of every kind. The loss to the country in money through this diversion of land, capital, and labor into the service of an industry which leaves the country no richer than before, is estimated at 458,000,000 marks, — an average loss to every family of eight persons of a sum large enough to keep a laborer's family of that size for eight weeks. — *Sel.*

TEMPERANCE is the proper control of the appetites; it implies the moderate use of good things, and total abstinence from poisons.

ALARMED by the ravages of strong drink, the Belgian government has ordered the display in all school-rooms of a printed placard setting forth the injurious effects of alcohol.

A CHINESE CANCER CURE. — The readiness with which many intelligent people swallow the vile decoctions sold as medicines by Indian doctors, Chinese doctors, and quacks of all descriptions, is one of the inexplicable phenomena of a civilized age. The following is the formula of a Chinese cancer-cure for which a wealthy Californian paid a hundred dollars, and of which he swallowed several gallons before he died: —

℞. Dragon's heart's blood	1	oz.
Pickled lizards	2	ozs.
Korea ginseng root	½	oz.
Willow cricket skins	12	ozs.
Rattlesnake's tail	3	ozs.
Sweet potato vine	6	drs.
Black dates	2	ozs.
Red bark	1	oz.
Devil-fish suckers	3	ozs.
Reindeer's horn (ground)	3½	drs.
Bird's claws	1½	ozs.
Lotus leaves	6	ozs.
White nuts	5	ozs.
Coffin nails (old ones)	8	drs.

Boil the whole in two quarts of water. Dose: A tablespoonful every three hours.

JAPANESE COOLIES. — A gentleman traveling in Japan related that on his journeys in the mountainous regions in winter he was carried by four coolie sedan-carriers. These men, who eat daily only two meals of rice and fruits, while carrying by turns, two at a time, at running pace, the sedan-chair containing the traveler, covered thirty-seven English miles in about eight hours. He described these coolies as extraordinarily muscular, well-hardened people, who after the day's journey always took a bath in the open air, the water being covered with a thin sheet of ice.

MARRO found that thirty-one per cent of criminals whom he studied were children of alcoholized parents; and Rossi, out of seventy-one, found thirty-one per cent of the same hereditary taint. This includes those who were criminals from direct intemperance only so far as they were children of drunken heredity.

THE more society offers itself to the extension of drunkenness, the more does it tend to increase the number of crimes and criminals.

LOST hope is a fatal disease.

PHYSICAL EDUCATION AS A MEANS OF PREVENTING DISEASE.

THE best of all means of preventing disease is a good constitution. Nature has made man superior to every germ to be found in the air, the water, or the soil. The human body, when free from disease and absolutely intact, can successfully resist the most virulent germs. Cholera, malarial disease, typhoid fever, malarial parasites, the microbes of yellow fever, and other infectious maladies, do not attack healthy persons, but those whose functions are in some way deranged, or those whose bodies are deteriorating. Physical training is one of the most important of all means of developing hardihood and resistance.

Dr. Ulrich, of Wheeling, W. Va., presented an interesting paper before the Section on State Medicine at the last meeting of the American Medical Association, held at Baltimore, Md., May, 1895, on "The Importance of Physical Education in Childhood and Youth as a Means of Preventing Disease." We quote a few paragraphs as follows: —

"Let us compare two children that are stricken down by disease, one whose physical training has been neglected, and one whose physical forces have been well developed by a judicious course of training. Let us suppose that pneumonia is the disease that has attacked these two children. Which one will have the better prospect for recovery? The strong child has, by skilful training, developed all its organs, especially the lungs, which, by continual exercise under the supervision of a competent instructor, have been well deve'oped, and are consequently able to throw off the products of the disease, or even resist the attacks altogether; while the child whose physical education has been entirely neglected, who has been allowed to sit bent up in a schoolroom, having little or no play of the lungs, either not going out on the playground at all, or endeavoring to play with the stronger, more robust, and more active children, overdoing itself and leaving its lungs in a worse condition than before, has to succumb to the terrible disease.

"Take a case of typhoid fever, and see how the two will fare. In this, as in other fevers, the heart has to double, treble, or even quadruple the work that is required of it in health. Now which heart will be able to accomplish it without coming to grief? You all know it will be the heart of the strong child, the one that has enjoyed good physical training and has been strengthened by a judicious and well-regulated course of exercise; while the weak and flabby heart, with its imperfect valves, its thin walls, its dilated ventricles, which is scarcely able to perform its work when no disease is present, is sure to fail when double or even quadruple labor is required of it. In typhoid fever we have a diseased condition of the intestines near the ileocecal valve. Frequently the coats of the intestines in this region are very much thinned. During the period of convalescence, when the patient begins to eat, owing to the slow digestion gases accumulate in the bowels, rupture of the intestinal coats takes place, and death ensues. In which patient is this more likely to occur? In the one whose organs and tissues, owing to a good physical development, are all in a sound and healthy condition, able to endure a strain, to throw off the products of the disease, to resist the encroachment of the destroying malady? or in the one who is weak, the muscular coat of whose intestines has lost its peristaltic power, rendering it unable to carry off the products of the disease,

which are thus permitted to remain stationary, preying still further on the tissues until they become thin, unelastic, and friable?

"Consider another class of diseases, a product of our modern civilization, of which the ancients knew nothing — nervous affections. I presume no one will hesitate to decide which class is most liable to these affections. The man or woman who has been properly trained, the intellectual and physical powers having been developed *pari passu*, whose organization is well balanced — the brain with its dependencies, the nervous system, the muscular system with its locomotive powers, the alimentary tract, the assimilative apparatus, as well as all the emunctories, in good condition as a result of a sensible course of physical training in childhood and youth, — will surely be less affected by nervous disorders and their concomitant pain and misery than the pale, weak, flabby being that is in every respect the reverse of the one I have just described.

"It is hardly necessary to say anything as to the causes that render such persons amenable to all kinds of nervous diseases, for I am sure every one of you can see it at a glance. When one of these nervous, excitable creatures is attacked by a fever, no matter what may be its character, it is easy to foresee the result. There is no power of resistance, and the patient must succumb. Should this person, nevertheless, survive the attack, he or she would remain a wreck, and life would be a burden. It is unnecessary to multiply instances, as the matter is self-evident."

WHAT TO DO FOR EXERCISE. — Let us say that it is winter. You are at work in a factory, or in a store, or on a farm, or in school from seven, or eight, or nine, till from four to six at night. Many people will tell you to get a football and hang it from the ceiling, then stand off and punch it. Another will say, "Go through a lot of fancy movements on getting out of bed in the morning." These things are all very well, but there are some things that are much better than that. For example, if you have a garret, or better, if you have a barn near by that you can use, rig up a set of high jumping poles out of two clothes poles and a light cross-bar. Every night before supper, just after coming home, go out into the barn, and by lamp-light make thirty good jumps at as high a point as you can go. It is of course better to go in the morning, but we all hate to get up early. If there are two boys in the family, or if you have any boy friend who lives near by, make him punt with you. That will add to the game.

This is, however, only an example. Another is that you buy a double pair of boxing-gloves, and begin to spar with the same friend one or two evenings a week. I have seen such a plan started by two boys, one of whom still has a fond remembrance of the evenings spent in learning this fine sport. The meeting that was to have been once a week gradually grew in importance, until finally a club was formed. Championships and such like things came in time, but at first we began by clubbing together and buying a book on boxing, and then we tried to know all we could about boxing, tried to keep our temper, and tried to judge as skilfully as possible. In time a tournament came, and then a series of tournaments, and before we knew it our two evenings a week had given us admirable exercise, a good, vigorous condition of muscles, one or two black eyes, and a general healthy and hearty feeling, which never could have been attained from any amount of pulley-weights. — *Harper's Young People.*

HOW TO LIVE IN HARNESS. — In a paper in *Scribner's Magazine* on "The Use of Time," Robert Grant speaks forcibly of the necessity for busy people to take exercise in the open air. He writes: —

"To die in harness before one's time may be fine and in exceptional cases unavoidable, but how much better to live in harness and do the work which one has undertaken, without breaking down. Happily, the young men and women of the country of the present generation may almost be said to have athletics and fresh air on the brain. The grown up men and women, absorbed in the struggle of life, are the people who need to keep a watchful eye upon themselves. It is so easy to let the hour's fresh air and exercise be crowded out by the things which one feels bound to do for the sake of others, and hence for one's own soul. We argue that it will not matter if we omit our walk or rest for a day or two, and so we go on from day to day, until we are brought up with a 'round turn,' as the saying is, and realize, in case we are still alive, that we are chronic invalids. The walk, the ride, the drive, the yacht, the bicycle, the search for wild flowers and birds, the angler's outing, the excursion with a camera, the deliberate open air breathing spell on the front platform of a street car, — some one of these is within the means and opportunities of every busy worker, male or female."

PHYSICAL SPORTS FOR WOMEN.

TALL maidens are a phenomenon of modern times in America and England. At the sea beach, at church, wherever the young people belonging to families in easy circumstances congregate, the young women seem to have taken inches to themselves by comparison with their mothers and grandmothers when the latter were young. The men do not appear to have made the same advance in height, although it is often said that the average of modern men, judged by the clothes and armor of bygone centuries, is considerably larger in every way.

The size of women is perhaps related to this alleged increase of the men in bulk and height, but a more reasonable guess is the improvement which has taken place during the present century in the care for female children with respect to food, sunlight, and fresh air. Female children are more respected now by their parents and nurses than they were before certain prejudices in favor of the male were largely done away; they are better fed, more intelligently clothed and warmed, allowed better sleeping rooms and playgrounds. Medicine has gotten rid of a legion of harmful ideas which helped to kill off girls who had a tendency to grow rapidly, and the number of those destined to be maids "divinely tall" if not "divinely fair" has been thus enlarged. Nowadays, as they grow to womanhood, they are able to indulge as never before in exercise indoors and in the fresh air; this must preserve the lives of many who under the old regimen of close rooms and irregular eating were certain to succumb to various maladies that are now quickly thrown off or wholly escaped.

Along with saner views of health has gone a gradual pushing back of the average age of marriage, from the teens to the twenties for women, and from the twenties to the thirties for men. Perhaps this has something to do with the stronger constitutions that appear to be the lot of modern young women, they being the children of stronger, more mature parents. But the factors probably most potent are those mentioned,—better food and hygiene in youth, more exercise in girlhood.

While our college boys have been overdoing exercise in a grievous way, turning our universities into training places for physical prowess and lowering very appreciably the old standards of scholarship, literature, and the arts, our college girls and the young women of our big cities have been taking just about the proper amount of exercise for good effect; at least many thousands have done so. At one woman's college boating is carried on in the most sensible fashion. There are no races, no crews that train, no cracks. Almost all the girls row, so that the entire college gets exercise on the water, instead of a mere fraction of each class, as it is among the college boys.

In cities the exercise for women, latest to come, but perhaps the one destined to remain longest, is fencing. The Fencers' Club of New York has been the pioneer in this healthful sport for women; last winter, Boston and Salt Lake City established clubs of men and women, in which the latter get their exercise on the same floors and from the same teachers, but at different times of the day. The Paris *Figaro* announces that a similar club has been founded in Paris on the model of the New York club, and also a second, composed exclusively of women who fence. The example of New York, tested by an experience of ten years, has been found worthy of imitation, not only in distant parts of the Union, but at the very center of the practice of the game, in Paris itself.— *New York Times.*

HOW A WOMAN MAY RETAIN BEAUTY.

THE physical beauty of women should last until they are past fifty. Nor does beauty reach its zenith until the age of thirty-five or forty. Helen of Troy comes on the stage at the age of forty. Aspasia was thirty-six when married to Pericles, and she was a brilliant figure thirty years afterward. Cleopatra was past thirty when she met Antony. Diane de Poictiers was thirty-six when she won the heart of Henry II. Anne of Austria was thirty-eight when described as the most beautiful woman in Europe. Mme. de Maintenon was forty-three when united to Louis, and Catherine of Russia thirty-three when she seized the throne she occupied for thirty-five years. Mlle. Mar was most beautiful at forty-five, and Mme. Recamier between the ages of thirty-five and fifty-five.

A woman, beautiful in all else, but wanting mirth, will grow old, sour, thin, and sallow; while the merry, fun-loving woman will be fresh and sweet, despite life's happenings and sorrows. The highest

beauty is the beauty of expression, and the cultivation of this requires the crushing out of envy, hatred, malice, and all low motives and passions.

True beauty rests on plain living and high thinking, on blood, bearing, and brains. It is in one sense a relative thing. To dip far into philosophy on the subject is not necessary.

The gospel of relaxing, of "letting go," of one's self, at times, is essential to facial well-being. The nervous system, like the violin, must not be kept always at concert pitch.

Beauty means harmony, balance, the mental fire of sensibility, as well as bodily attractiveness. Banish fretting, trivial perturbation, scowling, whining, wailing, excessive laughter, and pointless smiling.

In the first place, health is all-important. Flesh texture and tint, for example, depend upon it. A complexion lacking luster, plumpness, and elasticity, shows a lack somewhere in the vital or nutritive system. A mild diet, gentle temperature, even digestion, open-air exercise, sleep, and a tranquil mind pertain to good looks. Mistakes in diet begin usually in childhood. Often a girl sits down to a potato and pickles, several cups of strong tea, pies, cakes, ices, and fiery condiments. If meat be on the bill of fare, there is a chance that it has been spoiled in the cooking. As a result, when the girl is twenty her eyes are dull, teeth yellow, gums pale, lips wan, flesh flaccid, and skin unyielding. Recourse is had to padding, face washes, stains, and belladonna. The habits of life are unaltered. Before there can be an improvement, a change must be made and firmly persisted in. The diet, while generous, must be temperate. Peppered soups, stews, game, pâtés, ragouts, and spices are not good for the complexion. What is termed the epicurean woman will have, before she is thirty, a blotched face and flabby flesh. Women of nervous and sanguine temperament should restrict themselves to a diet of eggs, milk, bread, fruit, light broths, etc. Pure water should be the daily beverage.

A great deal of beauty at low cost can be obtained through the plentiful use of rain water, sunlight, and open-air exercise. Frequent bathing is a healthful luxury. Bodily exercise should be carried on temperately, its aim being facile muscles, supple joints, and pliant limbs — in a word, physical beauty.

How many women know how to walk? Observe them in the street or entering a drawing-room, even the better classes. One shambles, another slouches as if her shoes were down at the heel; but most of them dive, straining every muscle in their bodies, ploughing along with strenuous effort, like a ship in a high sea and facing head-winds. A perceptible swing of the body should be manifest with every step — that is, advance all of one side at the same time, with a slight turn right and left of the shoulders as the corresponding foot is projected. A long step — not a stride — easy, unhurried, the leg thrown forward from the hip, — this is the secret of the ideal gait. — *Science Siftings.*

THE ART OF BREATHING. — It is perhaps one of the signs of the times, to those alert for indications, that the art of breathing has become more and more a subject of attention. Oculists as well as physiologists go deeply into its study in a way hardly to be touched upon here. Physicians have cured aggravated cases of insomnia by long-drawn, regular breaths, fever-stricken patients have been quieted, stubborn forms of indigestion made to disappear. A tendency to consumption may be entirely overcome, as some authority has within the last few years nearly demonstrated, by exercises in breathing. Sea-sickness, too, may be surmounted, and the victim of hypnotic influence taught to withstand the force of any energy directed against him.

There is a famous physician of Munich who has written an extensive work upon the subject of breathing. He has, besides, formulated a system by which asthmatic patients are made to walk without losing breath, while sufferers from weaknesses of the heart are cured. At Meran, in the Austrian Tyrol, his patients (almost every royal house of Europe) are put through a certain system of breathing and walking. The mountain paths are all marked off with stakes of different colors, each indicating the number of minutes in which a patient must walk the given distance, the breathing and walking being in time together. As the cure progresses the ascents are made steeper and steeper. — *Harper's Bazar.*

HIS COLORS. — He had been learning to ride the bicycle, and the falls he had taken had marked him up pretty thoroughly with bruises. A young woman enthusiast was talking to him about his riding.

"What are your colors?" she asked. "I'd like to give you a decoration for your wheel."

"Thanks," he responded; "they are black and blue."

Home-Culture

THE TRAINING OF A CITIZEN.

THE best thing that the promoters of the kindergarten system are doing for the interests of humanity is in elevating to its true importance the work of the home for the child. It is in bringing us to see that the essential part of the training of a citizen does not consist in teaching him to read and write, but in development along moral lines, and that the shaping of speech is not to be disconnected from the formation of character. The training of the citizen for a patriot or an anarchist, for self-seeking or true humanitarianism, begins in the cradle, where, with the first dawnings of intelligence, the foundations may be laid for self-control, unselfishness, and obedience to law. This training is essentially the same for men and women, and in all I have to say of home education I speak of the child, and not specifically of the boy or the girl.

One end of home education should be to make of the child a healthy, well-developed animal, and this necessitates intelligent oversight of his food, his clothing, his sleep, and all his physical habits. He should be accustomed from infancy to regularity in eating, and taught to think of food as for the building up of the body, and not a mere delight to the palate. While care should be exercised that food should be abundant, nourishing, and well prepared, it is a less evil that the child should sometimes eat inferior food than that too much importance should be attached to mere feeding, while the social and intellectual side of the gatherings about the family table is lost sight of. A child's tastes are no more to be outraged than those of his elders, but a child will usually take wholesome food without question if he comes to the table with his appetite uncloyed by sweets, and if he has not been taught to criticize and choose or reject according to the whim of the moment. I have been a guest at a breakfast table where the inquiry was regularly made: — "What is my little boy going to eat this morning?" with the result that the youngster did not choose to eat anything that was upon the table, but was coaxed as a great favor to eat some specially prepared dish. A wiser mother served the children without question whatever food was provided, and though they understood that they were at liberty to leave it if they chose, they usually ate it as a matter of course, as their elders did.

If we are to have a healthy animal, it must be regulated by some higher law than the caprice of fashion or the vanity of the parent. Constriction, compression anywhere, undue or unsupported weight, insufficient covering for legs and arms, whatever interferes with perfect freedom of motion, does not secure a uniform temperature, or makes the child conscious of his clothes, is a sin against physical well-being.

Sleeping with older persons or in unventilated rooms, as well as insufficient hours for sleep, is a damage to the child and is responsible for a deal of the fretfulness that makes the morning hour a trial to the household. The practice of reading, singing, or in any way coaxing a child to sleep is a dangerous one, for in nothing are we more thoroughly the creatures of habit than in this matter of sleeping and waking. To go peacefully and happily to bed at an early hour, with a little good-night song and a few quiet words of mother-love and mother counsel, and then to sink naturally to the sleep that comes from silence, darkness, and pure, cool air, — that is to find indeed "tired nature's sweet restorer."

But our citizen is to be something more than a healthy animal; he is to be governed by intellectual and spiritual forces; he is to be himself a spiritual force.

Self-control is the end of all discipline, and it may

plishes the result without any drawback. These desiderata are only to be secured by wholesome food and drink, suitable exercise, sunshine, and sanitary surroundings.

"In discussing the subject of the injurious effects of alcohol as a narcotic, it is natural to inquire why we should use any narcotic. Tea, coffee, and tobacco should be placed in the same category as alcohol, by all who would study their needs and duties to themselves, and who desire to promote their highest effectiveness in the work of purifying their lives and helping their fellow men. There is no occasion for any narcotic to those who would live the higher life. If the world is ever to be reformed, it must come by the reformation of individuals."

Imprisoned at His Own Request.

Last July a young man in New Jersey induced the police to lock him in jail, so he could not get cigarettes. He had begun smoking at the early age of ten years, and at twenty-six was a nervous wreck, with a will-power so weakened that he was utterly unable to resist the clamorings of his appetite for cigarettes when it was possible to get them. Within the last three years their terrible effect has been painfully apparent,—his constitution is now ruined, his once robust body is reduced to a skeleton, he is so nervous he can scarcely hold a glass of water, and his head aches incessantly. Again and again he had determined to drop the habit, but found to his dismay that he could not do it, as he no longer had the will-power to obey the dictates of his conscience.

Victor Hugo Not a Smoker.

Victor Hugo was not a smoker, asserts the *Literary Digest*. As Théodore de Bauville once said, "In the house of Victor Hugo, peer of France, no one has ever even attempted to smoke." One evening one of his guests was vaunting the beneficent effects of a cigarette on a creative imagination. The great poet at once arose in revolt. "Believe me," said he, "tobacco is more hurtful to you than beneficial; it changes thought into reverie."

A BRIGHT lad, from a good home, so-called, was observed by his teacher to be growing morose. Little things were missing from the schoolroom, but the thief could not be detected. Soon sums of money, from friends and others, were taken, and it was developed that this boy, who needed nothing which his indulgent parents did not supply, was pronounced an irresponsible kleptomaniac, rendered so, the physician said, by the use of cigarettes. Another boy only fourteen years old was unfit to attend school on account of frequent epileptic fits, caused, his physician said, by the use of tobacco.

DR. BOLLINGER, director of the Anatomico-Pathological Institution in Munich, asserts that it is very rare to find a normal heart and normal kidneys in an adult resident of that city. The reason for the kidney disease is the tax put upon these organs by the drinking of excessive amounts of beer, and the cardiac hypertrophy and degeneration are secondary lesions for the most part. The consumption of beer is everywhere increasing.—*Popular Science News*.

THE *Popular Science News* says that "if, after eating pure food, fresh, outdoor air is breathed, the blood will show a large increase in red corpuscles, but by drinking stimulants, the red disks are decreased in serious proportions."

EXERCISE FOR INVALIDS.

BY J. H. KELLOGG, M. D.

THERE is no one thing which is so necessary to chronic invalids, from a therapeutical standpoint, as exercise. Exercise is the most important of all the means of vital regulation in the body; it regulates the relations of the supply and demand of the system — if there is too much material taken in, exercise will compensate for it. Exercise also regulates all the vital processes of the body, — excretion, elimination, etc. All these physiological effects of exercise are as necessary for a sick person as a well one. If we wish to know the value of a medicine for a sick man, we first ascertain its effect upon a well man; and when we find that it is able powerfully to modify the vital processes of a well person, we know that it may control those processes in a sick person. So the most powerful agents of any kind in disease are those which have the most influence in health.

Oxygen is the most powerful of all stimulants, and quickens all the vital activities. A person takes into his lungs seven times as much oxygen when exercising as when lying quiet, while the amount of carbon dioxide eliminated is about four times as great when a person is exercising vigorously as when he is lying down.

It may be asked, "What kind of exercise is best for invalids and convalescents?" — They require just that kind of exercise which is suited to aged persons, as there is in them the same lack of capacity for severe exertion of any kind. Carriage or horseback riding, walking, Swedish gymnastics, or any other exercise requiring slow movements of the arms and legs, are appropriate in these cases.

Great care must be taken to avoid fatigue in the case of the feeble, as exercise involves the use of the nerves as well as the muscles, and the convalescent or the weak person becomes discouraged when his vital forces are exhausted. Thus, it is very important to remember that the invalid and the old man mus always stop short of fatigue in exercising.

For a very feeble person exercise must be begun very gradually; especially with those who have been long in bed must the most extreme caution be observed in this respect. Standing or an attempt at walking is too much for such a patient to undertake at first. When he has been in bed, lying in a horizontal position for a long time, his blood-vessels have become distended, and he experiences tingling or numb sensations, or his limbs become rigid, upon trying to bear his weight upon them. In putting him on his feet at once, there is too great a change; there must be a long series of steps between lying in a horizontal position and getting on one's feet and walking off. The first thing to do is to teach the patient while in bed how to use the arms and legs. Have him pull the legs up in the bed and then stretch them out again, and continue this exercise until the muscles of the legs have been considerably strengthened. But it is entirely too long a step for the patient to pass directly from his position in bed to a standing position. After exercising the legs in bed for some days, he should be placed in a chair, and his feet allowed to rest on the floor for a time each day; then he should be helped to his feet and allowed to stand for a moment, and after a little while he will be able to take a few steps by the help of an attendant, and soon to walk without help. Massage and manual Swedish movements are of great value in such cases, as they furnish to a degree the results of exercise without effort on the part of the patient.

Manual Training an Aid to Mental Balance.

In an address before the Massachusetts Teachers' Association, Mr. Thomas M. Balliet remarks as follows: —

"Manual training, appealing to eye and hand, establishes a co-ordination between the sensory and the motor parts of the brain, which is a most important step in the organization of the brain. This proper knitting together of different centers, this opening of paths of association between the sensory and central portions of the brain on the one hand and the executive portions on the other, is most vital to its health and efficiency. It makes for perfect sanity and mental health, for well-balanced adjustment of life to environment, for good judgment, for self-control, and for firmness and poise of character. Much of our present school work divorces knowing from doing, and often exaggerates the relative value of the former as compared with that of the latter. Examinations test knowing more than doing, and even university degrees are conferred on the basis of attainment in knowing rather than attainment in doing. This may be to a large extent unavoidable, but it is nevertheless unfortunate. The legitimate end of knowing is doing. Right thought, to remain healthy, must ultimately issue in right deed. . . . Day by day the idea is gaining ground that mere brain education is not the true foundation of a symmetrical and thoroughly developed mind."

How to Walk.

At a recent medical congress, says the *Health Magazine*, much amusement was created by an orthopedic expert who analyzed the peculiar locomotion of some of the distinguished functionaries of Washington. He said that he had been making quite a study of the matter of "toeing in" and "toeing out." In London, it is the fashion to toe out a great deal. Sculptors frequently exaggerate this tendency, and the statue of Lord Admiral Nelson was instanced as an illustration. People who walk in deep snow toe straight ahead. There are two classes of ordinary individuals, those who keep the body straight in walking, and those who incline the trunk forward.

The heel of the forward foot should strike the ground first and the leg be straight when the weight falls upon it. The weight should lie forward on the balls of the feet, with the body slightly inclined, the chest erect and leading, and the head gracefully poised.

The trunk should aid in its own progression, instead of being "toted" along as dead weight by the long-suffering legs. The arms should swing easily, and the trunk move without any swaying or rocking motion. The legs should operate from the hip and not the knee, and the toes should not pierce the air as if skyward bent. Whether they turn in or out will depend a good deal on the rapidity of the gait. Tall people should remember that short steps are more graceful than long reaches, and that their shoe heels will thus wear more evenly.

DR. ELIZA M. MOSHER, Woman's Dean of the University of Michigan, holds the position of guide, philosopher, and friend to the six hundred girls in the university. She guides them in the selection of their course of study, and looks after the overworked nervous ones, finding out where the tight places are in the lives of the women students. She examines all ladies who are admitted to gymnasium work, and is responsible for their physical fitness for it. Her duties include also those of professor of hygiene, and director of physical culture.

COMPLICATIONS IN MEASLES.

BY KATE LINDSAY, M. D.

As stated in the previous article, most of the deaths from measles result from some complication, these being liable to occur not only during the active stages of the disease, but during the time of convalescence. These may, however, in the majority of cases at least, be prevented by proper treatment and care.

As the poisons produced by the disease not only cause inflammation of the skin, but of the mucous membrane of the digestive tract, and of the air-passages, as well as other lining membranes of the cavities of the body, it is an important matter to lessen the functional work of all these organs as much as possible.

Most of the complications which increase the fatality of all infectious diseases are due to added infection by other microbes, the most common being the ordinary putrefactive, or pus-forming, microbe, which infects wounds, and formerly caused so much trouble in the surgical wards of hospitals. These little plants, which are all about us, find in the diseased secretions and inflamed surfaces of the body which always exist in any case of infectious disease, just the right kind of soil to grow on ; and as the protecting covering of the epithelium is in a great measure destroyed, there is nothing to hinder these microbes from entering the tissues themselves, just as they do in a wound. In case the patient is predisposed to tubercular disease, and any of the tubercular bacilli are lurking in the glands of the body, or find entrance into the lungs through the air, an acute tubercular inflammation may take place, and death occur from what is known as quick consumption ; or the disease may assume a more lingering form.

The most frequent complication in the case of small children is capillary bronchitis ; in older children, catarrhal pneumonia. The former especially is apt to be a very fatal disease, as the little one has small bronchial tubes with very weak walls, and does not know how to expectorate the foul secretions which gather in the tubes. As the disease advances, the smaller tubes become completely closed up, thus shutting the air out of the air-cells. It is generally supposed that this condition arises from taking cold ; but it has been the experience of the writer that it is quite as frequently caused by indigestion or overloading of the stomach. The little patient is generally very thirsty in this disease, and if given the bottle or nursed at the breast, it will swallow an amount of food as great as or even greater than when in health, to quench its thirst. This, combining with the morbid secretions swallowed from the throat and tubes, forms a foul mass of fermenting matter in the digestive tract, the poisons from which are distributed to every organ in the body. After the liver, the lungs are the next organ to receive the poison, and from thence it is distributed to the capillaries. Even after the attack of measles has entirely subsided, and the patient is convalescent, the greatest care should be taken not to put more food into the stomach than it can digest. If the patient is an infant at the breast, it should be nursed only half as much, or even less, than when in health. To satisfy the craving for drink, give plenty of pure boiled water, either cold or hot, as the child seems most to relish.

Exposure to cold and dampness, and overheating from too vigorous exercise, and cooling suddenly afterward, often

Exercises for Flatfoot. — Hoffa, professor of surgery at Würzburg, recommends the energetic massage of the leg and of the sole of the foot, with exercise taken in an erect position, the toes touching, and the heels as far apart as possible. The order of the movements in the exercise is as follows: Raise the heels, flex the knees; then extend the knees and sink the heels, repeating. In standing and walking, the inside of the foot should be elevated as much as possible. The feet should be kept as nearly parallel as possible in walking. Do not allow the foot to rest upon the whole plantar surface at any time. Wear a metallic in-sole so shaped as to raise the inside of the foot and give it its natural arch.

THE THERAPY OF EXERCISE.

PHYSICAL exercise as a means for the development and strengthening of the body, with the view to the preservation of health, has been practised for many years, but it is only within a recent period that it has been prescribed with any attempt at precision in the treatment of almost every form of chronic disease.

Exercise is not only an important adjuvant in the treatment of disease, but is also, when rightly prescribed, a therapeutic measure of great value in its curative possibilities. It may, in fact, be said that no chronic ailment exists in the treatment of which exercise in some form cannot be practised with advantage.

The physician who would have had the courage a few years since to prescribe any form of active exercise in the treatment of heart diseases would have been doubtless dubbed a crank, if not looked upon as a dangerous man in the community; whereas now exercise is regarded by many as being the greatest of therapeutic agents in the cure of just such affections.

The numerous cases of displacements of the internal organs and particularly of the abdominal viscera, which are so frequently brought to our knowledge, are now generally well understood to result, in the majority of instances, from a weakened or ill-nourished muscular system, due mainly to insufficient exercise; and it is further understood that no other therapeutic measure can successfully take the place of exercise either in the prevention of these displacements or in the restoration of the wandering organs to their normal positions.

It has long since been observed that the cure of indolent ulcers, chronic rheumatism, surgical wounds of long standing, and the union of fractured bones are facilitated by some mildly active or passive form of exercise. In fact, it matters but little what the nature of the disease may be, when the inflammation and fever have subsided, and the acute stage passed, nothing can be lost, but a steady gain will be made, by strengthening the patient; and this can be accomplished by no other means so surely as by prudent exercise.

It does not necessarily follow that exercise should be fatiguing, or require any exertion upon the part of the patient in the severe forms of disease. In such cases the exercise should be of a passive character, such as that coming within the domain of massage, the more active forms of exercise being resorted to as the increased health and strength of the patient will admit. The exercise, too, should be of a general character, extending to all parts of the body. Any attempt at the development of certain groups of muscles with complete absence of it in others will not be followed by the best results.

When the therapy of exercise is better and more generally understood and practised, a great advancement will have been made in the treatment of chronic ills.—*J. Clark Slay, in the Dietetic and Hygienic Gazette.*

ATHLETIC EXCESS.

A WISE critic says: "Athletes who have overdeveloped certain sets of muscles at the expense of others, men who have acquired a stoop from constantly bending, and people who are weak in the heart by violent exercise should be criticized severely for making gymnastics a menace instead of a means of help. The

REGARD FOR SYMMETRY IN GYMNASIUM WORK.

ROBERT J. ROBERTS, writing in *Men* on the necessity of strengthening the weak parts of the body in order to attain true symmetry, says: —

"Many gymnasium members devote too much time to developing the stronger parts of their bodies, and neglect to exercise the weaker portions. If they would bear in mind that the body is only as strong as its weakest part, they would see the folly and danger of this way of working, and would use all the body so as to make its parts proportionally strong. A chain is only as strong as its weakest link. This is equally true of the body, which, when it is put under a test, will give way in the weakest part. Get measured; find out what parts of your body need the most work, and give it that work, and in a few months' time your body will take on as perfect proportions as its bony framework will allow.

"Some of the most important and weaker muscles to develop are those that you cannot easily see without the aid of a mirror — the posterior muscles. The pride of the flesh and the ignorance of anatomy lead many to develop the muscles they can easily see on their own bodies, the anterior ones. Often you will see a man dipping on the parallel bars, or throwing his chest strongly forward between the breast bars too much, or working too often on the chest weights with his back to the weights, and when asked why he is doing so much of that kind of work, he exclaims: 'Why, to broaden and deepen my chest, and to draw my shoulders back into their normal position;' and when it is explained to him that he is developing the muscles that will produce huge pectorals and depress his front chest and round his shoulders forward, he is astonished.

