

# Health

*A Journal Devoted to  
Healthful Living*

**Edited By Dr. U. Rama Rau & U. Krishna Rau, M.B.B.S.**

*Published in*

ENGLISH, TAMIL, TELUGU AND CANARESE.

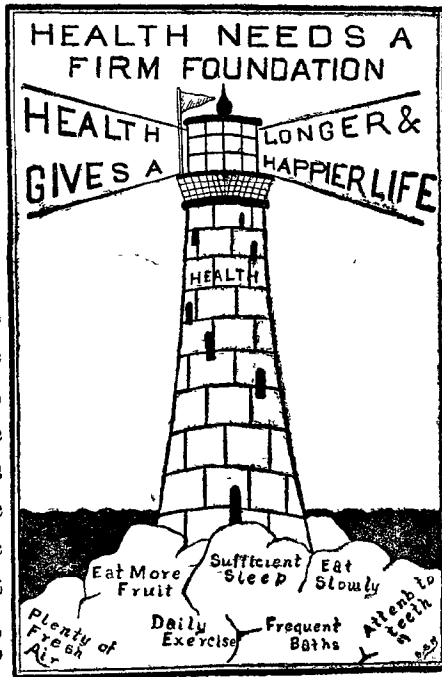
Annual Subscription for any edition Rs. 1-8. Foreign Rs. 2. Post paid.

Editorial and Publishing Offices:—323, Tham'bu Chetty Street, George Town, Madras

## EDITORIAL

### Health Salesmanship

THIS title may seem queer to our readers but health propagandists have used this expression to denote their avocations as salesmen of a very valuable and indispensable commodity—nay, the greatest of all commodities in the world, viz health. In adopting this title for this month's Editorial, we wish to convey to our readers an idea of the 'health sales' we have effected during the past eleven years and the benefit our customers have derived by the purchase of this rare product. We do not mean by 'health sales', the copies of 'HEALTH'



contain the precious health gems. These boxes cost very little, only 2 annas a copy. We have so far sold at the rate of 6000 copies a month, 7,92,000 journals to the public during these eleven years—quite a negligible number though, when compared to India's teeming millions. But there is this gratification that for every individual that purchases our 'HEALTH', there are dozens who

are profited by it-their families, friends and relations and if the purchaser is an Association, Company or Library, all its constituents. We dare say our journal has helped to educate its votaries in matters of health and hygiene and made them physically and mentally fit and trim during their life-time. In appraising the worth of our journal, our votaries alone are the best judges. The mere fact that our votaries have not deserted us even during the period of depression and that on the other hand, more votaries are coming in day by day, are sure indications of the usefulness and popularity of 'HEALTH,' as a medium of Health instruction.

Health is a subject as baffling and complicated as is the individual and the gigantic task before modern medicine is to deal with every phase of the life of the individual and keep that life healthy. Ignorance or failure to apply the laws of health on the part of the individual is the direct cause of ill-health and the duty of a health propagandist, therefore, is 'to make the evil of preventable diseases more widely known, instruct the public in the prevention of the causes of diseases and in the simple laws of healthy

living which would win a high standard of physique for the race.' This, we are confident, our 'Health' has succeeded in doing. But it rests with the individual to give a practical turn to its teachings. His duty is *to act* and ours is merely *to guide*. If only every man or woman develops in himself or herself a health conscience and a sense of personal responsibility, then it may safely be predicted that the day is not far off when the Indian Nation will become as strong, healthy and virile as any other nation in the world. Till then, health education and health propaganda should continue, though such education and propaganda might involve some amount of repetition, bordering on boredom. It will no doubt take a very long time to dispel

age-long ignorance and superstition and we shall go on beating into the brains of the people of India, the health tenets, so long as we have the life and health to do so.

On the twelfth birthday of 'HEALTH' which falls on the New year Day, we offer our hearty felicitations to all our subscribers, contributors, advertisers and occasional readers of 'HEALTH' and wish them all

### "Be Happy"

*You can't be always sunny  
If there isn't any sun.  
You can't be always funny  
If there isn't any fun.*

*But you can be always happy  
If you let the clouds go by  
In the faith there's always  
somewhere  
Little patches of blue sky.*

—Writer unknown.

—The Indian Temperance News.

**A NEW HAPPY HEALTH YEAR.**

# Health First

By

DR. MRS. ANNA THOMAS,

*Lord Chelmsford All-India Maternity  
and Child-welfare Gold Medalist, Karachi.*

WE are at the threshold of a new age. Ring out the old, ring in the new, this is the cry throughout the world. We are hearing a number of voices-hopeful, angry, wailing, protesting, appealing, indignant, pathetic-around us. Every thoughtful man or woman is dissatisfied with the present state of affairs, political, social and spiritual. We know the soul of India is stirred and she is longing for a better, and happier state. The time for work has come. We have to build up a re-generated India, a wealthy, but HEALTHY and happy India. The spirit of this restlessness has spread throughout the country. This is the spirit of the awakening.

The path of progress is a strenuous one. Mere RESTLESSNESS, rage, abuse and protest, will not do; we have to work. To work we want energy; to work we want Health. To have a regenerated and happy India, we must first have a *Healthy India*. Every lover of the country, every worker of the country's cause, every citizen of the country, must be strong and healthy, because he has to work much, struggle much, suffer much, and sacrifice much.

At the present moment the country is so much engrossed in politics, that health topics are neglected to a great extent. I am not forgetting the fact of the steady appearance of the magazine "Health" in different languages

for the last 10 years, regularly reminding us about health and "Health and Happiness" of Calcutta for the last several years. These have been doing a lot to India, in the cause of health and hygiene. But I should like to ask every leader of India to pause for a moment and think if the health condition of our country is satisfactory and prosperous. Even a casual reader of our newspapers will be struck with the fact that the health of the majority of our countrymen is anything but promising. Startling revelations are recorded by those who made a research recently into the health conditions of India. Nine years ago, medical research workers in India gave it as their considered opinion, that from the point of view of public health, India was in "a state of emergency," and if the wastage of life in the country was to be effectively stopped, it was necessary to conduct a careful and scientific enquiry into the causes which produced it. So, investigations were conducted recently in selected areas, which show that if nine years ago conditions were very unsatisfactory, they are now bordering on a crisis. Even the Statutory Commission, pointedly drew attention of the Government to the fact of the interplay of economic factors and incidence of disease which are sapping the very life-blood of the people and therefore to seek a remedy as urgently as possible. Investigations into conditions of life in typical villages in Madras, U. P., Punjab, Bengal, Assam, C. P., Bihar and Orissa, from the point of view of Public Health, reveal very alarming facts. These investigations were held by the medical men living among the people. They observed that

only less than half the total population in the villages, with the exception of Assam, were fit to be called physically sound. The report says, "that the shadow of death hangs over India may be seen from the high death rate, as compared with progressive countries. In 1929, it was 29.95 per mille in British India; in 1930, 26.85 per mille. It is about 12 in England, and less than 9 in New Zealand." What is more tragic is the fact that "out of every 100 deaths recorded in 1930, 43 were of children below 5 years of age." Dr. Hutton, the Census Commissioner of India has already reported about the increase of population and side by side we have to consider the poor quality of the surviving population and the colossal wastage of economic resources. M. Maurice Dekobra, a well known French author has written about this as follows:—"No statistics have amazed me so much. In 1877, there were 206 millions in India, in 1921, the number had passed 320 millions. I saw, alas, the quality of the human material resulting from this wretchedly undernourished creatures, the poor vitality of the puny off-spring of these very tiny parents, married too young. And I wanted to cry out to this good people in my Punjab village and to all who imitate them, do not have so many children. Do not beget little Indians by the half dozen under conditions so terrible as yours, which would make the hair of all European Hygienists stand on end. Obviously, I do not say eugenists, who would fall dead with fright." Just look at the condition of our country all round. Scarcity of water in one place! Famine in another place! Small-pox and plague in a third

place! Infantile mortality and insanitary condition everywhere! Numerous poor beggars suffering from leprosy and various kinds of epidemic diseases wander about in the country spreading infection in all places! Thousands are every day dying premature deaths for want of proper medical aid and timely help! Two lakhs of mothers dying in childbirth for want of scientific attention and help at the time of delivery! When the affairs of the country are like this, when our first and foremost consideration ought to be "Health First," many of our leaders have only time for politics and nothing else. Political regeneration is impossible, when the majority of the countrymen are dying by millions annually by many a preventable malady. A sound mind in a sound body, full belly and sufficient clothing are the foremost and absolutely necessary things required by the people of India before they can think of political regeneration. Let me with all respect and humility ask every reader this question, What are you doing for your country? We are asked to sacrifice many things for country's sake. To make the sacrifice we must have first the strength of mind, pure character, and a vigorous and healthy body. Only health, strength and vitality will lead to success. It is no mean labour to regenerate this old and degenerate race of our country.

