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### PHYSICAL TRAINING THROUGH CORRESPONDENCE

#### LESSON II.

"TAKE CARE OF YOUR STOMACH AND THE REST OF THE BODY  
WILL TAKE CARE OF ITSELF."

'Diet' has been extensively discussed and experimented upon. Volumes have been written on this subject; and, still, books are making their appearance throwing interesting fresh-light on the subject. It is such an appetising subject to the dietecian and to the physiologist, that each one of them has his own way of cooking and serving it; so much so, an indigestion has already been caused.

Is it not hard to gulp down more? We have books on dietetic restrictions in the treatment of almost every disease and infection so far known. To name a few, there is 'Diet' in high-blood pressure and arterio-sclerosis, diet in asthma and hay-fever, diet in duodenal and gastric ulcers, Mucousless diet, diet in Bright's disease and kidney disorders, diet in disorders of the liver and the pancreas, etc.

This brings us home the age-old saying "He who knows how to speak, has no quarrels, he who knows how to eat, has no disease." In spite of all this knowledge and warning about 'diet', people are still guided by their whims and the avidity of their tongues, and not by reason, discretion or incessant suffering.

The stomach is one of the most overworked and abused organs of the human anatomy. Over-indulgence in eating is an universal crime. The stomach is an ass, the tongue is a felon, and some day the poor ass is sure to break down.

Of course, in the beginning it complains, and protests; it expresses indigestion, gases, free-acid; but the callous master whips it with carminatives, acid-neutralisers, and gas-absorbents. It limps, it totters, it drags, and finally, collapses. No amount of whipping is seen to have any effect now. The master now changes his tactics. He pretends to be kind and sympathetic. He makes kind promises and says good things. But the poor ass is crippled;— crippled beyond recovery.

Now starts the tragedy of the man's life. The first blow shatters his peace of mind. Each rumbling in his stomach sets an echo in his own groan. He becomes a chronic dyspeptic. He begins to bark and to bite. He develops a nasty temper and becomes a menace at home and at office. No doubt about it.

Over-eating, physical inactivity, indulgence in alcohol and other excesses too numerous to mention sum up the life of the middle aged man of business and of high position in life. They will not, for the world, exchange their bacchanalian dinners for rational dietary, their alcohol for pure water, their cushioned easy-chairs, to even easy physical exercises. It is difficult to reform in personal-hygiene a person, who is disinclined to shake off his soft habits. It is easier for him to laze about with all his easy habits, than to live actively.

Coming back to the question of food...the problem is a very complicated one. Each country has its own dishes, based on what can be easily procured or grown there, and adapted to the tastes of the people. Diet depends also upon the individual means. It is therefore difficult to prescribe a common or ideal diet for the rich and the poor alike. Physiologists, Food-scientists and Food-faddists have experimented long and enough, and have given the benefit of their experiments and experiences for the good of the world. They have analysed the foods and named them. That part of the food which is digested by the Saliva in the mouth, they have named STARCH; that digested by the gastric-enzyme and intestinal-secretion, PROTEIN (Albuminous and Nitrogenous matter), and that acted upon by the Bile and the Pancreatic secretions, FATS and CARBOHYDRATES. These scientists have even measured the amount of heat and Energy each food produces in the body. They call this unit, the big Calorie. With this scale of heat and energy, they measure man's need at the different stages of life, for different kinds of labour and office.

The problem of 'DIET' can never be definitely solved. The idiosyncrasies of the human body and its adaptability are a problem to the scientists of to-day and will be a problem to the scientists of to-morrow. The wise man said "WHAT IS ONE MAN'S FOOD IS ANOTHER MAN'S POISON."

We have heard and read how some one, wrecked on an island, or in the absence of any other food-stuff, sustained himself and pretty well too, for a long time, on a single cooked or un-cooked food. Even to-day in the south of India, one finds families and tribes living on one principal starchy food, such as highly polished rice; living only on jack-fruit which have no more than a five percent nutritive value. The Protein content is but a soupcon in both these cases, yet these people's physical energy and working capacity are good but the physical build has much deteriorated.

One has in the course of life, surely come across a man who is rather thin, but quite energetic and healthy and who is trying his best to put on a little more weight. In spite of the most nutritious diet and rich fattening foods, this man continues to keep thin. This sort of person is what is known as the "Asthenic type". At the other extreme is the one who is corpulent; dieting himself to starvation, avoiding fatty foods, and yet somehow not losing weight. This is the "Hypersthenic type". Both are problems to the food-scientist. I know of a case where a man, a Hata-Yogin who lived on only 2 lbs. of Margosa (neem) leaves, which are extremely bitter to the taste. He took no other solid or liquid food, except pure water. Yet, he was hale and healthy, active and exceptionally bright in eye and mind. Surely a problem, this, to the food-scientist.

The human body is a wonderful self-adjusting and self-repairing machine. I have seen people drinking Nitric and Sulphuric acids, eating Potassium-cyanide, per-chloride of Mercury, lumps of Arsenic and Aconite with no ill-effects at all. To prove that this was no mass-hypnotism, the X-rays have recorded the contents of their stomachs immediately after they swallowed them. Has science anything to say regarding this?

I do not want to scare my reader or tell him that dieting is useless. Correct dieting is very necessary for all who desire to build up strength and stature. In my experience and

in the records of my sanatorium I have watched people gaining 5 to 7 lbs. a month (average cases) under proper diet and exercise; while others of the same age did not gain more than 2 to 3 lbs. at the most, under the same conditions. It is a question of constitution and a very complex subject to discuss in detail.

Now about FOOD:-I fear, I must use a few technical names and expressions in this lesson.