"Gymnasium work is curious; it will pull a young man all out of form or will improve his form as far as nature will allow. The first knowledge of a teacher of gymnastics or of body-building work should be elementary anatomy. A system of gymnasium work that teaches much anterior work is wrong. If one only did physical work that developed the posterior parts chiefly, the only result would be that he might sit, stand, and walk around with a flat back and a well-rounded-out chest. We don't see men of this class very often, and he who does only posterior work is not making much of a mistake. The best rule to follow is to do three-quarters posterior to one-quarter anterior work."

from the diseased member, and in avoiding the straining or twisting of any sore ligament, tendon, or muscle, as well as pressure on the sensitive part, will contribute a great deal toward the comfort of the patient, and very materially aid in repairing the injury.

In nosebleed the hemorrhage is often greatly increased by the common practice of bending the head over a washbowl. This position favors the flow of blood toward the torn vessels, and keeps up the bleeding, sometimes until the patient faints and the weak heart action permits a clot to form in the open ends of the bleeding vessels. In nosebleed the head should be held erect and slightly backward, and cold and pressure should be applied over the brow and nose, and heat to the spine and extremities. In all hemorrhages of the internal organs, as the lungs, bowels, pelvic organs, and brain, the position should be such as to favor a free flow of blood away from the bleeding organs. In cases when there is a discharging abscess, the opening should be made in the dependent portion, if possible, and the position should be such as to favor a free discharge from the abscess.

Of the multitudes of bad habits of position causing disease and defective development in both children and adults, I have space for but slight mention. Many bad positions are the result of disease which causes weakness of the muscles supporting the body in a proper upright position. Examples of a stooping posture due to injury done to the muscles of the waist by bands and corsets, are everywhere to be met among women, and they are manifest in the protruding abdomen, stooping shoulders, and caved-in, hollow chest, and in the hollow region over the stomach; also in the languid step and listless, benumbed mental condition, which show the moral, mental, and physical degeneration of the person. Children often acquire bad positions from improper seats, from carrying burdens in one hand only, or from stooping over their books or work, sleeping on high pillows, ill-fitting clothing, and also from improper exercise which calls into use only certain groups of muscles while others are neglected and grow weak from disuse. Women especially suffer in this way. The practice of treating disease by proper position requires no special apparatus. It needs only a little skill on the part of the patient and nurse to know how to place the body so as to favor a normal blood supply and proper exercise of all the muscles.

HOW TO KEEP THE SICK-BED WHOLESOME.

MAN is constantly poisoning himself. Sick or well, every person is giving off waste matter which poisons the air, the clothing, the bed, and all other surroundings, unless there are provisions made for these waste products to be oxygenized and removed. The rooms of the dwelling-house must be ventilated and the foul air carried off, or disease will result. The clothing worn through the day should all be removed and aired at night, and the night clothing and bedding must be spread out to air during the day. Cleanliness and health demand this care in order to get rid of foul exhalations which cling to the bedding and clothing worn, even in health, when the bed is used but one third of the time. How much more important, then, do frequent changing, airing, and washing of the clothing become when the bed is used all the time, and is constantly saturated with not only the bodily waste, but with disease germs and poisonous products? The bed is also liable to be soiled with discharges from the bowels and bladder, from sputa, and from catarrhal discharges from the eyes, nose, and other mucous surfaces, as well as from pus and foul matter from running sores. Many will keep the outside of the sick-bed fair to view, but the costly, elaborate counterpanes and pillow-cases may cover a mattress saturated with stale urine and discharges from the bowels, which are constantly poisoning the patient himself, and endangering the life and health of all other members of the family.

Dried discharges from the bowels and lungs are especially dangerous in certain contagious diseases, as consumption, typhoid fever, cholera, yellow fever, etc., and great care should be exercised to prevent soiling of the bedding, as it is very difficult to cleanse, especially the mattress. Cover the mattress with an oilcloth or rubber cloth, and over that place the draw-sheet. Whenever the draw-sheet becomes soiled, do not allow the discharge to dry, but immediately remove the sheet and immerse it in some disinfectant solution, thus destroying the poisonous germs and preventing the further extension of the infection. If no disinfectant is at hand, boiling the sheet, if done thoroughly, will destroy all disease germs known. Soiled bedding should never be tolerated under the patient for an instant, and no one should be so uncleanly as to cover up a soiled sheet with a clean one, thus fouling two sheets instead of one, and leaving the patient to be bathed in the vile

feared it would bring on another if he were moved or disturbed in any way. His countenance was livid, his breathing labored, and the end seemed to be but a matter of minutes when this fact of his unchanged position was learned. Notwithstanding the imminent danger from heart failure from the exhaustion, the patient was gently turned to the right side and heat was applied over the heart, with heat and gentle friction to the spine. When his position was changed from the back to the side, all the surface circulation seemed to have ceased there, and the tissues felt hard and dead; but by using heat and gentle friction at first, and later hot and cold spraying alternately, the patient finally rallied, though it was many days before the immense bed-sores on the back healed. These bed-sores were the result of continuous pressure, which arrested the blood flow and caused such complete death of the flesh and skin as to render the reviving of it impossible. The change for the better in every symptom of the patient after being moved, was remarkable. Within an hour the temperature, which was at 106° F., fell to 104°; the respirations, which were 60, fell to 40; the pulse, which was so rapid and weak as to be uncountable, was decidedly perceptible at the wrist and could be easily counted, though still very rapid (150). The patient had improved very much in strength; the face had grown less dusky; and taken altogether, the change for the better was so marked and rapid that if it had been due to any drug taken internally, the drug would have earned the well-deserved reputation of being a most wonderful remedy, which had almost miraculously saved a dying patient.

There are many diseases of the respiratory organs and the heart in which the patient can only breathe in certain positions. Thus in pleurisy, especially if there is effusion, the labored breathing is often greatly aggravated when the patient lies on his well side, and he can often be greatly relieved by turning him on the back or onto the diseased side. The same is true of cases of pneumonia where one lung is filled up with exudate; also in cases of pressure from tumors or anything impeding the action of one lung by pressure. In these cases the uncrippled member has double work, to make up for the failure of the defective organ, and when the patient lies on the sound side, that lung cannot expand freely because it is compressed by the diseased lung on one side and by the ribs on the other; hence relief is obtained by lying on the affected side.

Patients who are rational and able to move, always instinctively move into the position in which they can breathe most easily, but young infants and those who are too ill and completely helpless often endure much needless suffering, and their life is endangered by a failure on the part of those who are caring for them to place them in a position where breathing will be the least impeded. The writer has frequently relieved such cases of labored respiration, especially in children, by simply turning them over. If a remedy is administered at the same time, the effect earns a good reputation for the remedy, by affording such quick and ready relief of distressing symptoms.

In cases of asthma the patient breathes most easily in the upright position, and also in all cases of fluid accumulations and tumors which fill the abdominal cavity and press upward on the thorax. In cases of dilated bronchial tubes where there is a sac which fills with matter, the distressing cough which frequently threatens the patient's life, from suffocation, can often be relieved and the cavity emptied by having the patient lie over the edge of the bed and pressing upon the thorax. The action of gravity in pressure will thus assist the spasmodic efforts of the bronchial tubes in emptying the cavity. The disagreeable choking sensation often felt by dyspeptics and hysterical patients, can be relieved and the gas expelled easily by turning on the left side. The knee-chest position, as has been often proven by experiment, is one of the most successful methods for replacing not only prolapsed pelvic organs, but prolapsed bowels, liver, stomach, spleen, and kidneys, as well as in cases of hernia. The tired housewife with a bearing-down, sickening pain in the lower part of the abdomen and spine, can relieve her pelvic pain and backache by stopping her work for five or ten minutes every few hours, and going to her room and taking this position for five or ten minutes, having the clothing perfectly loose, at the same time inhaling and exhaling deeply. Or a still better position which relieves the congestion of the lower extremities is to lie on the back on the floor, placing the feet on a chair or the bed, or to climb the wall, feet foremost, until the weight of the body is sustained by the shoulders and head. Keep this position for half a minute or so; then rest, and repeat ten or twelve times. This simple treatment can be taken for five or ten minutes, twice or thrice daily, and may save the overworked housewife a physical collapse and a large doctor's bill.

When there is inflammation of any part, as in a felon on the finger, a bruised, lacerated, fractured, or dislocated limb, a rheumatic joint, or any other injured vital organ in which there is over-fullness of the blood-vessels, care in taking the proper elevation and position, so as to favor the free flow of blood

about with them, continually, diphtheria germs, while two or three in every thousand persons are typhoid carriers. This important fact explains the occasional occurrence of outbreaks of typhoid fever, diphtheria and other diseases that cannot be traced to direct infection from persons suffering from an acute attack of the same maladies.

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Simple Dressing for Wounds

DR. D. H. STEWART recommends ordinary granulated sugar as an excellent dressing for wounds. If the wound has been made with some dirty instrument it should be first washed with salt water, a teaspoonful of salt to the pint, and then bathed with an alcoholic solution of iodine, one part of ordinary tincture to three parts of alcohol; then the wound should be quickly covered with granulated sugar. Dry, clean dressings should be applied. If there is pain in the wound a fomentation may be applied over the dressings. The warm steam will find its way through the dressing and by contact with the skin will afford relief.

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Too Much Civilized

WE ARE BECOMING CIVILIZED ALMOST TO DEATH. The human race is fast hurrying down the hill of race deterioration and to certain race extinction unless by some means changes are brought about.

WHEN WE LOOK INTO THE SITUATION we find in this country alone a million and a half people dying every year. That is an enormous yearly loss from our population

if it takes place, is due to the development of immunity. That is, the tissues of the patient develops such a degree of tolerance for th infecting microbe that its presence is no longer capable of giving rise to serious symptoms. Typhoid, diphtheria or pneumonia patients do not recover because the bacteria which produce the disease have left the body but bceause the body has acquired ability to successfully combat the invading bacteria or to render its poisons innocuous.

NUMEROUS OBSERVATIONS have shown that in the case of typhoid fever about one out of twenty of the subjects of this disease continue to discharge daily from their intestines millions of typhoid fever germs for three months or more. A recent epidemic of typhoid in New York in which the infection was conveyed through milk was traced to infection by a typhoid carrier who had suffered from typhoid fever in the west some forty-six years previously.

A MOST REMARKABLE TYPHOID CARRIER is Mary Mallon, the famous "Typhoid Mary," a cook, who has carried typhoid germs about with her for more than fifty years, although it could not be learned that she herself had ever suffered from an attack of the disease. The probability is that she suffered from an attack of the disease in so light a form that its real nature was not discovered; nevertheless she was the cause of typhoid fever outbreaks in eight families in which she worked at different times. Although confined for a time, "Typhoid Mary" is now free and may be employed by some family as a cook.

Careful bacteriologic investigations have shown that in every community two or three persons out of every hundred carry

government began the process of civilizing the American Indians. They gave them land to till, supplied them with tools for farming, and built them comfortable houses in which to dwell. At one station in the northwest, shortly after the Indians were settled in their new abodes the agent in charge was called for a time to another place. When he returned two years later he was greatly surprised to find the Indians had all returned to their wigwams, while the houses he had taken such pains to erect for them were being used as storage places for their farming implements. When asked why such a change had been made the chief's ingenious answer was, "Too much house!" He said that when they dwelt in the houses they became sick and some of them spit blood. When they went back to their wigwams they got well. Very naturally they preferred health to houses. Recent statistics show the Indians after the civilizing of the last few decades are rapidly succumbing to that "house disease"—tuberculosis.

MAN IS BY NATURE AN OUTDOOR ANIMAL. It is just as natural for him to live outdoors as for any other creature. It is a good thing to remember this at this time of year, for if we get accustomed to living out-of-doors during the summer we may perhaps enjoy more outdoor life at other seasons.

OUR PIOUS ANCESTORS enacted a law that suicides should be buried where four roads meet, and that a cart load of stones should be thrown upon the body. Yet when gentlemen and ladies commit suicide, not by cord or steel, but through disobeying Nature's known laws, they are buried in consecrated ground and under the auspices of the church, and the public are not ashamed to read an epitaph upon their tombstones false enough to make the marble blush.—*Horace Mann.*

THE ENDURANCE OF THE SAVAGE IS ALSO INCOMPARABLY ABOVE THAT OF CIVILIZED MAN. A few years ago at the Hague Peace Conference there was a discussion respecting the use of dum-dum bullets, bullets that tear the flesh and make horrible, ragged wounds. Most of the nations at the Hague were ready to discontinue their use, but England would not agree to this, because "the savages that we have to combat in our colonies have such toughness of constitution, such enormous vitality we cannot destroy them with ordinary bullets," and they told the story of how a savage chief charged upon an English officer. Although one hundred feet distant at the outset and receiving during his progress seven bullets in his own body he did not stop until he had accomplished his purpose. Because of their extraordinary vitality these savages recover from wounds that would prove fatal to a man with habits customary with civilized people.

A SAVAGE RARELY DIES OF BLOOD POISONING, for he lives on a natural dietary. Captain Sanderson, the famous elephant hunter, says, in his interesting book, "Fourteen years in the Jungle," "If you wound a lion, no matter where, although he may live some considerable time, he will sooner or later die of blood poisoning resulting from it. But you may see a bison going along with an enormous tear in the flesh or with several suppurating sores where some lion or leopard has injured it, yet it appears in good health and it gets well after a time. This is due to the difference in diet. The diet of one fills the blood with impurities, while the diet of the other leaves the blood pure and with all its recuperative power."

THE LIFE TO WHICH CIVILIZATION HAS ACCUSTOMED MANKIND is not the natural life. It very speedily works havoc with the natural man. Some years ago the United States

THERE ARE OTHER MARKED EVIDENCES OF DETERIORATION. For one thing, the civilized man has almost entirely lost his sense of smell, whereas the savage has a keen smell. It is said that certain tribes of South America can scent members of other communities rods away. Think what a marvelous sense of smell the dog has! His master passes through a crowded street into some place where hundreds of human feet have passed over his master's tracks, on hard pavements or a polished floor, yet the dog will surely follow them. And there are certain tribes in Africa that have nearly the same acuteness of smell.

TOO, THE MAN WHO LIVES IN THE COUNTRY is apt to have a far keener vision than the city dweller, while defective eye-sight is growing more and more common among civilized people. The average boy becomes far-sighted or near-sighted before he leaves school—about ten per cent of children begin school with defective vision, but when they get up to high school, seventy-five per cent of them have some deficiencies of the eyes.

MOREOVER THE SAVAGE IS ABLE TO HEAR FAR BETTER THAN THE CIVILIZED MAN, while his sense of taste is superior. The savage, wandering through a forest, knows as soon as he plucks a berry or other fruit and touches it to his tongue whether or not it is fit to eat. The civilized man sitting down to a hotel table gives little consideration as to the suitability of the food on the menu. He eats it because it is there, because he enjoys the smell and flavor of it, because it looks dainty, or perhaps because it has the right sort of French name. The civilized man may get sick from his indulgence, the savage runs less risk.

of only one hundred millions. In some countries, and in some parts of this country, the death-rate exceeds the birth-rate. In France for a whole generation the death-rate was ahead of the birth-rate until the government set a premium on babies, offering special favors and advantages for large families. This brought the birth rate up to the death-rate, a fact over which there was great jubilation until the people discovered recently that the death-rate again is in excess of the birth-rate.

AND NOT ONLY IS THE DEATH-RATE ENORMOUS, but insanity has greatly increased, in fifty years to the extent of three hundred per cent. Intellectual activity is the highest manifestation we have of human life. When we find the brain failing in man, it is evidence that the whole body is failing. The body fights to maintain its functions; it labors to the very last to maintain the integrity of its highest functions. The brain receives more blood than any other organ in the body in proportion to its size. The brain maintains its integrity after every other organ of the body has begun to deteriorate in advancing age. You often find a man of eighty with his brain as clear and his mind as active as it was when he was forty. Even though his limbs are withered, his liver and stomach shrivelled and his arteries beginning to show evidence of hardening, his brain is as vigorous as ever, of which we had a splendid example in Gladstone.

WHEN WE FIND EVIDENCE of a marked increase of mental degeneracy from year to year, then, it is evidence that the physical stamina of the race is certainly depreciating. There are no imbeciles or idiots among our native Indians. These people are practically free from idiocy and lunacy. They get crazy sometimes under the influence of the white man's fire water, but they are not born crazy or feeble minded.

M. CHEVREUL (1789-1889)

Chevreul, ~~who~~, when asked to give the secret of his great longevity, replied:

"First of all, I have never worried. My father was chemist to the Gobelin industry, and I succeeded to his position, and so have never had to worry about finances; and second, I have all my life lived frugally. I do not eat meat, do not smoke, and do not drink wine, tea or coffee."

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Another Achievement Credited To Dr. J. H. Kellogg

Patent 1,917,264 has been granted to Dr. John Harvey Kellogg, Director, Battle Creek Sanitarium, Battle Creek, Michigan, covering four major heads of patentability.

Dr. Kellogg's chair back will be incorporated in chairs now entering production through a national manufacturer. It is also embodied in a posture panel which may be used with almost any chair, and may be moved from place to place, used in motoring, aviation, etc.

In either form, the dorsal spine between the shoulder blade is given support by a shaping which also tends to eliminate round shoulders. The lumbar spine is properly positioned by a gentle curvature of the chair. This induces formation of the "abdominal shelf," by the lumbar region of the spine, upon which the viscera are supported when a setting position deprives them of the muscular suspension they receive in standing.

Dr. Kellogg's discovery follows fifty years of study of sitting posture, forty years thereof being devoted to perfection of lumbar support, and the crowning achievement consisting of the curvatures which afford proper dorsal spine position. By inducing the proper position of internal organs in sitting, serious congestion is eliminated in these regions, and a swift return to healthy functions achieved. The posture panel which embodies this design is produced by Perfect Posture Chair Company, Battle Creek, and gives immediate enjoyment of the benefits of Dr. Kellogg's discoveries to those unwilling to await production of evolution of the complete chairs.

The Soil as well as the Seed Needs Attention

FOR the past thirty years the world has been giving more and more attention to the study of ways and means by which to avoid the seeds of disease, those insidious agents which the bacteriologists have named and classified by the hundreds in recent times. Every schoolboy knows the names and the lurking places of a dozen or more of these implacable enemies of human life. Every housewife knows that flies and mosquitoes are carriers of germs, and that bad water and milk are the favorite lurking places.

But we have woefully neglected the fact that soil is a matter of as much importance as seed. Without a suitable soil no seed can grow. In a favorable soil a seed will produce an abundant crop; in a poor soil, a scanty crop; and in a sterile soil, no crop. When a farmer sows a crop of wheat, he wants a good crop, and so he enriches and prepares the soil accordingly. The same principle applies to the growth of consumption and pneumonia germs. The more favorable the soil, the more abundant the crop. No one gets consumption or pneumonia unless his tissues, the soil in which the germs must grow, have been prepared for their reception by wrong habits of life, by wrong eating, a high protein diet—the free use of meat and eggs, the use of tea and coffee, hasty mastication, possibly the use of tobacco, an indoor life, and other infractions of the laws of health.

This matter of the soil is one of paramount importance. Chronic maladies have doubled in thirty years. This is not because the germs have become more active or virulent, but because the soil has become enriched. Tea, coffee, meat, mustard, pepper, alcohol, tobacco, late hours, bad air, luxurious living, are the fertilizers which best prepare the soil for an abundant crop of the germs which cause Bright's disease, apoplexy, arteriosclerosis, and premature old age.

The fine art of living consists in making and keeping the soil of the body sterile to the seeds of disease by temperate and natural living.

CORRECT POSITION AS A REMEDIAL AGENT.

THE most efficient remedial agents are sometimes neglected because they are so simple that no one thinks it worth while to study the best methods of applying them. In many cases they are calculated to do great good and relieve bodily pain, restoring the normal conditions to deranged organs of the body.

In cases of fainting or heart failure from any cause, nothing will restore the patient to consciousness quicker than placing him in a recumbent position with his head lower than the rest of his body. In some cases it is best to almost stand him on his head, when the fainting is profound. In these cases the brain has ceased to act because there is no blood flowing to it to keep the brain cells active; so by bringing gravity to aid the enfeebled heart action, enough blood may be caused to flow to the brain to stimulate the cells to action and start all the bodily functions into action again.

In case of hemorrhage from a wound, or any other injury, much may be done to arrest the flow of blood by elevating the injured member so as to favor the return of the blood from the wound toward the heart, and keeping the blood-vessels in the part as empty as possible. Sometimes when the wound is in the vicinity of a joint, as in the bend of the knee or elbow, flexion or bending may do a great deal to stop the bleeding by compressing the open vessels and giving time for blood clots to form in the open ends of the wounded vessels.

In all cases of congestion of dependent organs, due to venous dilatation, as varicose veins of the legs, the throbbing, heat, pain, and fullness of the surface vessels will cease at once if the legs are elevated higher than the trunk and rubbed upward. This will quicken the accumulated venous blood, and hasten its return to the heart and lungs; by a well adjusted bandage or rubber stocking the walls of the weakened vessels may be so strengthened as to keep up a normal circulation and prevent rupture of the blood-vessels, which causes hemorrhage, or indolent ulcers, which are often very difficult to heal. As the patient advances in years, the danger from senile gangrene is increased, and often a foot or leg may die while the patient has no other illness except that of the legs, due to stagnation of the blood.

The tired housewife whose feet and legs throb and burn when she is about her daily duties, can help herself a great deal by planning her work so as to do a part of it sitting down, and, while sitting, putting her feet upon a stool. By thus taking advantage of a change of position she will find rest, and the congested lower extremities will be freed from their extra load of stagnant blood. Vegetables and fruit can be prepared while sitting, dishes may be washed and wiped, grains looked over, and the unstarched clothes ironed, while the overwrought, busy feet and legs are resting and renewing their strength.

Babies and helpless or paralyzed invalids should be frequently turned over in bed to secure change of position. In the very weak, the internal organs may mortify from blood stagnation or the external tissues may die, forming bed-sores from lack of nutrition, causing death from blood poisoning, and exhaustion, while otherwise the patient might have recovered.

Patients in the later stages of typhoid fever and other acute febrile diseases of a severe type, often lose their lives because in their helplessness and stupor, friends and nurses fail to "disturb" them, as they say; they do not understand they are letting the body die by sections. This is mistaken kindness and forbearance on the part of the friends. The writer well remembers such a case where a patient ill of typhoid fever had been permitted to lie forty-eight hours absolutely still on the back, because he had had a hemorrhage of the bowels, and the family

not by nature blessed with what is called "a fine figure." It thus possesses a range of adaptability which is impossible to any of the conventional styles of dress.

DRESS FROM PARISIAN FASHION PLATE.

3. The principles of this system are of such a fundamental and general character that they can be adapted to any style which recognizes the outlines of the natural figure as its basis, and hence is not confined to any set or uniform style.

No woman who has deformed her figure by corset wearing would like to have a dress exactly fitted to her misshapen form. The attempts of such persons to adapt a healthful dress without the aid of proper instruction, is one of the principal causes of the unpopularity of dress reform, and the unwillingness of many intelligent women to make any attempt in the direction of reform in dress. First of all the misshapen figure must be corrected. This is easily accomplished, in the majority of cases, by having the woman learn how to stand and sit correctly, and how to discipline the neglected and weakened muscles of the trunk so as to enable them to hold the figure in proper shape.

The costume illustrated in this number, the "Mariette" costume, comprises fifteen pieces, — front, back, and under-arm gore of lining of waist, and front and back of outside of waist; upper and under portion of sleeve, and puff for sleeve; two collar portions, two trimming pieces for waist, and three skirt pieces.

The gown is developed in black serge, with the trimming portions, fold, and rosettes made of satin-finished silk, and edged with guipure insertion overlying white satin. Any kind of material may be used instead, that is not too stiff and wiry, either in silk, wool, or cotton, with any preferred decoration. The quantity of material needed is 6¾ yards of common width, 44-inch goods. Patterns of this gown may be obtained of the Sanitarium Supply Co., Battle Creek, Mich. Price, 40 cents.

A photo-engraving of a new costume by our special designer will appear in each succeeding number of this journal during the year.

SEASONABLE RECIPES.

Celery with Tomato Sauce.— Cut the white part of five heads of celery into small pieces. Cook until tender in boiling water, turn into a colander and drain. For three cups of stewed celery prepare a sauce with a pint of strained stewed tomato, heated to boiling, and thicken with a tablespoonful of flour rubbed smooth in a little cold water. Turn over the celery, and serve hot. If desired, a half cup of thin cream may be added to the tomato sauce.

Apple Dessert.— Pare some large tart apples, remove the cores, put into the cavities a little quince jelly, lemon-flavored sugar, or grated pineapple and sugar, according to the flavor desired. Have as many squares of bread, with the crust taken off, as there are apples, and place a filled apple on each piece of bread. Arrange in earthen pie plates, moisten well with a little quince jelly dissolved in water, lemon juice, or pineapple juice, according to the filling used. Cover closely and bake in a rather quick oven till the apples are tender. Serve with mock cream or cream and sugar.

Beet Coffee.— Wash good beets thoroughly, but do not scrape; slice, and brown in a moderate oven, taking care not to burn. When brown, break in small pieces and steep the same as ordinary coffee.

from the diseased member, and in avoiding the straining or twisting of any sore ligament, tendon, or muscle, as well as pressure on the sensitive part, will contribute a great deal toward the comfort of the patient, and very materially aid in repairing the injury.

In nosebleed the hemorrhage is often greatly increased by the common practice of bending the head over a washbowl. This position favors the flow of blood toward the torn vessels, and keeps up the bleeding, sometimes until the patient faints and the weak heart action permits a clot to form in the open ends of the bleeding vessels. In nosebleed the head should be held erect and slightly backward, and cold and pressure should be applied over the brow and nose, and heat to the spine and extremities. In all hemorrhages of the internal organs, as the lungs, bowels, pelvic organs, and brain, the position should be such as to favor a free flow of blood away from the bleeding organs. In cases when there is a discharging abscess, the opening should be made in the dependent portion, if possible, and the position should be such as to favor a free discharge from the abscess.

Of the multitudes of bad habits of position causing disease and defective development in both children and adults, I have space for but slight mention. Many bad positions are the result of disease which causes weakness of the muscles supporting the body in a proper upright position. Examples of a stooping posture due to injury done to the muscles of the waist by bands and corsets, are everywhere to be met among women, and they are manifest in the protruding abdomen, stooping shoulders, and caved-in, hollow chest, and in the hollow region over the stomach; also in the languid step and listless, benumbed mental condition, which show the moral, mental, and physical degeneration of the person. Children often acquire bad positions from improper seats, from carrying burdens in one hand only, or from stooping over their books or work, sleeping on high pillows, ill-fitting clothing, and also from improper exercise which calls into use only certain groups of muscles while others are neglected and grow weak from disuse. Women especially suffer in this way. The practice of treating disease by proper position requires no special apparatus. It needs only a little skill on the part of the patient and nurse to know how to place the body so as to favor a normal blood supply and proper exercise of all the muscles.

HOW TO KEEP THE SICK-BED WHOLESOME.

MAN is constantly poisoning himself. Sick or well, every person is giving off waste matter which poisons the air, the clothing, the bed, and all other surroundings, unless there are provisions made for these waste products to be oxygenized and removed. The rooms of the dwelling-house must be ventilated and the foul air carried off, or disease will result. The clothing worn through the day should all be removed and aired at night, and the night clothing and bedding must be spread out to air during the day. Cleanliness and health demand this care in order to get rid of foul exhalations which cling to the bedding and clothing worn, even in health, when the bed is used but one third of the time. How much more important, then, do frequent changing, airing, and washing of the clothing become when the bed is used all the time, and is constantly saturated with not only the bodily waste, but with disease germs and poisonous products? The bed is also liable to be soiled with discharges from the bowels and bladder, from sputa, and from catarrhal discharges from the eyes, nose, and other mucous surfaces, as well as from pus and foul matter from running sores. Many will keep the outside of the sick-bed fair to view, but the costly, elaborate counterpanes and pillow-cases may cover a mattress saturated with stale urine and discharges from the bowels, which are constantly poisoning the patient himself, and endangering the life and health of all other members of the family.

Dried discharges from the bowels and lungs are especially dangerous in certain contagious diseases, as consumption, typhoid fever, cholera, yellow fever, etc., and great care should be exercised to prevent soiling of the bedding, as it is very difficult to cleanse, especially the mattress. Cover the mattress with an oilcloth or rubber cloth, and over that place the draw-sheet. Whenever the draw-sheet becomes soiled, do not allow the discharge to dry, but immediately remove the sheet and immerse it in some disinfectant solution, thus destroying the poisonous germs and preventing the further extension of the infection. If no disinfectant is at hand, boiling the sheet, if done thoroughly, will destroy all disease germs known. Soiled bedding should never be tolerated under the patient for an instant, and no one should be so uncleanly as to cover up a soiled sheet with a clean one, thus fouling two sheets instead of one, and leaving the patient to be bathed in the vile

feared it would bring on another if he were moved or disturbed in any way. His countenance was livid, his breathing labored, and the end seemed to be but a matter of minutes when this fact of his unchanged position was learned. Notwithstanding the imminent danger from heart failure from the exhaustion, the patient was gently turned to the right side and heat was applied over the heart, with heat and gentle friction to the spine. When his position was changed from the back to the side, all the surface circulation seemed to have ceased there, and the tissues felt hard and dead; but by using heat and gentle friction at first, and later hot and cold spraying alternately, the patient finally rallied, though it was many days before the immense bed-sores on the back healed. These bed-sores were the result of continuous pressure, which arrested the blood flow and caused such complete death of the flesh and skin as to render the reviving of it impossible. The change for the better in every symptom of the patient after being moved, was remarkable. Within an hour the temperature, which was at 106° F., fell to 104°; the respirations, which were 60, fell to 40; the pulse, which was so rapid and weak as to be uncountable, was decidedly perceptible at the wrist and could be easily counted, though still very rapid (150). The patient had improved very much in strength; the face had grown less dusky; and taken altogether, the change for the better was so marked and rapid that if it had been due to any drug taken internally, the drug would have earned the well-deserved reputation of being a most wonderful remedy, which had almost miraculously saved a dying patient.

There are many diseases of the respiratory organs and the heart in which the patient can only breathe in certain positions. Thus in pleurisy, especially if there is effusion, the labored breathing is often greatly aggravated when the patient lies on his well side, and he can often be greatly relieved by turning him on the back or onto the diseased side. The same is true of cases of pneumonia where one lung is filled up with exudate; also in cases of pressure from tumors or anything impeding the action of one lung by pressure. In these cases the uncrippled member has double work, to make up for the failure of the defective organ, and when the patient lies on the sound side, that lung cannot expand freely because it is compressed by the diseased lung on one side and by the ribs on the other; hence relief is obtained by lying on the affected side.

Patients who are rational and able to move, always instinctively move into the position in which they can breathe most easily, but young infants and those who are too ill and completely helpless often endure much needless suffering, and their life is endangered by a failure on the part of those who are caring for them to place them in a position where breathing will be the least impeded. The writer has frequently relieved such cases of labored respiration, especially in children, by simply turning them over. If a remedy is administered at the same time, the effect earns a good reputation for the remedy, by affording such quick and ready relief of distressing symptoms.

In cases of asthma the patient breathes most easily in the upright position, and also in all cases of fluid accumulations and tumors which fill the abdominal cavity and press upward on the thorax. In cases of dilated bronchial tubes where there is a sac which fills with matter, the distressing cough which frequently threatens the patient's life, from suffocation, can often be relieved and the cavity emptied by having the patient lie over the edge of the bed and pressing upon the thorax. The action of gravity in pressure will thus assist the spasmodic efforts of the bronchial tubes in emptying the cavity. The disagreeable choking sensation often felt by dyspeptics and hysterical patients, can be relieved and the gas expelled easily by turning on the left side. The knee-chest position, as has been often proven by experiment, is one of the most successful methods for replacing not only prolapsed pelvic organs, but prolapsed bowels, liver, stomach, spleen, and kidneys, as well as in cases of hernia. The tired housewife with a bearing-down, sickening pain in the lower part of the abdomen and spine, can relieve her pelvic pain and backache by stopping her work for five or ten minutes every few hours, and going to her room and taking this position for five or ten minutes, having the clothing perfectly loose, at the same time inhaling and exhaling deeply. Or a still better position which relieves the congestion of the lower extremities is to lie on the back on the floor, placing the feet on a chair or the bed, or to climb the wall, feet foremost, until the weight of the body is sustained by the shoulders and head. Keep this position for half a minute or so; then rest, and repeat ten or twelve times. This simple treatment can be taken for five or ten minutes, twice or thrice daily, and may save the overworked housewife a physical collapse and a large doctor's bill.

When there is inflammation of any part, as in a felon on the finger, a bruised, lacerated, fractured, or dislocated limb, a rheumatic joint, or any other injured vital organ in which there is over-fullness of the blood-vessels, care in taking the proper elevation and position, so as to favor the free flow of blood

To Editor:

Please print the following.

THE MEDICAL JOURNALS DO NOT SUPPORT PROFESSOR ATWATER.

PROFESSOR Atwater's alcohol experiments reported last June have turned the thought of medical circles to the scientific side of the alcohol question as never before. Since January 1, 1900, these experiments and conclusions have been widely discussed by the standard medical journals of the country.

The Journal of the American Medical Association, the organ of the national society of allopathic physicians, contains an exhaustive discussion by Professors Woodbury and Egbert, of the Medico Chirurgical College of Philadelphia, on the Atwater experiments. This discussion shows that the tables of these experiments giving the gain and loss of the body do not prove that alcohol acted as a food; and that, in short, there is nothing whatever in these experiments to show those scientists wrong who declare alcohol to be a poison and not a food.