The problem of Health is a question of great national importance. It is also an individual problem. Every man and woman of our country should think about it and try their utmost to make themselves healthy and strong. Are you doing your duty? Are you lending a helping hand to this great

work of national regeneration? When you make your arm stronger, you make your mother's arm stronger; when you make your body healthier, you make the future generation healthier.

Therefore my message of the New Year, to the readers of this annual number of "Health" is, HEALTH FIRST and everything next. It is only the HEALTHY INDIA full of hope and vitality will be able to reach the goal in the present race of the nations.

Before concluding, I take this opportunity to express my sincere felicitations to the talented editors of "Health", for conducting the magazine for the last 10 years and creating a real intelligent interest among the educated classes on matters pertaining to health, and I pray God to grant them and their staff, long life, good health, grace, strength and wisdom to continue to do this useful humanitarian public service for many years in the cause of the dear Motherland.

## Guinea-Worm or "Naru" and its Prevention

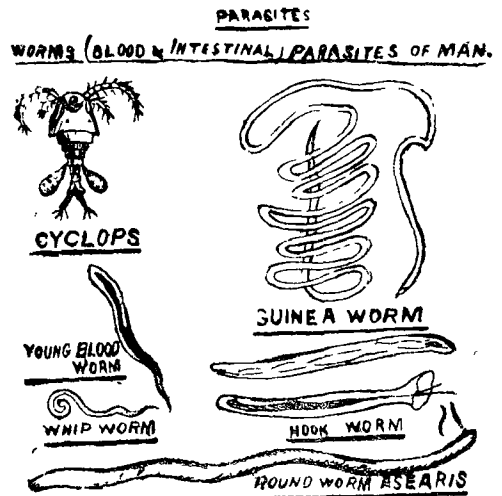
By

LT. COL. K. G. GHARPUREY, I.M.S.,

*Civil Surgeon, Belgaum.*

A LARGE number of persons in many villages, in limited tracts, suffer from this worm, and the trouble, misery and disability it causes is pitiful to see. It is one of those diseases about which one might fairly confidently say, "if preventable, why not prevent?" The apathy, indifference and ignorance of the illiterate population tends to keep up and spread infection with this worm. This has been going on for centuries, and surely it is time we did something to prevent it.

The life history of the Guinea-worm is rather interesting. If a person with a guinea-worm on his or her foot or leg gets into water, the worm emits out its embryos by thousands and millions into the water. These em-



bryos get into a small animal called "Cyclops" (something like a bug which can swim and of the size of a pin's head), and develop in them for about five weeks. The role of cyclops in relation to guinea-worm is similar to the role of mosquitoes in carrying malaria. When these cyclops are drunk by persons with the water, they get killed and the embryos are set free in the person's stomach. They bore their way through human tissues and go on developing until an adult mature worm is formed, which tries to come to the skin surface after

nine months to one year from the time the infected water is drunk. When it comes to the surface of the body, its object is to discharge its embryos into water. Then its life-work is done and it dies. It is a small thin long worm, usually about 1 to 3 feet long, and looks like a thickish white thread. Its tail is hooked, to enable it to fix itself in the tissues.

The chief factors which are concerned in this disease and which could be tackled are :—

1. Patients with Guinea-worm,
2. Step-wells and other sources of

water into which such patients enter, and embryos are discharged from the worms in these persons, into the water.

3. Certain kinds of small creatures called 'cyclops' which live in these wells, into which the embryos of the worm enter and develop.

4. Drinking of water containing these cyclops infected with the embryos of the guinea-worm.

The chain formed of the above-mentioned four factors or links can be broken anywhere to prevent this disease. This means, there should be

(1) No persons with Guinea-worm

or

(2) No step-wells or collections of drinking water which are directly accessible to these patients,

(3) No cyclops in which the worm develops,

or

(4) No drinking of water containing these infected cyclops.

(1) That there should be no persons with Guinea-worm cannot be done unless the disease is thoroughly eradicated.

(2) One can prevent step-wells being infected by preventing persons with Guinea-worm entering the water. This means that steps should be closed and the step-wells converted into draw-wells by building a small parapet

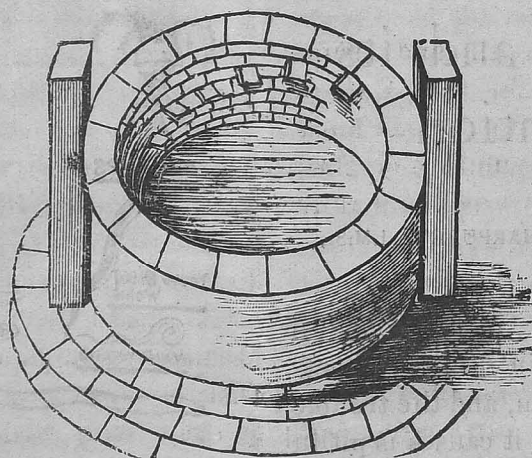
wall all round the well.

(3) Preventing cyclops to breed or destroy them. This can be done by disinfectants. A small quantity of Caustic Potash or quick lime will kill cyclops. First treating water with Copper Sulphate and then with perchloron

also kills cyclops. Disinfection kills cyclops but not their eggs. So cyclops re-appear after a month or so. But this disinfection can be done only by trained men.

(4) That persons should not drink water from step-wells in places where Guinea-worm prevails. This sounds easy. But persons will hardly follow this advice because men can get water from such wells with no special effort, beyond that of walking down a few steps. But every time water is drunk, if it is passed through a piece of cloth

STEP-WELL





or fine muslin, the cyclops are caught on the piece of cloth and worm cannot enter the stomach. This precaution every one can carry out, as every man has his Dhoti or Turban or shirt and every woman her Sari to strain the water through, if they have no other piece of cloth. This simple precaution of straining drinking water in places where Guinea-worm prevails is enough to check and prevent the disease if people only knew it and carried it out. Two small drinking pots, metal or earthen and a piece of cloth are all that is necessary. If there is only one pot, keep a piece of cloth on his mouth and drink through the cloth. A person should tie a piece of cloth on his mouth and drink through it water from the palms of his hands, if there is no pot. One must impress this on the public and thus combat the illiteracy which is mainly responsible for disregard of simple rules for preservation of health.

District Local Boards and other organised village bodies like Gram-panchayats, Sanitary Committees etc., and District Officers can carry out suggestions in No. 2 and 4 with some patience. A census of all the wells in villages with Guinea-worm, step-wells and other sources of drinking water can be taken, ways and means found out to tackle these sources of drinking water, and work started to convert step-wells into draw-wells in one Taluka to begin with and extended to other Talukas as funds permit. (If a programme is methodically laid out, the whole District could be rid of this disease in ten years or less, even with limited funds.)

Until this is done, disinfection of

wells in badly infected places can be carried out with the help of the Department of Public Health, and specially in the Guinea-worm infective season, which is from March to June.



*Guinea-Worm of full size being removed by the Doctor.*

Conversion of step-wells into draw-wells has been the chief and the only means of the stamping out of this disease at least from one place within my knowledge. The Taluka town of Madha in Sholapur District in which District I was Civil Surgeon for four and half years, used to be badly infected with Guinea-worm. But after the abolishing and conversion of step-wells, there were no cases of Guinea-worm.

In the meanwhile intensive propaganda in the infected villages can be carried out, telling persons how to prevent Guinea-worm, and its continuity kept for a few years at least. For this purpose, leaflets should be printed and village school masters and village Patels instructed in the simple methods of prevention as straining drinking water and not allowing Guinea-worm patients to go into water.

### Some interesting facts about Guinea-worm.

Infective season when Guinea-worms come out on skin surface is usually March to June, so efforts of prevention should be concentrated in these months.

Fish of the Genus *Barbus* eat cyclops but this fish does not thrive in step-wells.

Natural infection with Guinea-worm occurs in many animals in addition to

man, as in dogs, cattle, horses, monkeys, and snakes as cobras.

The concentration of Hydrochloric Acid in the juice in the stomach is a factor which influences infection in man. Hydrochloric Acid of 0.6 to 1% practically destroys Guinea-worm embryos.

Handful of Bamboo leaves put in a potful of infected water kills cyclops and so also the juice of Bamboo shoots kills them.