Eating, one of the primary instincts, is needed for self-preservation. Food supplies nutrition. We may roughly compare the body to a steam-engine. To keep the engine in working order, two things are necessary: (1) supply of fuel and (2) good repair. The burning of the fuel provides heat and generates the work, which the engine should accomplish. Food, in relation to the body, fulfils the same purpose. It undergoes combustion; bodily heat is kept up and work is rendered possible. Its second function is repair. It supplies the material for the repair of the body's framework, for, the body suffers wear and tear as a result of activity, labour, or physical exercise. The body is however superior to the engine. In an engine, repair has to be accomplished by means of 'SPARE PARTS' or, at any rate out of materials like those employed in the construction of the machine. There are certain materials in the food which are not identical with the substances of the body, but are converted into such by the digestive and metabolic processes. This, the living body utilises for repair and for further building.

#### F O O D:- BODY-BUILDING AND ENERGY-YIELDING.

The food we take can be divided into two main groups:

(1) The 'HEAT-FORMING'-more accurately known as 'Energy yielding' foods, classed as the Carbo-hydrates (Eg.- Starch, Sugar and Fats) and (2) the 'Tissue-building' foods, classed as those complex Nitrogenous substances, termed: the Proteins or Albuminous foods. The Proteins, in addition to their flesh-forming nature, are partially burnt in the body and so, serve also as a source of energy. A NUTRITIOUS DIET, then, is one which is able to repair tissue-waste and provide the requisite energy. When fuel is supplied to the engine in the shape of wood, petrol, coal, kerosine, or crude-oil, three forms of force are liberated: Light, Heat and Work. To measure this energy engineers select a work-unit, horse-power, foot-pound, etc. But the standard selected by

the physiologists is the 'Heat-Unit' known as the big 'Calorie'.

The big 'Calorie' is the unit of heat required to raise the temperature of one kilogram of water from freezing point to one degree Centigrade. Every substance has a fixed heat (or energy) value. For example, a gram of starch or sugar when burnt, yields 4 calories, and a gram of fat yields 9. Life is a process of slow combustion, and its activities are the result of a transformation of energy as in the furnace of the steam-engine. The advantage of fat as a fuel is obvious; it yields more than twice as much energy as an equal weight of any other food-stuff.

The daily calorie want of a human being depends upon his build and more especially on variations of his activities. For a normal man weighing say 140 lbs. who does no physical work at all, 1,800 to 2,000 calories are enough for a day. For an athlete, or a physical culturist of the same body-weight in hard training, about 3,300 to 3,800 calories are required. A physical culturist therefore, should take enough of energy-giving foods; Carbo-hydrates (Starch and Sugar), Fats and an adequate amount of Proteins (Albuminous foods), to build his muscles.

CLASSIFICATION OF FOOD. The chief chemical compounds in food are: (organic) 1. Proteins, 2. Carbo-hydrates, 3. Fats, (inorganic) 4. Water, 5. Acid, 6. Salts.

The human body requires all the above ingredients of food for its existence, and for its efficient working. The proteins are the most important substances which occur in animal and vegetable organisms and the protein metabolism is the most characteristic sign of life. Proteins are highly complex compounds of Carbon, Hydrogen, Oxygen, Nitrogen, Phosphorus and Sulphur, the chief constituents of the human body, which occur in a solid or viscous condition, or in solution, in nearly all parts of the body. The Proteins in the food form the source of Proteins in the body-tissue. But the latter are usually different in composition from the former. The food proteins are broken up into simpler substances in the process of digestion. These are usually called the 'CLEAVAGE PRODUCTS', and it is from these that the body-cells reconstruct the proteins peculiar to themselves. During Physical Exercises, due to 'KATABOLIC PROCESSES' (breaking up of tissue-cells) in the

body, the proteins are finally broken up; and Carbonic-acid, Water and Urea are some of the final products discharged through various outlets of the body.

THE CARBO-HYDRATE (Starch, Sugar and Fats):- are chiefly found in vegetable tissues and many of them form important foods. Some Carbo-hydrates are, however, found in, or formed by, animal organism. The most important of these are Glycogen (Animal Starch), Glucose or Dextrose and Lactose (Milk-Sugar). The Carbo-hydrates may be conveniently defined as compounds of Carbon, Hydrogen and Oxygen; the last two elements being in the proportion in which they occur in water.

Glucose or Dextrose or, Grape-sugar:- These Carbo-hydrates are found in many fruits, and in honey. It is also found in minute quantities in the blood, and in the numerous tissues, organs, and fluids of the body.

Common sugar or Sucrose is generally distributed in the Vegetable, but especially in the juices of sugar-cane, beet-root, mallow and sugar-maple. It is a substance of great importance as food.

Lactose occurs in milk. The lactic acid formation which occurs when milk turns sour is caused by an enzyme secreted by certain micro-organisms which are somewhat like yeast-cells. Bacteria in the intestines bring about the same results too.

Maltose is the chief sugar formed from starch, by the digestive enzymes contained in the saliva and the pancreatic juice. By the action of dilute mineral acids, it is converted into Glucose.

Glycogen is the animal starch usually found in liver, Muscle and the white corpuscles of blood. It is abundant in embryonic tissues.

Cellulose is the material, which, with other Carbo-hydrates make up the cell-walls and woody-fibres of the plants. By treating it with strong mineral acids, it is converted into Glucose. The various digestive enzymes have little or no action on Cellulose; hence the necessity of boiling the starch before it is taken as food. Boiling liberates the starch from Cellulose-envelopes, and thereby, allows the digestive juices to get at the starch.

FATS:- Fat is found in many vegetable-oils and in small quantities in many animal tissues. It is found in large

quantities in three things, viz., Marrow, Adipose-tissue, milk and milk products. The contents of Fat-cells in the Adipose-tissue (in the body) are fluid during life, the body temperature being considerably above the melting points of fats found there. These fats are three in number; Palmitin, Stearin and Olein. They differ from one another in chemical composition and in certain physical characteristics, like melting point and solubility. All fats are soluble in Alcohol, Ether and Chloroform but not in water.