Winfield S. Hall, Professor of Physiology in a University Medical School in Chicago, shows the fallacy of calling a substance "to a limited extent a food," or "sometimes a food" on the ground that it has one characteristic of a food, by the following syllogism: "Foods are oxidized in the body; alcohol is oxidized in the body; therefore alcohol is a food. We might as well say: Horses breathe oxygen; the yeast plant breathes oxygen; therefore the yeast plant is a horse."

Articles and editorials in the New York Medical Record, St. Louis Medical Brief, the Bulletin of the Northwestern University Medical School, the Therapist, the Practical Druggist, and others are in line with the Boston Medical and Surgical Journal which says:

"To demonstrate this fact [that alcohol is a food] it must be proved that the sum total of the effects of the ingested alcohol is useful rather than harmful in the maintenance of the animal economy. And this Dr. Atwater has not proved. And it has not yet, so far as we know, been demonstrated. In fact, the weight of experimental evidence is decidedly against it."

The Practical Druggist says: "Every standard work on toxicology and medical jurisprudence classifies alcohol with other poisons; and if alcohol is not a poison because it is possible to use it in ways and doses to which poisonous or fatal consequences can not be directly attributed, then we should be compelled to admit there is no such thing as a poison on earth, for whatever may be true of alcohol in this respect may prove to be true of every poisonous drug known."

Such opinions from standard medical authorities show that Professor Atwater has not proved the present temperance teaching erroneous.

Text-book Committee of Advisory Board:

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Mary H. Hunt,
World's and National Supt. of the Dept. of Scientific Temperance Instruction of the Woman's Christian Temperance Union.

June 1, 1900.

Adam's Backbone.

We once heard of a Sunday school superintendent asking his school to tell him how Eve was made, thinking that he would readily get the Biblical answer, but one lad promptly and victoriously called out, "Out of Adam's backbone!" And when we witness the moral courage of woman and her irresistible and persevering stand for righteousness, temperance and justice, we cannot help but say that the boy was right. Too often she has to take the initiative on many such questions, while men, who ought to take the lead, are afraid, or ready to dilly-dally.

It would be hard to get you to admit that Adam Clarke found the exact mathematical ratio when he said, "One woman is worth seven and one-half men," especially from a general standpoint. But I challenge any one to prove that this is not at least approximately true when it comes to her moral worth in the world's history. You cannot read the Old Testament without seeing her powerful influence and courage all the way through; and so in the New, and thus it has been in history ever since.

Tennessee Women and Tobacco.

We were glad to see that thousands of women in the State of Tennessee signed and sent a petition to the General Conference at Birmingham which resulted in a resolution offered that no man be admitted to the ministry of the M. E. Church, South, addicted to the use of tobacco. Of course it was lost, but the fight of the women of our church has just begun. The pastors would be surprised to know how greatly multitudes of the best women of the church are grieved at the common use of tobacco among them. Many of them are too modest and respectful to say what they think to a pastor personally. But if they would speak out their convictions they might express themselves like a Southern woman once did.

A preacher sought shelter in a Southern home but the good woman of the house refused him lodging. Insisting proved in vain. The preacher exclaimed as he moved away, "Well, I suppose I must go on, but I remind you of that Scripture that bids you 'entertain strangers, for thereby some have entertained angels unawares.' "I'm not afraid of you being an angel," replied the woman, "an angel doesn't chew and spit tobacco like you do."

believe that such a happy issue will not be far in advance of the millennium. This observation we will close by saying that the tobacco habit, after every possible charity has been exercised, is not sanitary, nor—shall we say it?—extraordinarily sensible. It is due, however, to the great body of young ministers in the Southern Methodist Church to say that they are not favorable to the use of tobacco."

This evidently is the sincere expression of a spectator at the recent conference, and it behooves every minister of our church addicted to the use of tobacco to wish, with "Bobbie" Burns, "O, wad some power the gift to gie us to see ourselves as ithers see us."

A Woman's Influence in China.

Mrs. Henderson, the wife of former United States Senator Henderson of Missouri, who not long since distinguished herself by destroying a cellar full of wine and other intoxicating liquors at her home in Washington, D. C., has begun temperance reform in far-away China. The former Chinese Minister, Wu Ting Fang, is a friend of the family, and through her book has become a convert to her temperance principles, and is using his influence among his Chinese associates and friends, even in the royal family. In writing to a well-known attorney in Philadelphia, he says:

"You may be surprised to hear that I have assumed a new role, that of a diet reformer. The subject was brought to my attention in this way: Some time ago Mrs. Henderson of Washington, D. C., wife of ex-Senator Henderson, sent me her book. In it she clearly proves that the eating of flesh, drinking of coffee and tea, as well as of alcohol, not to say smoking of tobacco, are the causes of all the ills that flesh is heir to. After reading her book carefully, and also other books on similar subjects by doctors and experts, I have come to the conclusion that the way we are living is all wrong.

"So it will interest you to know that I am now living on a simple diet of nuts, vegetables and fruits, with no flesh or strong drinks, champagne included, which as you know, I was very fond of at one time. I am very much pleased to be able to say that since the adoption of this new dietary I feel much stronger and healthier in every respect than before. So, it is my intention, whenever opportunity occurs, to preach the doctrines. In fact, I have done so to the Empress Dowager."

Good Reasons.

The amount of liquor destroyed by Mrs. Henderson is estimated at more than $1,000 as the result of her recent total abstinence convictions. It was carried out formally by the Independent Order of Rechabites, in which she has become a leader.

In this great gathering of the order in her palatial home, she, wearing the white and gold regalia of Onward Tent, of which she is a member, advanced, after the formal presentation, to the center of the room, and said:

"There has been a bit of burden on my mind these last three years about what to do with a dramshop down in our cellar. Previous to that time we had been accustomed to serving wines and liquors, supposing that people in general were not physically strong enough to fully enjoy themselves at dinner without something in the way of a poison stimulant. And so our wine cellar was always abundantly stocked with the so-called best brands of wines and liquors. Now, the trouble is [illegible] I took to studying hygiene, and that subject kept getting mixed with many other subjects. The more I studied physical culture the more it seemed primarily connected with every kind of sucess on earth. It even got mixed up with religion.

"What are the chief causes of evil tendencies? Now, the very first rule of physical culture is this: Don't poison yourself. To poison one's self is to poison every source of worthy thought and action. I began to think it a pity that our young men and women should be [illegible]ted to the temptations of a

Advance Sheet from "National Advocate."

THE M. E. BISHOPS AND PRESIDENT McKINLEY.

The following letter is from an eminent Christian merchant of national reputation. We believe it expresses the sentiments of a large number of Christian people.—(Ed. N. A.)

November, 15, 1899.

Rev. Dr. James B. Dunn, General Secretary National Temperance Society:

Dear Dr. Dunn:—I have been looking over the papers every day hoping to find that the Methodist bishops now in conference had taken some action on the canteen and the nullification of the recent law of Congress prohibiting the sale of liquors in the army. But I do not learn that they have taken any action, and they are now about to adjourn. I have no words to express the keenness of my disappointment. I had supposed that the chief representatives—those highest in authority in a church which had been bold enough to declare "the liquor traffic cannot be licensed without sin" would have been at least equal to this extraordinary occasion. There certainly has never been an instance in our national history, recent history at least, so far as I have any knowledge, that an act of Congress has been so boldly nullified as by the recent joint action of the Attorney-General and the late Secretary of War, but what makes the act of nullification more flagrant is the complicity of the President. When I voted for Mr. McKinley I was told not only that he was a Methodist, but that he was a Sunday-school teacher, a class-leader and licensed to preach. I thought surely the best interests of this country will be safe in his hands. I thought that the representative of a church so pronounced in its denunciation of the liquor traffic would certainly stand by the principles of his own church, and that in him the cause of temperance would have a staunch friend and advocate. But how is it? The very reverse of what we thought we had a right to anticipate. Petitions and remonstrances have been sent the President from every part of the country and in unusual number, and delegations of men and women—men and women of the highest standing in the community—have waited upon him at Washington, respectfully but earnestly imploring him to exercise his constitutional authority in the execution of the law and to put a stop to the sale of liquors in the army by which our soldier boys were being debauched and ruined. So far as I have learned, neither petition nor remonstrance nor personal appeal have had any effect, but the murderous crime goes on unchecked.

It is becoming very evident that the liquor power has its grip so tightly about the throat of the President that he dare not utter the word which his conscience would dictate. My opportunities for being informed are considerable and warrant me in the belief that the liquor power was never so thoroughly in dominion with the Administration at Washington as it is to-day. If the President would only come out boldly and declare in favor of the canteen with all its accompanying immoralities we would at least give him credit for candor. But * * *

I must not pursue this direction at this time. I set out to write you about the bishops. Never had they a better opportunity to make a deliverance for the truth; never, in my judgment, was there a louder call for it. No body of men in the country more respected, none who could have spoken more authoritatively; their words would have had great weight with the people, and certainly would have commanded the serious attention of the President. I fear that a great and unusual opportunity has been lost, and that the cause of Morality and Religion has been impoverished through this neglect. I am acquainted with several of the bishops who I know fully sympathize with the position taken by the National Temperance Society (perhaps they all do) but what seems to me to be needed is that they should be outspoken.

A great deal has been heard from the President and some members of his cabinet during the last few weeks about the beneficent Christian civilization about to be conferred upon the inhabitants of the Philippines. The prelude to this civilization has seemed to some of us strangely cruel and brutalizing. "Commerce will follow the flag," so say they, and so with a great flourish of trumpets say all their followers. What they say is true. Commerce is already following the flag, but what sort of commerce? Not chiefly that which clothes the naked and feeds the hungry and promotes human comfort and happiness, but the commerce which debauches and debases—the commerce in "liquid damnation." Pardon the word, but I know of no other so well suited to the case. Consider for a moment the frightful increase—a hundred-fold and more in the exportation of intoxicating liquors from the United States to Porto Rico, Cuba and the Philippines since they came under our control, and this as shown by the revenue office at Washington is the increase of only six months as compared with the same six months of last year. And the country is being congratulated now that commerce is following the flag! Search the dictionary for any words that stand for vice and immorality and degradation and they will not be too strong to substitute for this word "commerce."

Four hundred drinking saloons opened in Manila alone since its occupation by the American army. Saloons not only, but associated immoralities of the grossest character! And who is responsible for all this, if not the President of the United States who, by a stroke of his pen, could lawfully prohibit the exportation of intoxicating liquors to any of the islands now under military rule.

I hope the National Temperance Society will not be slow to emphasize these facts, and bring them to public notice, bring them home also to the Chief Executive of the nation, Chief Executive of the laws, under the constitution, but to-day, it is a sad thing to say, our chief official drunkard maker!

There should be no personal feeling in our controversy with the President. His acts should be regarded from no partisan standpoint, but only from the standpoint of duty under the constitution and the laws, and from this standpoint have we not a right to hold him to the strictest accountability?

I trust the National Temperance Society will not falter nor waver in the course which duty and necessity and the public good have mapped out for it. Sufficient should it be to know that yours is the cause of truth and justice, as sure, ultimately, to prevail as the rising of to-morrow's sun. Never was there occasion for you to be of such good courage. You occupy and have earned a position to which many are looking for help and guidance. I trust you will not disappoint any reasonable expectations. You must continue to agitate, agitate, agitate. I would not have you cease to address and admonish the President even if he will not heed nor hearken. The people at least will read what you have to say, and it will go far to create a wholesome public sentiment. Yours teetotally,

* * * * * * *

SOCIETY EVENTS.

THE dinner dance at the Country Club last Saturday night was one of the smartest affairs yet given. It was impossible to accommodate all who wanted to entertain with dinner parties. The dining room was filled and there there was an overflow on the galleries and in the hall. The tables were decorated with smilax and flowers, giving a pleasing effect that has never been attempted before. There were some wonderfully smart gowns worn, too, a fact that was noted with regret by some of the members, [illegible] Saturday night dinners in the past have been so when they decide to "do society," and for that reason the dance to be given Wednesday night can be counted on as being a very enjoyable affair.

Dr. and Mrs. William Luter went over to Seguin last Sunday to spend the day with Mr. and Mrs. Walter Nolte. The Walter Noltes have been so taken up with their new home and the joys of housekeeping that they have been missed from the social functions they have been accustomed to attend in former seasons.

* * *

Buy a copy of the Pastores and the San Antonio Calendar for your Christmas present.

Among the

Conducted by MRS. L

IT would be a strange thing if the character of the era to which an art belonged were not visibly influenced thereby. This is an era of metaphysics. new thought and general transcendental tendencies. The day when a thing existed only for itself and per se is past, and now everything seems to be regarded in the light of its inherent possibilities and final psychological as well as physiological effects. In the olden times the idea of femininity demanded that she be able to sing a little, play a little, dance a little and sit a proper amount of time at her embroidery frame. This system developed a creature of grace and undoubted refinement and when the stress of great trial came she proved that this diletantism had not lessened her courage. One might say that this courage existed in spite of the narrow mental scope customarially given to the feminine world of that day.

Now-a-days individualism and specialization shape the course of instruction. Every system for improvement is modeled upon this ideal. We study not to sing a little and play a little simply to be able to 'show off," or pass an ennuied moment, but with the idea of the development of a larger, freer, selfhood, a more characteristic demonstration of the ego, which involves the physical side of the problem as well as the mental. Nowadays the

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SAN ANTONIO, TEXAS, DECEMBER 19, 1908.

THE inconsistencies of women are a theme for perpetual jokes on the part of the average men. But men with all their superiority, are not free from their little failings and one of these is the inconsistent manner in which they give their philanthropic donations. For instance, they will turn a deaf ear to the appeals of well known and reliable citizens, but let some stranger come along with a fake scheme for advertising or some sort of a claptrap entertainment and they will give generously, even when they know that at least two thirds of the money will never go to support the object they are proposing to help. Why let strangers carry off large sums of money? Why not give one-third of the amount straight out and be done with it? A business man said not long since, "When the leading women get behind an enterprise and send a representative out in their name we are just obliged to patronize him or there will be a big to do made about it." Women have never been known to make anything but a very pleasant "to do" over a man that sent his check directly to them, and they would be just as happy to do away with the middle man as anyone if they could secure the money in any other way. As long as the money is so largely under the control of the men, women are obliged to ask them for aid in carrying on the philanthropic work of the country, and men should be glad to give the money if the women will relieve them from the petty details which are incident upon every undertaking for the benefit of humanity.

* * *

That people in every town violate certain laws with impunity is a well known fact and laws, too, that should be upheld by the best citizens. A well known woman asked the other day, "Is there not a law against women going into wine rooms?" When she was assured that such a law did exist she added that frequently as she passed a certain corner she noticed women coming out of the wineroom and just the day before she had seen one in a state of intoxication. This, added to the fact that Sunday morning on one of the principal streets a young man was seen walking with a girl who was so evidently intoxicated that she attracted the attention of all the passers, led this woman to the opinion that steps should be taken to enforce these laws. The public will pass a drunken man by with a degree of indifference, but the sight of a drunken woman gives a shock that is not easily forgotten. On every side there are snares set to entrap the feet of young girls and it is not to be wondered at that they are caught. The community not only permits these traps to be set, but to stand wide open. Periodically there is a wave of reform which sweeps over the town and an effort is made to rescue the victims, but the people are few who fight to abolish the traps or to guard the girls against walking into them. Faithful persevering workers are needed. Women who work in the kindergarten settlements report that there are many girls who are willing and anxious to be organized into clubs and taught that there is a respectable and rational way of enjoying life, but the club women are too intent upon the study of Shakespeare or literature to give any heed to their call, and society must dance and play cards, and thus the girls are forgotten and only a pistol shot or a dose of carbolic acid is able to arouse the public, and then only for a little while.

* * .

The enthusiastic promoters of Esperanto (the universal language) are proving that they are no theorists, as they have established a city and a state on ideal lines. This new city of Esperanto is located in that interesting territory known as Moresnet Neutrals, a little strip of land wedged in between Germany, Holland and Belgium, wonderfully well located for the scene of the experiment. The majority of the inhabitants already speak Esperanto, and the shop signs are nearly all written in that language. The effort which is being made in Moresnet to simplify language and mould the many languages into one is expected to permeate the whole world. An effort will also be made to strike off many of the other traditional shackles. Architecture and dress will be fashioned so as to fulfill the requirements in every country in the most adequate manner. The vulgar will be excluded from art and the music will carefully avoid the extremes of Wagner on the one hand and Kossini on the other. Cookery will offer mankind something better suited to its alimentary needs than dead animals. In brief, Esperanto will be a center and theatre for all the sound and sensible reforms which agitate thinking men and women in every land. A little leven leveneth the whole lump, and may the sensible reforms started in Esperanto extend to all parts of the world.

* * *

A recent writer says that King Edward's reign has brought us many things, and among these the cult of youth and the disappearance of the middle-aged woman. Now-a-days the social world is divided into girls, young wives and great-grandmothers. Much can be said on the side of perennial youthfulness. The desire to prolong one's youth shows a commendable pride and every woman knows that so long as she is able to appear young there will be no "finis" written on the page of her book of life. Indeed, it has been said with much truth that the debutante has her deadly rivals in the whole tribe of young and middle-aged married women. It is also said that many young girls are unable to get the cash they need because their mothers and married sisters spend such vast sums on personal adornment. But how to attain eternal youth—alas, that priceless secret is yet unknown, but the wise ones say, "trust to nature and try to do the trick by plain living and high thinking. The so called "simple life" has become a watchword of the twentieth century. Early hours bid fair to return to favor; meat and alcohol are avoided; lemonade and mineral water rival champagne as the drink of the moment. The rest cures have come to stay and one hour of quiet once in the day will do much to preserve youthful vitality. Plain food is said to help us in our upward course, mental, psychic and spiritual. After you have followed all these rules, live much in the open.

* * *

The Forest School of Charlottenburg is an educational experiment in Germany that is attracting widespread attention from the medical man and advanced educators in every country. Germany is noted for the care it takes of its children and in this it shows its national thrift and foresight. The government takes the children of the poor in hand early and compels them to attend school. Their health is attended to, their ears and eyes are looked after; in short, everything is done to prevent idle, worthless parents from bringing up idle, worthless children. This Wald-Schule is not charity, but a regular school maintained by the city and here the children who are weak physically and mentally are sent, for the teachers have found that in almost every instance when children are weak mentally they also have physical defects. Children whose presence might be detrimental to the others are not admitted. The buildings are the simplest and in fair weather the time is spent out of doors. There is no pomp or show about it but a Christ-like humanity. A writer who recently visited this school says: "To an onlooker it seemed a wise economy, not only saving life, but greatly increasing the earning capacity of those lives in later years. There can be no doubt of the success of the venture upon the children themselves."

PLEASE SAY YOU SAW ADVERTISEMENT IN THE PASSING SHOW.

 12/19/08

ALCOHOL AND MEDICINE

By Milton J. Bleim, M. D.

I USE the term alcohol as embracing all beverages whatsoever of which alcohol is the main drug ingredient. I use the term medicine in its broadest possible sense as including whatever relates to the human body in health or disease. It will at once be seen that my subject is most extensive in its scope and that in this brief paper I can touch only upon a few salient points of practical interest.

The alcohols form a group of carbon compounds in organic chemistry, of which methyl alcohol and ethyl alcohol are the chief. Methyl alcohol is produced by the distillation of dry wood and is therefore often called "wood alcohol;" it is also known in commerce as Columbian Spirits, or Colonial Spirits. It is used in the arts and in spirit lamps. The cheaper grades of whiskey and brandy are often adulterated with wood alcohol, thus increasing their damaging effects. Pure wood alcohol is sometimes drunk in ignorance or because of ease of securement. It is violently poisonous and in sufficient quantities will produce death in a few hours or days; five teaspoonfuls have caused death. In more than half the cases, blindness is produced, which is often permanent, due to atrophy of the optic nerve; two teaspoonsful have caused blindness.

Ethyl alcohol is the chief drug ingredients of so-called alcoholic beverages. In the malted drinks, such as beer, ale and porter, the alcohol forms from 1 to 8 per cent. In beer, which is the most common malted drink in this country, the average is about 4 or 5 per cent. The fermented juice of the grape produces the wines, which average all the way in light wines from 9 per cent, up to 20 per cent in the heavy wines. Among distilled liquors—Brandy is distilled from wine and contains 50 per cent alcohol; whiskey is obtained from fermented grain and contains 50 per cent alcohol; gin is distilled from malted grain flavored with juniper and contains 40 per cent alcohol; rum has 45 per cent alcohol and is distilled from molasses. Cordials or liquors are alcoholic spirits made aromatic and sweetened. It has been amply demonstrated that most patent medicines and nostrums contain from 20 to 50 per cent alcohol--as much as the heavy wines and ardent spirits. And yet how many supposed temperance people consume these alcoholic medicines with avidity! Besides alcohol, beer contains various extractives which exert a retarding effect upon digestion. Wines contain various aromatic ethers or acids which contribute to their flavor and palatability; also retard digestion. The various ardent or distilled spirits also contain other alcohol which combined are given the name of "fusel oil" and are considered very poisonous. They are especially evident in freshly distilled spirits, but with age become oxidized, adding to the flavor of the liquor and diminishing by that much the poisonous properties of the drink; this fact accounts for the great store set by liquors of great age.

The standard of alcohol is called absolute alcohol, which is supposed to contain no water, but commonly contains only 98 per cent pure alcohol; dilute alcohol as sold in the drug stores contains only 53 per cent alcohol, which is only a little stronger than whiskey and brandy.

The effects of excessive indulgence in alcohol are so well known and so deterrent that it is not worth while to consume our time in their discussion. The great battle ground in dispute has lain not here, but in the field of so-called moderate drinking; and within recent years the battle lines have been flung even into the sacred precincts of medicine itself and in consequece of the convergent conclusions of a host of skilfull laboratory investigations the serious question is now more and more confronting the medical profession as to whether or not alcohol can longer maintain its position as a helpful and rational therapeutic agent.

That part of medicine which deals with its healing agencies—materia medica and therapeutics—has made great strides within the past twenty-five years in consequence of the experimental work done in the laboratories. Here drugs have been given both to animals (especially dogs, rabbits and guinea pigs) and to man himself in the most careful way and the physiologocal effects have been most minutely noted. In this way we have come to know much more about the action of drugs upon the human body than in the former days of empirical medicine--which was based solely upon experience with the sick. Probably no drug has received more exhaustive or more extensive investigation in this way than alcohol. For years there were more or less conflicting reports by various observers. Especially was there doubt as to the true effects of alcohol upon the process of digestion and as to whether it is in any sense and even in the smallest quantity that "stimulant" of which we hear so much. But today all the most competent observers are a unit upon almost every essential feature and the differences have narrowed down to the vanishing point. In a very recent review ("Modern Medicine," October and November, 1908), Dr. J. H. Kellogg, the able and distinguished superintendent of the great Battle Creek Sanitarium, marshals in a masterly manner the researches and conclusions of the greatest investigators and concludes by leaving alcohol, as a therapeutic agent, not a single leg to stand upon. The most recent system of medicine, not yet fully published, is "Oslers Modern Medicine." The chapter on alcoholism is written by Dr. Alexander Lambert of New York, than whom none is more competent to write upon this subject. Here he goes fully into the latest conclusions by the ablest investigators as to the physiological effects and the pathological (or disease-producing) results of the use and abuse of alcohol. With a few minor exceptions there is a remarkable unanimity in the conclusions drawn by these authors. What I have to say, therefore, will be based upon these sufficient authorities.

Before briefly considering the use of alcohol as a medicine, it will be profitable as well as necessary to consider the physiological and pathological effects of alcohol in small or moderate doses. "The moderate use of alcohol is a relative term; moderation for one is excess for another." Some think they are moderate so long as they stop short of intoxication. "Duclaux defines excess as any amount of alcohol, any effects from which one remains conscious of an hour after its ingestion. Many moderate drinkers use alcohol throughout a long life and show no ill effects from its use, while others find after a longer or shorter period that it has insidiously produced nephritis, gout, degeneration of the liver or arterio-sclerosis and that their viscera are permanently damaged." (Lambert.) It is true of all drugs or poisons (for all drugs are poisons in sufficient dose) that the effects vary greatly with the individual and even at different times with the same individual. This has given rise to the old saying that "what is meat for one is poison for another." This is particularly so with the general effects of alcohol. Heredity plays a prominent part in this. The descendants of drinkers are more neurotic, have a less stable nervous system, and are more susceptible to the evil consequences of the use of alcohol. Idiots and epileptics are largely descended from alcoholics. Alcoholism also tends to produce sterility and finally the degeneration and extinction of the family. From the law of heredity it follows that the descendents of moderate drinkers will be more likely to develop ill consequences from the use of alcohol than their drinking forbears, and this in an increasing ratio.

From time immemorial alcohol was called a "stimulant." It was supposed to quicken the action of the mind, to reinforce the heart, to strengthen the muscles, to facilitate digestion and to improve nutrition. The animal body is an immense chemical workship. Incessant activity reigns among its innumerable cells and tissues. Change and interchange of food commodities and tissue wastes are going on day and night. The accompanying chemicals are called "metabolism." Meanwhile many special functions are being performed by those aggregations of cells, called organs. All this vast activity is directed by the nervous system, of which the brain is the central organ. This supervising control of all cell activity is two-fold in its power—it can both stimulate and check—excite and inhibit. Therefore these two powers are called the "excitory" and the "inhibitory" nerves. This power may be likened to the driver of a horse; he checks or "inhibits" his horse with the reins. He drives or stimulates his horse with the whip. It can readily be seen that if he uses the whip too freely his horse may run away; and if he pulls the reins too hard he will stop. Proper progress and safety lie in a golden mean between the two. In the case of the nervous system the "inhibitory influences are necessarily weaker than excitory influences. The excitory impulses are primary and essential to life, while the inhibitory influences exist merely as a modifying and controlling factor. Hence the presence of a paralyzing agent naturally makes itself felt more distinctly by its effects upon the inhibitory rather than the excitory mechanism, unless applied with such vigor as to overwhelm and annihilate all nervous influence." (Kellogg.)

Now, we all know that alcohol when pushed too far, paralyzes or inhibits the nervous system and all that is dependent upon it. Both excitory and inhibitory powers are down and out. "Dead drunk" is sufficiently expressive. The horse has come to a full stop. In other words, in sufficient

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SAN ANTONIO. TEXAS, DECEMBER 26, 1908.

THE FUMES OF THE WINE ROOM.

THE other day two women were meandering down Houston street, and each was carrying spirits of a different brand from that of the usual Christmas cheer.

Oh, don't fold your hands, shake your head, roll your eyes, and say with the Pharisee, "I thank God I am not as other men." Be conscious of a stigma upon the name of woman.

Could anything be more disgusting than such a spectacle? It is bad enough to see a man intoxicated, but when a woman falls from her high estate, when she throws to the winds the attributes that make her fascinating to our hearts, and she shows us the common beast, then do we realize how dull and darksome we are.

We don't flit with the airy creatures, into that realm of fantasy and moonlight, nor loiter in the country of dreams, but instead, we walk home soberly, with our eyes constantly upon the ground. We don't stand admiringly before the mirror when dressing for dinner, and we affectionately pat the head of the dog.

* * * * * * * * * * *

Two girls were loitering around a street corner on Houston Street.

Agnes was a blonde, and had $1.19 worth of blonde hair from a department store. It was spread out to do the most good over a considerable area. She was a trim little body, but her feet were big. A five-cent package of chewing gum distended her face and kept her jaws from losing any of their elasticity.

Mayme was a brunette, and she also had the expensive hair habit, and her hair was combed adroitly over a new big wire rat, in an immense pompadour that extended far into the back yard.

Two noisily dressed young men boldly pranced down the street, and met the girls, evidently by appointment.

"Hollo, Charley; this is Mayme—Mayme, Charley. You know Fred. It's awful nice of you boys to take us out, ain't it Mayme?"

Mayme smiled as to how it was, and added: "You're a traveling man, aint you, Charley? Do you know Jack Winesap? He's a traveling man too, and a particular gentleman friend of mine. I like traveling men. They're so generous and free."

It was Charley's turn next, and he jollied the little girl some, while only a few feet away Fred was throwing whole bunches of the con at Agnes.

Charley was a jaunty boy. His striped suit advertised his calling, while the depth of the trouser cuff, the directoire coat, with sheath, slanting pockets and such, the superfluous buttons on coat and waistcoat, the buckles and straps on his shoes, all gave evidence of his fastidiousness and his natty dressiness. He wore a green hat with the brim along the right side turned hellward. Oh, he was some class, was Charles!

Fred was a good running mate. A gab fest was now on, and with Fred as the head-liner. He relieved himself of the fact that his pipes were dry, and that he was spitting cotton. Would the girls take a drink? Oh, he knew by their looks that they were not in the habit of going to wine-rooms, but it couldn't hurt—just this once. He knew of a place, close by, a nice, quiet, handy place, and they could slip up the side street, dart a few paces down an alley, slide through a back door, glide into a small room draw the curtains, and who could see?

It was so easy and Charley was so powerful thirsty, too. What would mother say? Mother wouldn't know—no one could see back of the curtains.

Fred and Agnes entered one compartment, Charles and Mayme another, and two curtains were drawn. The bar-keep delivered four cocktails—that is, at a time.

* * * * * * * * * * *

It is the same old story, and it is not that of "The Poisoned Gum Drop, or The Candy Woman's Revenge." It has another title, and is far more pathetic.

Maybe Mayme is not your daughter, nor your sister. Probably your girls do not visit such places. Maybe Agnes is not your set. Well, the story is for you, anyway. The sick need a physician, and Mayme and Agnes need treatment of some sort.

You people, who were so deeply affected by the late tragedy in Travis Park, should utter a simultaneous shriek, take ax in hand and fell the tree that bears the poisoned fruit.

As long as the wine rooms are convenient, and checkered-suited, flashy-eyed men walk the streets, Agnes and Mayme can be classed among the "indisposed." They have tasted the first fruits of hell and are sick. The remedy to cure the disease is not to be found in the medical books, either—but rather in the exerted influence of our citizens.

Property owners, look to your tenants!

Abolish the wineroom and take away its demoralizing influence from the decent part of town.

If the curtained apartment had not been there, Agnes and Mayme would have taken a chocolate ice cream soda at the counter and have arisen the morning following, happier if not wiser, girls.

The fumes from these places hover over Houston, Losoya and other streets in the city, and permeate the atmosphere breathed by our boys and girls as they pass along the streets.

What worse influence can come to your boy? When you allow him to be robbed of his belief in woman, he has indeed lost a jewel.

Cut out the wineroom. Take a club to the Fred and Charles type of male persuasion. Spoil his physiognomy, if you will, but by all means remove the wine room.

Tear away the dense veil from its gloomy recesses; discover and lay low its entrances; open up the curtained chambers, and reach out a hand to save the ignorant and the innocent from the fumes of this pestilence.

* * *

A fashionable florist of New York, who recently failed in business, has announced that his creditors are all right; they are rich and will pay in time, but for no consideration would he sue one of them, because it might reveal the fact that the married customers had been sending flowers to women who were not their wives, and this would scare off other possible customers. And then, too many fine young men spend large sums on the flowers they send to the chorus girls and they would not like to have this fact made public. An effort is always made to shield the men, no difference how much the girls may have come into the limelight.

* * *

Dr. Anna Ellsworth Blount of Chicago is the mother of several fine children. She also wields an able pen. In a letter to the Chicago Record-Herald the other day she made a keen reply to an anonymous "wife and mother" who had written in opposition to equal suffrage. Dr. Blount says: "I am a suffragist because I sincerely believe what you "antis' are eternally saying with your lips, but do not believe, i. e., that the highest and holiest occupation on earth is the bearing and rearing and educating of the succeeding generation. How do I know that you and all the world do not believe it? I will tell you. Because this work is regulated to pauper labor. The world pays for what it values. How does it pay its mothers? With board and lodging and tips. How does it pay its nursemaids, to whom it intrusts the young? Almost the least of all its servants. How does it pay its teachers, who bend the plastic minds of our children? About as much as our cooks, when you consider living expenses of both. I believe the chief value to the world of the business woman will be to raise the status of the home woman—the mother—to put her work on a more respected basis."

ALCOHOL AND MEDICINE

By Milton J. Bleim, M. D.

(Continued from last week.)

ALCOHOL. not only narcotizes, but also destroys the cell. Therefore we find that continued use of it, even in small or moderate doses, causes destructive changes in the various vital organs. It exerts a specially vicious effect upon the delicate nerve cells in the brain and spinal cord. It destroys the cells of the heart, muscles and the liver, replacing them with fat, so that many drinkers die of fatty infiltration of the heart and liver. It not only destroys the cells, but also causes a great increase of the connective tissue framework of the organs, and thus result the various diseases of the liver, pancreas, spleen, kidneys. brain and cord called "cirrhosis," or "hardening." "Arterio-sclerosis," a disease now better known than formerly ,is a similar hardening of the arteries. The arteries become brittle, the circulation becomes greatly disturbed and in due time the heart and kidneys especially become involved.

The brittle arteries in the brain are liable to break and cause hemorrhage of the brain. The heart becomes weak and dilated and the kidneys become inflamed, causing Bright's Disease. While on this subject I desire to call attention to a very common cause of heart and kidney disease in excessive beer drinkers. Aside from the destructive effects upon the cells and tissues of the total amount of alcohol ingested, the enormous quantity of liquid consumed taxes the heart, the blood vessels and the kidneys to the extreme. We find in excessive beer drinkers very large, hypertrophied and dilated hearts and very much enlarged kidneys. Heart disease and Bright's Disease form a common end for free beer drinkers. A normal person will not on an average pass more than two or three quarts of fluid through his heart and kidneys in 24 hours. Think, then of taxing these organs with 20 to 60 schooners of beer per day! An equal amount of water, barring the alcohol, would be almost as detrimental.