## Eczema

By

DR. S. THAMBIAH, B.A., M.C.,

M. R. C. P., D.T.M. & H., F.D.S.

*Dermatologist, Govt. General Hospital, Madras.*

THE word Eczema is derived from the Greek word 'Eczein' (ek, out and Zein, to boil) meaning to "boil over" or "burst out". Literally it means an eruption. The scientific use of the term has a restricted application. It is used to denote a special catarrhal inflammation of the skin of a defensive nature to an unknown toxin arising in the body. The skin tries to eliminate this toxin to localized areas. The reaction set up in the localized area of skin resembles very closely that produced by a mild or severe irritant to the skin, e.g. mustard plaster. This produces a reddening of the skin with a pricking or burning sensation. Later vesicles and blebs form and on bursting leaves a weeping raw surface, etc. One readily sees the close relationships in the two conditions, but in the case of eczema the toxin or irritant is derived from internal sources.

That the condition does not arise from microbic infection has been satisfactorily established. An eczema may become secondarily infected by pus-forming organisms from its exposed position. The exudation when present may also favour the growth of organisms. Eczema as pointed out above is a catarrhal inflammation of the skin and this requires a word in explanation. The catarrh may be obvious at sight as a weeping which stiffens the linen or bandage; or, it may be present confined in the different layers of the skin causing a swelling of the affected part with subjective discomfort. This state may also give rise to light scaling of the outer layers of the skin which may be hard to the touch.

Certain conditions predispose to eczema, as dry skin, varicose veins and elephantiasis (filarial) of legs, etc. In the two latter conditions, the natural drainage is at fault and in dry skin there is an absence of the natural grease, which keeps the skin glossy and pliable. Asthmatics very often suffer from eczema. Eczema and asthma do often alternate; when asthma is on, the eczema is better or



healed up, to break out again when the asthma is better. Diabetics also suffer from eczema and the predisposition arises from the higher sugar contents in blood.

Hereditv can be traced in a number of cases where many individuals suffer from eczema. Seasons may aggravate the condition and it is considered to have little or no influence in the causation of Eczema.

**Symptoms:**—The patient usually complains of itching, burning, or intense local discomfort. Generally the subjective symptoms vary a good deal; what in one is a slight discomfort may appear in another as an intolerable pain. When the condition is acute and extensive, there may be fever and general malaise. Local trouble may also be greatly aggravated when pus organisms invade. Intense itching might render the person sleepless and look run down. In short, all signs and symptoms of an acute inflammation—heat, redness, pain, swelling and disturbance of functions—may all or severally be present with varying degrees of intensity according to the individual make-up. There is a certain degree of exaggeration from a neurotic patient.

**Clinical varieties:**—Recognition of certain clinical varieties is helpful in treatment. *Vesicular and papular* varieties may be confused with other conditions. *Weeping* eczema is easily recognised by the serous discharge which stiffens linen or runs down the parts drying with crust formation. If the crusting takes place over the affected part, it is designated as *crusted* eczema. When the surface is bright or dull red and exudation slight, it is

termed a red eczema (*Eczema Rubrum*). Warty and indurated appearance will give rise to a chronic variety known as *warty* eczema. Another chronic variety is *scaly* eczema, and is easily recognised.

**Prognosis:**—If intelligent care and attention can be devoted, eczema should be regarded as a curable condition. General condition of the patient will also require attention and should be brought up to par in both chronic and acute cases. Asthma and diabetes will call for special lines of treatment, as eczema is a common accompaniment of both these diseases.

**Treatment.**—The part should be at rest and the crusts removed by painting with olive or cocoanut oil, or the application of a boro-starch poultice applied over night. If swelling and redness be intensive boro-starch poultice may, with profit, be repeated for three or four nights. When clear of crust, soothing applications will be required. If weeping is prominent, a lotion is more appropriate. Two level tea-spoonfuls each of calamine and zinc oxide in 6 ozs. of lime water will make the very commonly used *calamine lotion*. This may be mopped on to the part freely and frequently, or a small piece of lint spread over the affected part may be wetted frequently. In 48 to 72 hours, the weeping will have stopped and the part is ready for another kind of application—a paste or a cream. Instead of calamine lotion the part may be bathed in aluminum acetate solution, made by dissolving a level tea-spoonful of aluminum acetate in four ounces of sterile cold water or a tea-spoonful of strong solution of lead acetate in four ounces of dilute

milk, (two ounces of fresh milk and two ounces of water.)

After the application of above-mentioned lotions to stop exudation, a cream or paste is better borne and promotes rapid healing. The best known cream is a zinc cream made by the addition of 4 to 6 tea-spoonfuls of zinc oxide to two ounces of Carron oil (made by mixing intimately one ounce of olive oil and an ounce of lime water.) The cream must be applied evenly and thinly over the part. Most people commonly use soap and water to wash away the cream (or paste): germolene and strongly alkaline soaps are also used. These should not be used. It is easy to remove the old ointment by gentle wiping by means of a small wad of cotton wool dipped in a little coconut oil. This will collect the old ointment and leave the area clean without the laborious and injurious method of soap and water cleaning.

A paste may be used as an alternative. Zinc paste is commonly used, and may be prepared at home by mixing two tea-spoonfuls each of well-powdered starch and zinc oxide with an ounce

of vaseline. If the paste is tenacious, a little more of vaseline may be added to facilitate application. Old paste is removed by oil as shown above and not by washing.

Warty eczema and scaly eczema will always require the supervision and direction of a medical attendant. The former will have to be daily scrubbed with a pledget of cotton wool dipped in green soap, and the excess of alkali in the soap will help in removing the dead external parts which cause the wartiness. Then a Hebra's plaster should be applied and a firm bandage put on to produce intimate contact. It may be removed once in forty-eight hours and re-applied after the above-mentioned process. In six to eight weeks healing and normal condition would have set in.

Treatment by protein shock and colossal preparation of manganese, vaccines to deal with secondary pus organisms and iodine-casein (Yakencasin) will require the services of a medical attendant and he should be consulted to watch and direct the progress.

#### SMALLPOX VACCINE FROM HEN'S EGGS

We can remember when the virus for smallpox vaccination was taken from the arm of one suffering from the disease and transferred direct to the other. People shuddered as they feared that other things also might be transferred with the virus. It was a great advance when calf lymph was adopted. And yet—well there are many people who dislike this method almost as much as the previous one.

The *Lancet*, well known British medical journal, is responsible for the statement that smallpox vaccine virus can now be obtained from chicken eggs. Col. W.D.H. Stevenson and Dr. G. G. Butler of the Government Lymph Establishment in England are credited with this remarkable achievement. From 28 eggs the investigators obtained enough material to vaccinate 7,000 persons.

The *Lancet* points out editorially that the new vaccine is sterile; that the method is not as arduous or expensive as the calf lymph and that the yield is excellent. This is a definite advance and seems free from many of the objections brought against calf lymph.

—*The Oriental Watchman.*

# Is Consumption Curable?

By

RAO BAHADUR DR. M. KESAVA PAI, O.B.E., M.D.,

*Superintendent, Tuberculosis Institute, Madras.*

THE answer to this question has changed considerably during the last 50 years. Before Robert Koch discovered the bacillus of consumption in 1882, the conception of consumption was that it was a very dangerous disease usually fatal, so that in a few cases where recovery was described of a condition diagnosed as consumption the sceptic doubted whether the patient that recovered did really suffer from the disease. After the discovery of the bacillus of tuberculosis it became recognized that many people who suffered from cough, fever and the other signs of

other tests. Later on by means of delicate biological tests it was found possible to discover that the vast majority of human beings living in all civilized countries had signs of having been infected with the germs of consumption in earlier life though it was only a few that showed signs of the active disease. A combination of the experience of clinicians and bacteriologists has now definitely proved that out of 1000 persons living,

CONSUMPTION'S ALLIES AVOID THEM & YOU ARE SAFEGUARDING AGAINST THE DISEASE



1. Alcohol. 2. Closed window. 3. Over work. 4. Crowded sleeping room. 5. Smoke & dust. 6. Mouth breathing due to adenoids.

consumption and had tubercle bacilli in their phlegm made a decided recovery from their complaint and led useful lives for years after such recovery. In the meanwhile the experience of several hospitals showed that in the post mortem examination of persons whether children or adults, who died from other causes than tuberculosis and in whom no signs of consumption or other form of tuberculosis were discovered during life, there were spots of disease in the lungs, glands or other organs identical with the lesions of consumption or tuberculosis of the respective tissues or organs, in which live tubercle bacilli could be demonstrated by microscopic examination or

not less than 900 have been infected with live germs of tuberculosis some time in their previous lives, usually in infancy and childhood; that perhaps 500 or so have actual spots of disease in some part of their lungs or other organs without showing actual signs of disease: that about 30 to 60 show actual signs of the active disease as consumption, scrofula etc., but about 3 to 5 only die annually as a direct result of tuberculosis. If by a careful system of early detection and timely precautions the disease be detected early and suitable active treatment applied the death rate could be still further reduced from 3 to 5 per 1000 to less than 1 per 1000, as has already

been achieved in several advanced countries in the world like England, America, Australia, New Zealand, Denmark etc. It has thus been proved that though the vast majority of human beings become infected most of them recover from the infection, some even after developing early signs of consumption and only a very small minority actually die from the disease.