WATER:- (In the body) More than two-thirds of our body is water: say about 100 lbs. in a man weighing 150 lbs. This quantity is constantly changing, according to the amount of liquids consumed and discharged, chiefly by the lungs, the skin, and the kidneys, which aggregate to about 150 ozs. a day. Some such quantity is consumed daily. Otherwise, an unhealthy dryness results. Water is not confined to fluids only. With one or two exceptions, it is present in all food-stuffs.

Because of water, the blood circulates; the complicated processes of digestion are accomplished, and our sensations and thoughts travel on it; in short, we live by water, but not by water alone.

S A L T S:- the human body is a chemical composite with sixteen principal elements in it; Oxygen, Nitrogen, Hydrogen, Carbon, Chlorine, Fluorine, Iron, Phosphorus, Calcium, Potassium, Magnesium, Sodium, Sulphur, Silicon and Iodine. Every element has to perform a certain duty for the body and if the blood and tissue-building salts are not supplied in sufficient quantities, or, are any of them missing, health soon becomes impaired.

The average daily requirement of tissue salts to maintain a healthy body in condition is about half an ounce. The diet that does not contain this amount of Organic-Salts, is not a suitable one. White-bread, Meat, rice, Cake and other cooked foods, do not contain these mineral-salts in sufficient quantities and during the process of cooking, most of these are lost, or, are made unassimilable.

Fruits, vegetables, cereals and nuts, are rich in Organic-Salts. These do not ferment, putrify, and produce toxic elements in the Alimentary Canal, as readily as the meat diet; and therefore, they are naturally a proper diet for man in sickness and health.

VITAMINS:- The term 'Vitamin' was first used by Dr. Funk, a great food scientist, while he was trying to find the actual cause of deficiency diseases, such as Scurvy, Pellagra, Rickets, and Beri-beri. This vitamin theory was later on much developed by Mc. Collum, and since that time, a great number of scientists have taken up and developed it to a high degree. Experiments are still being made and new vitamins are discovered. I can only give a brief resume of the information about the Vitamins.

There are at present more than ten classified Vitamins, of which seven are known to chemical science, viz. Vitamin A, Vitamin B (with two important sub-divisions B 1 and B 2), Vitamin C, Vitamin D, Vitamin E (or X as it is otherwise named), Vitamin H, Vitamin K and Vitamin P (the latest addition).

Vitamin A is a fat-soluble Vitamin, a crystalline colourless greasy substance, which is built up in the body from yellow carotene, the yellow pigments of vegetables such as carrots, spinach, etc. It is stored in the liver. So, fish-liver and fish-liver-oil serve as a good medicine, for diseases due to deficiency of Vitamin A. Cod-liver-oil and Halibut-liver-oil contain large quantities of Vitamin A. Other important sources of Vitamin A, are milk, butter, carrots, spinach, cabbage, egg-yolk. An adult person needs 1/8 grain of Vitamin A daily. The diseases caused by the deficiency of this Vitamin are: night-blindness, retarded growth, atrophy of the glands, sterility, xerophthalmia (an inflammation of the eyelids and eye-balls). Milk and milk products should therefore, be used liberally. They are termed 'protective foods' because they supply the first and most important nutrition 'Vitamin A'.

VITAMIN B is soluble in water and consists of several independent factors such as, B, or Vitamin F, which is the anti-Neuritic factor, the absence of this Vitamin, produces a disease called Beri-beri; very often a fatal wasting disease which comes of Nerve inflammation and results in failure.

Vitamin B is also important for the utilization of sugar in the body. Some common diseases of metabolism as well as some forms of Nerve-inflammation, especially in pregnancy, are attributed to this deficiency. Vitamin B is found mainly in Yeast, Wheat-germ, Yeast extracts, bran, peanuts, dried peas, beans, lentils, nuts, whole-wheat, rye, maize, oat-meal,



whole-barley, unpolished-brown-rice, potatoes, cabbage, oranges, tomatoes, etc.

B 2 or Vitamin G is an anti-pellagraic factor. Its chief source is egg-yolk.

B 3 and B 5 are Chicken anti-pellagra factors.

B 4 a dog black-tongue factor, a pigeon heart-block factor and a growth factor for micro-organisms.

B 6 together with other factors produce a hormone which is necessary for the building up of haemoglobin; want of it leads to Anaemia.

FOR COLDS:- Vitamin C, known chemically as Ascorbic-acid, is a derivative of sugar and is to be found in almost all fresh fruits and vegetables. The diseases caused by the lack of this Vitamin are, spongy bleeding gums, hemorrhage tendencies, sore and swollen-joints, anaemia, scurvy, susceptibility to dental caries and separation of the growing ends of the bones in infants. The chief sources of Vitamin C are, oranges, lemons, grape-fruit, onions, carrots, pine-apple, potatoes, milk, apples, and bananas. This Vitamin is susceptible to heat and air, which easily destroy it. Bear in mind, that the necessity for Vitamin C arises in epidemic periods. Therefore, when colds and 'Flu' are prevalent, much citrus fruits (oranges, lemons, grape-fruits, etc.), which carry a high amount of Vitamin C should be used.

MUSCULAR WEAKNESS:-

Vitamin D. Deficiency of this Vitamin is responsible for rickets, improper dental formation, irritability, soft-bones, pigeon-chest, muscular-weakness, protruding-abdomen, bowed-legs, square-head, spine-curvature, knock-knees, etc.

Milk, Cod-liver-oil, Salmon and liver, egg-yolk, butter, fat, herring, Cod-liver, cream, mutton-fat, beef-fat, liver-yeast and sun-shine are the chief sources of this Vitamin. Ordinary dairy products (milk, butter and cheese) contain enough Vitamin D. Calcium and phosphorous salts. These with sun-shine, must help in overcoming any deficiency disease of this class.