Alcohol, and we are speaking now of moderate doses, also lessens the vital resistance of the body to disease. It diminishes immunity to infectious diseases, consequently drinkers are always more liable to catch an infectious disease than abstainers, and are also less liable to recover. It is a well known fact that in epidemics of cholera. smallpox, yellow fever and so-forth, drinkers fall like sheaves before the reaper; and when drinkers become ill with pneumonia, typhoid fever, grippe or any infectious disease that requires stamina they have a hard time of it and furnish a large death rate.

A great many diseases are due to intestinal auto-infection. Here bacteria swarm and poisons are freely liberated. The normal system usually disposes of them successfully. It is proved that alcohol increases this condition of intestinal toxemia and therefore conduces to the development of such diseases. You have no doubt heard people claim that "beer made them billious." This is nothing but a condition of intestinal auto-infection or toxemia brought about in such cases by alcohol; under the use of alcohol the etheral sulphates, which are the products of putrefactive processes in the intestinal canal, are greatly increased in the urine.

It used to be claimed that alcohol promoted bodily heat. The fact is that it increases heat radiation from the body and thus decreases the temperature of the body. The false sense of warmth is due to the dilation of the capillaries in the skin. Large doses may depress the temperature to as low as 80 degrees or even 72 degrees. Arctic explorers have found by actual experience that alcohol is harmful in a cold climate, and therefore avoid it. The scientific explanation is plain. The common custom of resorting to alcoholic stimulants in cold weather for the sake of its supposed warming effects is therefore seen to be illusory. By perverting the judgment alcohol thus produces the false impression of increased heat when the body temperature is actually lowered thereby. Conversely it would be useful in hot weather and hot climates were it not for its other baleful effects.

I can only briefly refer to several other interesting phases of this subject. It used to be supposed that alcohol produced an increase in muscular strength and endurance. Many exhaustive experiments have proved that such increase is purely illusive and merely a false spurt. A man's judgment is inhibited and he thinks he is doing more work, but the facts show that he is doing less and also poorer work. In actual experiments the amount of work done was as high as 10 per cent less under alcohol. In consequence of the demonstrated fact employers of large bodies of men are more and more demanding of them total abstinence while at work, and many prohibit indulgence entirely.

Then again the food value of alcohol has been exhaustively discussed and investigated. Anstie and Atwood found that a certain amount of alcohol is oxidized or burnt up in the system, just like other carbo-hydrates, with the consequent production of energy, heat and fat, and this announcement produced much favorable comment, and the value of alcohol as a "food" was widely vaunted. But the further fact developed that even in these respects is decidedly less economical and inferior to the ordinary diet of fats, starches and sugars, while at the same time playing the mischief as a drug or cell poison. Nor does it produce true body heat, which can only be produced by cell activity or "Metabolism." Nor can it ever produce new tissues or cells, like the protien foods. More than that can be said against it in relation to its effects upon protein metabolism, which means the chemical changes due to cell activity. It interferes decidedly with this important process. Atwater says: "In large quantities it is positively toxic and may retard and even prevent metabolism and protein metabolism in particular. In small doses it seems at times to have an opposite influence, tending to increase the disintregration of protein." Dr. Kellogg pertinently asks, "If, then, alcohol is a positive poison in large doses and a protein poison in small doses, in what doses can it be called a food, and under what circumstances can it be recommended for habitual or daily use?"

Granting, then, that the general testimony of modern science affirms that alcohol in all doses is a narcotic poison and a cell destroyer, and that its continued use is liable to produce a hydra-headed brood of evil consequences, the question still remains, what, if any, place in medicine shall we give this drug as a therapeutic agent. It will be seen at once that, from a rational standpoint, it is contra-indicated in all infectious diseases, such as tuberculosis, typhoid fever, pneumonia, diphtheria, erysipelas, cholera and cholera-infantum, and in gastro-intestinal infections, first, because it lowers vital resistance and natural immunity to disease, and destroys those antitoxines which the body generates to kill the specific poisons of the infection. Second, because it promotes putrefactive processes in the intestinal canal and thus promotes rather than hinders bacterial growth, and therefore retards recovery.

Dr. Kellogg says: "The list of maladies in which alcohol has been administered is a long one. It includes, in fact, almost every malady to which human beings are subject. If we should study the whole category we would not find a single malady for which alcohol is a specific remedy, and I venture to say that we should not find a single one in which alcohol renders service which cannot be better rendered by some other and more rational means. My personal experience has fully persuaded me of the absolute truth of this statement. I was trained in the practice of medicine under the elder Flint. He was a warm advocate of the use of alcohol in pneumonia, typhoid and other fevers, and especially recommended its use in phthisis. In beginning practice more than thirty years ago I was inclined to make occasional use of the drug under the supposition that it possessed stimulant properties, but as laboratory research gradually made clear the fact that alcohol possesses no stimulant properties whatever, except through the transient irritation which it produces when brought in contact with living tissues, and that its real effect is depressant and paralyzing. I lost faith in its curative virtues, and for more than twenty-five years have excluded it from my practice, and I cannot recall a single instance in which I have had reason to believe that its use would have rendered any service whatever. I have never taken the position that I would not make use of alcohol under any conditions, but have held myself in readiness to use it in any cases in which I would find a rational basis for its application. I am ready to say frankly, that in the light of my experience and the accumulated evidence of the nature and effects of this drug, I do not expect to encounter such a case.

Alcohol should be regulated to the limbo of discarded drugs which have been tested and found wanting. The social and moral mischief which the drug has done, as well as its physical effects, give sufficient reason why it should be accorded drastic treatment and avoided if possible. A decided stand against alcohol on the part of medical men, a clear statement of its uselessness as a food and as a medicine, and of its pernicious effects upon

(Continued on page 105.)

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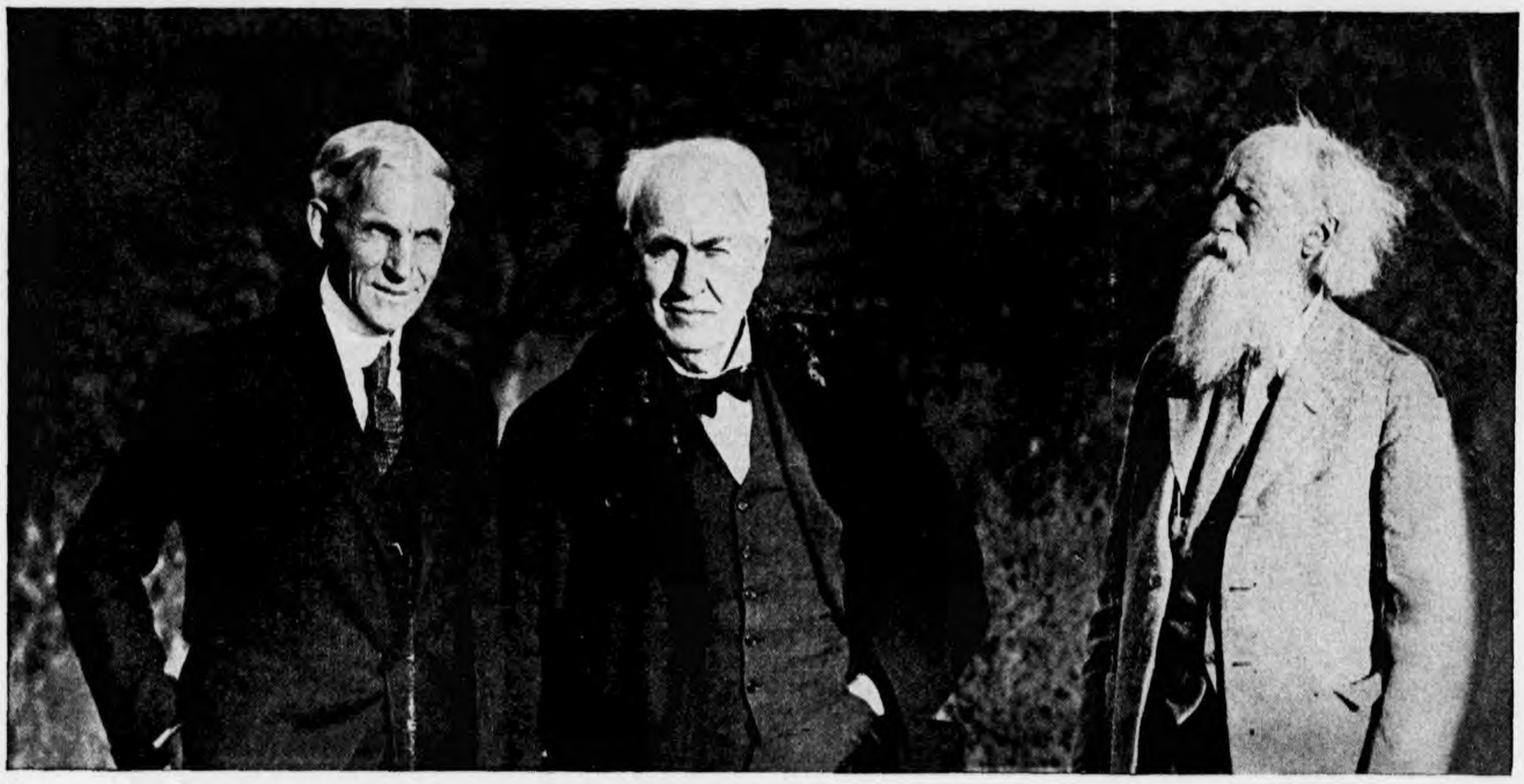

HENRY FORD THOMAS A. EDISON JOHN BURROUGHS

The greatest men in the country sought his inspiring companionship

Let him now be YOUR friend and guide

JOHN BURROUGHS joins his famous nature-loving friends no more—but he can still walk the fields and woods with *you*.

He made every one of his country walks an excursion into a land of unexhausted treasures. His fortunate companions found their eyes and ears opened for the first time to Nature's secret sights and sounds. He gave freely of his rich life's store of knowledge, conversed charmingly of his acute observations, and imparted his inspiring philosophy of life, learned while listening to the heart-beats of the free and glorious outdoor world. Is it any wonder that all who knew him loved him, and that Thomas Edison said,

"Some of the most enjoyable hours of my life were spent in his company."

Here is *your* opportunity to walk in spirit with "John O' Birds"—the wise and gentle, to whom Theodore Roosevelt paid tribute in these echoing words,

"It is a good thing for our people that you have lived."

John Burroughs Was in Love With Life

WHY is it a good thing?—because Burroughs persuades you to fall in love with life just as he did himself. On every walk in the country you will draw strength from all you see, courage for living, and power to enjoy, because you will be in tune with the forces of Nature, Burroughs teaches you to understand.

Nature intends every one of us to be carefree, happy, overflowing with vitality. We suffer nowadays from indoor-itis. We have closed the doors on Nature, cut our roots and shut off the sap of our being. Like timid, underground creatures we have retreated into walled and roofed enclosures. Half-alive we peep out of windows and require artificial amusement and stimulation to find joy in life.

It is an indoor age, an age of sick, surly, neurotic, feeble people. Red-blooded, sun-tanned outdoor courage is at low ebb. We have almost forgotten how to be joyous in the din and gloom of our smoke-blackened cities.

The great nurse of our happiness is Nature. And the kindly doctor who coaxes us back into her healing presence is that wonderful prose poet of the Great Outdoors, John Burroughs. He shows you what it is to live. He starts your pulses beating afresh. He reveals the rapturous beauty of the world. How to regain the full natural vigor of mind and body and soul is what Burroughs tells you in his magical books.

The gift of Nature is Life—abundant animal and spiritual life! It isn't surprising that the "strenuous" Theodore Roosevelt should have honored John Burroughs above all men as the teacher of the way to live!

What Burroughs Does for You

BURROUGHS gives you a fresh outlook in the world. The rocks and trees and birds and butterflies have stories to tell—thrilling stories, if you will listen. Wild four-footed beasts are leading exciting lives in the fields and forests all about. Tragedies and comedies are being played out under your nose by your feathered neighbors.

The thing is to see and hear and understand what is happening. The changing of the seasons, the behavior of clouds and wind, the effects of sunshine and snow and rain and fog—these natural phenomena are full of meaning, if you know about them. Tracks in the dust, in the snow, or the mud tell wonderful tales. Signs and signals rich with significance are visible and audible all the time—if you know where to look and how to listen!

Every-body needs to keep in touch with the natural world. Fields and flowers and sunshine restore you to health. The behavior of birds and animals, the growth of plants will give you new interest in life, new courage for living, new power to enjoy. Your exercise in the open brings health, relaxation, refreshment of spirit. These things send you back to your duties better equipped for the battles of life, d e e p l y , exultantly alive!

How Many of Nature's Fascinating Secrets Do You Understand?

Why do the stars appear unusually bright and clear the night before a stormy day?

Why do *white* flowers have perfumes more often than colored ones?

If you cut off the extreme top shoot of a pine tree, will it grow again?

How does a squirrel know enough to gnaw through a butternut on the side where the "broadside" of the kernel will be exposed?

Why does even deep snow fail to cover up the food supplies of the rabbit?

Do honey-bees really injure grapes and other fruits by puncturing the skins?

What are the best times of day to foretell the next day's weather?

Why does the oriole now build a shallower nest than it did a hundred years ago?

Why do nearly all songbirds build their nests less than ten feet from the ground?

What bird "drums" on a dead branch to attract a mate, instead of singing, as most male birds do in courtship?

Why does a grove of young oak and chestnut trees often spring up where a pine forest has been cut down?

Why does a chipmunk carry away to some distance the soil that he brings out in excavating his burrow?

Do bees ever carry tiny stones for ballast on windy days?

Which is the best-concealed birds'-nest in the woods?

Why do other birds often hatch out and raise the young of the cowbird, even at the expense of their own offspring?

Do hostile swarms of bees ever battle with each other?

Why does a bird, surprised in the woods, often pretend to be injured or crippled?

Why do robins, sparrows and peewees rear three broods of young in a season, while kingbirds, bobolinks and orioles rear only one?

What bird swims so well under water that he can capture even the wary trout?

What bird impales its prey upon a thorn?

What bird often kills branches of apple trees by drilling holes to drink the sap that flows from them?

Why does the downy woodpecker make the entrance to his nest-hole smaller than the entrance to the hole where he spends the winter?

What common animal has lost his protective coloration by changing his home from the woods to the fields?

Let "John O'Birds" answer all your questions about Nature and Life

IF you love to walk in the fields and woods, and long to know more about the intense activity of life that you see going on about you, John Burroughs will come as a delightful guide and companion. And even if you think you are "not interested in Nature," he will beguile you, astonish and fascinate you just the same, almost before you realize it.

No secret way of bird, or squirrel, or bee, was unknown to his inquiring and compassionate eye. No bird-song but brought him a thrilling message of joy in life. Every plant and tree told him its deepest life secrets. The history of our world's beginnings, written in the rocks, was to him a great epic story, fascinating to read. But, best of all, he possessed the gift of making every subject his pen touched as clear as crystal and as fascinating as if the man himself were telling you about it.

When you have read a few of his pages, you will take your next stroll with a keener eye and ear for the sights and sounds of grove and meadow. You will begin to cultivate the keen, all-noticing eye of the Indian, and feel a little of his intense wonder and delight in the presence of the outdoors.

> **"I AM in love with this world; by my constitution I have nestled lovingly in it. It has been home. It has been my point of outlook into the universe. I have not bruised myself against it, nor tried to use it ignobly. I have tilled its soil, I have gathered its harvests, I have waited upon its seasons, and always have I reaped what I have sown. While I delved I did not lose sight of the sky overhead. While I gathered its bread and meat for my body, I did not neglect to gather its bread and meat for my soul. I have climbed its mountains, roamed its forests, sailed its waters, crossed its deserts, felt the sting of its frosts, the oppression of its heats, the drench of its rains, the fury of its winds, and always have beauty and joy waited upon my goings and comings."**—From *The Summit of the Years,* p. 2.

Does a Dandelion Think and Plan?

Did you ever notice that the puff-ball of a dandelion has a longer stem than the yellow bloom which preceded it? Did you ever wonder why? The answer, as given by Burroughs, will give you a wonderful glimpse of the intelligent foresight that is evident everywhere in Nature:

"The dandelion, after flowering, retires from society, as it were, and meditates in seclusion; but after it lifts itself up again, the stalk begins anew to grow, it lengthens daily, keeping just above the grass until the fruit is ripened, and the little globe of silvery down is carried many inches higher than was the ring of golden flowers. And the reason is obvious. The plant depends upon the wind to scatter its seeds; every one of these little vessels spreads a sail to the breeze, and it is necessary that they be launched above the grass and weeds, amid which they would be caught and held did the stalk not continue to grow and outstrip the rival vegetation. It is a curious instance of foresight in a weed."

Burroughs was all his life a "home-body." It is true that he went upon occasional journeys to England, to Jamaica one Winter, even to Alaska one Summer as the guest of E. H. Harriman, who took forty scientists and writers there on a sightseeing expedition. He enjoyed these travels and wrote vividly of them, but his real joy was to lie in the woods, in his oldest clothes, and spend an entire afternoon fathoming the secrets of a wild bird's courtship.

The "Revolving Showcase"

He believed that: "One has only to sit down in woods or fields, or by the shore of the river or lake, and nearly everything of interest will come around to him—the birds, the animals, the insects; and presently, after his eye has got accustomed to the place, and to the light and shade, he will probably see some plant or flower that he has sought in vain for, and that is a pleasant surprise to him. So, on a larger scale, the student and lover of Nature has this advantage over other people who gad up and down the world, seeking some novelty or excitement; he has only to stay at home and see the procession pass. The great globe swings round to him like a revolving showcase; the change of the seasons is like the passage of strange and new countries; the zones of the earth, with all their beauties and marvels, pass one's door, and linger long in the passing. What a voyage is this we make, without leaving for a night our own fireside! St. Pierre well says that a sense of the power and mystery of Nature shall spring up as fully in one's heart after he has made the circuit of his own field as after returning from a voyage around the world!"

He Wrote Nature Books That Are Literature Too

John O'Birds wrote no mere "nature guides" enabling you to identify birds, flowers, animals and trees. He observed keenly, and described what he saw so clearly that he makes you see it too, but in addition he magically gives you the poetry and meaning of Life itself!

In the foresight of the chipmunk, the carpenter's skill of the woodpecker, the unfolding of the Spring buds, the blossoming of the hepatica under the snow, Burroughs makes you see evidences of infinite and beneficent power and plan. He shows you "the divine, the celestial, the pure, in the common, the near at hand." He makes you "see that heaven lies about us here in the world."

As an old man, he was able to write,

"I have had a happy life, and there is not much of it I would change if I could live it over again. . . . I would gladly chant a paean for the world as I find it. What a mighty interesting place to live in! This great rolling sphere with its sky, its stars, its sunrises and sunsets, and with its outlook upon infinity—what could be more desirable? What more satisfactory? Garlanded by the seasons, thrilling with life, with a heart of fire and a garment of azure seas and fruitful continents—one might ransack the heavens in vain for a better or a more picturesque abode."

Burroughs' Message for You

But you must discover for yourself the message that Burroughs has for you personally. You must *read* him to learn what calmness, what peacefulness, what contentment and joy he can bring you. Find out for yourself how his sanity and well-founded optimism can release you from the cares and worries of life and how he can fill your life with rich thoughts that will make you feel, as William Sloane Kennedy aptly expresses it—"as if you had a little better soul, were more of a man."

For John Burroughs' life in distant places had far less appeal than life at home. The more he knew about the plants and birds and flowers of his native countryside the more deeply he fell in love with them. It was not the queer and different that attracted him, but the familiar, common, everyday world of Nature.

This is what makes Burroughs the beloved guide and friend of everyone who has eyes to see and ears to hear. You find described in his pages the very things you have seen and heard and wondered about.

Says Frank M. Chapman, Curator, Dept. of Birds, American Museum of Natural History, "I clearly recall the delighted surprise when, as a boy, I first read 'Wake Robin' and found on page after page some thought which had before vaguely stirred my consciousness. The book helped to acquaint me not only with Nature but with myself. This discovery I attempted to describe to Burroughs in a letter written years before I knew him. Promptly came the reply expressing his pleasure that anything he had written should possess this potency. How many such letters he must have written! How immeasurable is the influence he has exerted upon the lives of those who have read him."

> **"WHEN Nature made the bluebird she wished to propitiate both the sky and the earth, so she gave him the color of the one on his back and the hue of the other on his breast, and ordained that his appearance in spring should denote that the strife and war between these two elements was at an end. He is the peace-harbinger; in him the celestial and terrestrial strike hands and are fast friends. He means the furrow and he means the warmth; he means all the soft wooing influences of the spring on the one hand, and the retreating footsteps of the winter on the other."**—From *Wake-Robin,* p. 189.

The Nature Writings of John Burroughs

THOUSANDS of sets of Burroughs have been sold at high prices. The edition pictured and described below is the first inexpensive edition. These books are printed from the same plates as the high priced sets which sold for $45. They have the same large, clear, easy-reading type, similar wide well-proportioned margins and high grade book-paper. But they cost only about ONE-QUARTER as much!

By binding the books two volumes in one and using a superior quality of forest green linen for the binding material great savings in cost of production were effected and these savings are handed over to the purchaser of these unique books in the extremely low price. Glance through the description of the contents in the following paragraphs and read—below—our very extraordinary short-time FREE EXAMINATION offer.

18 Volumes Bound in 9 Handsome Books

WAKE-ROBIN

Walt Whitman, the Good Gray Poet, read this book by his friend Burroughs before it was published, and he was thrilled by it. "What does Wake-Robin mean?" he asked. "It's a spring flower," Burroughs replied. "When it blooms the birds are sure to be returning from the south." "Then that," said Whitman, "is exactly the right name for your book. It brings back the birds from the south in the heart of the reader."

TIME AND CHANGE

How the earth has grown up, and rocks have been transmuted into fertile soil, plants, animals, birds and men! "The original, pulverized granite was probably not very nourishing, but the fruitful hand of time has made it so. The more death has gone into it, the more life comes out of it; the more it is a cemetery, the more it becomes a nursery."

LOCUSTS AND WILD HONEY

The reference in the title of this book is to the wild, delicious food for thought which we find unexpectedly all about us—"the free and ungarnered harvests which are everywhere afforded to the observing eye and ear."

FAR AND NEAR

Adventures on an exploring expedition to our marvelous northern territory of Alaska, fill up the "far" half of this book, and the "near" half among his own hills and fields is equally adventurous!

LEAF AND TENDRIL

In a little bark-covered studio called "Slabsides," surrounded by his vineyards, Burroughs wrote this volume. The title sounds simple, but turns out to be symbolic—leaf, standing for observation of natural phenomena, and tendril, for the mind's groping after the truths that lie behind the obvious facts of experience.

WINTER SUNSHINE

With the trained eye of a naturalist and the soul of a poet, Burroughs leads us in this book upon long, lovely tramps through the snowy landscape, talks of apples and autumn tides, and how beautiful March is in America and how mellow the October face of old England! A volume to relish and remember.

SIGNS AND SEASONS

A book of secrets. Answers to a thousand teasing, fascinating questions. How to read the signs in Nature. And what the seasons bring—and take away with them. All told so simply, so charmingly it enriches your understanding of Nature a hundredfold.

RIVERBY

Named for Burroughs' comfortable stone house on the banks of the Hudson. This volume shows how the great revolving showcase of the world swings round to exhibit itself to the man who will stand still and look!

WAYS OF NATURE

More secrets—and some of the secrets of the writing trade as well. Nature-faking enjoyed a brief, unholy career in American literature. Burroughs, more than anyone else, laughed it out of countenance. His views on the intelligence of animals occupy a large part of this volume.

FRESH FIELDS

A loving and well-deserved tribute, this volume is, to the beauty of English woods and lakes and mountains and meadows; English song-birds, wild flowers and fertile, well-worked fields, and ending with his happy, homeward voyage.

BIRDS AND POETS

Outdoor studies are coupled with literary appreciations in this delightful volume, which contains among other things, the famous tribute to the great Walt Whitman, entitled "The Flight of the Eagle."

PEPACTON

"Marriage of the waters" is what the title of this book means in the language of the Indians. Near this stream Burroughs was born. On its banks his kindred sleep. Inspired by its musical movement he writes as only he can about the adventures we all may have in the open.

THE SUMMIT OF THE YEARS

More studies of animals and their minds crowd this full and delightful volume. With them go the reflections and observations of a profound philosopher, a great "sweetener of life," on how you can find the pot of gold at the end of the rainbow. A book filled with the wisdom of three-score years and ten.

THE BREATH OF LIFE

What the great discoveries of scientists and naturalists mean in your daily life, how they affect your health, your wealth and your happiness. No one can read this book without gaining immeasurably in grasp on living.

UNDER THE APPLE-TREES

In an old orchard where Burroughs spent happy hours as a boy he finds for you, fresh food for thought, suggestions from beyond the horizon, refreshment for your spirit in this whirling world where too few of us can smell the flowers and hear the hum of bees.

FIELD AND STUDY

Into his rough studio come the birds and chipmunks to be observed and to do their own sharp-eyed observing. And from the window he watches the shy woodchucks and other wild creatures—and they watch him. Little by little he imparts to you the technique of looking at life—your own life, and the lives of men and women, birds and beasts, flowers and trees!

ACCEPTING THE UNIVERSE

Some people spend their lives fighting the world, fighting themselves, in constant conflict with their surroundings. Burroughs would have you begin by "accepting the universe"—and that means accepting your own character and condition—and then going on from there to get the most out of your existence!

UNDER THE MAPLES

It is in this volume that you will read about John Burroughs' long deep friendship with Roosevelt, and his camping trips with Ford, Firestone, Edison and Maxim. What happy times these old cronies had together under the magical spell of "John o' Birds"!

At a Discount of 70%

This Fine Edition of Burrough's Nature Writings Now Within Reach of All!

IN LIFE he made himself accessible to all who sought him, millionaire and President and dusty boy scout alike. He was beloved by millions and he wrote for the average man and woman. But the multitude was barred from enjoying his works. Only wealthy booklovers could afford the former sumptuous edition.

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The accompanying letter tells how you may secure Burroughs' Complete Nature Writings for 10 days' free examination. We pay shipping charges. See the books, appreciate their quality. Read Burroughs and discover what he will always mean to you.

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The New Method in Diabetes (Fourth Edition)
John Harvey Kellogg, M. D., LI D., F. A. C. S.
The Modern Medicine Publishing Company, Battle Creek, Michigan
Price: $2.50

This book, written for the guidance of the intelligent layman, and to aid nurses who have diabetic patients in their care, results from the experience the author has had with hundreds of diabetic patients during his many years as Superintendent of the Battle Creek Sanitarium.

The language used is non-technical, and clear explanations are given of the nature of the disease, its predisposing causes, and modern methods of treatment. These include both therapeutic methods and dietary treatment, this last giving greater emphasis to vegetable proteins, permitting a more liberal use of carbohydrates and, according to the principles of the Battle Creek dietary system, advocating the use of a low protein diet.

Included in the book is a unique and very practical "Catechism for Diabetic Patients." This valuable feature explains, by means of questions and answers, the multitude of questions which perplex the diabetic—questions concerning his diet, the care of the feet, general health and hygiene problems, and the danger of acidosis.

A table to use in calculating the dietary accompanies the text, as well as a chart giving the percentage composition of foodstuffs.

Sixty pages of diabetic recipes are also included, but it is to be regretted that these are not formulated on the 100 gram system, and standardized as to 25—50—75 and 100 gram portions, rather than following the more confusing calorie system which the author adopts.

Tune in to THE FORECAST RADIO SCHOOL OF COOKERY at 11 a. m., on WJZ and Associated Stations of the Blue Network

y Topics.

Editorial

Blessed be Prunes.

At last we have found a way of circumventing the rapacious meat trust. Science helps us out. It has been proved conclusively that the average man requires three thousand and thirty-five hundred heat units in order to secure proper nourishment every day, and a morning paper publishes a valuable list of articles, showing the amount of nourishing heat units in each. From this list we learn that we can subsist very comfortably every day on a pound of bread and a pound of cookies, or a pound of nuts and a pound of potatoes, or a pound of cake and a pound of candy, or a pound of cream cheese and a pound of dried prunes, and so on. Then let us take heart and laugh to scorn the packers and their wicked machinations. We all remember the story of the grande dame of the time of the French Revolution, who, when she was told that the people clamoring in the street had no bread, asked, in surprise, "Why do they not eat cake?" So we, deprived by "natural causes" of our customary meat diet, can fill up on bread and candy, cheese and prunes. We are not the people to rush into revolution and berate the very useful and beneficent trusts because other articles of diet are high. Let us down on our knees and thank God for prunes. — *Roswell Field, in Chicago Evening Post.*

Nuts and Grapes

AS TO MR. POST, part of whose cerebration is to be found boxed on this page, we have no space to include answers to all his shrill complainings in the press. The law court is the proper place to demonstrate more exactly his remarkable mendacity; and likewise the ingredients of his pet goods, as a step toward showing the probability that they will cure appendicitis, corns, heart-disease, earache, density of intellect, or any other ill that mortals suffer from.

11

(A.K.K)

A PROSPEROUS barrister was recounting his career at a dinner party.

"When I took my first brief," said he, "I was very nervous and excited, especially as my client was a bad egg. He was a man of good family, whose name would have been fatally tarnished had the rascal been convicted. Luckily, I managed to get the beggar off."

After dinner a millionaire entered. He was a friend of the host, who presented the K. C. to him.

"I do not need to be introduced to this gentleman," observed the millionaire, patroniziingly. "I met him long ago; in fact, I gave him a start in life. In fact, I was his first client."

The noisy hilarity which greeted the announcement was never explained to the late comer.—*London Telegraph.*

The Medical Claim

From the "Grape-Nuts" Advertisements

"Appendicitis — not at all necessary to operate in many cases. . . . A New Hampshire girl had appendicitis, but lived on milk for a while, then Grape-Nuts, and got well without an operation."

"President of Board of Health [says]: 'I suffered several years with malnutrition, palpitation of the heart and loss of sleep. . . . In a short time after I commenced its [Grape-Nuts'] use, the disagreeable symptoms disappeared, my heart's action become steady and normal.'"

"It is worth knowing that a change in food [to Grape-Nuts] can cure dyspepsia"

The Denial

From Mr. Post's Recent Public Statement

"No announcements during our entire business career were ever made claiming 'medicinal effects' for either Postum or Grape-Nuts. Medicinal effects are results obtained from the use of medicines"

What a Drug Is

From the National Pure Food Law

"The term 'drug' as used in this Act shall include all medicines . . . and any substance or mixture of substances intended to be used for the cure, mitigation, or prevention of disease"

A member of the committee of the College of Surgeons told W.K. that they were going to report favorably in regard the Coffey-Humber treatment for cancer.

Pass Examination — Dr. John Harvey Kellogg, Dr. Robert Fraser and Dr. Richard Norton passed the medical examination required to permit them to practice in the state of Florida, according to a message received this morning by Dr. Walter F. Martin, of the Sanitarium staff. They are interested in the institution established by Dr. Kellogg in Miami to do work like that being done at the Battle Creek Sanitarium, it is stated.

When the Watchman *Carries* His Conscience

Some employers are inclined to trust to a watchman's conscience to keep him awake during his hours of duty. They forget that watchmen are human, and that one of the most human, the most basic of desires is the desire to sleep.

A Detex Watchman's Clock is the best conscience a watchman can carry. He knows that the record on the dial cannot be altered or explained away.

Detex Watchman's Clocks are accurate, strongly built and completely tamper-proof. The most ingenious watchman cannot "beat" them.

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MEDICINE

Leprosy Serum Found?

Though generally considered an almost extinct disease, leprosy still grips between two and three million sufferers. Most of these are herded into colonies which dot the globe. There they are treated, often cured.

Last week Bacteriologist Hermann Dostal of Vienna announced that he had isolated the leprosy bacillus, developed a serum. One problem which has always confronted scientists attempting to isolate the bacillus has been a means of keeping it alive once it was removed from the human body. Dr. Dostal's success lay in developing a culture medium. Another difficulty: animals not being susceptible to leprosy, it is necessary to experiment with humans.

His serum, he announced, has been used with "gratifying" results in the Bari Clinic. Some of his patients showed marked improvement, others were definitely cured.

Other leprosy news of last week: the opening of Leonard Wood Hospital at Cebu, Philippine Islands. Built of concrete and bamboo, it is a 26-building hospital big enough for 700 patients.

Measles Year

In most communities that bugaboo of mothers, Measles, follows a nicely defined curve. One year the disease will be prevalent, the following year rare. In one pair of years in Manhattan the ratio was 20:1. Last year was the low point of the curve; this year is a measles year. Manhattan's public health officials are getting into action, preparing to combat the malady.

Serums have been used in isolated cases to immunize children but the first general use will soon begin in Manhattan's public schools. Blood will be collected from adults who have suffered, will be injected into the children. For best results the injected blood should come from one of the child's parents.

Many have been the attempts to isolate the virus which causes measles. All have been unsuccessful. The best method of combatting the disease yet found was perfected by Dr. William Hallock Park of the New York Health Department. Thirty cubic centimetres of blood are drawn from the elbow of a person who has had measles, are injected into the child. If the child is over five years old the dose is doubled. Half of the blood goes into the right buttock, half into the left. Consequences: a mild, immunizing case of measles, an inability to sit comfortably for a few hours.