The modern methods of treatment of consumption have enabled us to cure a larger percentage of consumptives than it was possible to do a generation ago.

Consumption can therefore be said to be one of the most curable of infectious diseases, death being the exception after infection and recovery either naturally or by treatment the rule.

## The Role of Vitamines in Daily Life.

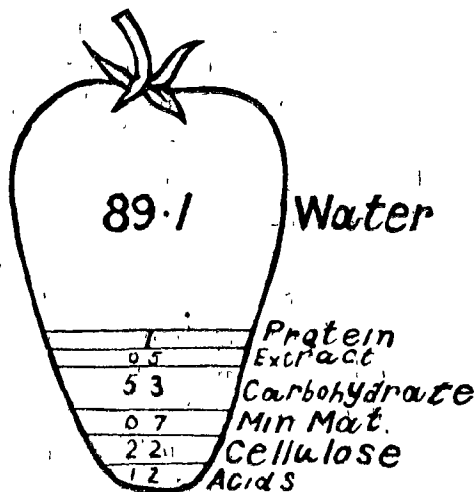
By

DR. D. SIVASUBRAHMANYAM, M.R.C.S. (ENG.), L.R.C.P. (LOND.,)

*Civil Assistant Surgeon Vizagapatam.*

*Introduction:* — Nothing is more important to physical well-being, and for prolonging human life than the two evidences of a healthy stomach-appetite and good digestion. The materials which make up our food, besides water and the several saline ingredients, are first, the proteins such as meat, eggs, cheese, gluten of wheat, flour, peas, beans etc., second, the fats such as fats of animals butter, cream, cheese, milk, olive oil etc., and third, the carbohydrates, such as starch, sugar, and molasses in all their varieties. In addition to the foregoing, there is yet another group of subtle substances which are considered as absolutely essential for the proper maintenance of health, for the

growth of the body, and for the correct functioning of all the organs. These are known as vitamines and these are indispensable elements for nutrition. In an ordinary dietary these are present in small and in sufficient quantity, but where there are no fresh and natural foods, these essential substances are absent and the lack of them results in what are commonly known as deficiency diseases such as rickets, scurvy, beriberi etc.



*Strawberry—A Vitaminous Fruit.*

I can very well illustrate the value of the vitamines in our food by the following story. Once there lived in a certain village in England, a husband and wife. They were known for their scrupulous cleanliness. Their house & surroundings, were too well cleaned

and disinfected and all their food stuffs were completely boiled and sterilised and nothing natural and fresh ever passed their lips as food. All went on well till their little son Willie was born. Now more vigorous attention was paid to the cleanliness and sterilisation of food. Thus the child was fed on well boiled and completely sterile milk free from all vitamine contents. Days passed but the child did not thrive. Everyday the child was declining in health and this caused the parents considerable anxiety. A neighbour of theirs, a scientist in a neighbouring institution, observed the languishing child and the distressed parents but hesitated to offer them his advice. However, he ultimately suggested to the parents, that by way of a change, little Willie may be fed on fresh milk, fresh fruits etc. The parents first viewed with horror this suggestion, but in the end, made bold and tried the same. Wonder of wonders, the languishing child began to show interest in life and look alive. Thus encouraged, they fed their child completely on fresh and natural foods with the result that their child grew up to a fine and handsome boy. This story has a moral. The food which the child first had was completely sterile and free from all natural elements. When however, the same ingredients were supplemented in his diet, the child thrived well. It is these essential principles in the daily dietary which are called vitamins. It should not be understood that these vitamins are necessary only for the young children. If they are essential in promoting growth in children, they are equally essential in maintaining health in the adults. Within our living

memory, during the last Great War, our soldiers who were on active service with the several expeditionary forces in the various theatres of war could not command always fresh foods and several of them had to be repatriated to the base camps with either 'berbieri' or 'scurvy' or any of the other deficiency diseases. There are several instances like these which could be quoted '*ad lib*'. If we only look up the life history of the various exploring parties of the early days and the early navigators of the various seas where it was not always possible for them to command fresh supplies of food, it will be seen that many of them fell sick in numbers and were completely unserviceable and of no use whatsoever.

Thus it will be seen that our daily food must contain the essential vital principles—vital to life. These vitamins are found in all fresh foods in small traces and these substances in addition to promoting growth and maintaining health are also responsible for the actual absorption and utilisation of the various ingredients in our food.

The vitamins are classified into five recognised groups depending on their properties and modes of action. Further investigations are going on and for purposes of convenience only, the recognised groups so far are taken and they are designated as Vitamines A, B, C, D and E. Some of these Vitamines are found dissolved in fat, and hence known as fat soluble vitamins, while some are soluble in water and hence known as water soluble vitamins. The main source of all these vitamins is only the plant kingdom. Though some vitamins are found in animal

fat such as cheese, butter, milk etc., of the cows, these cows derive their nourishment only from fresh grass, greens etc., and thus the vitamine contents absorbed from these are stored up in the fat of the animal. Similarly taking another well known example, the cod liver oil found in the cod fishes in the northern seas, the small plankton lives only on sea greens, again entirely plant kingdom. This plankton serves as food for the larger inhabitants of the sea.

*Vitamine A.*—This is soluble in fat and hence described as fat soluble Vitamine A. This is most essential for growth and for maintaining health. This is found in abundance in milk, cream, cheese, butter, fat, cod liver oil, etc. This is not easily destroyed by heat unless exposed to high temperatures and in the presence of oxygen. As long as boiling takes place in closed vessels this vitamine is not destroyed. The question is often asked whether milk when it is boiled in order to free it from its impurities to be safe for consumption, does not lose its vitamine. The answer is 'no.' The milk can safely be raised to its boiling point and kept on the boil in a covered vessel and still the vitamine content is preserved. The absence of this vitamine leads to failure of growth, weakness, dryness of the eyes, softening and destruction of the eye ball. Further such people lose all their powers of resistance to infection and easily succumb. This condition is cured by the administration of large quantities of cod liver oil and fatty nutritious foods.

*Vitamine D.*—As this vitamine is closely allied to the foregoing group, for convenience's sake this will be described here. This is also fat soluble

and is found in fats, milk, butter, olive oil, cod liver oil, etc. These two vitamines are either found together or this latter alone is found separately. Unlike the other vitamine A, this is capable of being produced in the body by the action of ultra violet rays of the sun light on the surface covering of the body. The ultra violet rays penetrate the skin covering and act upon the cholesterol content of the subcutaneous fat. Thus the cholesterol is converted into vitamine D, and this exerts its beneficial influence. In the western countries where the sunlight is a rare commodity and only occasional bouts of sunshine are seen and that too more on the seaside health resorts, the holiday makers, when they resort to these places, indulge in a lot of sunbathing and it is no wonder they return fully benefitted and with suntanned face and glowing health. This vitamine is also easily oxidised as the vitamine A. The deficiency of this vitamine, leads to a condition known as 'rickets' prevalent formerly only in the west, but of late, occurring more frequently also in our country, owing to malnutrition. It will not be out of place to give a few salient features of this condition already referred to as rickets. It is well known that Calcium is an important constituent for the proper formation and growth of bones. If calcium is deficient, the bone either does not grow or the growth is delayed. On account of this deficiency, the bones are softened and bend easily on account of the weight of the body. The ends of the long bones are enlarged and thickened chiefly in the neighbourhood of the joints. The skull bones are thin and soft and the



fontanelles do not close and the skull itself presents a peculiar shape which used to be described as resembling 'hot cross buns.' Again due to the lack of calcium on account of the deficiency of the above vitamine, the child is subject to frequent convulsions and at times leads on to tetany. Further on account of the inability to digest and absorb the food, particularly the fatty food, the child passes large quantities of pale fatty stools. 'Ergosterol' which is one of the remedies for this disease is administered by the mouth. Germinating pulses and nutritious fatty foods are given to get over this rickety condition.