FOR STERILITY:-

Vitamin E. The deficiency of this Vitamin causes sterility. This Vitamin is found in wheat-embryo, wheat-germ-oil,

unpolished-rice, rice-oil, lettuce, green-leaves, palm-oil, cotton-seed-oil and olive-oil.

Vitamin H. This is claimed to exist in raw-liver and is helpful for normal growth.

Vitamin K. Deficiency of this Vitamin, causes certain skin diseases and alopecia. Its sources are fish, hog-liver, tomatoes, cabbage and spinach.

Vitamin P. This is a recent discovery and is said to be contained in fruits and is the flavon factor, citric.

Many more Vitamins are sure to come and the few remaining letters of the English alphabet may not suffice to denote them. There seems to be at the present day, a craze for Vitamins. People have become almost Vitamin-crazy and in their attempts to stuff their stomachs with Vitamins, they forget the substance and catch the shadow. It is best, therefore, when thinking about or when coming in contact with food problems, NOT TO WORRY ABOUT CALORIES OR VITAMINS separately, but about what constitutes real food; that is: the real food which contains all these elements together. The food which Nature intended us to eat, is, in the natural unspoilt products of the vegetable kingdom, complete with all their mineral elements, and not subjected to the de-mineralizing, debasing and devitalizing influence of modern commerce or haphazard, wasteful cookery.

F O O D. PROPORTION:- This depends on the age and size of the man, and varies specially with his activities. Food-scientists give us the following figures for an average man's daily diet:-

Protein ...	...	200 to 300 grams.
Fat ...	...	100 to 150 "
Carbo-hydrates ...	...	250 to 350 "

Some typical diets must be considered as more than rough averages of what is necessary for a man in the course of a day. Actual experience shows that in the diets of different nations there are considerable deviations from this standard, without producing bad effects. Growing children require a very nourishing and easily digestible diet. Thus, milk, the diet of the infant, beside being easily digestible, is proportionally twice as rich in protein and half as rich again in fats as the normal diet standard given above.

More food is necessary during work than during inactivity. A physical culturist's diet should be nourishing, both for body-building and energy-yielding.

An ideal diet should consist of the following factors:-

(1) It must contain the proper quantity and proportion of the various principles. (2) It must be adapted to the climate, age and weight, of the individual, and, to the amount of physical work done by him. (3) In addition to the amount of Proteins, Carbo-hydrates, and Fats, it must also be in a digestible form.

#### COOKING OF FOOD:-

(1) Cooking destroys all parasites, bacilli, and all dangerous infection. (2) In vegetable foods, it separates the starch grains from their cellulose covering, so allowing the digestive enzymes to come into contact easily with this vegetable starch. (3) In meat, it converts the gelatin content into a soluble form. It also breaks up the closely knitted muscular fibres, thus rendering the digestion easier.

#### FRIED FOODS:-

Fried foods are very hard to digest as the molecules of starch and proteid matter of the food get enveloped in layers of fat. The saliva cannot get at the starch by breaking through these layers of fat. The gastric-enzyme too, has a tough job in doing its part of the work.

CONSTITUENTS OF THE USUAL FOOD-STUFFS. Proteins are chiefly found in meat, eggs, fish, cheese, peas, lentils, nuts, milk and poultry.

THE CARBO-HYDRATES are in bread, cakes, flour-puddings, rice,- potatoes, wheat, corn, maize, peas and a few fruits.

FATS are found in cream, butter, ghee, meat, milk, cheese, ground-nuts, almonds and other oil-nuts.

ORGANIC-SALTS AND VITAMINS are found in all greens and vegetables, cereals, fruits and tubers.

SUGAR is found in candies, preserved-fruits, dried-fruits and honey.

ROUGHAGE is present in beans, greens, vegetables, whole-wheat, tubers, cereals, fruit-pulp and peel. Here is a small list of common food-stuffs, their food-values and the calories per pound.

Food-stuffs	Vitamins A.B.C.D.			Refuse	Water	Protein	Fat	Carbo- hydrate	Ash	Calories (per lb.)
Wheat	2A	3B	1D	-	10.6	12.2	1.7	71.3	1.8	1,760
Bread white			1B	-	35.5	9.2	1.3	53.1	1.1	1,200
" brown	1A	1B		-	43.6	5.4	1.8	47.1	2.1	1,040
"whole wheat	2A	3B		-	38.4	9.7	.9	49.7	1.3	1,130
Peas green	2A	2B	3C 1D	-	85.3	3.6	.2	9.8	1.1	235
Cabbage	2A	3B	3C	15	77.77	1.4	.2	4.8	.9	115
Lettuce	2A	2B	3C 1D	15	80.5	1.0	.2	2.5	.8	65
Onions		2B	2C	10	78.9	1.4	.3	8.9	.5	190
Potatoes	1A	2B	2C	20	66.2	1.8	.1	14.7	.8	295
Tomatoes	2A	3B	3C	-	94.3	.9	.4	3.9	.5	100
Apples	1A	2B	2C	25	63.3	.3	.3	10.8	.3	190
Turnips		2B	2C	30	62.7	.9	.1	5.7	.6	120
Bananas		1B	1C	35	48.9	.8	.4	14.3	.6	260
Grapes		1B	1C	25	58.0	1.0	1.2	14.4	.4	295
Lemons		2B	3C	30	62.5	.7	.5	5.9	.4	125
Oranges	1A	2B	3C	27	63.4	.6	.1	8.5	.4	150
Milk	3A	2B	3C 2D	-	87.0	3.3	4.0	5.0	.7	310
Cheese		2A	2B	-	34.2	25.9	33.7	2.4	3.8	1,865
Butter		2A	2B	-	11.0	1.0	85.0	-	3.0	3,410
Rice	1A	3B	2D	-	12.3	8.0	.3	79.0	.4	1,620
(unpolished)										
Sugar		..	..	-	-	-	-	100.0	-	1,730
Almonds	1A	2B		45	2.7	11.5	30.2	9.5	1.1	1,551
Chestnuts	1A	1B		16	37.8	5.2	4.5	35.4	1.1	915
Coconuts	1A	1B		48.8	7.2	2.9	25.9	14.3	.9	1,295
Peanuts	1A	2B		24.5	6.9	19.5	29.1	18.5	1.5	1,775
Walnuts	1A	1C		58.1	1.0	6.9	26.6	6.8	.6	1,250
Beans string	1A	2B		7.0	83.0	2.1	.3	6.9	.7	170
Apricots	1A	2B	1C	-	29.4	4.7	1.0	62.5	2.4	1,125
Dates	1A	2B	1C	10.0	13.8	1.9	2.5	70.6	1.2	1,275
Figs		1B	2C	-	18.8	4.3	.3	74.2	2.4	1,280
Chocolate	2A	1B	1C	-	5.9	12.9	48.7	30.3	2.2	2,625
Beef		2A	1B	18.7	49.1	14.5	17.5	-	.6	995
Mutton	2A	1B	1C	18.4	51.2	15.1	14.7	-	.8	890
Pork	2A	2B	1C	19.7	41.8	13.4	24.2	-	.8	1,245
Fish		1A	2B	44.7	40.4	10.2	4.2	-	.7	765
Fowl	1A	2B	1C	25.9	47.1	13.7	12.3	-	.7	765
Egg	3A	1B	1C	11.2	65.5	13.1	9.3	-	.9	635
Spinach	3A	3B	3C	-	92.3	2.1	.3	3.2	2.1	95