Due to the prevalence of measles, some communities have, to a large extent, immunized themselves. But when they remain untouched over long periods of time they provide fertile fields for the virus and often disastrous results occur.

Coffey Clinic Crowds

Sufferers from cancer have been mortgaging their homes, impoverishing themselves to get funds to carry them to San Francisco to be treated by Drs. Walter Bernard Coffey and John Davis Humber at their Southern Pacific General Hospital Clinic. Over the protest of Drs. Coffey & Humber, newspapers have heralded as a cure what the Doctors refer to as "encouraging experiment" (TIME, Feb. 24). Deluded into believing that sure, swift relief could be given them, some 1,500 people have rushed to the Clinic, more than could possibly be handled.

Last week in Manhattan, at the annual meeting of the American Association for Cancer Research, a report on the Clinic re-echoing the warnings of Drs. Coffey & Humber was read by Dr. Burton Thorn Simpson, who spent three weeks there observing. Said he: "I did not observe that this treatment [injection of an extract derived from the cortex of the adrenal glands] had any beneficial result and I would certainly advise against any patient going there in hope of a cure. . . . A cancer cure . . . must cause cancer to disappear . . . for at least five years. The Coffey treatment has been applied for only three or four months and it is impossible to judge the permanency of its effect from that." In line with this warning of Dr. Simpson have been similar warnings from Drs. Coffey & Humber.

Jungle Surgery

Out of the tangled jungles of the Peruvian (upper) Amazon emerged last week a botanical expedition of the Field Museum, Chicago. Some items of medical interest forwarded by Llewelyn Williams, leader of the party:

Surgical Ants. When Indian warriors return home after inter-tribal clashes, tribeswomen anesthetize their wounds with ginger. Beside the "doctor" is a jar containing a species of ferocious, strong-jawed ants. After drawing the lips of the wound together, the "doctor" holds an ant close to the wound, lets it bite. If and when the mandibles strike on each side of the wound, the ant's body is snipped off. The death grip of the head holds the wound together. Often as many as six ants are used on large wounds. Thus drawn together the wound is smeared with a weed-pulp paste, bandaged with dried banana leaves.

Thorn Sutures. When wounds are too large for the biting ants, a thorn is thrust through the two sides. A string fastened around the protruding ends draws the wound together.

Burrowing Worm. Also found was a worm which burrows into the human leg, like a hookworm. The boil-like infection which it causes finally breaks, leaves the head of the worm protruding. Any attempt to pull it out suddenly ends disastrously, as the worm breaks in the body. Natives draw out these entozoa, often ten feet long, a few inches per day, reeling them on sticks as they emerge.

Burrowing Fleas, which dig into man's flesh, become distended with a huge number of eggs. The sufferer works about the prospective flea family with a thorn, carefully removes the parent flea. Unless great care is taken the body will be broken, the operation rendered useless. Often a salve made from crushed ants is applied to such open wounds.

EXERCISE AND FATIGUE.

J. H. KELLOGG, M. D.

FATIGUE is one of the interesting phenomena connected with muscular activity. What is the cause of fatigue in a muscle? A muscular fiber as we have before learned, has the property of storing up two things, glycogen and oxygen. Fatigue is in part the result of the destruction of this stored-up oxygen or glycogen. In ordinary fatigue, neither the glycogen nor the oxygen is entirely consumed, for if these elements, or either one of them, were entirely consumed, the muscle would be completely paralyzed; but in ordinary fatigue, the muscle is not absolutely paralyzed; its capacity for work is lessened, but not entirely destroyed.

There is another element of fatigue, and that is the formation in the muscle of a substance which is a poison to the muscle. This poisonous substance has been studied. Some years ago, a number of Italian soldiers had been violently exercised by a very long march, and some of them were found to be sick as the result of this extreme exercise; they had a rise of temperature, and a disease which is now recognized as "fatigue-fever." A physician and physiologist examined the blood of these soldiers, and removed from the blood a substance which he injected into some dogs, and immediately upon application of the injection, the dogs became fatigued the same as the soldiers had been. This shows that there is produced in the blood, as the result of muscular action, a poison which is the real cause of fatigue. A fatigued muscle is one which has been poisoned by self-generated poisons, substances which have developed in the muscle itself as the result of activity, just as we have poisonous gases left after an explosion of gunpowder, or in fact, of any explosive substance.

The fact that loss of oxygen is a cause of fatigue in a muscle, is evidenced by the experiment of cutting off the blood-supply of a muscle. It is found that when an artery which supplies a muscle with blood is tied, the muscle loses power in a short time, because the oxygen is no longer brought to it, and because the blood no longer carries away the toxic substance by which the muscle is being poisoned.

Some very interesting experiments have been made with frogs' muscles, which retain their vitality for some time even when separated from the animal. When such a frog's muscle has been stimulated by electricity, and made to lift a weight until it has become tired and works very feebly, it is found that by washing the vessels of the muscle out with pure blood it quickly recovers. Even washing the muscle with a weak salt solution has the same effect, whereas a long time must elapse for the muscle to recover itself if it is not washed in this way.

Another interesting experiment has been made with the muscles of a frog. It is found that if a solution of the extract of beef is passed through the bloodvessels of a muscle when it is fresh and active and ready to work, the muscles become fatigued immediately. This very interesting fact shows that there is a poison in the tissues which has a paralyzing effect upon the muscles. This may account, in part, perhaps, for the lethargy exhibited by carnivorous animals after they have eaten a large quantity of flesh.

During periods of inactivity or rest, the energy of the muscles is restored. Why? — During rest, oxygen is absorbed and glycogen is stored up, and the poisonous substances which had accumulated during activity are washed out by the blood circulating

benefit of the world. It is the most favorable period for a woman to enter upon literary work, and it is the time when many of our most successful literary women have done their best work. It is also a woman's time for going into public life, if so be that her home cares have slipped from her and set her free. The temperance cause needs women of mature experience and ripened intellect. Every town in the land affords a field of labor of this kind, and the younger women need leaders who are wise and motherly. What is true of the temperance cause is also true of church work, where "mothers in Israel" can perform holy offices of ministration to those whose feet are newly turned into paths of righteousness, and also in guiding and encouraging the young. Young men and young girls away from home need the friendship and assistance which a woman of fifty years can best give.

Social purity work, in particular, should be under the direction of matronly women. Inexperienced young girls, although capable of a great work among companions of their own age, are less fitted to go into the slums or visit jails. It is sensible, motherly, sympathetic woman who can safely reach a helping hand to her fallen sister, and who, more often than any one else, can reclaim a fallen brother.

The woman of fifty can do much for the rising generation by giving to young mothers the benefit of wisdom gleaned, it may be, amid tears and heartaches. She can caution the young girl who through the glamour of false lights named pleasure, is setting her feet in slippery paths, and what work will have greater reward?

But invalidism is the bar which holds many and many a woman of advancing years from availing herself of these exalted privileges. It is a sin and shame for her to become a wreck, physically and consequently to a great degree mentally, and thus rob society, yea, let us say rob God, of her most exalted service.— *Kate Lindsay, M. D.*

WILD OATS.

You see aged men about us at eighty, erect, agile, splendid, grand old men. How much wild oats did they sow between eighteen and thirty? None, absolutely none. God does not very often honor with old age those who have in early life sacrificed swine on the altar of the bodily temple. Trembling and staggering along these streets to-day are men, all bent and decayed, prematurely old for the reason that they are paying for liens they put upon their physical estate before they were thirty. By early dissipation they put upon their body a first mortgage and a second mortgage to the devil, and these mortgages are now being foreclosed, and all that remains of their earthly estate the undertaker will soon put out of sight. Let a flock of sins settle on your heart before you get to be twenty-five years of age, and they will in all probability keep possession of it. What! Will a man's body never completely recover from early dissipation in this world? — Never! How about the world to come? Perhaps God will fix it up in the resurrection body so that it will not have to go limping through all eternity.— *Dr. Talmage.*

One day last week a friend of mine walked down Piccadilly behind a lady who was wearing a dress fitted with the long train now in vogue. Opposite St. James' Club she got into a cab. She consequently left behind her on the pavement all the rubbish which her skirt had collected as it swept down Piccadilly. My friend, being of a scientific turn, proceeded to make an inventory of the collection, and he has been good enough to send it to me for publication. I give it below. In the days when germs and microbes play such an important part in social life, I question very much whether these trains should be permitted by law. This lady left her street sweepings on the curbstone; but it must be remembered that many convey them into their own or their friends' houses: —

2 cigar ends.
9 cigarette do.
A portion of a pork pie.
4 toothpicks.
2 hairpins.
3 fragments of orange peel.
1 slice of cat's meat.
Half the sole of a boot.
1 plug of tobacco (chewed).

Straw, mud, scraps of paper, and miscellaneous street refuse, *ad. lib.* — *The Arena.*

sons, we may have a stunting of the growth. If the amount of oxygen which the body contains, a large portion of which is necessary for the vital processes which maintain growth, digestion, circulation, etc., is reduced so much by exercise that there is not sufficient left to carry on the process of tissue building, then of course the child will not grow properly. This is the reason that children who are overtaxed while young are usually dwarfed. The same thing is true of young animals. If they are made to work steadily and laboriously, they do not develop as they should, in consequence of the unusual and unnatural consumption of nutrient material in work which should have been used in building up the body.

(To be continued.)

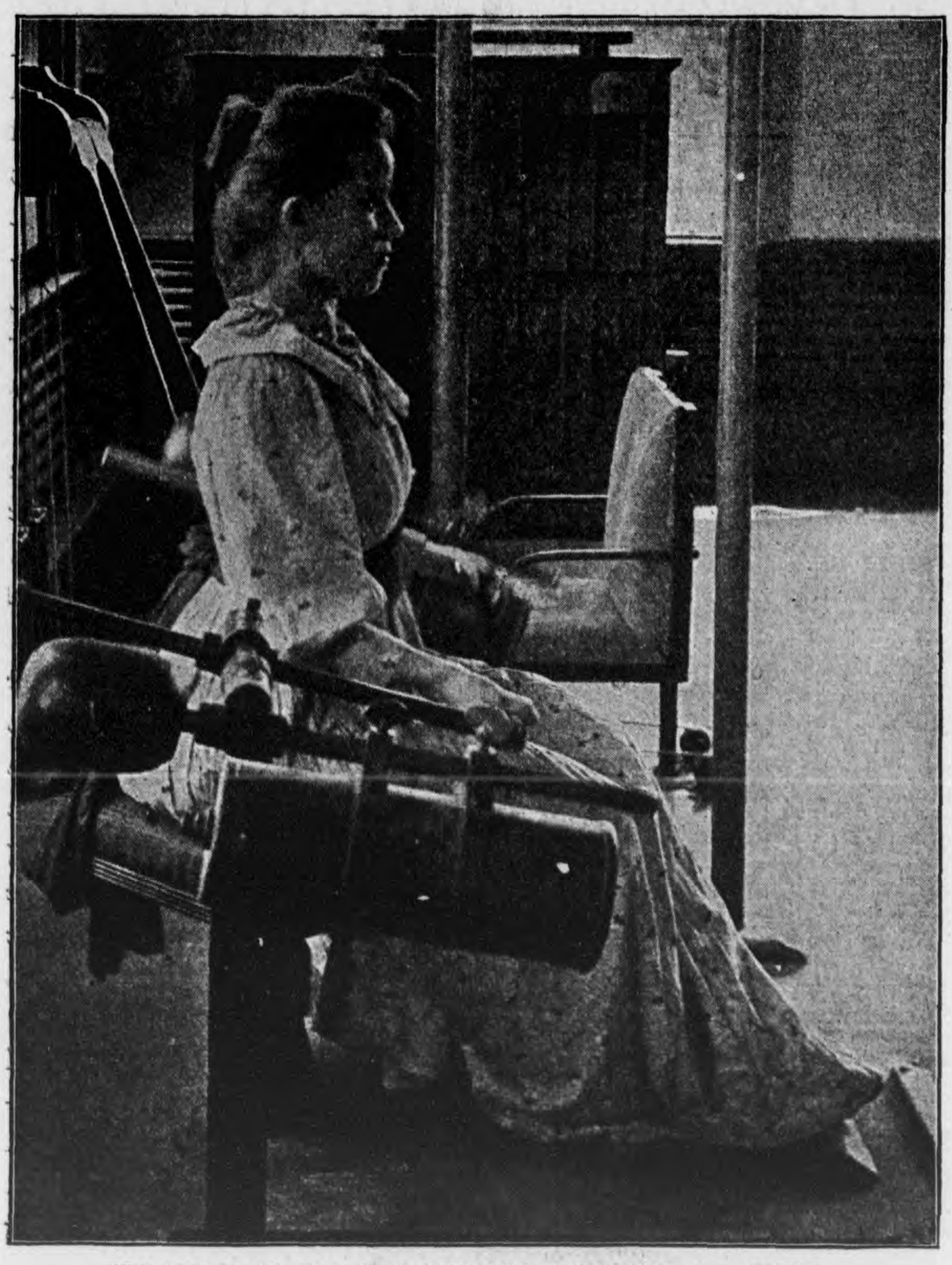
A NEW APPARATUS FOR THE DEVELOPMENT OF THE MUSCLES OF THE TRUNK.

THE accompanying illustration presents a new form of exercise apparatus devised by the writer, which has been in use in the Sanitarium gymnasium for nearly ten years, and which has proved to be a very efficient means of developing the muscles of the arms, trunk, and shoulders. The apparatus consists of two hollow cylinders attached to a movable bar and counterbalanced by a weight from the opposite end of the bar, the box in which the bar slides being attached to an axis placed at right angles with it, which is made to rotate by means of a crank, the arm of which can be lengthened or shortened at will. Two of these devices, one arranged the reverse of the other, constitute the apparatus.

The patient places himself upon a seat adjusted the proper height between the two standards, and grasps the crank handles, the arms of which are then adjusted to correspond with the length of the forearm, thus placing the elbow at the center of the circle through which the hand moves in using the apparatus.

The most novel feature of the apparatus is the hollow cylinder which is filled with water saturated with salt, to one-half or two-thirds its capacity. At starting, the fluid is at the bottom of the cylinder. As the handles are raised, the fluid flows toward the upper end. By this means, the amount of weight lifted is continually changing to correspond with the varying ability of the muscles of the arm to lift. The lifting ability of the muscle diminishes as it shortens. By means of this equalizing effect, the danger of straining the muscles by overaction is greatly lessened.

The need of a device of this sort must be recognized by all experienced teachers of gymnastics or physical culture. Nothing is more common in a gymnasium than to see some one making repeated attempts to find a dumb-bell or weight that is adapted to his strength for the movements which he wishes to execute through the whole extent. A dumb-bell or weight of any sort which may be easily lifted at the beginning of a movement may, through the changing of the position of the



NEW APPARATUS FOR DEVELOPING THE MUSCLES OF THE TRUNK.

through it, and so the muscle recovers. It is found that the application of massage to a muscle when it is exhausted, recovers it more quickly. Why? — Because massage facilitates the circulation of the blood, and thus the poisonous matters are removed more rapidly. It is always found that a galvanic current passed lengthwise through a muscle will cause it to recover much more quickly from fatigue than simple rest, perhaps because the electric current stimulates the circulation and aids the nutritive processes by which oxygen is absorbed and glycogen stored, and the process by which poisonous elements are oxydized and removed.

It ought to be remembered that fatigue involves the nerve centers as well as the muscles. When a person is fatigued from exercise, it is not simply his muscles that are exhausted, but the nerve centers which control the muscles; and perhaps also the nerves which transmit impulses to the muscles. This is doubtless the reason why a person whose legs are fatigued, finds that his arms are tired also, and that he cannot lift so much as he could before. Not only the hands and arms, but also the internal organs are exhausted under the same circumstances. That is the reason it is well not to eat after violent exercise, because the stomach as well as other organs of the body, is fatigued as the result of severe muscular effort. Doubtless the reason of this feeling of fatigue is because the store of oxygen in the body has been diminished by exercise, and not only that, but the whole system has been saturated to a greater or less extent with the poisons generated by the muscles during activity.

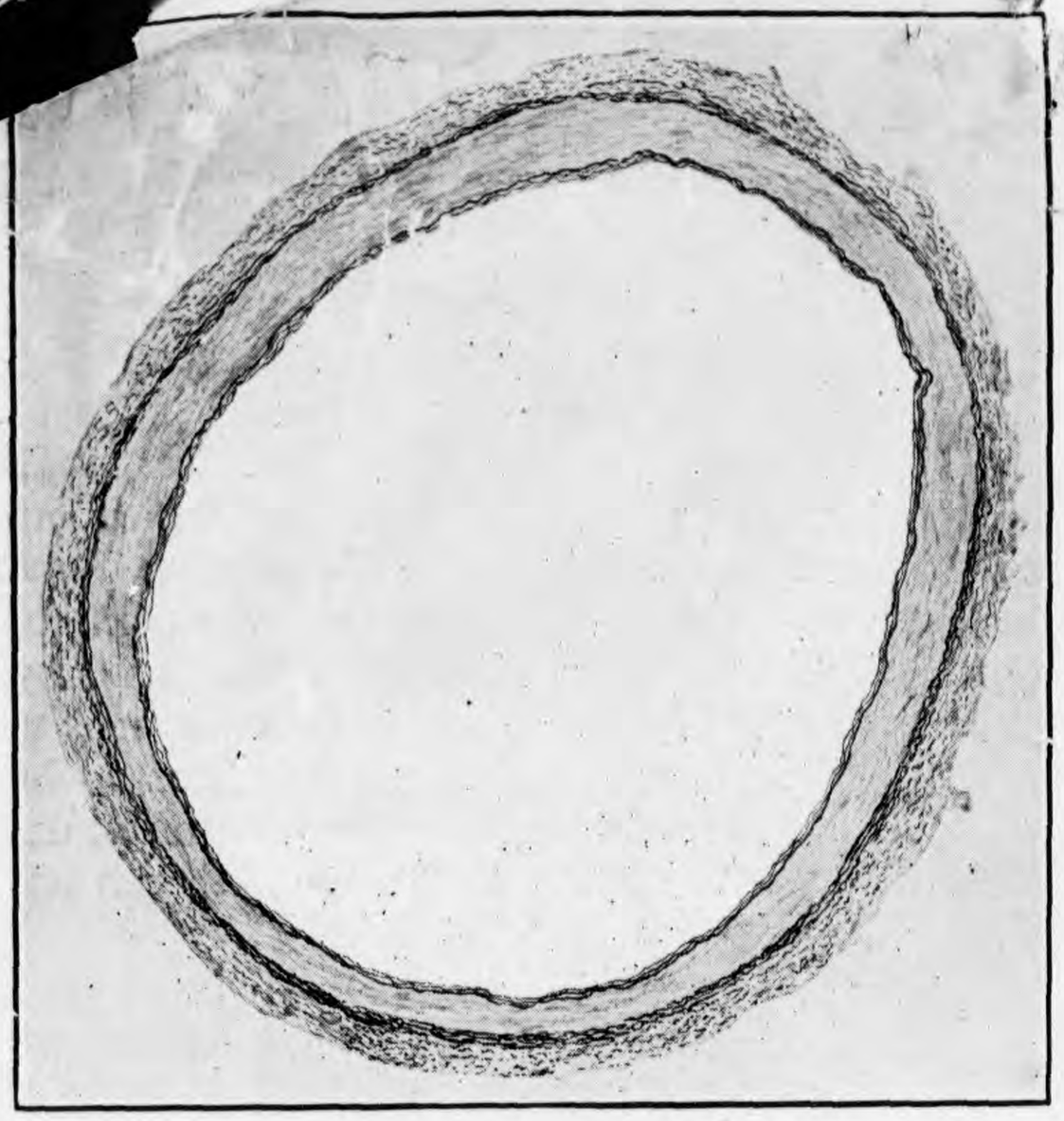
It is found by noticing the effects of exercise of different kinds, that an easy exercise to which a person has not been accustomed, is more fatiguing than one which is more difficult, to which he has been trained, even when the work required to be done in the latter case is much greater than in the former. The amount of fatigue is more directly proportioned to the difficulty of the work than to the amount of work done. As an illustration of this, suppose a person is made to walk a line: it is no more labor to carry the body on a line or on a narrow fence-top than it is to walk on the sidewalk. The same weight is moved through the same space; and yet, if you try the experiment by walking, for instance, upon a railroad iron for half a mile, you will find that it will be found more tiresome than walking upon a broad path, where no effort is required to keep the balance. Why is this? — It is because the nervous energy is used up in maintaining the balance; the coördinating effort exhausts the system by the strain upon the nerve centers; this is the reason why the nerve centers enter into the element of fatigue.

There is another interesting matter which is observed in reference to fatigue: the same amount of work done in a few slow but severe efforts, is much more fatiguing than if done in a larger number of brief but easier efforts, — efforts less severe, because less force is expended. For instance, emtying a tub of marbles by taking out a few at a time is much easier than lifting the tub when filled with marbles and emptying it in that way. Of course, the amount of work actually done would be greater if the marbles were lifted out one by one, for the weight of the hand must be carried each time; but the work would not be so fatiguing. This principle applies in a practical way to many of the activities in which we engage.

As previously remarked, the internal organs become fatigued when the body in general is fatigued. One notices, after violent exercise, that a person sighs. This sighing is an evidence of respiratory fatigue, or exhaustion of the muscles of respiration.

A very interesting fact has been noticed by some recent experimenters, of which we made a record in GOOD HEALTH some months ago, — the fact that in ordinary labor, the store of oxygen which is supplied to the body gradually grows less; that is, there is less oxygen taken in than is used up during work, so that after a number of days, a person has lost a considerable portion of his store of oxygen, thus requiring a day of rest, so that there is a sort of physical law for a sabbath. This law does not determine how often a sabbath should come, — whether once in seven days or once in ten days. It might be possible for a person so to arrange his work that he would not use up any more oxygen each day than he absorbed. If he had the right proportion of work and rest each day, there would be no loss of the store of oxygen. But in ordinary labor, as society is constituted at the present time, an ordinary laboring man expends more oxygen than he receives each day, so that a rest-day is actually required. It is quite possible that this was the design of the Creator respecting man in commanding him to earn his bread "by the sweat of his brow," thus expending daily, by the amount of labor done, more oxygen than he receives, making a day of rest necessary.

Permanent injury of the muscles may be produced by excessive labor, and in various ways. It may result from excessive work and habitual fatigue. In the first place, the stores of oxygen and nutrient material which the body contains may be gradually exhausted; and, as the result of this in young per-



A Normal Artery

Arteriosclerosis

elevated, some condition which increases the head against which the heart has to work. The higher the diastolic pressure the more work the heart has to do and the sooner it will be worn out and the more liable it will be to disease. The influence of increased diastolic pressure upon life expectancy is shown in the accompanying table:

Effects of High Diastolic Blood Pressure in Shortening Life

Age	Normal Expectancy	90-100 Expectancy	90-100 Years Lost	101-105 Expectancy	101-105 Years Lost	106 and Above Expectancy	106 and Above Years Lost
20	45	28	17	21	24	13	32
25	41	25	16	20	21	12	29
30	37	23	14	17	20	11	26
35	33	20	13	15	18	10	23
40	29	18	11	14	14	9	20
45	25	15	10	12	13	7	18
50	21	13	8	10	11	6	15
55	17	10	7	8	9	5	12
60	14	9	5	7	7	4	10
65	11	7	4	5	6	3	8
70	9	5.5	3.5	4	5	3	6
75	7	4	3	3	4	2	5
80	5	3	2	2	3	1.5	3.5

By reference to the table it will be seen that a diastolic pressure of ninety in a man of fifty years reduces the years he may expect to live from twenty-one to thirteen, a loss of eight of the most important years of the average man's life. A diastolic pressure above one hundred and five means a loss of fourteen and one half years, or more than two-thirds of the normal life expectancy.

The Significance of High Blood Pressure

High blood pressure is not a disease. Like headache, fever, insomnia or loss of appetite, it is a symptom. It indicates, of course, that there is something wrong with the body machinery, something which Nature is seeking to remedy by increasing the pressure in the blood reservoirs and pumping machinery.

When the hypertension begins at an early age, say twenty-five or thirty years, it is usually associated with disease of the kidneys, which not infrequently owes its origin to an acute nephritis occurring as a complication of scarlet fever, diphtheria, typhoid, smallpox or some other infectious disease in childhood. The kidneys have been damaged in such a way that more pressure is needed to force the blood through them. Unfortunately the kidney disease is progressive and so the prospect as regards length of days is most unpromising. The only hope lies in arresting the renal disease and lightening the load upon the kidneys. Happily this may be successfully accomplished in many cases. The hopeful cases are the early ones, that is, those in which the kidneys have not been destroyed to such a degree that the waste products which it is their duty to eliminate, collectively known as "non-protein nitrogen," are left to accumulate in the blood.

The accompanying cut shows a single kidney cell. Each kidney contains about two million of these cells which are so delicate and minute that each unit must work incessantly day and night for three months to produce a single drop of urine, and a tablespoonful is a lifetime task. Half of these minute filters may be destroyed or obstructed and the blood may still be kept free from the uric acid and other poisons the prompt removal of which is essential to life. Evidently the chief problem is how to prevent further injury to the kidney filter and so lessen the work of the crippled organ as to enable it to do its necessary work efficiently.

In many cases high blood pressure is associated with disease of the arteries, which become hardened, with thickening of their walls, thus losing their elasticity and so increasing the work of

EXERCISE AS A REMEDY FOR OBESITY.

A person who weighs from one hundred and twenty-five to one hundred and fifty pounds more than he ought to weigh is a fat person; he is, in fact, obese. A man who weighs three hundred pounds when he ought to weigh but one hundred and fifty pounds, is compelled, so to speak, to carry about upon his back, constantly, another man of his own weight. Let any man weighing one hundred and fifty pounds take upon his shoulders another man of equal weight, and then undertake to walk a long distance, climb stairs, or go up and down hills, and it will be found that only a very strong man would be able to accomplish such a task. But this is just what the overfat man is compelled to do. His excessive flesh is a dead weight,—just as much a dead weight as though it were a mass of iron or stone.

The excessive weight of the fat man is due to a deposit, everywhere in the body, beneath the skin and around and in the muscles, in the cavities of the body, in every part of the body, in fact, of an excessive amount of residual tissue, or fat. In consequence of this accumulation of fat, the fleshy man finds exercise difficult, and sometimes even a very small amount of exercise is rendered almost impossible.

There are several very cogent reasons why the overfat man finds exercise difficult. In the first place, in addition to this extraordinary amount of weight which the obese individual has to carry and the extra work which he must do, the abnormal accumulation of fat directly interferes with exercise, so that he has to do the extra work at a disadvantage. There is, in the first place, an accumulation of fat about the heart, which is always present in the overfat man. This overburdens the heart, interferes with its movements, and weakens it. Then there is an accumulation of fat about the lungs. Fat accumulates between the cells of the lungs and in the pleura which lines the chest, so that the lungs are compressed. By the accumulation of fat in the abdominal cavity the same effect of compression is produced there. The distention of the abdominal cavity also interferes with chest-movements. The muscles are necessarily hampered by the abnormal accumulations of fat about and within them. The fat may be deposited in the muscular fibers themselves, which may, in time, become entirely replaced by fat, the muscles thus undergoing what is known as fatty degeneration. Not only the voluntary muscles but such important involuntary muscles as the heart, may undergo this fatty change. Thus we see that there are abundant reasons why the overfat man becomes easily fatigued,—his muscles are weak, his heart is weak, his lungs are compressed, and yet, notwithstanding these disabilities, he has an unusually large amount of work to do, even in the movements required for ordinary exercise.

But there are several other important reasons why the fat man suffers excessively from fatigue. The sense of fatigue is produced by the presence in the blood of an excessive amount of waste or poisonous substances thrown off from the tissues. An excessive accumulation of adipose tissue is necessarily accompanied by an accumulation of waste matter, for the reason that the tissues of the overfat man are spread out, so to speak, and there are many terri-

Walking for Health
If illus. are wanted, see p. 34 vol. 1906 G.H. (3-2)

30. In walking, *always hold the chest high* and carry it well to the front. Swing the arms moderately and *walk fast enough to hasten the breathing a little.*

Nine miles a day at three miles an hour is the proper distance for the average adult. Most busy housekeepers and farmers do more than this.

The Mastery of Man p. 539+

to organize a new research so planned as to leave no loophole for cavil or doubt of the mandatory character of the results, whatever they might be.

Arrangements were made with the Springfield Training School, an institution which trains Y. M. C. A. physical directors, and is conducted under the direction of a very able and scientific faculty. Twenty-five volunteers were called for, and the response was almost unanimous, showing a splendid scientific spirit among the sturdy young men who compose the student body of this very exceptional educational institution. A competent group of metabolism specialists was selected to take immediate charge of the work, among whom was Dr. Paul Roth, director of the Physiologic Laboratory of the Battle Creek Sanitarium, who was loaned by the management as their contribution to this important scientific research. Doctor Roth had immediate charge of the details of the work of the students at Springfield.

Twenty-five men were placed under observation. Twelve of these were placed upon carefully regulated rations. The first object was to reduce the weight of the men about ten per cent by reducing the food intake until insufficient to maintain the weight. After this had been accomplished, the food intake was so regulated as to prevent further loss in weight but to permit no gain. The regimen at this time was such that the total intake of food was less than half that before the beginning of the experiment, or 1950 calories as compared with 4000 calories.

This reduced regimen was faithfully continued for 3½ months, during which time the students continued without interruption their studies and their strenuous gymnastic and athletic work exactly the same as the other students. They even entered upon contests with the other students in endurance tests, cross country runs, and other athletic events, and showed themselves to be fully equal to the high feeders in all respects. Strength tests, careful urinary examinations, psychological and other tests showed the men to be in no way injured by their meager diet and lower protein regimen. Indeed, the urinary examinations showed that the work required of the kidneys in the elimination of protein waste was only about two-thirds as much in the experiment squad as in the other students, an advantage which must appear in longer kidney life from lowered work requirement.

The results of the experiment were so clearly in favor of the low-protein regimen advocated for the last sixteen years by Chittenden and his disciples that there was no escaping the conclusion that Chittenden, Folin, Hindhede, Zuntz, and others who have declared themselves in favor of greatly reducing the habitual protein intake, and, indeed, of lessening the total food intake, were on the right side of the fence and the high protein advocates on the wrong side. There was nothing to be done but to get over on to the other side of the fence as fast and as gracefully as possible. And this, Doctor Benedict and his colleagues proceeded to do. Doctor Benedict shortly after read a paper before the American Philosophical Society in which he confessed his error, and took his stand unequivocally upon the side of the low-protein feeders. We quote from this interesting writer the following paragraphs, which we know our readers will be pleased to read, because they may be properly regarded as closing the discussion of this subject forever; for there is not now left a single leg to support the platform of the partisans of *luxus* protein consumption:

"I find myself in a novel situation as a public advocate of far-reaching dietetic alterations. Recalling my earlier objections to Professor Chittenden's inferences from

ag-3.

his experiments, I realize that, although abstract science and propaganda are more or less incompatable, in time of stress old beliefs may well be challenged, earlier concepts discarded, and conservatism permitted to exercise a less restraining influence; hence a public avowal of change in point of view and an admission of the errors of earlier judgment are not only desirable but absolutely necessary.

"While still maintaining that the published records of Professor Chittenden's experiments left the desirability of a propaganda for lower protein and energy open to serious fundamental criticism, I am now convinced that his data on protein intake justified many of his public statements and recommendations. His conjectures regarding caloric needs seem in no small part substantiated by the results of this new research.

"Professor Chittenden's conclusions from his experiments that a low-protein diet is practicable seem fully substantiated; this expensive source of food material may thus be materially lowered. The calories may also, without doubt, be lowered. Indeed, it may become a serious question as to whether a patriot should be permitted in times of stress to carry excess body-weight, for the expense of carrying it around calls for calories that other people need. The excess weight is prima facie evidence that he is living at the highest metabolic level, higher than he needs by approximately 25 per cent; and there is no doubt that the excess weight contributes to shorten life.

"Certain practical points in connection with a reduction in diet are important. Difficulties in the shape of tendency to constipation can be easily controlled by the use of bran, as was done in our study. Bran also provides a certain amount of bulk, which helps materially in producing a feeling of satiety. It is quite clear that variation in diet is absolutely essential. If a person craves a certain article of food, he may eat it, but stick religiously to the 'half portion.' The presence of an unlimited food supply on the table makes self-denial harder.

"Of special significance is the importance of not eating between meals and of omitting the eating of extras in the form of candy, peanuts, and minor luxuries. It has surprised us to find how large a proportion of the total diet is made up of these extras. Captain Gephart, in his study of the food intake of St. Paul's School, Concord, New Hampshire, found that out of a total daily intake of 5,000 calories per boy, 647 calories were derived from extras in the form of sweet chocolate, candy, coffee buns, etc. With our control squad at Springfield when on normal diet, approximately 4,000 calories were consumed daily by each individual. Of this amount about 400 calories were obtained from extras not served at the table.