*Vitamine B.*—This is found soluble in water and hence it is styled as water soluble vitamine B. It is found in germinating grains and pulses, yeast, eggs, milk, the pericarp of wheat and rice, that fine dust like powder which forms an immediate investment for the rice, which is unfortunately discarded and which is popularly known as 'bran.' In these days of ultra civilisation when people care to take only fine polished rice, this most essential element is thoroughly removed during the process of milling these grains. What is actually taken in, in the form of rice is only rice minus its vitamine. It no doubt appeases hunger for the time being by its bulk, but it does not render any further help in body building and nutrition. On the other hand, long continued use of this devitaminised rice results in a condition known as Beri Beri. The patient complains of general weakness, swelling of the body, legs and face, weakness of the heart and final collapse. It used to be very common only in China and Japan

and parts of our Presidency where rice was more freely used. But the incidence of this disease in our country and elsewhere is increasing as people have long ago given the 'go-by' for the old hand-pounded rice, and are resorting more and more to the milled and polished rice which has all the whiteness but nothing of the vitamine in it. This deficiency is made good by the free use of yeast, marmite, eggs and milk. Of late, scientists have subdivided this vitamine alone into various subdivisions but the two well recognised ones are  $B_1$ , the deficiency of which leads to Beri Beri and  $B_2$ , the deficiency of which leads to Pellagra.

*Vitamine C.*—This is also soluble in water and hence spoken of as water-soluble, 'antiscorbutic' vitamine C., as the deficiency of this vitamine results in a condition known as 'Scurvy.' In the early days during the times of the sailing ships before the introduction of steam engine, and organised navigation, the ancient sailors used to suffer very badly from bleeding gums, bleeding in other places, weakness, eruptions on the skin etc., and such cases have not infrequently ended fatally. Unfortunately before this condition was recognised such sufferers among the crew used to be termed as malingerers. But now, with the advancement of science, things have changed and it is found that this unfortunate condition is the result of ingesting dry and stale foods and want of fresh foods and fresh juices. This vitamine content is present in abundance in lemons and in reasonable quantities in limes, oranges and green vegetables such as spinach, cabbages,

cauliflower, tomatoes etc. The administration of fresh lemon juice, rapidly cures the people suffering from scurvy. Even in these days of advanced speed the supply of fresh goods as oranges, apples and a daily ration of fresh fruit juice are the daily routine on board the vessels. Those who have taken a sea voyage would have noticed that at every part of call, large quantities of fresh fruits and fresh vegetables are taken in and laid in cold storage for the use of the passengers, and the crew. It is also present in eggs and milk. There is one snag that we have to beware of. There is an erroneous practice, that when vegetables are boiled and prepared for our daily food, a small quantity of soda or commercial soda, as it is called, is added. This addition destroys the vitamine as alkali destroys the vitamine C. It is hoped that with a view to preserving and utilising this vitamine, it is even advisable to forego the sentiment of taste.

*Vitamine E.*—This is a vitamine which is absolutely necessary for performing the function of reproduction. Animals deprived of this vitamine in their food, can no doubt thrive well and for all appearances look healthy but they are incapable of reproducing young ones. Conception may occur but the embryo fails to attain full development and dies in utero. This vitamine is present in wheat, oil, butter and certain other fats. It is not destroyed by heat light, acids or alkalies. It is not yet

actually understood how it acts as it is present only in very minute quantities. Appended below is a list of food stuffs in daily use both by the rich and the poor in our country against which is shown the relative values of vitamine content.

The sign + indicates present.

The sign ++ indicates large quantities.

The sign — indicates deficiencies.

No.	Name of Food substance	A	B	C	D	E
1	Almond ...	+	++			+
2	Apple ...	+	++	++		
3	Cod Liver Oil..	+++			++	
4	Banana ...		+	+		
5	Bread made with milk ...	+	+	—	+	
6	Bread made with water ...	—	+	—	—	
7	Butter ...	++	++		+	+
8	Cabbage ...	++	++	+		
9	Carrots ...	++	+	+		
10	Cauli Flower...	+	++			
11	Cheese ...	++	++	—	+	
12	Cocconuts ...	+	++	—	+	
13	Cream ...	+++	—	—	+++	
14	Eggs ...	+++	+	—	+	
15	Fish ...	+	+		—	
16	Green Beans...	++	++			
17	Lemon Juice ..		++	+++		
18	Maize ...	+	++	—		
19	Condensed Milk ...	+++	++	+	+	
20	Fresh Milk ...	+++	++	++	++	
21	Oats ...	+	++	—	—	
22	Onions ...		++	++		
23	Pea Nuts ...	+	++			
24	Pine Apple ...	++	++	+++		
25	Potatoes ...	+	++	++		
26	Pumpkin ...	++				
27	Rice ...	—	++	—	—	
28	Rye ...	+	++			
29	Tomatoes ...	++	+++	+++		
30	Bran ...	++	+++			
31	Barley ...	+	++	—		
32	Dhall ...	+	++			
33	Spinach ...	—	—	++		

# Drinks and their Relation to Health and Diseases.

By

T. D. MUKHERJEE, M.B. D.P.H.

*Burdwan. (Bengal)*

THE subject under discussion is so important and its aspects are so diverse that, in the very beginning, I owe an apology to my readers for possible omissions in my treatment of the matter. As food is necessary for the preservation of the human system, so, the necessity for the administration of drinks in some form is greater for the maintenance of the biochemistry of the human body. Drinks may not ordinarily be classified strictly as food but for the maintenance of life they are none the less essential. Drinks in various forms include Water, Aerated water, Coconut water, Sherbets, Milk, Tea, Coffee, Cocoa, Toddy, Liquor, Wine, and other allied spirituous preparations. I propose to consider the different kinds of drinks in the order mentioned.

(1) *Water*:—It is a primary form of drink for sustaining life. Hindus considered it to be one of the five essential elements of the universe. Now a days it is well known that it is composed of Hydrogen and Oxygen in the ratio  $H_2O$ . Though ocean is the vast reservoir of water we get our water from the following sources: (a) Rains, (b) Rivers (c) Tanks, (d) Wells, Springs and other forms of underground supply. With the advent of civilisation, the causes of pollution have increased. Formerly water from

all these sources was taken by people with impunity; but now a days suspicion pervades over almost all the samples taken from the various sources.

Rain water theoretically is the purest water because it is the product of vapourisation and contains nothing but  $H_2O$ , but during its passage it may be polluted with dirt, bad gases etc. During a heavy shower if the water is collected properly in a clean vessel a short while after the beginning of the rains, it can be used as a drink with impunity. The water is very soft, and as it contains sufficient Carbon dioxide, it is also very palatable to drink. River water at the beginning of its source is very pure but as the river passes through places of habitation, it is contaminated with various impurities and cannot be used for drink safely. Specially now a days it carries more or less the sewage matters of the towns. In ancient times river water was considered very pure and river bath was incorporated into the performances of Hindu religious ceremonies. There is great chance of river water being purified by nature. The current and the surface help much for oxidation of various matters of animal and vegetable origin. The sun light helps the purification. The algæ and similar vegetation growing in the water exert the action of purification,

to some extent in the same way as in the artificial filter beds. Except in rainy season sedimentation takes place, which helps also the purification. Vast quantities of water coming on and on dilute the impurities so much that no chance is left for the pathogenic bacteria to reach the human body through the water taken by any particular individual. Last of all the power of nature to kill the pathogenic bacteria, plays a part in the purification. Bacteriolysis takes place and the phenomenon may be explained by the recent scientific observation of Bacteriophagy. The Hindus observed the phenomenon long ago, though not in the term of modern science, and according to injunction water was treated as sacred and laws were laid down not to pollute it. Ablution in the rivers as in the Ganges is being treated as a religious rite specially on some auspicious occasions. Now a days the pollution of the water of a river has made the use of it not so safe. In towns where there are waterworks, the water from a river is generally taken for the supply and it is filtered and chlorinated before it is pushed in the supplying mains. The river water on examination is generally found very soft in nature, and of moderate salinity. The water contains a very small quantity of iron. Bacteriologically the river water contains on an average 3000 total colonies of bacteria in 1 c.c. of water and faecal bacilli is found in .01 c.c. of water. The water pumped out from the river is allowed to settle for a few days in large reservoirs, where it is treated at the same time with Ferro Alum which helps the settling of mud and other suspended matter. The water of the

settling tanks contains about 1000 colonies of bacilli per c.c. and faecal bacilli are found in 1 c.c. and upwards of water. From the settling tanks the water is allowed to flow on the sand filters; after the filtration the water is kept in large underground covered reservoir, where it may be treated with Chlorine and the water then is found to contain only about 100 colonies of bacteria but no faecal bacillus is generally found. It is then fit for drinking and is pumped up in elevated reservoir from which the town is supplied by pipes. This is the process of slow sand filters described very briefly. The water is soft and during its passage it takes sufficient  $\text{CO}_2$  and becomes palatable. The water from the street hydrant is the water coming direct from the clear water reservoir and bacteriologically it is the same as that of the reservoir and therefore is of high standard of purity and is safe for drinking. Many a person complain of the Alum used in the settling process and ascribe it to be the cause of the cases of Diarrhoea during the summer and the rainy seasons. Sometimes they do use water from other sources, the purity of which is questionable and the cases of Diarrhoea increase in number. The quantity of Alum used first forms a gelatinous precipitate and settles completely in the bottom of the tanks; by ball valve action the water from the surface of the tank is led to the filter beds.