## MEAT: ITS PLACE IN DIET:-

For ENERGY meat is eaten, mostly because it contains Protein or Albumin in an easily assimilable form. Protein is the great repairer and replenisher of tissue-waste. As a source of energy, it is almost equal to carbo-hydrate, but far inferior to fat. The manual labourer requires no more meat than the man in the arm-chair however much its contrary be believed by those ignorant of physiological principles. An engine in condition called upon to do more work does not necessarily need repair; what it needs, is more fuel (coal, petrol or oil). Even so, healthy human-engine when called upon to do more work, requires the carbo-hydrate food (Heat and energy-giving food).

For NUTRITION. Butcher's meat, however is not the only form of Protein food rationed for an energetic people; we can also get Proteins in milk, in cheese, in nuts and in bread. There is no need, however, to think that man is anywhere near the margin of danger so far as the supply of flesh-forming foods is concerned. The other available form of Protein food is that in peas, beans, lentils and the like. These useful vegetables contain as much Protein as beef and mutton and if properly cooked are as easily digestible.

I have said that the food - vegetarian or not - depends upon the adaptability. Human body is a wonderful self-adjusting, self-adapting machine, though this adaptation is sometimes slow. The carnivorous man has no absolute reason to slaughter innocent animals for food, at least in tropical and temperate zones where vegetable food can be had in abundance.

"I wish there was a science of nutrition, natural and worthy of its name" writes Bernard Shaw, a fervid vegetarian. The world's great food-scientists such as Dr. Kellogg, Mc. Cann, Dr. Fisher of Yale, Dr. Nelson and a few others have experimented long, and come to the conclusion that vegetarian diet is superior to the meat-diet, in points of quality (of bequeathing great endurance), of purity (in being free from infectious worms, aerobes, anaerobes and of its disease-free condition and its comparatively slow putrefaction).

THE WORK OF THE DIGESTIVE ENZYMES:- As there are five food elements, Proteids, Starch, Fats, Sugar, and Salts, so also there are five main digestive fluids: 1. The Saliva (an alkaline fluid containing 'Ptyalin' which digest starch),

2. The Gastric-enzyme, formed by a mixture of 'pepsin' and 'hydrochloric-acid' (which dissolves all kinds of proteids or albuminous foods and coagulates milk with the help of the ferment 'Rennet'), 3. The Bile (product of the Liver which emulsifies fat, making it ready for absorption), 4. The Pancreatic-enzyme (which performs the combined action of the three former juices), 5. The intestinal secretion, which acts on all the other food elements.

FOOD:- The moment food enters the mouth, it starts on a very long journey of nearly 40 feet. It passes through 30 feet of intestinal tube itself before the unabsorbed waste is thrown out of the Rectum. Food is first well-masticated and thus saturated with Saliva. It is passed down the throat in swallowing. The conversion of the starch in the food into sugar or glucose, begun by the action of saliva, is carried on till the food reaches the stomach. MYRIADS of glands in the walls of the stomach begin to secrete the Gastric-juice-compound (pepsin and hydrochloric acid), and the proteid matter is absorbed. A vigorous muscular action of the stomach aids it. The semi-digested food now called 'CHYME' passes on to the 'DUODENUM' where the bile and the pancreatic secretion mix with the 'CHYME'. Fat is now emulsified and starch is converted into Glucose. Then it passes into the intestines. The smaller intestines become all active as this remnant food enters it on its long journey of nearly 25 feet through them. The intestinal secretion here digests completely what little is left of the Albuminoid material. The innumerable 'VILLI', in the small intestines do their work in picking up the digested food and sending it through the 'LACTEALS' (Lymph channels) so as to mix with the blood stream. The Material which fails of digestion, passes then into the Colon through the 'ILEO-CECAL-VALVE' and helped by peristalsis (Worm-like movement of the muscular tissue of the large intestines) is then thrown out of the Rectum.

COFFEE, TEA AND COCOA:- The first two have no food value by themselves, but are stimulants to the nervous system. They contain Caffein and Tannin. Cocoa contains Theobromine. All are alkaloid poisons to the system. If used in excess and for a considerable period they produce over-excitement, weakening of digestive power and other Gastro-intestinal ills. Cocoa contains much of fat and proteid matter and may be used in moderation.