"This is no time for the epicure. Every person should be under rather than over weight, and it should be popular not to be fat. Today every woman, as well as man, should make it a special mission to see to the physical condition and not carry around excess fat or live upon an abnormally high metabolic level. *By this means a great saving of food in this country can be effected to the positive advantage of health.*

"It is more than probable that with reduction in flesh, the physical appearance will be somewhat less satisfactory, for admittedly the face may appear somewhat drawn. On the other hand, it is absolutely proved that excess weight is distinctly disadvantageous to health. People, especially over thirty years of age, who are over weight are notoriously bad insurance risks. Even those over-weights without demonstrated organic change in early or middle life show very high death-rates. Nobody should be over weight; most people should be somewhat under rather than over weight. If, when the war is ended, plenty is established and the need for restriction is removed, one wishes to go back to the former metabolic level, the way is very clear. The palate will lead to this way very readily. The purse may permit indulgence, but the health will really be better for a moderate reduction."

Doctor Benedict is to be congratulated upon his frankness and his recognition of the fact that the time for a right-about-face has fully arrived, as well as for his naïve way of expressing it.

And now all vegetarians may rejoice and be exceedingly glad. A pound of bread and three pints of milk will supply all the nutriment needed, according to Doctor Benedict, and according to Professor McCollum of Johns Hopkins University, milk is better than meat. The millennium in diet seems near at hand.

Of course, Doctor Benedict does not advocate vegetarianism, but the admission of the adequacy of a low-protein diet practically eliminates meat, because if one takes the amount of fruits, vegetables, grains, and milk necessary to supply himself with the salt and vitamins which meat does not furnish, he will in so doing get his full complement of protein, and cannot take lean meat without getting a surplus. Low-protein advocates who are not vegetarians take little or no lean meat. No one has ever contended that the fat of meat is essential. It has been well shown by Mendel and others that lard and other animal fats, with the exception of butter, are deficient in essential vitamins. Butter is in every way superior to all other animal fats.

ALL School Children to be Fed at Public Expense

JUDGE HENRY NEIL is the cleverest publicity man in America. In obtaining free newspaper space for propaganda for humanitarian projects he has no equal on earth. He started his Mothers' Pensions campaign in nineteen eleven absolutely alone and with no funds except his own, but so effective was his publicity in newspapers and magazines that a few months later nineteen state legislatures had passed Mothers' Pension laws. In three years forty-two had Mothers' Pension laws and, later, every English speaking country, and Italy, all the results of his personal campaigning. Neil was publisher of his own books and publicist in Chicago for a lifetime, and has the highest standing in his own community.

Sam. T. Hughes
President, Newspaper Information Service, Washington, D.C.
Editor-in-Chief of The Centenarian Club

(Over)

ALL School Children to be Fully Fed at Public Expense

JUDGE Henry Neil, Father of Mothers' Pensions will address two meetings, under the auspices of The Centenarian Club, and tell of the law now in force which makes it the duty of the school board to provide everything necessary for the child's health that the parents are unable or unwilling to provide.

Union Auditorium, 229 W. 48th St., New York City.
Sunday, September 29th, 3 P. M.
Monday, September 30th, 8 P. M.

Admission Free, No Collection, Nothing to Sell

COME FOR YOUR CHILDREN'S SAKE.

(Over)

HENRY NEIL

THE CENTENARIAN CLUB

THE CENTENARIAN CLUB, founded by Judge Henry Neil, Father of Mother's Pensions, is a non-pro'it, humanitarian organization which teaches people how to live in health and happiness for more than one hundred years. The headquarters of the Club are at East Aurora, N. Y.

There are, at present, only four thousand persons in the United States over one hundred years of age. The average length of life for Americans is fifty-eight years.

Earnest R Blew
President of the
Centenarian Club

Every year, the world is deprived, by early death, of brilliant men and women, scientists, inventors, organizers, artists, writers, etc. who are cut off at the very age that their knowledge and experience is beginning to benefit mankind. How much faster we would progress if they lived and retained their mental and physical vigor.

Science has proved that by eliminating poisons from living bodies life may be prolonged indefinitely. Experiments by modern biologists find life cells and many tissues potentially immortal.

¶ Poisonous conditions in the body are caused by intake that is either originally poisonous or becomes so by imperfect elimination. What we eat and drink today becomes our thoughts, our speech and our actions tomorrow. Death is the result of accumulated poisons. The average length of life of people over fifty is steadily decreasing.

Dr Wm Howard Hay
Spokesman for the
Centenarian Club

Each Local Club has some definite aim which will benefit humanity, and the aim which lies closest to the heart of the Founder, Judge Henry Neil, is that of Race Betterment. He positively states that crime is the result of mal-nutrition in childhood. The seeds of Race Betterment must, therefore, be planted at a very early age, and it is the solemn duty of each branch of The Centenarian Club to undertake specific duties toward accomplishing this aim. Helpful articles on this subject are published from time to time in the Bulletin. Wherever there is a school there is an opportunity for useful work. Members of The Centenarian Club assist and co-operate with school teachers to insure all undernourished children being adequately fed, and educated in correct living, so that they may become happy, healthy, and useful citizens for more than one hundred years.

Members meet once a week to discuss, earnestly and helpfully, all problems connected with happy, healthy living. These meetings take the form of a luncheon held, in rotation, at the homes of members, or at an hotel, or some other convenient meeting place. Appropriate menus for such luncheons are issued with the Health Service Charts. At every luncheon a speaker (guest or member) is invited to speak on some subject connected with health, followed by a short discussion. As an alternative, a chapter from some appropriate book is read and discussed, or the Health Director answers questions on health and diet problems

Samuel Thomas
Editor-in-Chief of The
Centenarian Club

The Centenarian Club has nothing to sell; it does not advocate specific foods for the purpose of profit making. It teaches how to eat and drink, what to eat and drink, and when to eat and drink, bountifully, and in the most delicious forms, of the good things that Nature provides. By following the Club suggestions all poisons are eliminated from the body, and everything necessary to promote proper functioning of every part is provided.

Every man and woman who becomes a member of the Centenarian Club becomes, automatically, a potential centenarian, and can look forward to an extended life of happy, healthy usefulness.

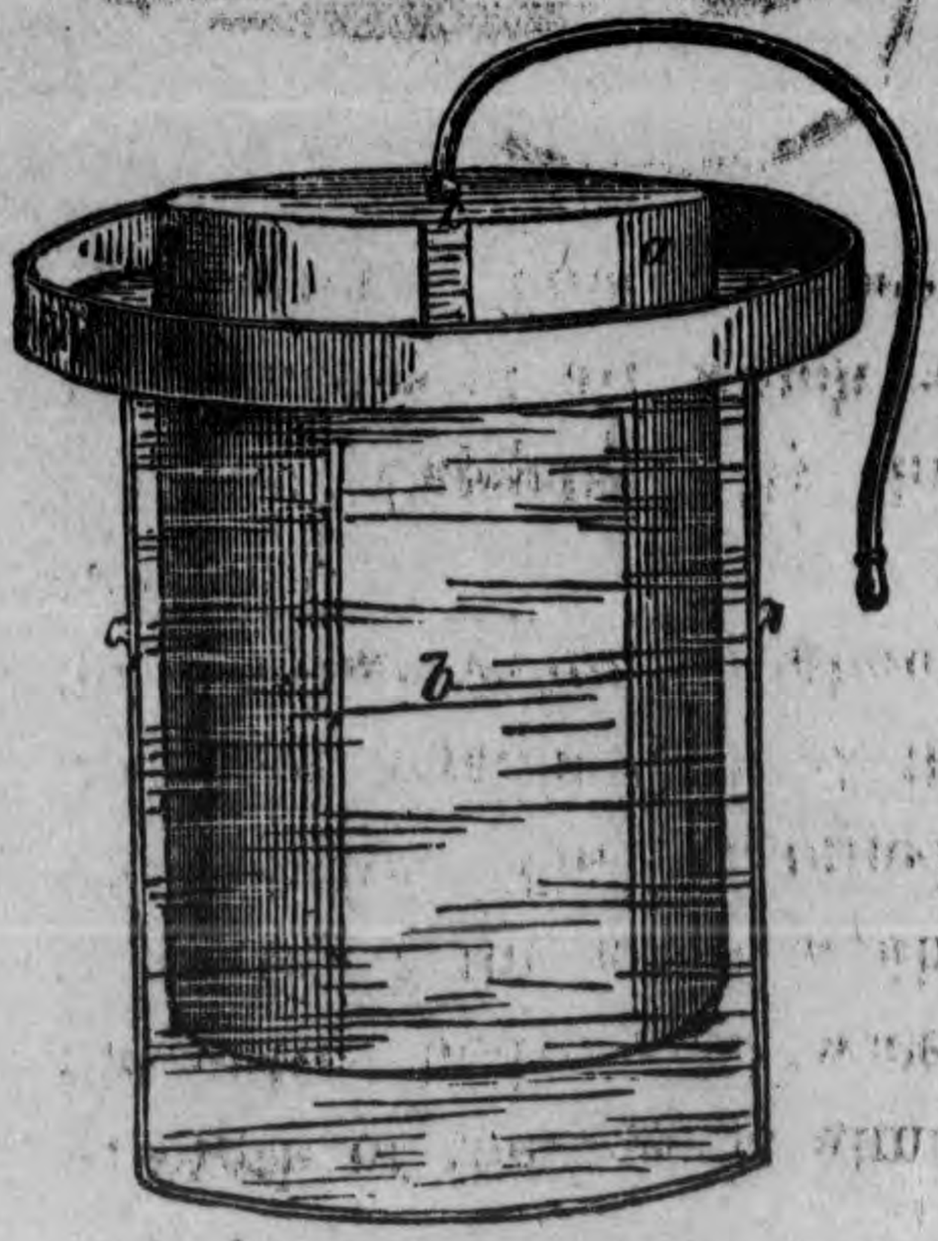
ST. CLAIR BUXTON, *Secretary*, Roycroft Inn, East Aurora, Erie County, New York

The instrument consists of two tin vessels, one inverted inside the other. The larger one should be nearly filled with water, and should have a small tube passing up through the center nearly to the top. This should communicate with a flexible tube outside, to the end of which is attached a mouthpiece, which may consist of a short glass tube with a good-sized bore. By blowing into the tube, the inner vessel will be made to rise, and the amount of air expelled will be indicated by a scale accurately determined by previous calculation or experiment, and marked on the outside. If the inner vessel is eight inches in diameter, a scale may be made with lines one-tenth of an inch apart, each of which will represent five cubic inches of air.

A person five feet high ought to be able to raise the scale three inches and a half, after taking a full inspiration. A person six feet high should be able to raise it five inches.

By the daily practice of the exercises described in the chapter on exercises, a person may increase his vital capacity very greatly.

Vital Capacity.—By this is meant the number of cubic inches of air which can be exhaled after a deep inspiration. This has been found to have a direct relation to the height of an individual. A person who is five feet and one inch in height, has a vital capacity of 175 inches. Each additional inch in height adds eight inches in vital capacity. Thus, a person measuring five feet eight inches in height should have a vital capacity of 230 cubic inches. The lung capacity is easily measured by means of a spirometer.



SPIROMETER.

An instrument of this sort, shown in the accompanying cut, and which will answer a very good purpose, may be made as follows:

Chautauqua School of Health

THE ABSORPTION OF OXYGEN

BY J. H. KELLOGG, M. D.

BREATHING is the receiving of air into the body, or rather the absorption of oxygen. In man and the higher animals this is accomplished by means of a most ingenious pumping device, by which the air is sucked in through the nose and the mouth. This breathing apparatus consists of the chest, the outer walls of which are made up chiefly of ribs and muscles; the diaphragm, which forms the floor of the chest cavity; and the lungs and the breathing tubes which are placed within the cavity. The lungs are a double, hollow sac, which is subdivided into an immense number of smaller sacs, or air cells, in the lining membrane of which is found an extremely rich capillary network, to which is distributed for purification the blood sent to the lungs from the heart. The lungs are covered by the protecting pleura. A similar membrane lines the chest. Air is conveyed into the lungs through the larynx, trachea, and bronchial tubes which are connected with the back part of the mouth. It is as much the duty of every enlightened person to give thought to the quality of the air he breathes, and to the manner of breathing, as to give attention to the food he eats, and the manner in which it is served and eaten. Pure air may indeed be regarded as one of our most necessary foods. In fact, death occurs more quickly when the body is deprived of air than when deprived of other food or of water.

Air is made to enter the chest by enlarging the chest cavity or thorax. This is accomplished by a downward movement of the diaphragm and an outward movement in all directions of the lateral chest walls. This is largely accomplished by the muscles which lift the ribs and pull them outward from the center of the body. The lungs are emptied by the natural return of the parts to a passive state, when the muscles cease their pulling upon the chest walls. In ordinary deep respiration, when the breathing movements are not interfered with, the movement consists chiefly of an enlargement of the trunk in the region of the waist. There is at the same time a marked bulging forward of the abdominal wall. This style of breathing is sometimes, though incorrectly, termed abdominal respiration. In abdominal respiration proper, there is a forward movement of the abdomen, but without marked enlarging of the waist. Abdominal respiration is most frequently seen in sedentary men and in infants. The opposite style of breathing, known as costal breathing, is seen in women who habitually wear waist-constricting garments. The principal movement is at the top of the chest.

Neither costal nor abdominal respiration is capable of bringing the lungs fully

into action. Only such portions of the lungs act as lie in contact with a portion of the chest wall which moves during the respiratory effort; and in those parts which lie in contact with portions of the chest wall which remain idle, the air stagnates. Carbonic acid gas and other poisonous matters accumulate. The living cells are thereby poisoned and paralyzed. Pneumonia germs and other disease-producing microbes, and especially the germs of tuberculosis, are likely to find lodgment in these idle parts. The paralyzed cells are easily overcome by the invading germs, and so an acute inflammation may be set up, or, still worse, that dreadful disease, pulmonary tuberculosis or consumption, obtains a foothold.

It is important to cultivate a proper mode of breathing, taking pains to expand the lower part of the chest. One does not use the abdominal muscles actively in ordinary respiration, but they are used passively in aiding respiration. As the breath is drawn in when the full chest is expanded, especially the lower part, the abdominal muscles are stretched. The diaphragm, in descending, presses the abdominal organs outward, thus rendering tense the muscles which form the front wall of the abdomen. In expiration, the muscles contract, as does rubber when released after stretching, and by the pushing of the abdominal organs upward, aid in crowding the air out of the chest and preparing for another incoming breath. In order to serve this useful purpose, the abdominal muscles must be strong and tense. Flaccid muscles can render no service. In forcible respiration, as in speaking, the abdominal muscles, as well as the muscles of the chest, must be kept under constant control, sometimes being contracted with vigor to give an increased force to the voice. This action is especially necessary in public speaking and singing.

In speaking, one should breathe deep enough to feel distinctly the movements of the abdominal muscles. By this means greater volume will be given to the voice, the effort of speaking will be found much less laborious, and the voice will be much less easily fatigued. A high-pitched, strained voice should be particularly avoided as highly irritating to the throat, exhausting to the speaker, and disagreeable to the audience.

Persons who have not learned the use of the abdominal muscles in speaking or in singing, or in whom they are so weak as to be of no service, habitually use the muscles of the throat and the upper part of the chest in a strained way during loud speaking or singing, and greatly to their injury. Not only the voice suffers, but the habit of using the lungs in this way impairs digestion, the action of the liver, and the functions of all the abdominal organs, which need the benefit of the rhythmical movement produced by the strong action of the lower portion of the chest. This is the real secret of the great benefit experienced by many who have corrected their mode of breathing, transferring the principal action from the upper to the lower part of the chest. It should be remembered, however, that the whole chest should be moved, and the upper part of the chest fully expanded, in order to secure proper ventilation of every part of the lungs, thus preventing the lodgment and development of germs and the various acute and chronic diseases which result therefrom.

"THE world leads round the seasons in a choir,
Forever changing, and forever new,
Blending the grand, the beautiful, the gay,
The mournful and the tender, in one strain."

EXERCISE AND PURE BLOOD

Tonic Condition of the Skin, One of the Many Valuable Results from Thorough Activity.

WHEN an athlete is in "fit" condition, the fact is indicated in part by his skin, which, as the trainer says, is "white as a woman's." This is because of the active perspiration induced by the vigorous exercise and the accompanying activity of heart and lungs.

The skin of the sedentary man, like that of the long-stabled horse, is inactive, lifeless, dingy, even "hidebound." Excrementitious substances which ought to be cast out through the sweat glands accumulate. The perspiratory ducts are clogged, the sweat glands become inactive, the blood flows sluggishly in the vessels.

Exercise awakens all the bodily activities. Every organ feels the tingle of new energy and power. The stagnating fluids which fill the sweat ducts are forced onward and the skin perspires. A cold or cool bath only cleanses the outside of the skin. Sweating by exercise cleanses the skin to its depths. A hot bath causes sweating and is good for the skin; but it does not supply as does exercise the oxygen required to burn up the impurities of blood and skin needful for body health.

Brisk walking is perhaps the best of all forms of exercise. Running is too violent; ordinary leisurely walking is quite too slow and easy.

Swimming in water of sea-water temperature is perhaps the best of all forms of exercise. It is a splendid heart and skin tonic. It strengthens the nerves, improves appetite and digestion, and increases lung capacity.

ALCOHOLIC LIQUORS CONSUMED ON SHIPBOARD.— The London *Star* is authority for the statement that the passengers of the Cunard steamers alone annually consume 344,000 bottles of spirits, about 16,000 bottles of claret, 9200 bottles of other wines, and 489,344 bottles of ale and porter, as well as over 30,000 pounds of tobacco, 63,340 cigars, and 56,873 cigarettes. The Cunard is but one of the several popular lines carrying a large number of ocean passengers. If there is the same proportion of drinking and smoking upon the other lines as upon the Cunard, the aggregate of liquors consumed on shipboard must indeed be very large. There is great peril involved to the traveling public on land by the use of intoxicants, but their use on shipboard is exceptionally hazardous. Many of the disasters at sea, on naval vessels as well as in the passenger service, have been due primarily to the use of alcoholic liquors. There should be a vigorous and earnest crusade against the use of intoxicants by any who go down to the sea in ships, whether passengers, officers, or sailors.— *National Temperance Advocate.*

ENGLISH SERVANTS AND THE TEAPOT.— Tea-drinking is rapidly becoming a vice among working-women in England, and it has just been shown that the miserable condition of the workers in the slate quarries at Merioneth is very largely due to the inordinate consumption of tea by the men as well as the women. The teapot is in use all day long, and appears at every meal; and although cookery classes are held in this mining district, it has been found impossible to wean the poor from incessant tea-drinking, or to persuade them to use nutritious foods. There can be no doubt that the indigestion and anemia from which working-girls and servants invariably suffer are largely due to inordinate tea consumption. In most workrooms and kitchens the teapot is in constant requisition, and its effects, if less revolting than those of the beer-can, are hardly less dire upon the health.— *The Princess (Eng.).*

ADVICE TO LITERARY WORKERS.— An English medical journal, which ought to have some knowledge of the matter, undertaking to tell "literary workers" how they should parcel out their days, tells them to "rise early, take a cup of coffee with toast at 6:30, write for a while, take breakfast at 8, write till noon, take a lunch at 1 o'clock, smoke a pipe after it, take a cup of black coffee at 2, write a couple of hours, take a cup of tea at 4, write till 6:30, take dinner at 7, winding it up with a cup of black coffee; take things easy till 10:45, then take a small cup of cocoa, and be ready for bed at 11."

The publication of such a fiendish plan of work and diet makes it pertinent to warn literary workers not to adopt it, unless they desire to sacrifice themselves to the interest of the craft at large by cutting off in their own persons a portion of the overstock of writers. Any man who mixes up nine hours of writing each day as a steady occupation with three cups of black coffee — and possibly some more at breakfast — a certain amount of tea, cocoa, and tobacco, and only six or seven hours of sleep, with no allowance for the wakeful hours caused by the nerve stimulation of the day, will speedily reach a pass where he will save the publishers all further trouble. It may be possible that the stolid English nerves can stand spurring, first with excessive work and next with excessive coffee; but the American writer who tries it will soon be fit for nothing but a rest-cure or lunatic asylum. There can be no hard-and-fast rule laid down as to how writers shall work and eat, any more than as how bookkeepers or bank clerks shall do the same things. But for all mental workers it is safe to lay down the rule of moderate labor, plain but nutritious food, and strict abstinence from tinkering with nerves and robbing nature's sweet restorer, all of which crimes are embodied in the advice of the alleged medical authority quoted above. — *Pittsburg Dispatch.*

THIS is how diminutive dogs are produced in Paris: Snatched from their mother's breast when but a few hours old, they are put on an alcoholic diet instead of a lacteal diet. When they reach a certain age, alcohol under different forms constitutes almost the sole diet of the animal. The young dogs do not die, but what is far more important, they do not develop, and appear to be wasting away continually. They soon cease to grow entirely. The Lilliputian animal is thus obtained after two or three generations. What a terrible lesson for drunkards and absinth consumers! — *New York World.*

THE PEANUT AS FOOD.— In a German medical journal Dr. P. Furbinger treats of the peanut as an article of food rich in albumin, of which it contains forty-seven per cent., together with nineteen per cent. of fat and non-nitrogenous extractive matters. He recommends the use of roasted peanuts in the form of soup or mush. On account of their cheapness, peanuts are recommended as a popular article of food, especially in poorhouses and the like.

RUNNING AS AN EXERCISE.

RUNNING, as I shall proceed to show, constitutes one of the most perfect exercises which a man may take without apparatus or assistance from others.

The first great merit of running is that it applies exercise mainly to those parts and organs least used, — the toes, feet, legs, lungs, and heart. It exercises least the arms and back, which are most used in ordinary work. Therefore it serves the first great purpose of any remedy ; it balances the circulation, and equalizes the functional energy.

To keep the head cool and the feet warm is the great desideratum, because the head is so near the heart, and the large blood-vessels reach it so directly. The tendency of our civilization is so to overwork the brain that the least deficiency in the circulation of the extremities is sure to be avenged by a congested head, leading by repetition to headache and insomnia. Running secures a cool head and warm feet.

Walking is dull work. There is scant pleasure in the exercise for its own sake. You must always be going somewhere ; and if you cannot continually go to some new spot, you are bored. The pleasantest walking is a quiet, contemplative stroll. But that is of little value for exercise, and rapid walking is almost always forced. But there is a spirit and *verve* about even the shortest little dog-trot which the most vigorous walking altogether lacks. Start to run, and the breath quickens, the pulse leaps, and the brain brightens, as the freshly oxygenized, purified blood begins to bound through it ; the eye sparkles, and the charm of your boyhood has returned once more.

How much of the exhilaration of our childhood was owing to the fact that we then were ever running ? And if adults ran more, would they mourn so much for the lost illusions of early years ?

The blows which the sole of the foot receives in running are of real value in improving the circulation in the feet. Those who have studied the merits of muscle-beating do not need to be told this. These sharp, vigorous strokes running up through the great sciatic nerve to the spinal cord and brain are stimulative and tonic in a high degree, and the quickening goes all through the body. Every nerve fibrilla feels it ; the liver is shaken and jarred into action ; the stomach grinds merrily away at its welcome grist ; the bowels start their weird serpentine, peristaltic action ; the capillaries flush blood ; the pores open ; and all is vigor and motion. Not a terminal fiber, not a corpuscle of blood, that does not share in the jubilee and revival. Running is "the universal alterative."

"Do not run ; it is too violent an exercise for your health !" How often is this advice given ; wisely enough, perhaps, to those with heart disease, but foolishly enough to the majority, who need precisely this exercise to strengthen their hearts against sloth and luxurious living. For the heart is a muscle, and suitable exercise is the one thing which every muscle must have or it atrophies. Very rapid and vigorous walking is good for the healthy heart, but it takes vastly more will-power to walk hard than to run easily, and the running will do the heart more good. Of course those with weak hearts should take this exercise with caution ; a few yards only should be the extent of the run at first, and when this grows easy and pleasant, a few more, and so on, working very gradually until a quarter of a mile becomes a bagatelle. When a quarter of a

mile causes no distress, *that* heart may cease to be solicitous about its safety. If adults ran as freely and as frequently as children,— I do not hesitate to say it,— heart disease would be rare. But when I praise running for the heart, competitive racing is always excluded. That has ruined many a heart. Health and pleasure are the only prizes for which to run.

I lately conversed with an athlete, an ex-champion in the Caledonian games, and he told me of the physical condition of some famous runners he had once examined. "The muscles on their abdomens were so hard that when I tapped them with my finger it was like tapping a board," he said. Observe the flabby sac which retains the bowels of the average sedentary man, and think what this difference must mean in the absence of abdominal obesity, constipation, prolapsed bowels, piles and hernia, to say nothing of a host of other pelvic weaknesses. Fine, vigorous abdominal muscles mean healthy viscera and pelvic contents in a normal position. What would this be worth to women? A woman who had avoided corsets and heavy skirts, and who had taken a quarter-of-a-mile vigorous run daily since childhood, would be wagered upon by an enlightened physician as perfectly free from "female weakness" or malpositions.

Again and again it has been shown that nothing is so healing to sick lungs as pure air taken freely; and in no other way can it be taken so freely and so purely as when running in the open air. As a breathing exercise alone, running is priceless; as a preventive of consumption nothing can excel it; and he is a dull hygienist indeed who cannot see how very valuable an agent it might become, when wisely employed, in checking lung disease. Were I to start a "consumption cure," running would be my sheet-anchor. Indeed, running would be my chief resource in treating those chronic diseases in which the patient has the use of the lower extremities.

We hear much of the medical use of oxygen nowadays, but there is no better oxygen than that which nature provides in the open fields; and if we fill ourselves with this, feasting on it as we run, every drop of our blood will thank us for the treat. Running furnishes oxygen more rapidly and abundantly than any other spontaneous exercise.

When you run, you perspire. Thousands upon thousands of little pores begin to drain off impurities, and thus relieve the other excretory organs of overwork. No Turkish bath can excel a run, no sudorific will produce a more thorough sweat. In the corporation of man, running means clean streets, good drainage, perfect waterworks, and public sanitation.

Running is pleasant and inspiring. It enlivens the mind and dispels melancholy. It exercises every muscle in the body, and chiefly those not commonly much used. It cools the head, and draws blood to the lower extremities. It cures rheumatism, corns, cold feet, headaches, insomnia; prevents stiffness, varicose veins, apoplexy, consumption, hernia. It stimulates and tones up the nervous system. It shakes and arouses to action all torpid viscera. It insures appetite, digestion, assimilation, excretion. It will certainly cure obesity, for nobody ever yet saw a hard runner who was fat. It requires no apparatus. Taken all in all, it is the most perfect single exercise known for health, pleasure, and all-round development.

If you feel the need of running, have the courage to do it, and you can soon persuade others to join you, if you must have company. Children at least will be always glad to accompany you. The dress should be appropriate. The cap should be very light and close, so as not to blow off easily. Much of the time when you run fast, you will carry it in your hand. Let all the clothing be woolen, so that the perspiration will quickly pass off, and chills be avoided. Have no flapping skirts, coat-tails, nor other loose ends. Wear woolen stockings and low running-shoes or, better still, wear no stockings and no shoes, whenever the weather will permit. There is wonderful comfort in bare feet, as everybody knows. Contact with the earth is healthful. And in summer, after a rain, or in the dewy morning, how refreshing a running foot-bath through wet grass. Even in winter a short run, barefooted, through the loose snow, may be made perfectly safe for those who have taken the right training, producing a warmth and glow in the feet which will last for hours afterward.

Never race for prizes, or run against time, or compete for anything. Avoid overstrain. Don't make work of your sport. Leap and bound down hill, and you will find it jars you much less than straight running. Run up hill zigzag. Stop whenever you feel any discomfort, get your wind, and then run again. By constant practise a man could run as long as he could walk. In some places in the Orient, outrunners and footmen accompany carriages, and keep up with the horses. In the bardic chronicles of Ireland we read of the horse-boys running all day by the side of the traveler, ready to be at the bridle whenever the master halted. And

travelers of to-day tell us wonderful tales of runners in Mexico, Japan, Africa. But such running, if wonderful, is not perhaps desirable, and is hardly to be attained without too much expense to other faculties. The runs I recommend are through the dewy meadows of morning, over the hills of afternoon, or through the aisles of forest temples,—runs with an easy breath, a light foot, and a gay heart.

You may not, like Selkirk, become able to run down wild goats, but you can at least run down your avoirdupois, run up your spirits, and run out, if not outrun, your doctor.— *William J. Lloyd, M. D.*

BICYCLING AND VEGETARIANISM.

Last fall, a Mr. Kragness, physical director in the Y. M. C. A. gymnasium at Minneapolis, demonstrated the staying qualities of the vegetarian diet during a very hard journey on a bicycle from St. Paul to San Francisco. He lived entirely upon vegetable food, fruits, grains, and nuts,—subsisting chiefly upon granola, granose, and other health foods manufactured by the Battle Creek Sanitarium Health Food Company. He was accompanied by a vigorous companion, who subsisted upon the ordinary diet, but Mr. Kragness more than once showed his superiority in endurance by carrying heavier loads than his companion, and reached his destination in fine condition, having actually gained in weight, notwithstanding the many hardships he had met among the mountains. Mr. Kragness was by this experience so thoroughly convinced of the value of a non flesh diet that he has now become a confirmed vegetarian.

Another vegetarian bicycler has recently appeared in the person of Mr. F. G. Barnett, a young bicycler who, at El Paso, Tex., last year broke the world's record in a five-mile standing straight run, making the distance in the remarkably short time of twelve minutes and eighteen seconds, or at the rate of twenty-four and one-half miles an hour. A recent newspaper speaks as follows of Mr. Barnett's vegetarian ideas:—

"F. G. Barnett, the 'Nebraska cyclone,' has become an avowed vegetarian, and has started a crusade to get all the speedy riders in Chicago to adopt his diet. Barnett has foresworn meat, and will eat nothing but starchy foods, fruits, and nuts while riding and training on the national circuit.

"To-morrow morning the farmer boy who made such a sensation in wheeling circles a little over a year ago by tying Walter Sanger's mile unpaced record, after being but a week off the farm, goes to Battle Creek (Mich.) Sanitarium. There he will ride on the track and road for two weeks, covering in the neighborhood of twenty-five miles every day. When he has gotten down to riding weight, he will go to Louisville, and cultivate esprit on the Fountain Ferry track.

"Barnett thinks a vegetable diet well adapted to the wheelman. Since he has adopted it, he has added fifteen pounds to his weight."

Mr. Barnett is now stopping at the Battle Creek Sanitarium, getting new ideas in relation to healthful living, and putting himself in condition for his summer's work.

CORRECT BREATHING.

It has been discovered that the double chin can be banished by correct breathing. The woman with a short neck must hold her head high, even stretching her neck until conscious of the tension of the cords. She should practise dropping her head, and letting it roll listlessly about. This will give a graceful poise to the head, and the exercise of muscles will help to consume the extra amount of fat. Lung exercises in breathing are the best exercises for excessive stoutness. The best time for this is before dressing in the morning, and after undressing at night. Five or ten minutes' exercise every day will reduce the flesh in a wonderfully short time. Stand erect, with the head and chin well up, and rise upon the toes at each inspiration, holding the breath a moment, then expelling it forcibly, coming down upon the heels at the same time.

Another good breathing exercise is to draw in a full, deep breath. Retain the breath while counting fifteen, and then slowly expel it. Sometimes stout women move the arms gracefully, but the body has an utter lack of liberty and free motion or suppleness. Drawing her corsets tighter never did make a stout woman less stout in appearance. The first

care is to discard the corset; the second is to banish all idea of being stout from your mind, and let the muscles have as free play as possible. All women can learn to use their bodies gracefully, even if there is a predisposition to stoutness. Stout women are often the lightest dancers, and there is no reason why they should not be graceful in pose and motion. If a woman draws her breath freely from the bottom of her lungs, she diminishes the effect of her size immediately by doing away with that ready-to-burst look that is generally associated with stoutness. That is the look that must be avoided, even if the waist measures an inch or so more, and the bust and shoulders gain a little.— *Sel.*

HORSEBACK RIDING.— The great antiquity of equitation for the alleviation and cure of some chronic affections is attested by Hippocrates himself, who flourished four centuries before the birth of Christ, and who recommended and prescribed horseback riding, even at full gallop in the open fields.

Oribasius, who relied so much upon other gymnastic exercises as remedial measures in the treatment of some diseases, passes the highest encomium upon equitation. After declaring that riding slowly is tiresome, he goes on to say that when a horse is put on the stretch, though he violently shakes the whole body, this concussion is beneficial; for it strengthens the entire system, especially the stomach, and it purges and quickens the organs of sense beyond all other exercises. Some of the most valuable effects of equitation, as described by Oribasius, cannot, for obvious reasons, be obtained or experienced from bicycle riding.

The Latin writers, as well as the Greek, also allude to horseback riding as a therapeutic measure in the treatment of disease. The Romans, however, although they exceeded the Greeks in their admiration for and prosecution of gymnastic exercises, generally fell greatly behind them in their attention to and recommendation of horseback riding as a remedial measure. The celebrated Roman physician, Baglivi, however, was one of its greatest admirers, and speaks of having cured two hypochondriacal patients who were desperately ill, by causing them to ride in the country on asses.— *New York Medical Journal.*

To expand the lungs, go into the air, stand erect, throw back the shoulders and head, and draw in the air through the nostrils as much as possible. After the lungs are filled, with your hands at your side, raise them, and still continue to take in air. When you have forced the arms backward, and taken in all the air possible, let out the air slowly till the lungs are emptied. Go through this process several times each day. It will enlarge the chest, and do very much to ward off consumption.— *Sel.*

AVERAGE BICYCLE RIDES.— An average afternoon ride for a business man who does not train regularly is twenty miles, without much of a stop anywhere from the first to the twentieth mile. An average ride for a woman who probably never has taken much exercise is ten miles, with several dismounts, and walking up most hills, thus getting the variation of the muscles furnished by a little walk.