The water from a tank if kept reserved and free from pollution can be used for drinking purposes, but to be on the safe side it is better to have it boiled before use. Nature plays a very strong hand in the purification of the

water in a tank, otherwise there would be devastation of the people in villages, who have got no other source of water supply except a few tanks in the villages. Sun light, Oxygen, Algae and the mud and to a certain extent the fish in the tank, help the purification of the water.

The purity of water from a well depends upon various factors. The water is hard and of high salinity, often contains much iron which render the water brownish. The water from a shallow well should not be used for drinking purposes. The water from a deep well may be used but often it contains impurities rendering the water unfit for drink. Now a days the tube wells are being sunk in large numbers and the water is used for drinking purposes. As there is less chance of pollution and the water comes from below the impervious layer, the water after analysis is often found to be of good quality and can be used safely for drinking. But the hardness, the saline and the iron contents of the water and the less quantity of  $\text{CO}_2$  dissolved in it render the water not so palatable. Moreover during rainy season the condition of the water may be affected and subsoil water may reach the end of the pipe into the strainer down the outside of the tube and may contaminate the source to some extent.

Water is a great solvent, various salts and gases are found in water in solution. It forms the greater part of the body weight. Taken in, it passes out unchanged but during its passage it takes out various salts and waste products from the body. It comes out from the body with sweat, respiration, urine and faeces. Though it is

not a food in the proper sense as it does not produce any energy inside the body yet it is indispensable to maintain the biochemical process of the system. It helps metabolism. Less quantity taken causes indigestion. It is taken in our country to wash down the food but in other countries it is never taken for this purpose. A story about this point told by a friend of mine is interesting. In a feast in Calcutta after the dinner was over my friend was asked about the drink of his choice, Sherry? Champaign? or Beer? But my friend asked for a glass of pure water. The host became astonished, remarking how "simple water" was a sufficient substitute for the other forms of drink. Water if polluted may cause disease in an indirect way; viz. decaying vegetable matters or excess of mineral salts, may pollute water and if taken in, may cause gastrointestinal disturbance etc. An infected water carries the germs of a disease direct to the system and may cause various water borne diseases. They are Typhoid, Cholera, Dysentery etc. Bacilli of Colli group and eggs of intestinal parasites may enter the body through drinking water.

(2) *Aerated water* came into vogue in this country from the latter half of the nineteenth century, about a century after it was invented by a London chemist. It is nothing but water surcharged with Carbon Dioxide gas under high pressure. The gas is generally prepared by the chemical action of crude Sulphuric Acid upon some form of Calcium Carbonate. ( $\text{H}_2\text{SO}_4 + \text{CaCO}_3 = \text{CaSO}_4 + \text{CO}_2 + \text{H}_2\text{O}$ .) Simple water charged with Carbon Dioxide is the basis of all forms of aerated water and this simple

mixture is called soda water, though it does not contain any trace of Sodium Salt. There are various other names of aerated water according as it contains essences of different articles. It is sometimes sweetened by addition of sugar about an ounce of ordinary sugar to one bottle, or is made acid or alkaline by the addition of Citric, Tartaric or Acetic acid or of Sodii Bicarb. In the preparation of Lemonade, Tr. Lemon, Sugar, etc., are first added and that water is charged with Carbon Dioxide and the bottles are filled. In the preparation of Gingerade, Tr. Ginger, Tr. Orange etc., are added to the water before it is charged with the gas. Other names are according to other essences used, viz. Orange, Kola, Ginger, Banana, Pine Apple, Calisaya Tonic, Capsicum, Foot ball punch, Gin, Ice Cream, Indian Tonic, Lime-juice, Mango, Pick-me-up, Raspberry, Rose, Vimto, etc., etc. Various colours are used, all shades supplied including Amber, Saffron, Aurentine, Caramel, Cherry, Green-Lemon, Red, etc. The ordinary tap water is generally used. Distilled water is sometimes used with special purpose. The storage tank of water sometimes wants proper cleaning and the water used for the purpose of washing out the bottle and the brushes often are not taken proper care of, and may carry pollution to the bottle. The sugar in the bottle gets sometimes fermentated if the bottles are kept long, and may cause gastric disturbances, when taken. Sometimes impurities from the washing water and the cleansing brushes etc., cause the water unfit for drinking purposes. The simple method of testing a bottle is to hold the bottle upside

down and to look for any particle suspended in the water. Foreign matter or any precipitate indicates impurity. The water is sparkling; any turbidity indicates unfitness. The sharp and aromatic taste of the water is very pleasant. The Carbonic acid gas helps digestion as it is soothing to the nerves of the stomach, the gas increases the movement of the stomach and helps digestion. The bubbles of the gas in the chyme of the food helps the gastric juice to come in contact with the food material and thereby helps digestion. The sugar in solution is refreshing when taken in fatigued condition. Calisaya Tonic and other tonics contain the active principles of Cinchona Bark in a palatable form. Lime juice is reputed for freshness of flavour and is an ideal thirst quencher. The Carbon Dioxide is absorbed in the blood and no aerated water should be taken by a person suffering from cyanosis; as the gas is dissociated in the stomach, a person suffering from gastric dilatation should not take it. It is not suitable for a person suffering from heart disease, as the gas distends the stomach to a certain extent and the distended organ presses the heart to embarrassment. Carbonic acid gas does not kill any germ but it has some beneficial action against the Cholera Vibrio reaching the stomach.

(3) *Cocōanut* has been called a "Fibrous Drupe." The edible substance is the endosperm. There is a space in the middle of this endosperm filled with fluid, which is called Coconut water. The water of a green fruit is only used. It is a flowering plant under the division of Angiosperms and under the class of Monocotyledons and



belong to the natural order of *Palmae*; this order is akin to *Gramineae* under which belong the grasses. The fruits of the order *Palmae* are called berries or drupes. The trees under this order is a speciality for the tropical countries. The botanical name of cocoanut is "*Cocos Nucifera*." The water of the green fruits makes a refreshing drink. It contains a quantity of salts and little protein and carbohydrate etc. The salts are useful to the system. The water quenches thirst. The salts help digestion. Moreover in places where pure water is not available for drinking, the water of a cocoanut may be taken with impunity. According to the teachings of Ayurvedic system the cocoanut water is cold, sedative, aphrodisiac, appetiser and laxative. It is valuable in fevers in which vomiting takes place, in diseases of urine, in *Dyspepsia* and in *Phthisis*.

(4) *Sherbets* are good drinks specially after fasting and weariness. The basis of sherbets is sugar dissolved in water; other things are added according to the taste of individual. Fruit juices especially lemon juice, essences of fruits, rose water, flavours, colours, *Dhahi* (curd), etc., are added according to liking. Ice is often used to make the sherbets cool, as this is a speciality of tropical countries. Sherbet is also called "*Panak*." It is cold, refreshing, tasteful and diuretic. It alleviates hunger, thirst and fatigue. It prevents nausea and vomiting. The nutritive value of sherbets depends upon the quantity of sugar. Sugar is pure carbohydrate and we know that one gramme of sugar yields 4 calories of energy. Strong solution of sugar is irritant to the mucous

membrane of the stomach. But in sherbets it is well diluted. Glucose and lactose are less irritant than cane sugar and they do not get fermentated easily and are therefore used during fever and in aethenic condition. Moreover we know that sugar in whatever form is used enters the system in the form of monosaccharid, and therefore when nutrition is required without taxing the digestive organs in the least, we use Glucose solution, honey and fruit juices especially *Bedane* and this consideration is essential during prescribing diet to a fever patient. Sherbets should not be used by persons suffering from *Diabetes* and fermentative *Dyspepsia*. Sherbets may easily carry infection if water and other constituents of it be contaminated with germs of diseases and therefore one should take care of taking sherbets from every hand and from every place.

(5) *Milk*:—Whether it should be included under drinks, is a controversy. Milk, fermentated milk, butter milk, malted milk or whey is so often used as drink that it cannot be excluded from the order of drinks. The qualities and uses of milk have been described so vastly and are so well known that I am afraid of repeating them. It is more a food than a drink and as it contains all the constituents of a food in proper proportion required to maintain life, it is so very valuable. It contains large number of ferments and enzymes common to living tissues and therefore it is called a vital fluid. But these properties remain only in the very fresh sample; keeping the milk for a certain time and under influence of temperature, destroys those qualities.