ALCOHOL, within limits is a stimulant. But this limit is hardly ever kept up. Alcohol has ruined persons, families, and Nations. There is very little chance of escape when once a person is caught in its grip.

Mustard, pepper, ginger, chillies and curry-powder, etc. are also stomach stimulants, excessive use of which destroy the mucous-lining of the alimentary tract and leads to dyspeptic troubles.

WHEN TO EAT:- DO NOT EAT UNLESS YOU ARE HUNGRY. Hunger is not felt in the mouth. Mere flow of saliva is not a true indication of hunger. The mouth begins to water at the sight of, or, at the mere thought of delicacies even at times when the stomach is full. Real hunger is felt in the stomach. It is a peculiar empty and sinking feeling. It is felt only when the body calls for nutrition. There must be an expenditure of tissue which requires repair and replacement, or there must be real need of energy to carry on some work. Scientists have proved that there is a produce called 'Appetite-juice' secreted by the stomach when it is empty and hungry. The thought, or sight, or smell of food, stimulates the stomach for the production of this 'Appetite juice'.

HOW OFTEN TO EAT:- English people and Americans, as a rule, eat four meals a day. Physiological facts argue for the two-meal plan, or else, for very light and easily digestible food, if an extra meal is necessary in-between. Even to-day in INDIA some orthodox Brahmins live only on one square meal a day and they keep well on it. The stomach requires at least five hours to digest a full meal. And a rest for an hour or two is necessary for the stomach, before another meal is taken. It is bad for health to put food into the stomach when there is some remnant of the previous meal still in the stomach. The ingested food gets mixed with this almost fully-digested food, and nutrition is retarded and impaired. The secreting glands are also put to a great strain. This continuous strain is sure to injure the stomach in more ways than one: Dilatation, ptosis, gastritis, hyper-acidity and all their ugly brood of ailments show up causing misery.

A FEW MORE SUGGESTIONS ABOUT DIET:- Do not eat just before going to bed. At least two hours should elapse between the last meal and the bed-time. Chew the food well, to let it mix with the saliva. Stop eating, before you feel full. Let the

foods be fresh, wholesome and nutritious. Avoid canned foods. Ptomaine poisoning (Tin-poisoning) is dangerous. See that each meal contains plenty of vegetables, one or two ripe fruits and a few nuts. Alcohol must not be used to whet the appetite. Foods taken at blood temperature are easy for digestion. The cold and too hot things, and highly spiced savoury injure the stomach.

A physique-building enthusiast must pay particular attention to his 'Diet'. Nutritious foods need not be costly; for instance, whole-wheat and whole-rice (unpolished) are not costlier than their refined cousins. Beans, lentils and grams of different kinds are not at all costly. Greens are within the reach of the poorest. Food articles like almonds, butter, milk and ghee are a bit costly and poor people cannot afford them.

Among non-vegetarian foods: barring fish, and eggs, other things are not within the reach of the poor man. He has to rely more upon the vegetarian foods. Rich meat dishes, heavy vegetarian preparations and rich viands are not meant for the healthy person. They hurt the stomach.

A person desirous of reducing weight, waist and hip-line must be careful regarding the choice of his diet. He should take care not to include any starchy and fatty diet in his daily menu. Milk, butter, ghee and other fat-producing foods must be avoided. Rice, potato, and other starchy foods must also be avoided. Sugar must be taken only in limited quantities. His diet should mainly consist of, whole-wheat preparations, plenty of greens, vegetables, citrous fruits and butter-milk. If he takes care of his food, the exercises will do their bit of the work in utilising the fat that is already stored up in the body. When he has sufficiently reduced, he can have recourse to the normal diet of an average man, while keeping to his regular daily exercises. Dieting alone cannot do the expected good for the heavy person. A judicious amount of exercises (to sweat and burn away the stored-up fat in the body) is very necessary. I wonder such discipline in diet and exercise, be possible for the heavy person, who has cultivated a taste for dainty and rich dishes, and who is inclined to laze about in luxury and comfort. Such discipline would be dry rationing and exercises, a physical torture to him.

The person who is keen on putting on weight and muscle must choose the very diets tabooed for the corpulent person.



This person should eat well: Not that he should load his stomach to bursting point. To fill half the stomach with solids, a quarter with liquids and to leave a quarter empty is good practice.

Proper mastication and ensalivation cuts down almost 50 per cent. of the strain on digestion in the alimentary tract. Good mastication is also necessary to preserve the teeth and gums in perfect condition and to save them from disease and decay. With the diseases of the gums and the decay of the teeth, half of one's health is gone for ever. Let the diet be simple, wholesome and nutritious. Do not have more than three or four varieties at each principal meal. Steamed, or roasted foods are easy to digest than fried (in oil, ghee or fat) foods.

Whole-wheat and unpolished rice are staple food-stuffs. Bolted-flour and polished-rice are unfit for human consumption. You should take care that this staple food has quality in it, else, half its nutrition value is lost.

Dhol, lentil, black and green-gram preparations, supply you with the necessary proteins. Beans, peas and nuts make up for any deficiencies in this sort of food. Potatoes and tomatoes are necessary adjutants to a nourishing diet. Greens and vegetables are the essential source of mineral salts for the body. Take some greens and vegetables with each meal. It is better taken as salads rather than steamed, boiled or fried. Amongst steamed, boiled or fried, steamed is the best. Cabbage, cauliflower, knoll-khol, radish, onion, celery, lettuce, spinach, tender green-beans, green-peas, cucumber, tomato, carrot, etc., make excellent salad. (Minced well and mixed with enough salt and lime-juice.) Curds may be added to this. Coconut gratings make it more delicious. These vegetables give the necessary amount of roughage for the digestive system, and roughage is a helpful factor in overcoming constipation. Too soft foods, starches, polished rice, bolted-flour (which do not contain bran), pastes, cakes, chocolates, biscuits and other flour-preparations, clog the colon, resulting in constipation. In short, all refined and manufactured foods constipate a person.