An average ride for a young man in school or college who has been in pretty good condition for some time, if not absolutely in training, is from forty to forty-five miles in an afternoon, without much stop. An average ride for a girl of healthy outdoor life and training — for there is always a certain amount of physical training in outdoor life— is twenty miles in a day, with several stops.

Here are four grades, so to speak, which merely give us a basis to work on. Now as to the time occupied. In the first, the man's twenty-mile ride, it would be safe to say two hours should be occupied in doing the ride. In the second, or woman's ten-mile ride, about an hour and a half altogether would be required. That is to say, she will wheel at the rate of seven or eight miles an hour, and occupy a good fifteen minutes in walking. The third case, that of the young man in training doing fifty miles, ought to occupy under four hours, or at any rate, not much more than four hours.— *Harper's Round Table.*

PROFESSOR HEIN, of Zurich, Switzerland, writes with reference to the Swiss archery competitions as follows: "The Swiss have been distinguished in archery for centuries. I had occasion, a short time ago, to speak with one of these far-famed huntsmen. This clever marksman assures me that all who attain skill in shooting are strictly temperate men or abstainers. Even temperate men have to become abstainers about a week before entering into a *schutzenfest* (competition)." The best marksmen not only refrain from alcohol, but live exclusively on simple and easily digested foods.

average age for single births is 32.7 years, for twin births 35.1 years, and for triplet births 36.9 years—thus triple births occur on an average over four years later than single births.

The sex composition of pairs of twins or sets of triplets or quadruplets is not a matter of accident. It is determined by certain definite principles. That it follows a certain law, at least in the case of twins, will be shown in an article in a later issue dealing expressly with twins, for the case of twin births furnishes, of all plural births, by far the most abundant statistical material and for that reason lends itself to certain definite analysis which it would hardly be worth while to attempt for the higher orders of plural births.

Mortality Experience of the First Six Months of 1934

IN THE STATISTICAL BULLETIN for January we showed that the vitality of the American and Canadian peoples, in so far as it is measured by their deathrates, had been maintained throughout the most severe industrial depression of a generation. Now, that there has been a definite turn in the economic tide, we can report that the two countries are still experiencing remarkably low mortality rates, even if the rate for the first half of 1934 has not been quite as favorable as that for the like part of three of the four years immediately preceding. The basis for this conclusion is the mortality record, for the first six months of 1934, of the many millions of Metropolitan Industrial policyholders. Their cumulative deathrate was 9.5 per 1,000; and in only three of the last ten years has a lower mortality rate prevailed, namely, in 1933, 1932 and 1930.

Furthermore, the margin between the deathrate for the first half of the current year and that for the like part of last year, is small—only 2.9 per cent. One of the best June health records in the history of this large group of insured persons had the effect of reducing this margin materially; for, at the end of May, it was 4.4 per cent. It may well be found later that the small difference is entirely due to the rise in the average age of the policyholders this year. Indeed, a group of about a million policyholders who live in the Pacific Coast and Mountain States have registered a lower deathrate this year than last; and among a similar number of insured Canadians, the 1934 figure is identical with the record low point established for the like part of last year.

Rates for White and Colored Policyholders

When the comparison with last year's record is confined to the white Industrial policyholders, we find that the rise was only 2.1 per cent.; for insured negroes, however, there was the much larger increase of 6.6 per cent. The colored policyholders

EXERCISE PURIFIES THE BODY.*

BY J. H. KELLOGG, M. D.

WE all know what happens to a stagnant pool when there is an absence of exercise or movement in the water; it becomes covered with slime, and gives off offensive odors. But let a running stream be turned into the stagnant pool, and it carries away the slime and filth, and makes the water pure, and the pool soon becomes a pellucid lake instead of a stagnant frog-pond.

In the body which is not subjected to exercise there is the same accumulation of unwholesome things and the same giving out of unwholesome emanations as in the case of the stagnant pool. To illustrate: When a horse has been accustomed to plenty of exercise, and then travels or works until he sweats, the perspiration is clear and does not leave a stain. But if he has stood in the stable all winter, when he begins to work there is a thick, sticky gum mixed with the perspiration, which is quite difficult to curry out of his hair. Do you ask, What is that gummy substance that is mingled with the perspiration? It is matter which has been distilled from the horse,— a collection of impurities which have accumulated during the idleness of the animal; and before it was in the hair of the horse, it was in his body — in every gland, cell, and nerve-fiber.

The very same thing is true of the man of sedentary habits. If he sweats, this mucilaginous, sticky substance comes out upon the skin, because it is in all his tissues. Even in the brain there are poisonous substances which should have been carried off by muscular action; indeed, there is an accumulation of organic dirt in the whole body. That is the reason why, when a person has been sitting in his room for a long time, having taken no exercise, his face becomes sallow and his eyes yellow. Organic dirt has accumulated in the eye under the transparent membrane, and makes a dingy sclerotica. This dingy appearance of the sclerotica is a significant thing to the physician; it means not only that the eye is dingy, but that the muscles, nerves, glands, and everything connected with the digestive organs are affected; the whole body is clogged with impurities.

Now exercise is what is needed to rid the system of these impurities. Exercise causes the muscles to rub against each other, constituting a sort of inward currying; it jostles and stirs up everything in the body that is stagnant. If there is any part of the body that is not exercised, the same thing occurs there which happens when a stream becomes obstructed. Wherever there is a sheltered nook or an obstruction of any kind in the current, it creates a little eddy, which keeps whirling round and round, and retains in the vicinity of the obstruction the chips, sticks, and any débris which may have been thrown into the stream. Thus, if there is any part of the body which is not exercised, the effete matter and débris of the body accumulates there.

The right kind and amount of exercise taken every day makes the heart work; it makes the lungs work; it makes the whole body work so vigorously that it fairly steams with perspiration, and the impurities within are forced through every part of the body into the various excretory channels. The body should be stirred up in this way every day, so that there will

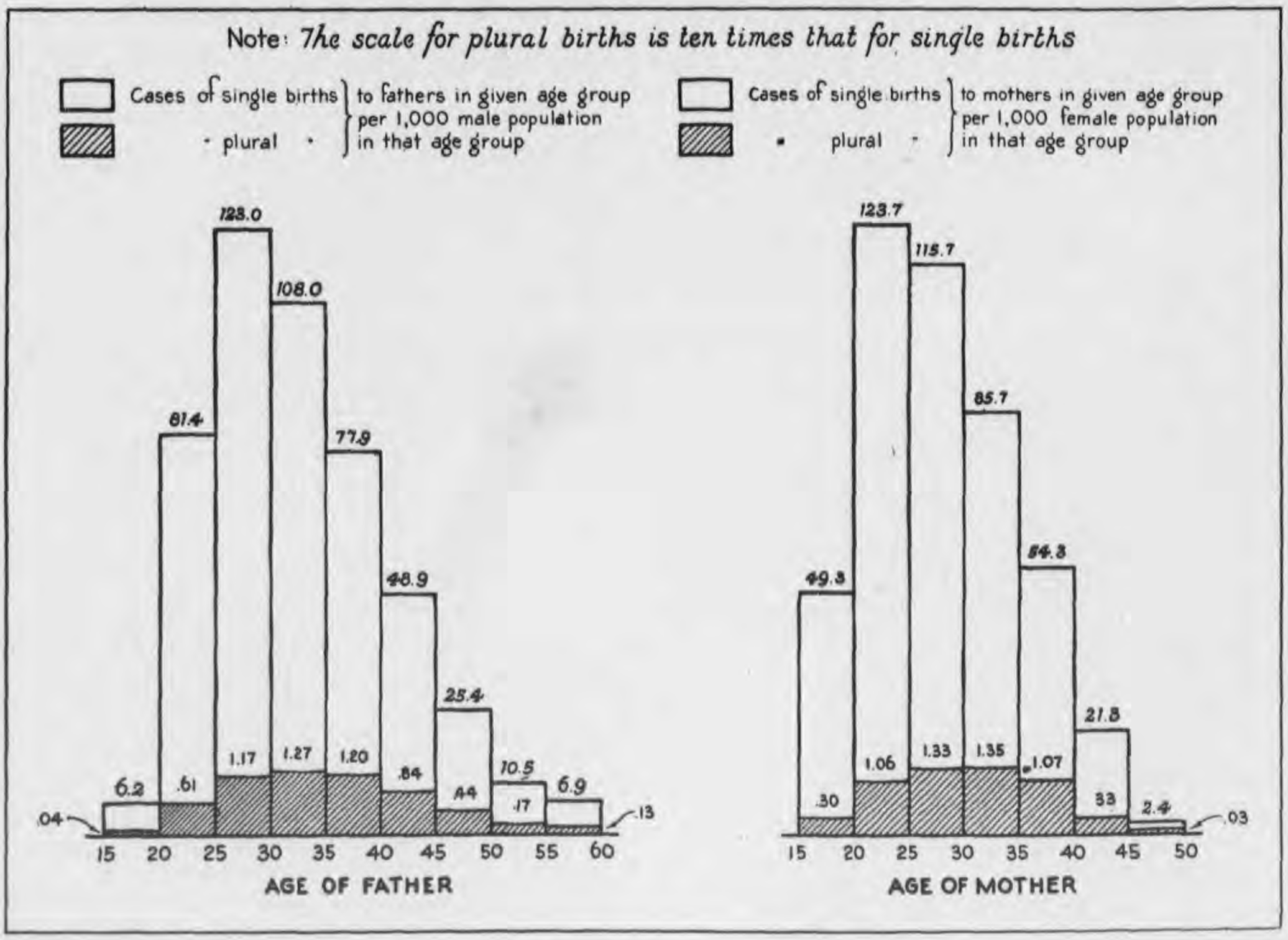
*From a lecture delivered before the patients of the Battle Creek Sanitarium.

is the group from 20 to 25 years, the second in order being the group from 25 to 30. In contrast with this, plural births are most frequent in the age group 30 to 35, about eight years later than the range of maximum for single births. Another interesting characteristic feature of the diagram is the following: The frequency distribution for single births is strongly asymmetrical or skew, rising rapidly to its peak in the second quinquennium and then falling off more gradually at the right-hand side of the diagram. In contrast with this the frequency distribution curve for plural births is almost exactly symmetrical.

Conditions very similar to these are exhibited with regard to fathers in the left-hand side of the graph. Here also the peak for the single births comes a good deal earlier in life for the father than the peak of the plural births.

A single figure which brings out some of the differences in the age distribution of mothers and fathers at the birth of their children in the case of single and plural births is the average age of the parent at the time of the birth of the children, namely, for mothers, 28 years for single births, 30.2 years for twins and 31.6 years for triplets. The sample for quadruplets is altogether too scant to secure the average ages for these. In the case of fathers the

AGE DISTRIBUTION OF PARENTS AT BIRTH OF CHILD
IN SINGLE AND IN PLURAL BIRTHS
United States Birth Registration States, 1930



be no chance for impurities to collect, as in a stream rushing down a mountainside there is no chance for stagnation.

The same thing is as true of the dog as of the horse: When he is young and active, his perspiration is pure and comparatively free from offensive odors, so that he can be tolerated in the house, and even taken up into the lap. But a dog which has become old and inactive cannot be allowed in the house. One dog, by reason of lack of exercise, carries a mass of impurities within its body; while the other keeps his skin and breath pure by his activity. Exercise is just as essential to the attainment of this end in human beings as in the lower animals.

Do you ask how it is that exercise secures this result — how it accomplishes the cleansing of the body, the blood, the muscles, and the tissues? The heart, beating from sixty to one hundred and fifty times a minute, sends a current of blood through the brain, muscles, and tissues of the body, washing out and purifying them; and this purification of the body is brought about not only by the increased activity of the blood produced by exercise, but by increased lung action, by which an abundance of oxygen is brought into the body. Dr. Brooks has shown by experiments that a person breathes in seven times as much oxygen when running as when lying on the back, and this sevenfold quantity of oxygen burns up the impurities of the system. A great fire in a city has one good effect — it burns up accumulated impurities. Now that is what a "fever," as it is called, does when it attacks the human body; it is like a fire, because it sweeps away the impurities of the body. But when one keeps his system clean and pure, there is nothing there for a fever to feed on; hence he is seldom attacked by it.

The person whose system is filled with poisons is apt to be in a depressed state of mind; but when exercise has brought in sufficient oxygen to burn up all this waste matter, the brain is cleared, and the spirits brighten.

The frog is a thorough pessimist. All his life he does nothing but sit and groan and croak; but the birds which sing in the tree-tops are always active, and will easily keep up with the fastest railroad train, singing as they fly. If people would imitate the birds rather than the frogs, they would soon find their lugubrious thoughts vanishing, and good cheer taking their place. Indeed, there is everything to encourage people to persevere in habits of exercise and industry.

THE IMPORTANCE OF PERFECT POISE.

One very important artistic reason for raising the chest is found in the improved hang of draperies and the increased dramatic expression given to the entire dress. While the chest remains depressed and inactive, the lines of the figure suggest decreased vitality, and the dress partakes of the general effect. The moment, however, that the chest becomes firm and active, leading as it were all the other vital organs, draperies depended from the shoulder and bust, and lines radiating downward, take an individuality and grace that are surprising to one who has not investigated the law of cause and effect in physical development and dress.

I dwell upon this point because all my experience emphasizes the necessity of securing the poise of the body, and a vital chest is the starting-point in physical culture and the art of personal adornment.

Begin Now!

Start at once to live the simple life.

Turn over a new leaf. Make a new beginning today.

It's easy. Just a mild return to savagery, minus barbarism.

We're too much tamed, too sophisticated.

Like worn-out city horses, we need to be turned out to pasture so we may get back to Nature. Listen to the "call of the wild!"

This is what it says: Get out-of-doors. Escape from your office prison into the open.

Sleep out by aid of porch, balcony bed, window tent, or wide-open windows.

Don't guzzle.—Leave gin and whisky alone, and when you drink water or milk, sip. Sip what you drink, and chew what you eat. And let it be simple. Cut out mustard, pepper, hot sauces, tea, coffee and all such poisons.

Discard flesh foods. Take your nourishment from Nature's gardens and orchards.

Man was born in a garden.

Just where this garden was, the theologians and the archæologists and the other science mongers are not yet fully agreed. But of one thing we are certain—*it was out-of-doors!*

Live simply, sensibly, biologically. Your reward will be:

Long life.
Healthy life.
Efficient life.
Life that's worth while.
Begin today!

—DR. JOHN HARVEY KELLOGG

THE OYSTERS' FUNERAL

Six oysters on a platter lay
  Serenely side by side,
A-thinking of their former homes
  Beneath the flowing tide.

They longed once more to snugly lie
  Where sewers empty slime,
And feast upon that luscious filth,
  And live the life sublime;

Or lick the sewage from each stem
  That grows beneath the waves,
And relish juicy morsels such
  As every oyster craves.

But here they lie, each in his shell,
  Yet not a sigh is heard,
Unmindful of their dreadful fate—
  Alive, to be interred!

For Man, the master of this realm,
  Sits down to royal feast,
And swallows with a joy supreme
  This slimy little beast.

He never hears it holler "Ouch!"
  It knows no form of speech,
But down it slides when once inside
  Without a single screech.

Where shut within man's spacious maw,
  Once more it meets its friends,
As one by one each little beast
  To that dark vault descends.

And here they say their last adieu,
  Ere heart has ceased to beat.
Oh, why must man, with brains endowed,
  Such filthy sewage eat!

—*C. L. Magee.*

211 N. Kendall

Carte en Plan

envoyé par Postmaster

B. Creek Mich

Cured by Clinics

Condensed from The Modern Monthly

Edna B. Mann

(As told to the writer by C. W. W.)

As a social worker I had urged many of my "clients" to seek treatment at the public hospitals, and had often been exasperated by their stubbornness in preferring their own unclean, crowded homes to the ordered quiet of a modern institution. Last month I got sick. Recurring attacks of paralyzing pain forced me to follow my own advice, and I selected a hospital with an eminent staff and up-to-date equipment.

I came at 12:30 for the afternoon clinic, and was still on my bench two hours later. Whenever I walked to the desk I was ordered to "sit down." The room was jammed, and I wondered if the people around me felt as exasperated as I did at waiting. But they did not seem to mind. They looked beaten, dulled. "You'll get used to coming to clinics," said a woman next to me.

Finally my name was bawled out and a clerk pointed to an alcove. There another clerk put me through several sheets of routine questions, made out several colored cards, and didn't raise her eyes toward me during the whole proceeding. She droned out that I should go to the second floor for a diagnosis, and there, on a bench with a dozen others, I sat for another two hours.

Suddenly a nurse stuck a thermometer between my lips and took my pulse. Silently she motioned me and other automata to be weighed. Not a word or human touch in the process. Sitting at a desk was a woman secretary, who surveyed the dregs of humanity before her with sneering distaste. A colored woman, who had just come out of an adjoining doctor's office, approached this lady to make an appointment for her next visit.

"Tuesday next week, same time," snapped the secretary.

The woman stood there uneasily. "Can't I come any other time? I have a job afternoons and every cent counts. I have to support my children. If I lose an afternoon I may be fired."

"Certainly not. We're not interested in your affairs. You come here when you're told. Tuesday."

My name was called next. It was 4 p. m. when I entered the examination room. A youthful medical student told me to be seated.

"Where are your pains?", this prize for four hours of waiting asked me.

I told him of my three attacks, and he wrote busily. With time-consuming detail he went through every particular of the history. "Do you take narcotics?" "No." "Do you take cocaine?" "Do you take morphine?" "Heroin?" I went through a list to let him know what diseases I had ever had. He wrote each one down in unabbreviated longhand,

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(The Modern Monthly, January, '35)

Reader's Digest, Mar. '35

ith the World

nt in Collier's, The National Weekly

Foster

IN ASIA, perfume is widely used to quiet the nerves and aid digestion. Many Oriental peoples rest after each meal, inhaling their favorite scent, in the belief that the mental state thus created induces a relaxation and contentment beneficial to assimilation.

IN THE harems of the Far East, a new wife is first presented to the Master of Fragrance. He carefully analyzes her personality and then prepares a scent for her which he thinks will not only express her qualities but forever distinguish her from all other women.

THROUGHOUT Asia, the petals of flowers, especially those of roses, are used extensively in the making of marmalade, pastry and other sweets.

THE members of the House of Commons, London, must remove their hats when coming in, going out, or making a speech. In short, whenever they are on their feet. But when seated, hats are worn.

OPTICAL illusions frequently result from certain juxtapositions of color. This is illustrated in the flag of France, which has its three stripes made in the proportion of 30 for blue, 33 for white and 37 for red so that they appear to be of equal width.

EVERY pound of fat in the human body requires six-tenths of a mile of blood vessels. Therefore a person carries three extra miles of them for every five pounds of superfluous flesh.

UNCLE SAM now recognizes acrobatic aviation with its sudden changes in air pressure as a possible remedial agent in certain types of deafness. So hereafter, when a commercial pilot has such a prospective passenger, he may obtain a special permit to go up and zoom and tail-spin him back to normal hearing.

THE only city in the world whose sole business is boarding the insane in private homes is Gheel, Belgium (population, 20,000). Nearly every family is paid by the Government to keep one or two, and not only treat them like members of the family but also allow them to go shopping or visiting alone. This system is said to be the most humane method in existence for dealing with the insane.

THE most dramatic warning to reckless motorists is the "wreck" which is staged at dangerous spots along the highways of England. This gruesome scene, which is set on one side of the road, consists of two wrecked and overturned cars with several dummies of dead bodies realistically sprawled near by.

Says Meat Uneconomical

"Meat is uneconomical from every standpoint. It takes 100 pounds of nature's food put into an animal to make three pounds of meat which nature never intended man should eat.

"If there is 25 per cent loss solids in a quart of milk than in a pound of beefsteak, a 60-cent steak is just the equal of certified milk at 45 cents. But pure milk is life-giving and the best steak is germ-breeding — millions of putrefactive germs in every inch of it, even as it hangs in the icehouse.

"Geologists and scientists will tell you that man was not originally a flesh-eater. He is a primate and related to the gorilla, the chimpanzee and the orang-outang. Cuvier says that the food of all of this species was fruits, nuts and tender green shoots. These animals rank the strongest for their size in the world and they are still vegetarians, while man has fallen to eating flesh which putrefies or rots within him. Fruits and vegetables only ferment and cleanse the digestive tract.

Says Irish Prove Contention

"If you think people are not fighters unless they eat meat, just look at the Irish, who are probably the smallest meat-eaters in Europe. They could not be starved out or diminished so long as they had potatoes. Indeed, the strength of the Irish in America springs from that Irish potato.

"The theory is that the conditions of the glacial ages forced man to eat meat when he could not get grains, nuts, fruits, etc., which, in common with the food of the higher apes, was his natural sustenance."

A Remarkable Career

The Post Reporter—"Don't you ever eat any kind of meat, Dr. Kellogg?"

"Not for 55 years have I tasted meat in any form," said Dr. Kellogg.

The Post reporter: "Can you work and sleep and enjoy good health without touching any form of meat?"

Marvel of Energy at 70 Years

"Look at me," said Dr. Kellogg. "I am in my 70th year and as I don't poison myself eating meat I never need more than four or five hours' sleep. The rest of the day I can work hard right straight through to bed time. I have energy enough, and even to spare, for others, every minute of the day."

Dr. Kellogg looked it as he jauntily grabbed his heavy bag and jumped aboard the train with the clearest eyes and complexion like a baby's.

Then the Post reporter in amazement went and looked up the record and he found that Dr. Kellogg began his career in a printing office at 12 years, had ambitions to be a teacher and worked to that end. He has never given up studying all that Froebel, Margaret Fuller, Jean Paul Richter or Jean Jacques Rousseau could teach the teachers. Summoned to medicine he studied in Vienna, Paris and London, and even took drawing lessons abroad that he might be more skilful with the blackboard and crayon in teaching the anatomy and economics of the human system. When he was 24 years he wrote his first book, "Plain Facts," refused a publisher's offer of $10,000 for the manuscript and made $100,000 out of the sale of the book by commission.

Genuine Altruist

He has written some 30 books in all and the royalties from these with other outside income has been such that he has never charged a personal fee in performing more than 15,000 surgical operations. Indeed he has never permitted himself any personal compensation from his great institution at Battle Creek. He has adopted 20 children and educated more than 20 others.

He keeps abreast of the latest scientific developments of the day translating foreign medical publications and dictating to his stenographers abstracts of everything of value, that copies may be given to the members of his staff. He keeps several stenographers busy; a staff at his office and a trained stenographer with him at home in the evening. He is thus able to keep in touch not only with every branch of science in relation to health and the human body, but with every detail of his institutions at Battle Creek where his "family," as he calls them, number from 2000 to 3000 persons. Twelve thousand persons come every year to Battle Creek to get instruction or treatment.

Nurses, dieticians and medical students are trained here. Still Dr. Kellogg, in his 70th year, is starting on new plans for expansion. He has just received $750,000 for the foundation of his Race Betterment Association, which he hopes to build broad, deep and enduring to carry on the scientific food researches with which he has been connected for more than 50 years.

"The latest experiments with 'bacillus acidolphus' on chickens have been most promising. Of a first crop of chickens fed on milk containing a considerable percentage of the elements which encourage this bacillus only about 4 per cent as opposed to the customary 20 to 30 per cent died. Of a second brood of 120, only seven were lost. Cockerels were crowing in the fifth week and hens were actually laying in three and one-half months. Most people feed chickens meat scraps, which, partly digested, putrifies and poisons. The president of the Agricultural College of Michigan came over to see our work and was amazed. Never before had he heard of such a percentage of savings. The acid elements in the milk thus treated keep the system clean, and what we do for chickens we are going to do for babies."

What Mothers Must Do

The Post reporter: "How can mothers quickly avail themselves of these discoveries?"

"First of all," said Dr. Kellogg, "by looking to their milk supply. Here we are still ridiculously careless and unscientific. After all that has been said on this subject, impure milk is the cause of the death of fully nine-tenths of the 250,000 to 300,000 babies who die every year in this country before they are 12 months old.

"A cubic centimetre of water which contains a hundred bacteria is supposed to be unfit to drink, whereas a cubic centimetre of commercial milk, uncertified, may contain anywhere from 500,000 to 1,000,000 bacteria. Some of these it is true are friendly to the system. Others are very inimical to health and life. Nor does pasteurization adjust the matter. Pasteurization destroys valuable vitamines which stimulate most important activities in the body.

Lauds the Oaks Farm

"Parents should always take certified milk for babies and young children. Certified milk costs higher per quart, but it is cheap considering its value to the system—its health-giving and life-giving properties. Clean milk, or certified milk, is the first fundamental for mothers in the care of their children.

"But we hope to do more in the future and be able to treat it in such a way that it will assist in curing poisons in the digestive tract of children."

The Post reporter: "What are milk conditions in New England?"

Dr. Kellogg: "I am not familiar with them in a broad way. I visited more than one certified milk farm, but the most wonderful certified milk dairy I have found was that of the Oaks Farm at Cohasset, owned by your C. W. Barron of the Boston News Bureau. Here were barns of which you could eat off the floor and there was not so much as an odor within or without. Cow barns used to be associated with cow smells. Here dirt and odor have been eliminated by absolute cleanliness. The cows are not kept like animals. They looked to me more like ladies in clean, smooth, fur coats. The windows, ceilings and walls were spotless.

Priceless Herds at Farm

"I don't suppose every dairy can maintain the standard set by Mr. Barron, who has attained the 100 per cent of dairy and barn perfection. It is too expensive for most producers. I understand the Oaks Farm is run at a considerable loss, even at 30 and 35 cents per quart for milk delivered in continually-iced receptacles.

"I saw here a special herd of valuable registered Ayrshires which are used only for certified milk for babies. As for Guernseys, I never saw such cows in my life, for at the Oaks Farm is the most valuable Guernsey herd to be found in the world. It would take the four largest herds on the Island of Guernsey to equal the size of Mr. Barron's herd, and then it would not approach his in value. The most valuable Guernsey cows and bulls are in the United States and the highest priced bulls and cows in the United States are at Oaks Farm in Cohasset. Cows that cost $6000 each and calves at $3000 to $10,000 apiece I never before saw to such an extent as I found here. This farm has been the largest importer of Guernseys of late years and is known in the West more than in the East for its importations and Guernsey breeding.

At About 40 Cents a Quart

"But the whole institution is built entirely to produce certified milk for hospitals, families and babies, and the importation and breeding have been undertaken to reduce the deficit in the production of certified milk. In Paris such milk is produced in the laboratory and sells for a dollar a quart. I understand it costs the Oaks Farm about 40 cents a quart as a dairy proposition. But if the demand for certified milk becomes greater and more farmers can be induced to go into it by reason of the demand, the price can be kept down. But such milk is cheaper at 50 cents a quart on its health-giving properties alone than is beefsteak. It is the one safe thing for the parent to take, and is economy in the end.

Against Meat Eating

The Post Reporter: Do you mean to say, doctor, that milk at the highest price is cheaper and better than meat?"

Dr. Kellogg: "I mean to say that and more. A quart of certified milk has more and better food value in it than a pound of any kind of meat. I don't think there is any higher priced certified milk in the country than 35 cents, but there are several farms getting this price throughout the country, and producing it largely for the love of children.

"Most people do not understand that milk contains 12 to 14 per cent solids, while beefsteak and roast beef contain 60 to 70 per cent water, besides their putrefying germs. Now a quart of milk may weigh 2.2 pounds, and have nearly 30 per cent of one pound of solid matter in it, while beefsteak has not 40 per cent of solid matter in it.

X I

5 Proofs to C W Barrow's office
Saturday A M—Leave on City
Dest TONIGHT Hed Up!!!!

The Boston Post, learning that Dr. Kellogg of Battle Creek, Mich., was visiting university laboratories and certified milk dairy farms in New England, caught him as he passed through Boston and had an hour's most interesting conversation with him before he stepped aboard the train.

AMAZING DEVELOPMENTS

Dr. Kellogg conducts at Battle Creek not only one of the greatest health resorts in the world, but has there most important scientific laboratories for food analysis, and for X-ray and other scientific researches. He has individually spent more than $300,000 in food analysis; probably the largest expenditure in this line outside of government work.

The Post reporter asked Dr. Kellogg for the latest results from scientific investigation, and Dr. Kellogg replied:

"The two most important scientific developments of recent years are radium as a cancer cure and a newly discovered intestinal 'bug,' which through proper preparation of cows' milk for children is producing wonderful results."

The Wonders of Radium

Dr. Kellogg says that this bug, known as the "bacillus acidolphus," was discovered by Moro, and is of greater usefulness than the famous "bacillus bulgaricus," made known to the world by Metchnikoff.

The Post reporter: "Before you tell us about the babies and milk, won't you tell us if radium will cure cancer, and if you have had any experience with radium?"

Dr. Kellogg replied: "Yes. Cancers, but not all cancers, can now be cured by either radium or the X-ray. The X-rays are more potential in external cures, but radium will penetrate deeper. Radium, you know, will penetrate in its activities through a foot of solid steel, or an inch of lead, which is a denser metal. Radium laboratories have to be lined with lead, and receptacles containing radium have many windings of lead coils and still it cannot be absolutely confined.

Wonderful Energy of Radium

"Twelve years ago I visited Austria and studied the subject by going to the very mines where Madame Curie and her husband and associates brought forth radium from pitchblend. Before I left Europe I had bought all the radium in the possession of the Austrian government, and we still have more than half a gram of radium in the Battle Creek laboratories.

"The women of America have just presented to Madame Curie, at a cost of $100,000, a single gram of radium gotten from Colorado minerals, and not from pitchblend.

"One gram of radium is only the size of a large kernel of corn; yet there is enough energy in it to light the city of London for a year, if all the energy could be taken out within a year.

Possibilities of Cancer Cure

"But science has yet found no way by which the energy of radium can be mechanically exploited—in other words, by which the energy can be called forth from the radium in either greater or lesser degree than nature has decreed.

"The energy in radium goes forth at the rate of four-ten thousandths of its power in a single year. In other words, a gram of radium will give forth its energy regularly for 2500 years, and we as yet know no way of accelerating or retarding that energy."

The Post reporter: "To what extent can cancer be cured?"

Dr. Kellogg: "When cancer is not too closely intertwined with the vital organs it can be cured by the X-ray or the rays of radium. Radium can be inserted in tubes or needles in the body even to cure cancer at the base of the tongue.

Cancer Sure to Be Conquered

"While studies in radium are going forward and are more in the public view, the development of X-rays is likely to astonish the world in the near future. German physicians made wonderful progress during the war in increasing the potentiality of the X-ray. After several failures, a complete X-ray machine has now been set up in this country with a voltage of 250,000, or more than 10 times the voltage used in the electric chair.

"It is quite correct to say the treatment of cancer is becoming more efficacious every day. Within a few years, this disease will join the many which science has analyzed and finally conquered."

Anent "Bacillus Acidolphus"

The Post reporter: "But you came here to study milk."

Dr. Kellogg: "Yes. I came to Boston in study of the milk problem, but I came to New England first to confer with Dr. Mendel of the Yale research laboratory. I want more assistants for our researches at Battle Creek. There is yet wonderful work to do in milk analysis and the development of the 'bacillus acidolphus,' on which we are at work in both places.

"This new germ is radically different in its nature and habits from the 'bacillus bulgaricus,' discovered by Tissier, assistant of the famous Metchnikoff, who developed it commercially. Metchnikoff made known to the world what at the time seemed the incredible idea of bacteria friendly instead of inimical to the system.

"At first hooted by the public, this idea was quickly accepted when proof of its value was established. Now Metchnikoff's germ is limited in usefulness and power because it does not thrive within the digestive tract. There has now been found a germ constructive in its activities which will readily grow and multiply within man and not be destroyed by digestion. This 'bacillus acidolphus' was discovered by Moro, but it has lately been the basis of researches and experiments by Rettger of Yale and others. This 'bug' is found in the digestive tract itself, but it can be quickly and readily strengthened and multiplied by certain elements put into the milk given to children. This 'bug' thus thrives, so to speak, on its native heath and properly encouraged is of incalculable benefit to the system.

Wonders With Chickens

"At Battle Creek," said Dr. Kellogg, "most exhaustive experiments are constantly going forward and for these purposes hundreds of guinea pigs, rats and poultry are fed and attended with scientific care. Each day the amount of food given an animal, the composition of food and the weight of the animal are registered. The record is studied to ascertain the reactions from certain foods and the changes in types through generations.

scattering wine over it. After this observance, supper is served, of which turkey is the special feature. The following night, Christmas night, the chief item of the menu is the "bread of St. Étienne," a loaf baked in the shape of a gourd, and popularly credited with miraculous powers.

In other country districts of France a couch of straw is spread under the tables at Christmas, in memory of the Christ-child's manger. In some communities a theatrical performance representing the scenes at the birth of Christ is a regular part of the festivities. At Paris several weeks before Christmas may be seen in shop windows extraordinary representations of the manger at Bethlehem, the infant Jésus lying in the straw, Mary, and the wise men from the East grouped about. The star, made of cheap brilliants, and the cow's head over the manger are ridiculous, being of about the same size and quite out of proportion to the other objects. All the figures are startling studies in color and pose.