This should be remembered during the feeding of an infant. It is thus seen that freshly drawn raw milk is far superior to boiled milk in which form we take it generally. But the danger of raw milk should be kept in mind. It decomposes very easily; it is a very good medium for the growth of most of the bacteria and it very easily conveys infection with disastrous result; the condition of the animal, the cleanliness of the hands of the person and of the bowl by and in which it is drawn, etc., are so very difficult to manage in a sterile condition that it seems better to have it boiled before use than to take it in fresh state. Various diseases may be conveyed through milk viz., Tuberculosis, Typhoid, Paratyphoid, Diphtheria, Sore throat, Diarrhoea, Dysentery, Cholera, Malta fever, Foot-and-mouth disease etc.

(6) *Tea* is the prepared leaf of tea plant—*Thea Sinensis*. Black tea in which form we generally use it, is prepared from the leaves after they are fermentated and baked. The constituents of tea are Caffeine, Tannin, Thein, albuminous matter, ethereal oil, gum, dextrin etc. The aroma and flavour depend upon the volatile oil it contains. The tea plant sends out young shoots four times a year and tea is collected at those times. The first shoots form the best kind of tea. Again tea is classified according to the variety of leaves collected and assorted. Thus the new leaves on the topmost part of a branch when very small form what is called broken pekoe. When those leaves are a little grown up they form Flowery Pekoe. The leaves still more grown up form Orange Pekoe.

The leaves below these but yet containing least fibre form Pekoe. The leaves still below and a little larger form Sou-chong. The other leaves of the branch form what are called Congon and Bohea, which are not often used. In the preparation of tea in whichever form we take it, water is raised up to the boiling point and is poured upon tea, kept for five minutes, then mixed with milk and sugar and is taken sipped, the quantity of sugar and milk is added according to the taste. Addition of milk makes the tea more palatable and it precipitates the tanning to some extent with other insoluble matter, hence the bottom of a tea cup should not be drunk. To prepare 15 ounces of liquor 4 ounces of tea is required. A tea cup measures about 5 ounces. In the preparation of good tea drink, certain precautions should be taken. The water should be soft and well aerated. Water should be used when just it reaches the boiling point. The pot should be rinsed with boiling water, before making the infusion. The time for the tea to be infused should not be less than two minutes and more than five minutes. Tea should be of good quality and unadulterated. According to the standard of the Bengal Food Adulteration Act, tea must contain between 4 and 8 per cent of total ash, the extract obtained by boiling dry tea (that is tea dried to constant weight at 100°C) with 100 parts by weight of distilled water for an hour must not be less than 30 per cent. Tea is refreshing and removes langour. Water reaching the stomach passes gradually to the intestines where it is absorbed. Cold water should be raised to the body tempera-

ture before it is absorbed. Hot water therefore reaches blood more promptly. Thus it quenches thirst more readily than the cold water and tea being taken hot, allays thirst more quickly. It should be taken in moderation otherwise it may cause derangement of digestive power. It is improper to take tea in empty stomach. In loaded stomach also it should not be taken, as in that case it hinders digestion to some extent. Persons who are habituated to take tea, in some particular hour of the day, a craving for it at that time occurs and unless supplied would feel discomfort and generally yawnings take place. When drinking water is not above suspicion tea is a good substitute as the water is boiled before use. The persons who are not accustomed to take tea, often complain of sleeplessness if they take it. This is caused by the caffeine it contains. If taken in excessive quantity, indigestion, cardiac and respiratory distress may occur.

(7) *Coffee* is obtained from the seeds of the *Coffea arabica*. The ripe fruit contains two seeds surrounded by a pulp. These seeds are taken out dried and powdered. It contains Caffeine, an aroma and a flavour. Coffee is roasted before use and the peculiar flavour is due to a volatile oil. The preparation is the same as that of the tea. About 2 ounces of coffee to a pint of hot water would make a good infusion ready to be taken with milk and sugar. It is an exhilarant drink. Taken in excess it causes insomnia and nervous disturbance.

(8) *Cocoa* is prepared from the seeds of *Theobroma Cocoa*. Seeds are separated from the pods, and dried and

roasted, and then ground. The powder contains an alkaloid called Theobromine, a quantity of starch and fat. The fat of cocoa is known as Cocoa-butter which being separated is used in pharmacy for making pessaries etc. The drink is prepared with hot water, milk and sugar as tea is prepared; but cocoa is not soluble in water but remains in suspension. The fat imparts the peculiar odour which is not liked by many in our country. The cocoa has got some nutritive value and for this reason it is preferred sometimes to tea and coffee, but the form of drink in which it is taken contains so little a quantity that practically it contains no food value. In the sense of beverage also its value is inferior to that of tea and coffee owing to the small amount of alkaloid it contains.

(9) *Toddy, Liquor, Wine and other spirituous drinks* are not used in this country for the purpose of drink in the proper sense. Generally they are used for intoxicating purposes and as such I do not wish to deal with them in any detail.

Toddy is prepared by fermentating the saccharine juice obtained generally from palm and date trees and is taken largely by the poorer classes of this country, in the form of a drink but for the purpose of intoxication.

Beer, ale, porter and stout are examples of liquor drinks. Beer is the product of fermentation of malt and hops. Ale is prepared by brewing rice etc., and the so called 'Kanchi' or Pachai or grog of this country falls under this class of liquor. Porter and stout are akin to beer, only in the

preparation, malt is first roasted and caramel is added.

Wine is prepared by fermentating grape juice. Claret contains 8 to 13 per cent of alcohol, a small quantity of acetic acid and volatile ether. Burgundy contains a little more alcohol in proportion than Claret and it is rich in extractive matter. Hocks are pale wines. Port is also rich in extractive matters. Maderia is rich in volatile ethers. Marsala is a little sweet to the taste. Champagne is prepared from black grapes and is sour to the taste. The different names are due to the different places they are prepared, as for example, Champagne is so named because it is prepared in the Champagne district of France.

Spirituous drinks are the products of distillation of various kinds of fermentated sugars. They are of high alcoholic strength. Whisky is prepared from malt and is distilled in pot stills. Whisky contains about 48 to 56 per cent of alcohol. Brandy is prepared from grapes. Rum is prepared from molasses, dark colour is due to caramel. Gin is obtained from rye and malt.

Alcohol contained in these drinks produces intoxication. Strong solution of alcohol causes irritation. Alcohol

is absorbed by the mucous membrane of the stomach. Alcohol in moderate doses is stimulant. Alcohol produces caloric energy inside the body and thus can sustain life. In big doses alcohol paralyses the cells and thus it is a protoplasmic poison. In the act of stimulation it follows the law of dissolution, which means stimulation from lowest to the highest centres followed by depression from the highest to the lowest centres. As regards its power of sustaining life, I would be very clear by repeating the metaphor told to us

while, a student in the Calcutta Medical College by Principal Col. Deare. "A steamer falls short of its water supply on a sea, no help is available unless a port is reached; salt water from the sea is poured inside

#### WHAT IS DISEASE?

*Dr. Hutchison has revived the old definition of disease which runs as follows :—*

*"We have done that which we ought not to do and there is no health in us"—London Hospital Gazette.*

the tank. Engine runs all right, takes the steamer to the port to the relief of all; but on examination the parts of the engine are found corroded nastily, with the strong saline solution." To finish up shortly I must say that alcohol in any form is an unnecessary drink to a healthy person. In diseases it is used in the prevention of tissue waste in acute fevers, in toxæmia, in nervous exhaustion, in failing circulation, in persistent high temperature and in bad general condition.

# A Simple form of Pranayam

(Breathing Exercise)

By

DR. J. N. GHOSAL, L.M.S.

*Basirhat.*

**Definition.**—By Breathing Exercise we mean, open-air exercise of the lungs and the chest wall, by regulated enforced deep inhalation and exhalation. The object is to increase the strength of the chest wall and the vital powers of the body, whereby infections and proneness to cold or wet can be effectively dealt with.

(Unequal development of the body,—as for instance superlative growth of the musculature on a comparatively narrow-chested frame is more commonly met with now a days, on account of an awakening of the physical sense in our youths, resulting in a propping up of Professional Athletes everywhere. On the other hand, one meets everywhere in India Sanyasins, Hatha yogins as well as Rajyogins,—who travel high and low altitudes almost naked and fight with all sorts of weathers with impunity. Their only weapon and strength is well-regulated Pranayam practised twice a day,—breathing exercises postulated and made perfect by Seers of the Path, countless ages ago.)