Milk is necessary for all who are in hard training. A glass or two, 15 or 20 minutes after exercise make up for any deficiency in the diet. A youth who is very anxious to

put on weight and muscles quickly, should drink three to four glasses of milk per day.

A correspondent once wrote to me how difficult it was for him to keep to his simple and regular diet at home. He had a number of invitations to dine out every month, sometimes two to three a week, and each dinner was rich, heavy and late.... Mostly this happens during marriage seasons in India. It is true. One often cannot avoid this plague. It is often a price one has to pay for being some body, for being popular, for being a big business man or some influential person. The average man can avoid this if he has courage. Such dinners are a sacrilege committed on the poor stomach. One must not forget that one eats to live and does not live to eat. It is good not to let the tongue develop fancies and tastes and tempt one to take holidays from health.

One other evil is the meaningless courtesy of offering tea or coffee to friends and visitors irrespective of the hour of the day. Refusing is considered discourtesy from guest to host. Cool refreshing drinks are better substitutes to those stimulants and depressors of appetite.

My opinion is, it is wrong etiquette to force coffee or tea on visitors and friends at hours other than usual. So much about diet. Now for the exercises.

**THE DELTOIDS:-** The Deltoid (shoulder-muscle) is a muscle that envelops the shoulder joint. Normally it is known as the shoulder. The muscle is named after the Greek letter (Delta), as it resembles a triangle, the bases of which are attached to the end of the collar bone (Clavicle) and the wing-shaped bone (Scapula). The vertex is attached to the bone of the upper arm (humerus). Each Deltoid muscle is classed into three separate divisions, anterior, lateral and posterior. The movement that lifts the arm forward is done by the anterior (front) portion of the Deltoid. Lifting the arm sideways is done by the lateral (middle) portion of the Deltoid and taking the arm backwards is done by the posterior (back) portion of the Deltoid.

**THE IMPORTANCE OF SHOULDER DEVELOPMENT:-** Deltoid is the S E A T of strength in the arm. This is evident in the breadth of one's shoulders. You have heard and read of heroes having broad shoulders and deep chests. Many a time, while walking the street, you must have paused suddenly, turned round and

gazed with admiration at the back and shoulders of the giant who passed you by. You could not help taking notice of such a towering personality, his bearing, his broad and manly chest and powerful shoulders.

Nothing is more agonising than the sight of a pair of thin long spiderlike arms and shoulders, emaciated and hanging loosley from the shoulder joints, closely resembling the arm-bones of an ever-grinning skeleton.

If one develops well his Deltoids and the muscles of his upper-back;... if he pays due attention to the development of his fore-arm, his upper-arm will grow in size almost of its own accord. The Deltoid muscles are already being well-exercised in the 'STOOL-Dips' you have been doing regularly. Add the three following exercises with those of the first lesson and continue doing them all daily for a fortnight more.

Exercise 7: FOR THE SHOULDERS:-

Study Fig. 6 carefully. Hook the index and the middle fingers of one hand with the same fingers of the

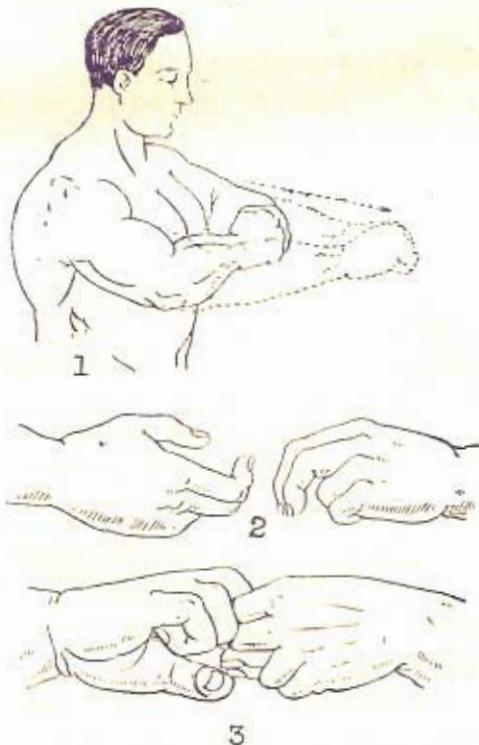


Fig. 6

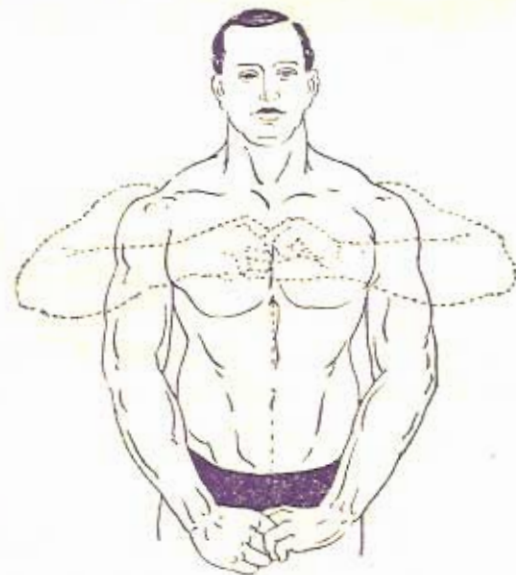


Fig. 7

other compactly. Study the sketches carefully. No. 2 and No. 3 of Fig. 6 represent the correct way of hooking

Start moving the arms upwards as indicated by the arrow-line till they are brought to the position as shown by the dotted lines. Pause for a second and then go back to the starting point. I say once again that the 'Pulling apart' should be vigorous enough to strain EACH fibre of the shoulder muscle. Exhale as you pull downwards and inhale deeply as you pull back to the starting point. This completes one movement. Repeat the numbers as in the previous exercise. Move the arms always close to the body. This exercises both the Deltoids and Trepzius muscles. Rest a minute before you go on to the next exercise.