The midnight mass Christmas Eve is the characteristic feature of the Christmas celebration in Paris. Many a Frenchman marks this occasion as the one time in the year when he enters a church. Masses are said in almost all the churches, and great care is taken to have beautiful music. Everybody goes to the midnight mass, and one who desires a seat in the Madeleine or St. Augustin's must take his way thither hours beforehand. At the close of this solemnity the true Parisian departs in hot haste for the *réveillon*. A novice is wont to associate the word "réveillon" with the sounding of trumpets, but the Frenchman knows better. To him it means to do just what he is always doing, — to eat strange things and to drink copiously. The réveillon is a supper intended to compensate for the fatigue of the mass. In olden times the French Christmas was even more of a religious fête than it is now, and men observed the Christmas fast before mass, attended a second mass at daybreak, and a third still later, at which a sermon was preached. The réveillon was established as a natural and humane interruption; but it very soon proved its relationship to the fabulous giant who sprang from a pint bottle. The mass at daybreak is still said and the sermon is still preached, but the modern French Catholic can not be counted on for more than the mass at midnight and the supper. After the réveillon he prefers to go home. One can hardly wonder, on reading the customary bill of fare.

The réveillon has a menu peculiar to itself. The usual course of soup is omitted. In its place is served chicken dressed with rice. Then there are four side dishes — hot sausages, tripe, a white and a black pudding. Following this there are tongue and pig's feet and pork for a change, all highly seasoned and garnished. The four corners of the table are adorned with pastry and confections. To be sure, the number of desserts is limited to nine, but still only a goat could be expected to feel devotional after this feast.

The French have a proverb on Christmas weather corresponding to the English, "A green Christmas makes a full graveyard." They put it, "When Christmas has bare gables, Easter has hot firebrands." Another saying is, "When one sees little flies at Christmas, he sees little frosts at Easter."

Aside from the yule-log, the midnight mass, and the réveillon, the French Christmas is marked by little that is distinctive. New Year's day, or "the day of the year," as it is called, is the great popular holiday, — the day of family reunions, of gifts, of remembrances, of friendly greetings. Americans are inclined to think it the day pre-eminent for giving fees, for

while at home it is customary to remember the postman and a few others, in Paris you are expected to make a present to the letter-carrier, the chambermaid, the concierge, the milkman, the errand boy,—to every one, indeed, who wishes you a happy New Year. The practice becomes such a drain on the patience, as well as the pocketbook, that one is tempted to sympathize with the man on whose tombstone was written:—

"Here lies under marble white
The most stingy man of Rennes,
Who up and died on New Year's Eve
For fear of giving *des étrennes*."

The story is told of how a French dignitary outwitted a subordinate, although it is a question which had the best of it. When the intendant, whose honesty the master more than suspected, came with his New Year's bow and greeting, the diplomat said: "Monsieur my steward, I give you for your New Year's present all you have stolen from me during the year." Upon which the steward bowed very low, and answered gratefully, "A thousand thanks."

A few days before the new year the grand boulevards of Paris undergo an extraordinary transformation. The dignified buildings seem to draw back and shut themselves up, while all along the sidewalks spring up little booths and shops, where holiday articles are exposed for sale. The space is rented by the government to small merchants, and for a week there is no doubt about the democracy of Paris. Toys and crockery, gingerbread and hot waffles, New Year's cards, candy, shooting-galleries, flower-stands,—one grand mélange besets the passer-by. It is the small fête of the village magnified to fit the great city.

While the windows of American stores are filled with gifts for Christmas, the shops of Paris advertise *étrennes*, or New Year's presents. The famous Parisian dolls are out in all their glory. There is one place on the Rue de Rivoli, called the Paradise of Children, where every imaginable style of Parisian stares at you from the windows—the *bonne*, or nurse-maid, with her cap with long strings, the French dancing-girl, the clown, the baby that can drink from its little bottle. I saw the English game of gobang, and found tiddledywinks masquerading under the appropriate term "The Flea." But the most gruesome plaything I ever heard of is described in the catalogue thus:—

"Railroad catastrophes, with tunnels, collisions, broken bridges, derailings. Complete assortment of victims in all positions."

Considering this last attraction, one can not murmur at the high price.

GYMNASTICS WITHOUT APPARATUS.

BY J. H. KELLOGG, M. D.

THE most perfect system of physical exercises ever devised is probably the one known as Swedish gymnastics, chiefly the invention of Ling, a lieutenant in the Swedish army, who, having learned something, perhaps, from the Chinese, and something from other sources, founded his own school in the early part of the present century. The writer has for many years been familiar with this system of gymnastics, having visited Stockholm for the purpose of investigating it. It possesses great value in the treatment of invalids suffering from various maladies, as well as in the training of the young. It requires, however, a skilled instructor, and while of inestimable service in securing general physical devel-

opment, and in correcting deviations from the normal standard of bodily symmetry, it must be admitted that for the ordinary requirements of hygiene, as regards the general effects of exercise upon the body, equally good results may be obtained from exercises which, from a scientific standpoint, may be technically less correct, and a knowledge of which may be acquired without any considerable effort and without the aid of a teacher.

After studying this question for a number of years, gathering hints from various sources especially from the methods used by the Schott brothers in the treatment of affections of the heart, at Nauheim, Germany, the writer has formulated a plan for exercises which can be taken anywhere, and for the most part even in bed, without the aid of apparatus of any sort. If perseveringly employed, this system may be relied upon as a means not only of maintaining a healthy condition of the muscles and of the body in general, but of securing exceptionally vigorous muscular development.

FIG. 1.

Briefly described, these exercises consist of a systematic series of contractions and relaxations of all the groups of muscles in succession. To illustrate the fundamental principles of this mode of exercise in which no apparatus is employed, make the following simple experiment:—

Hold the arms at the sides with the palms upward flexed. Now bend the forearm till the hands are brought up near the shoulders. The amount of work done in this is very insignificant, and the movement might be repeated many times without producing the fatigue which is necessary to stimulate development, and thus produce increase of strength. But repeat the same movement holding in the hands a moderately heavy book or weight. Observe the different sensation experienced in the arm. The muscles are at work. Tension is felt. A repetition of the same movement, still holding the book in the hand, will in a short time produce a sensation of fatigue or weariness in the arm. Now lay down the book, and repeat the movement, at the same time endeavoring to reproduce in the arm by an effort of the will the same sensation produced by lifting the weight. This is accomplished simply by producing a rigid state of all the muscles concerned in bending and straightening the arm. In other words, an effort is made to hold the arm straight, while at the same time bending it. Before beginning the movement, the arm is made rigid while extended straight at the side.

FIG. 3.

FIG. 2.

Then while maintaining the effort put forth to hold it rigidly extended at the side, the flexor muscles, or those which bend the arm, are energized to act to such an

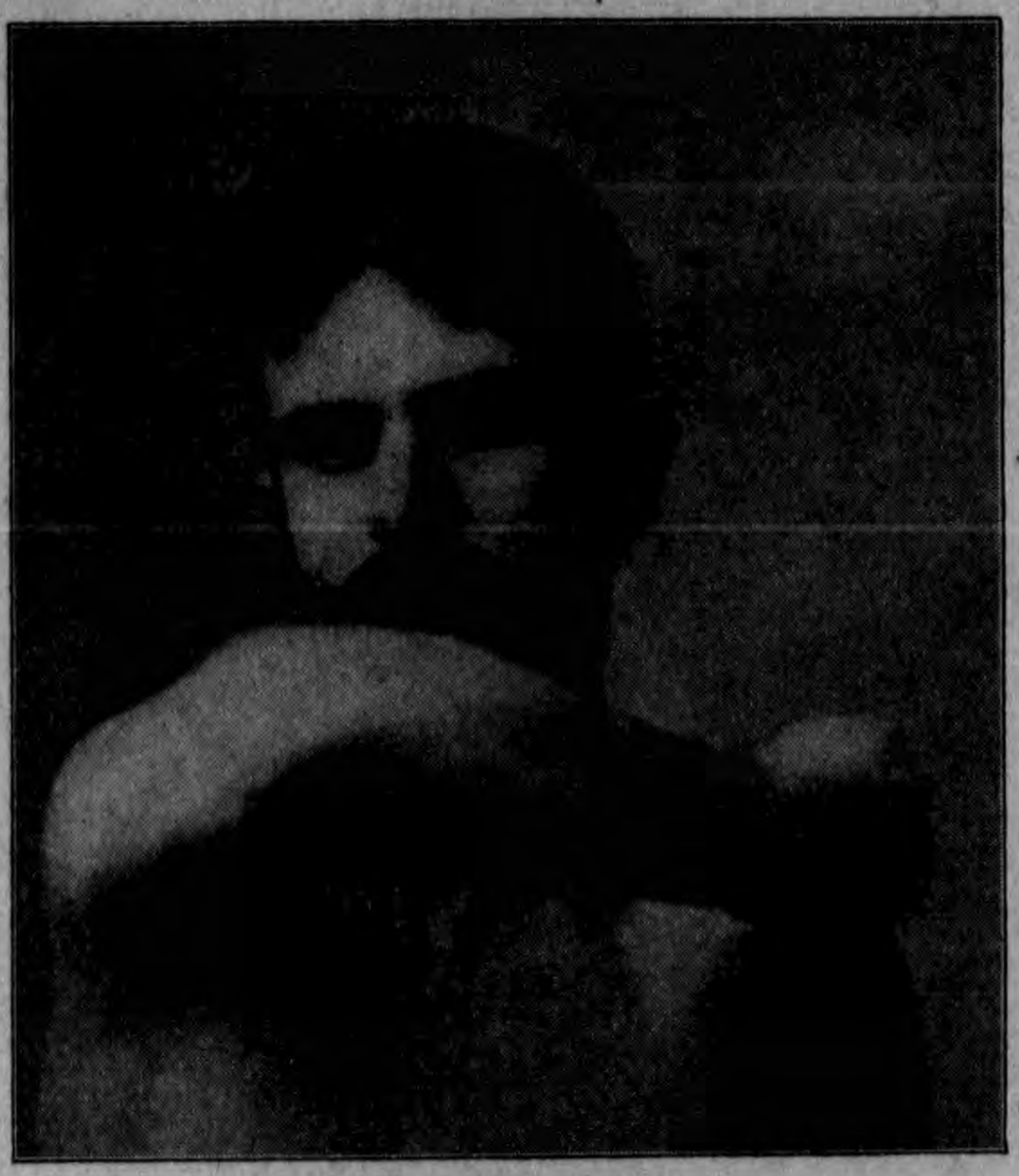

FIG. 4.

extent that they are able to overcome the movement which tends to straighten the arm. No weight is being lifted, but the flexor muscles are made to work the same as if they were lifting a weight, by the antagonizing action of the extensor muscles.

It will readily be apparent that the amount of work done by the muscles can by this means be regulated to a nicety. The flexors can be made to do as much work as can profitably be required of them. After the arm has been flexed, or bent, under resistance, the attention of the will toward

FIG. 5.

the arm is changed so that it is made rigid in its flexed, or bent, position, while the extensors, or straightening muscles, are compelled to extend or straighten it.

Below is given a brief description of the several exercises which the writer has found useful. It will be evident that an almost interminable number of combinations may be made from these, by bodily attitudes or positions, whereby the work may be increased or diminished. The following general rules may be laid down as especially applicable to these exercises, as well as to many others:—

1. The will must be energetically employed in each particular movement. This effort for concentration of the will upon the muscular organs employed is a powerful factor in inducing development.

FIG. 7.

2. The acting muscles or groups of muscles must be continuously and regularly energized from

FIG. 6.

the beginning of a movement to its end.

3. The movement begins with the part in its natural position, and ends when the part returns to that position.

4. As far as possible let the breathing be deep and regular while exercise is being taken, avoiding the tendency to hold the breath. This can not be altogether avoided; for it will be found necessary to fix the chest in many of the movements. There is no special harm in this, however, unless carried to the extreme. The muscles of the chest,

Then while maintaining the effort put forth to hold it rigidly extended at the side, the flexor muscles, or those which bend the arm, are energized to act to such an

FIG. 4.

extent that they are able to overcome the movement which tends to straighten the arm. No weight is being lifted, but the flexor muscles are made to work the same as if they were lifting a weight, by the antagonizing action of the extensor muscles.

It will readily be apparent that the amount of work done by the muscles can by this means be regulated to a nicety. The flexors can be made to do as much work as can profitably be required of them. After the arm has been flexed, or bent, under resistance, the attention of the will toward the arm is changed so that it is made rigid in its flexed, or bent, position, while the extensors, or straightening muscles, are compelled to extend or straighten it.

FIG. 5.

Below is given a brief description of the several exercises which the writer has found useful. It will be evident that an almost interminable number of combinations may be made from these, by bodily attitudes or positions, whereby the work may be increased or diminished. The following general rules may be laid down as especially applicable to these exercises, as well as to many others:—

1. The will must be energetically employed in each particular movement. This effort for concentration of the will upon the muscular organs employed is a powerful factor in inducing development.

2. The acting muscles or groups of muscles must be continuously and regularly energized from the beginning of a movement to its end.

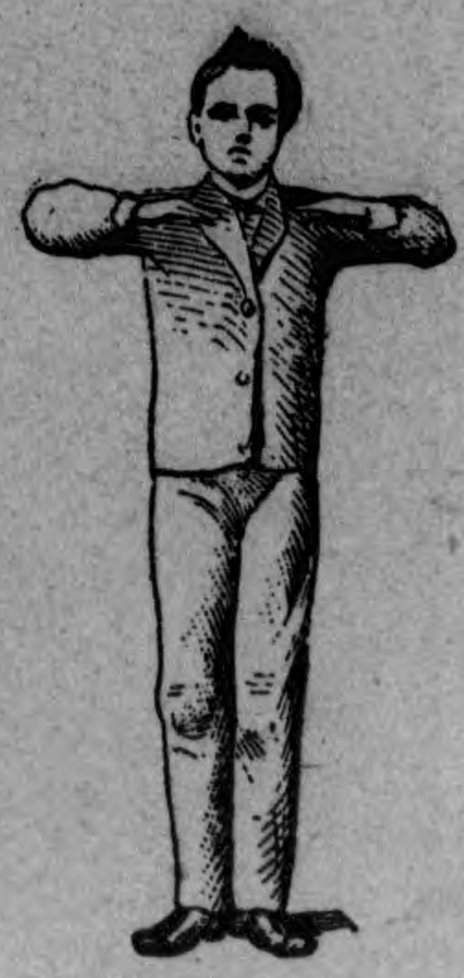

FIG. 7.

FIG. 6.

3. The movement begins with the part in its natural position, and ends when the part returns to that position.

4. As far as possible let the breathing be deep and regular while exercise is being taken, avoiding the tendency to hold the breath. This can not be altogether avoided; for it will be found necessary to fix the chest in many of the movements. There is no special harm in this, however, unless carried to the extreme. The muscles of the chest,

opment, and in correcting deviations from the normal standard of bodily symmetry, it must be admitted that for the ordinary requirements of hygiene, as regards the general effects of exercise upon the body, equally good results may be obtained from exercises which, from a scientific standpoint, may be technically less correct, and a knowledge of which may be acquired without any considerable effort and without the aid of a teacher.

After studying this question for a number of years, gathering hints from various sources especially from the methods used by the Schott brothers in the treatment of affections of the heart, at Nauheim, Germany, the writer has formulated a plan for exercises which can be taken anywhere, and for the most part even in bed, without the aid of apparatus of any sort. If perseveringly employed, this system may be relied upon as a means not only of maintaining a healthy condition of the muscles and of the body in general, but of securing exceptionally vigorous muscular development.

FIG. 1.

Briefly described, these exercises consist of a systematic series of contractions and relaxations of all the groups of muscles in succession. To illustrate the fundamental principles of this mode of exercise in which no apparatus is employed, make the following simple experiment: —

Hold the arms at the sides with the palms upward flexed. Now bend the forearm till the hands are brought up near the shoulders. The amount of work done in this is very insignificant, and the movement might be repeated many times without producing the fatigue which is necessary to stimulate development, and thus produce increase of strength. But repeat the same movement holding in the hands a moderately heavy book or weight. Observe the different sensation experienced in the arm. The muscles are at work. Tension is felt. A repetition of the same movement, still holding the book in the hand, will in a short time produce a sensation of fatigue or weariness in the arm. Now lay down the book, and repeat the movement, at the same time endeavoring to reproduce in the arm by an effort of the will the same sensation produced by lifting the weight. This is accomplished simply by producing a rigid state of all the muscles concerned in bending and straightening the arm. In other words, an effort is made to hold the arm straight, while at the same time bending it. Before beginning the movement, the arm is made rigid while extended straight at the side.

FIG. 3.

FIG. 2.

as well as other muscles, must be fixed in order to be energized; and it is only when thus brought into full action that they are stimulated in such a manner as to secure development.

5. In general, it is better to repeat the exercises of a particular group of muscles not more than two or three times before passing to another.

FIG. 9.

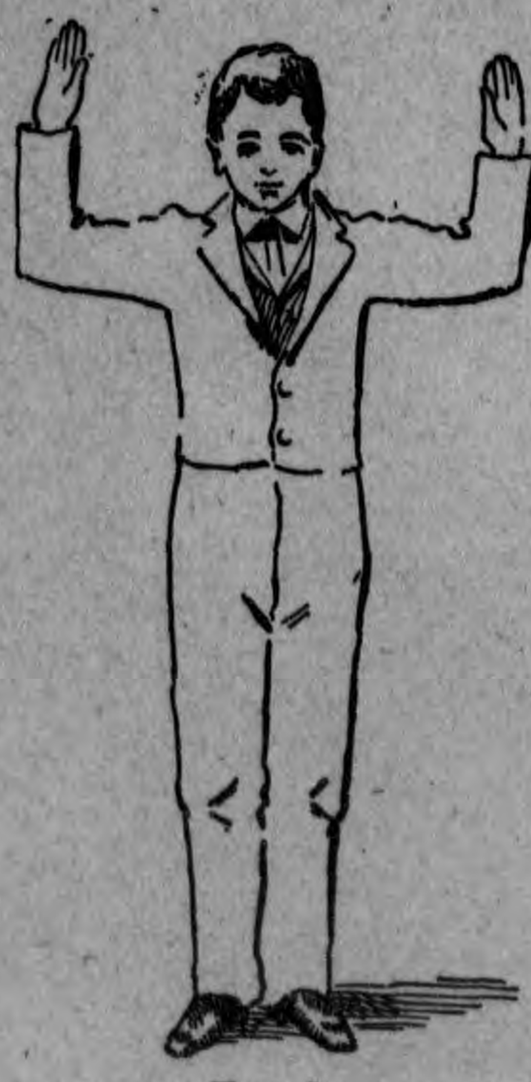

FIG. 8.

6. After each movement of a group of muscles, rest a sufficient length of time to take a few deep breaths before repeating or beginning another.

7. When beginning a series of exercises, care should be taken that the first practice be not too severe or prolonged. The exercises are so simple that the first impression will be that they may be continued almost indefinitely without marked effect; but unless this precaution is observed, the novice will experience on the day following the first employment of these muscles a very uncomfortable soreness. Probably no particular harm will result from this, hence the exercises should not be abandoned, but lighter movements taken.

8. After exercising a group of muscles on one side of the body, it is better to exercise the corresponding group on the opposite side before proceeding to another group on the same side. By this means the corresponding sides of the nervous system are brought into action symmetrically and practically simultaneously, and thus the most vigorous impression is made.

9. At first these exercises should be taken only once a day, but after a few days they may be taken two or three times to advantage. The time used in the exercises need not necessarily be so long as to make it a matter of inconvenience. Those who suffer from insomnia will find it advantageous to spend a few minutes with the exercises on going to bed at night, care being taken to make them very light, the purpose being to draw the blood

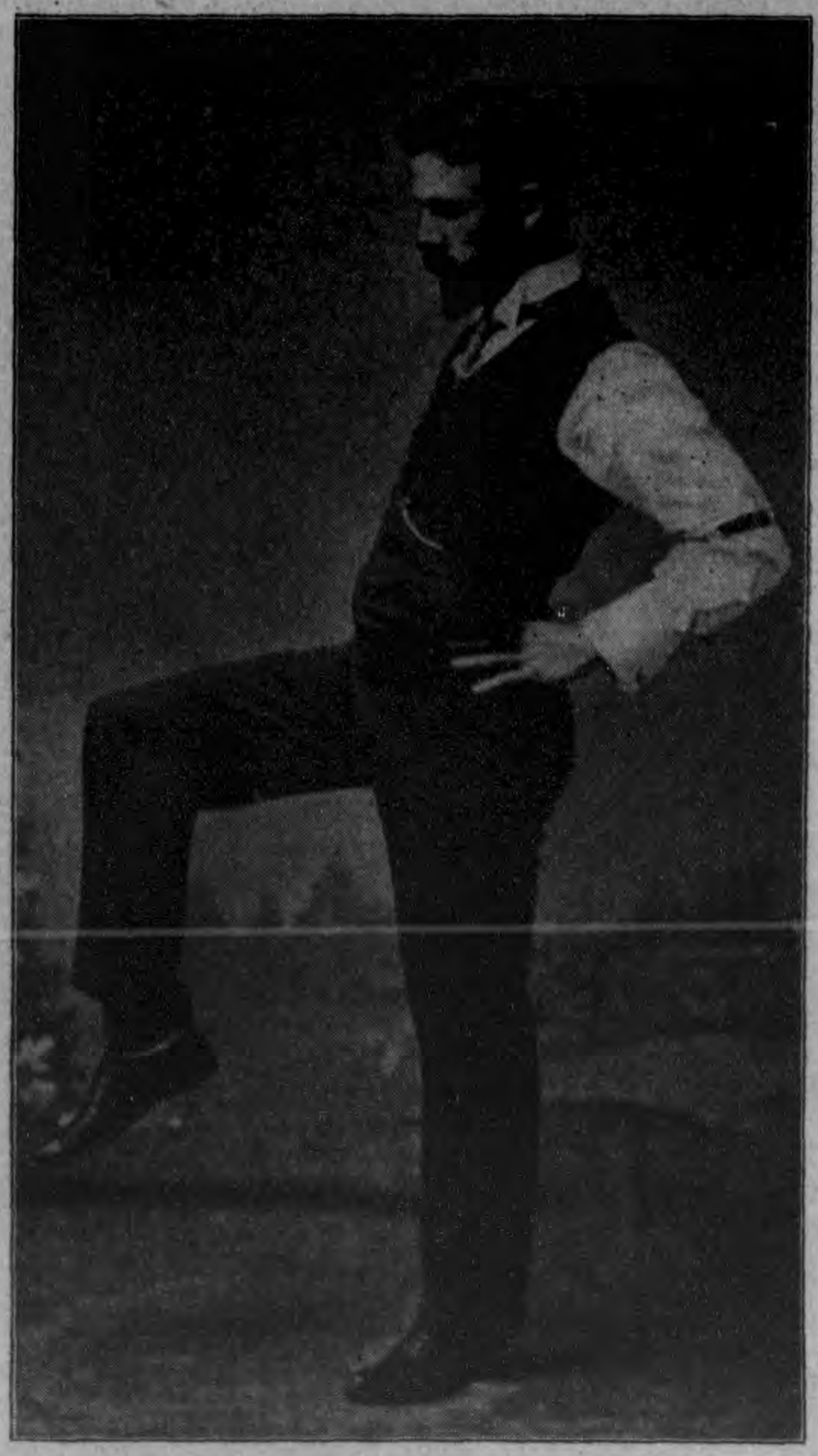

FIG. 10.

to the muscles and thus relieve the brain. In general, however, the best time is on first rising in the morning.

10. It is obvious that the exercises may

be taken most readily when the body is hampered with but little clothing; but the ordinary clothing worn by men does not seriously interfere with the movements.

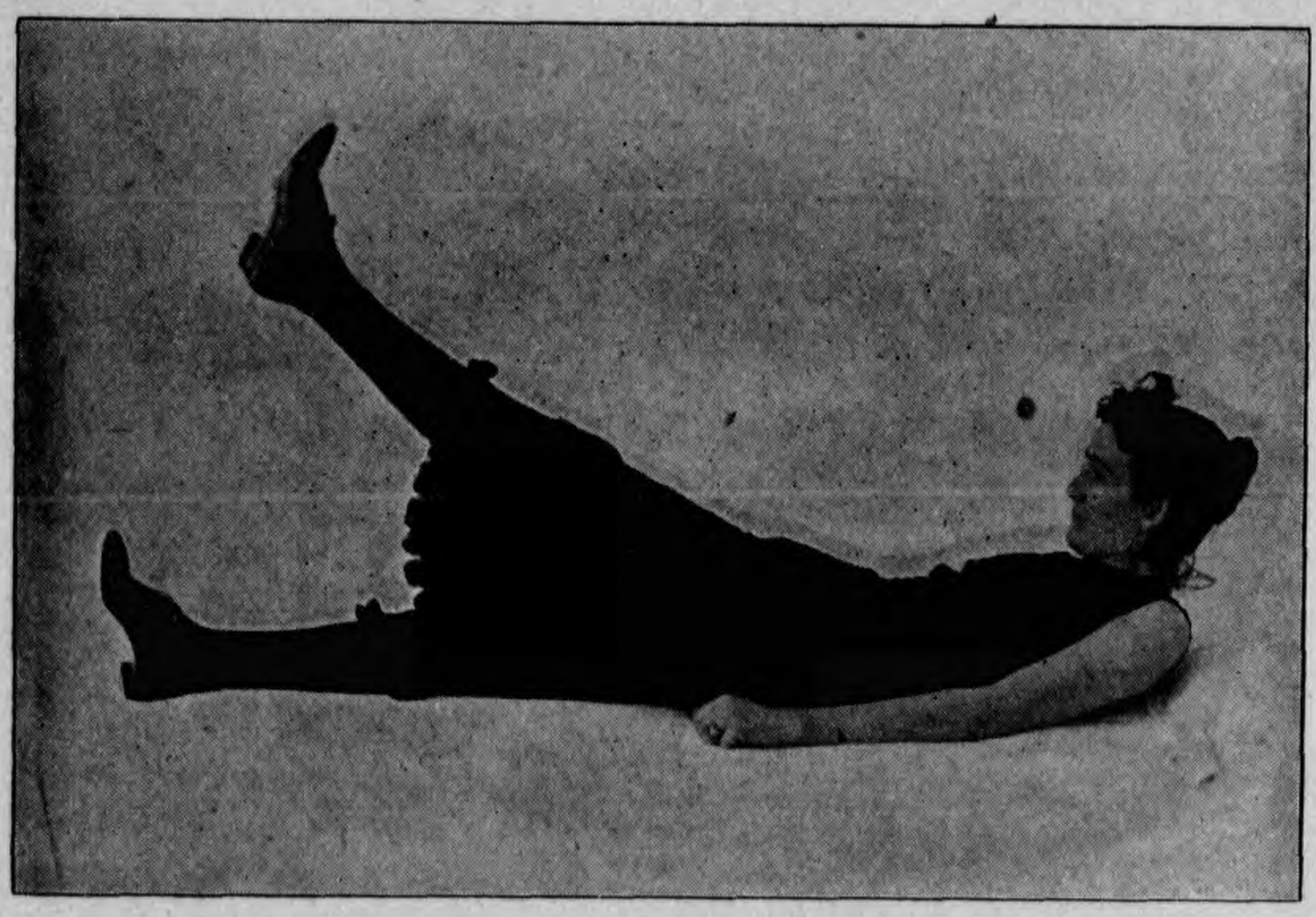

FIG. 11.

The dress worn by women will not admit of taking the exercises in the proper manner, on account of the tightness of the waist, and the restricted movement of the shoulders.

11. When the extremities are cold, they may be very speedily warmed by means of these exercises applied with moderate vigor for five or ten minutes or repeated at short intervals. This method of warming the extremities is much to be preferred to artificial means, as it secures the desired object by balancing the circulation and withdrawing a portion of the blood from the brain or other parts of the body in which there is an excess.

12. Persons suffering from organic disease of the heart or from any affection of the lungs which produces shortness of breath, may be greatly benefited by these exercises. In such cases they are more appropriate than any other exercise; but the movements must be executed in such a way as to avoid exciting the heart or lungs, a condition which will become readily apparent by quickened movements of the chest. In other words, the exercises should be taken in such a manner that respiration is not hastened. In these cases the further precaution should be taken to make but one movement with each group of muscles before proceeding to the next, or, preferably, bringing into action the corresponding group of the opposite side. The patient must not hold his breath while going through any movement. All the movements should be taken very lightly, and all "straining" must be carefully avoided.

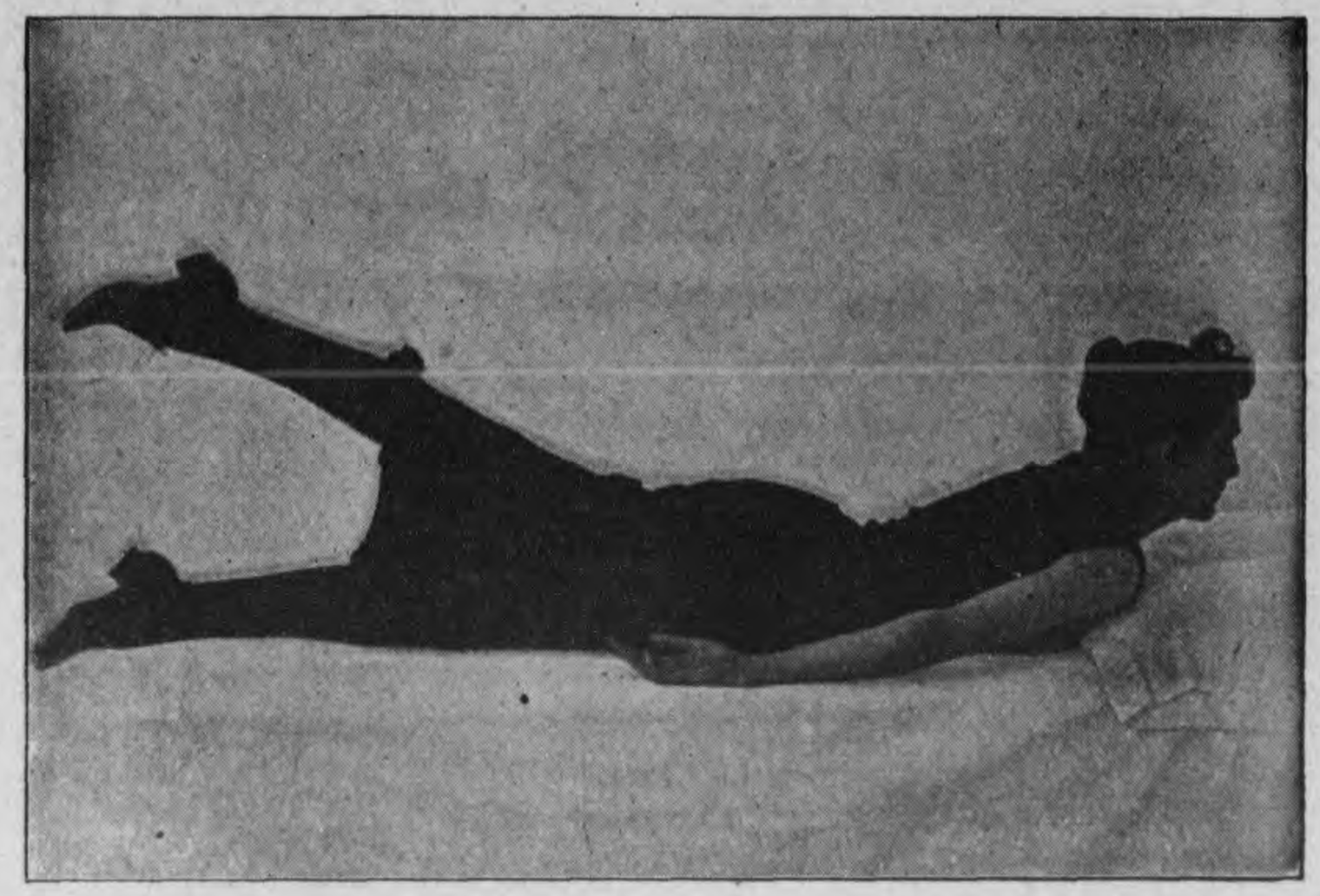

FIG. 12.

The following is a brief description of a series of movements which we have termed "Controlled, or Self-Resistive Exercises:"—

Position.— In taking the following ex-

Out of Doors

Out of doors, 'neath the open sky,
Bathed in the fresh, sweet air;
Out where the birds and the insects fly,
And their songs echo everywhere.

Out of doors, with the trees and the flowers,
Treading a carpet of green;
Or, weary, 'neath fragrant, sun-kissed bowers
On Mother-earth's breast to lean.

Out of doors, where the wind-harp's tones
Attune with the robin's lay,
And the brooklet's purling song with the stones
Chords with the willow's sway.

Out of doors, where the earth-organ peals
Its tide of melodious sound,
The heart its vibrant harmony feels,
And the soul's discords are drowned.

Out of doors, when the king of light
Kindles his fire on the hills,
Burns up the murky gloom of night,
And with joy the whole earth thrills.

Out of doors, out of doors—make haste
Out of the shadows to flee
Like a captive bird from its cage, to taste
What a joy it is to be free.

S. W. Kellogg

Ingersoll a Vegetarian

INGERSOLL, the famous author, believed with Thoreau that "it is a part of the destiny of the human race, in its gradual improvement, to leave off the eating of animals." In a letter to a friend he once said: "Probably the time will come when man will be civilized enough not to kill and eat his fellow creatures. We have at least made some advance—we have stopped eating each other, and the next step may, in the far future, be taken. . . . I must admit that the eating of meat, when I think about it, is shocking, and that I am somewhat ashamed to look into the peaceful and trustful eyes of cattle."