Exercise 9:--Study Fig 8. This exercise is good for all the three sections of the Deltoids (Anterior, Lateral and Posterior). Your attention please.

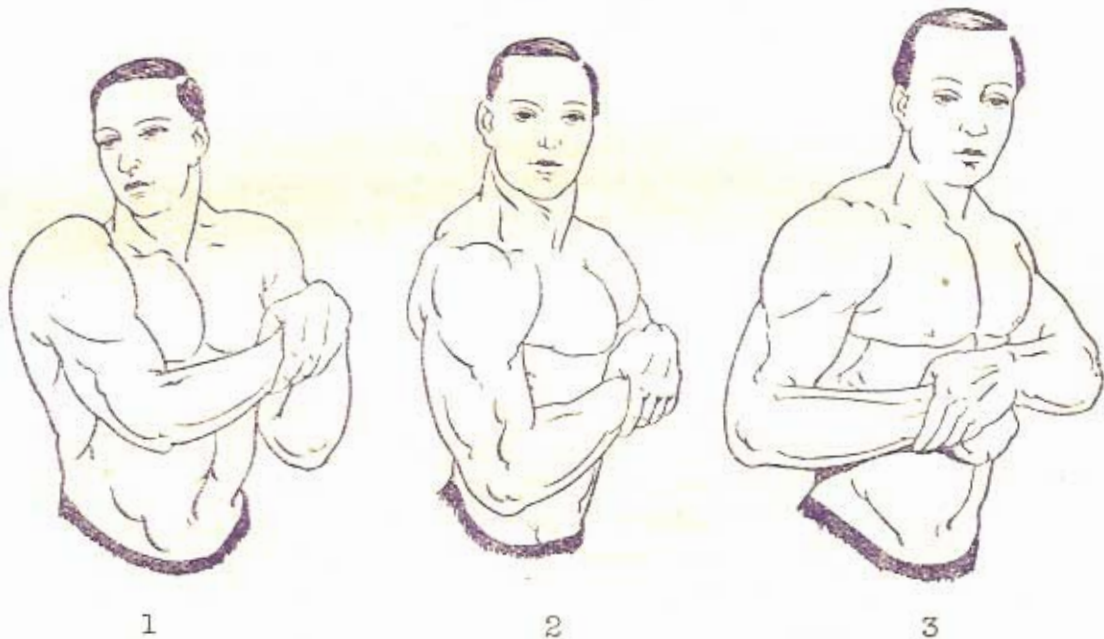


Fig. 8

Bring your right arm close across the chest, with the elbow bent as in illustration (posture) 1. Study carefully the exact positions of the arms and the body. Grip the wrist of the right arm, firmly with the disengaged left palm. With these positions correct and secure, the movement starts. With the left arm strongly opposing the movement, commence pulling the right elbow first to the right side (posture No. 2), and then as far backwards as it can be taken (final posture No. 3).

Three important things to be noted in this exercise are: one, the amount of opposition put against the movement, second, at no part of the movement should the elbow be lifted off from the body (the elbow should always move close to the body), third, ENOUGH CARE MUST BE TAKEN not to let the body move or turn sideways along with the movement. The position of the trunk must be firm and fixed. The chest always remains lifted up. The neck may remain in one fixed position or may move along watching the movement, provided you take care that the trunk does not move along with the head. Now the left arm is across the chest. Release now the grip over the right wrist and grip the left wrist with your right palm and start moving the right elbow to the sides and then backwards, strongly resisting the movement as before. This completes one movement. You will have to do 8 such movements. Increase the numbers as in the previous exercise. Breathing must be normal (deep and slow). Let me repeat once again that during the exercise, the trunk is kept fixed in one position and should NOT MOVE.

Your second lesson ends here. There are only three exercises in this lesson. You have to include these with those of your first lesson and continue doing them all for another fortnight. The exercises of the first lesson are very important and I want you to get to the prescribed maximum number of movements in each of the exercises, with grace, precision and concentration. Take it from me that any amount of time spent on those 'Stool-dips' and 'Baitaks' is well-spent. For an all-round development, Stamina and for the strengthening of the heart and the lungs, these two exercises are non-pereil. In asking you to continue your first lesson along with this second lesson, I have a definite purpose and that is to strengthen your heart and lungs beyond any future strain. I am taking all possible pains in drafting these lessons for you. I want you to soon achieve the ambition with which you started upon this training. I will try and give you hundred-fold in return for the amount of money you have invested on this course. I take you to be an active and ambitious person, who is all anxious to build up a physique that will be a model for your town. You have to inspire all young men of your place with your physique and health, with your poise and charming personality. It is my sincere desire that after your finishing this course of training, you will in your own turn spread the "CULT OF HEALTH AND CARE OF THE BODY" amongst your good

friends. Better make a beginning of it in your own home. Spread this Cult among your own brothers and sisters. Teach them how to be healthy and strong. If you are a married person do teach your wife and your children. This is a service you owe me. This is the only way our Nation can become strong and virile.

For a nation to become strong and healthy, the mothers should bear strong and healthy children. The undermining of her health and physique, undermines the health and physique of the generations to come. Your wife, your children and everybody at home must be initiated into the ways of "Health and Fitness". Only, and only then, can we hope to live.... live as men and not as Vermins as we are and as we are rightly considered to be.

You should in your turn become a missionary of health, right living and right thinking. I will help you with all the necessary theoretical and practical knowledge that you need know. This IS one of the best courses of 'postal training' (in the world to-day). I am saying it, having studied almost every 'course' available both in the East and West. I definitely know I am not overstepping my modesty when I say this. I am confident. My conscience and courage tell me I am right and am doing the right thing.

I AM DOING MY BEST—ARE YOU DOING YOURS?