The form of exercise mentioned below by the writer is chiefly intended for the average students and intellectuals who live in congested towns and who cannot afford to indulge in expensive outdoor games or attend Profes-

sors in Gymnasiums. I also venture to recommend this simple form of exercise to our muscular Professors as well, just to perfect their systems and add beauty and more strength to their frames.

**Immediate Results.**—Deep Inhalation and Exhalation for some minutes is an effective temporary mental stimulant, doing away with mental as well as physical fatigue. All intellectual persons take to it unconsciously whenever fatigued,—by rising straight up, throwing the chest forward, the hands to the back of the head and inhaling deeply several times. Weight-lifter, Plunger, Voice trainer, Professional Gymnasts of repute, etc., resort to it before their performances. Its effect on muscular fatigue is also unique—a few minutes deep breathing restores vitality and fresh and renewed activity.

**Permanent Results.**—Deep Breathing if practised regularly and scientifically brings on the following permanent changes in the system:—*First* of all, the abdominal breathing is changed into thoracic. The general run of people inhale air without expanding their chests,—simply by protruding their abdomen. The exhalation or throwing out of air is also done by indrawing of the abdominal wall and therefore without any contraction of the chest. All Insurance Doctors know

how difficult it is to obtain even  $1\frac{1}{2}$  inches chest-expansion among the average Insurers. The *second* permanent effect is the change in the shape of the chest and the manner of breathing. A narrow, ill-expanding, ill-formed chest is transformed into a beautiful atheletic stature. The *third* result is the tonic and stimulating effect of the exercise on the entire system, whereby mouth-breathing, habits of unnecessary hawking and coughing and spitting, etc., are permanently checked. And *lastly*, with a greater lung capacity, the strength, reserve and resisting power are definitely increased, the body-weight is raised to the standard unit, and proneness to infections and victims of every change in weather are done away with for ever.

**The Methods.**—The simple breathing exercise taught me by a Sanyasin in 1902 consists, in drawing in of fresh air with the mouth in the kissing posture, slowly inflating the chest to its fullest, and then blowing out the air through the nostrils slowly but completely, by strongly and rapidly contracting the abdominal wall backwards, and upwards, thus forcing out even the residual air out of the lungs.

(Standing straight before an open window whence fresh air is blowing in the early morning and evening,—

(a) draw in air slowly, consciously expanding the chest wall wider and wider, till the chin and the breast come almost in one line,—first stage; (b) then slowly allow the chest wall to fall down, keeping the abdominal wall unmoved, and exhaling air out of the lungs,—second stage (c) lastly, press the abdominal wall

towards the spine, whereby the diaphragm, the partition wall between the chest and the belly,—is raised up and the lungs are squeezed thoroughly, this is the third stage. Then begin again. During all the 3 stages, the body should be kept straight, and unusual effort must be avoided.)

Begin with 3 or 4 such deep breaths every morning and evening and gradually and without the least fatigue increase the number and depth of the breathing, but never over-do or over-exert yourself. I practised this exercise without a single break for more than one full year and felt a tremendous reserve strength in me. For years after, my normal respiration rate remained 12 a minute during rest and pulse rate 62. I could easily complete one course of 15 respirations in so many minutes. And I could hold my breath for 3 minutes at a stretch immediately after such exercise. This was due to over-charge of my system with oxygen.

(In 1902, I got a sudden and severe attack of asthmatic fit which kept me stranded near the window for 3 days and nights. My father had suffered from bronchial asthma almost his whole life and hence I was alarmed. I consulted the Sanyasin and he taught me this simple exercise deleting the Kumbhak or poise portion from Pranayam. I practised it assiduously with the result that up till now I am free from all lung troubles. And whenever I feel fatigued, I practise this pranayam and find myself equal to my task.)

**1. Modifications:**—One can breathe with his nostrils equally effectively, mouth shut during the whole exercise,



2. The hands can be placed across the abdomen which is to be pressed during the stage of exhalation. This is for the beginner who cannot contract his abdominal wall fully in his first attempt. When he will be able to squeeze and contract his abdomen, then he can place the hands at the sides or behind.

3. If one wants to be thorough, he can raise both the arms slowly above his head with each inhalation, hold his breath, and then rise on tip toes. Then the arms are to be lowered at his sides and the chest pressed vigorously during exhalation.

4. Lastly, young persons may practise this exercise thus:—Raise the hands above as before during inhalation; hold the breath; bend forward keeping the knees straight until his fingers and toes meet; rise with the arms above the head; then lower the arms sideways, press the chest and exhale all the time.

1. **Caution:**—Over-exertion,—indicated by a feeling of weakness, dizziness, palpitation, unusual perspiration, discomfort, headache, a rise of temperature and of the pulse rate,—must be avoided by all means. Enthusiasm very often leads the young beginner to excess and this brings discredit to the system. Begin almost normally; 15 respirations per minute. After a month's practice the rate ought to naturally come down to 12. Stick to that for another month, and then one less every month,—one can reach the safety line, 5 to 6 per minute.

2. Consumptives should never attempt the exercise. Spitting of blood is a bar for all ages.

3. Chronic Bronchitis with Emphy-

sema of all standing is a natural bar. But recent victims will find in this exercise possibly the only remedy.

4. After excesses of all kinds, breathing exercise should not be undertaken.

**As a Treatment,** daily "supervised" breathing exercise of the above simple type is a cure for (a) misdirected Kumbhak Yoga and similar practice with the breath: (b) suspected Tuberculosis of the lungs; (c) chronic adherent Pleurisies; (d) various Back-bone deformities, etc.

(Rai Saheb P.N.B. of the Postal Service used to practise Kumbhak yoga. In 1911 or 12, when posted at Madhupur, he spat blood on several occasions, felt feverish, got alarmed, consulted specialists and was declared a suspected case of Phthisis. He consulted me in despair believing himself doomed. Close questioning revealed to the writer that Mr. Bose had been lately practising Kumbhak "with over-exertion." It was a hard task to convince him that T. B. had entered his Mind and not into his Lungs and that his overdoing of the Hathayoga had resulted in venous congestion and hæmorrhage from the lungs. As he saw no other alternative, he consented to practise my system very slowly and went away straight to his post at Madhupur. He returned to me a month and half later, altogether his former self, without any vestige of weakness in him.)

Narrow-chested children and pre-tuberculous subjects,—family of consumptives,—are sure to derive permanent benefits from this simple exercise, when guided properly.

**Conclusion:**—The Breathing Exercise recommended above can be undertaken with profit by any one possessing average intelligence and patience. I earnestly request every intellectual person to practise this simple Prānāyāma in empty stomach, morning and evening; within 3 months of regular

practice, the act will be performed automatically needing little effort. The mind can then be fixed to one's *Ishtam* or to the One Absolute whence comes real Shanti, Peace, Balance of Mind. The day's work can then be undertaken with confidence and cheerfulness.

## Care of the Newly Born

By

DR. K. L. NARAYANA RAO. M.B., B.S.,

*Madras.*

CIVILIZATION is the cause of many evils; one of them is the modern woman. She does not think that bringing up of children is her first duty to God and man-kind, and platform, the office, the club, etc., are only of secondary consideration. The modern mother, for reasons best known to her, tries to avoid breast feeding the child and shirks the responsibility of the care of the child to an ignorant menial. By that she does great harm to the infant.

The breast-milk is the most suitable food to the child; its constituents are in such proportion as to be easily digestible and assimilable by the child. It contains vitamins, the essential food-factor, which is not destroyed by boiling or other artificial means. There is no danger of contamination, as the milk passes direct from the breast to the child's mouth. It also contains antibodies for the protection of the child against disease. During the siege of Paris the infantile mortality rate was lowest, as all mothers were forced

by circumstances to nurse their infants. When milk-supply was rationed in Germany during the last war, most mothers had no other alternative, but to nurse their infants with the result that infantile mortality was reduced. If a mother is unable to take proper care of her children, we would rather wish her to have recourse to birth control methods, than be a party to the sufferings of her children.

Another point I would stress here is when to begin feeding the newly born. Though the milk is formed by the third day after delivery, there are many advantages by putting the child to the breast from the first day. For the first three days breast secretes what is called colostrum, which supplied the infant with nutrition and also acts as a mild laxative. It teaches the child to suckle, stimulates the breast to secrete more milk and reflexly helps the contraction of the womb.

One of the most common complaint of the mother or the nurse is that the child does not suckle. It may be a

retracted nipple, in which case the nipple must be properly drawn out, or the child is not properly held to the breast, or the flow of the milk is not quickly established. The mother and the nurse are apt to jump to the conclusion that suckling is impossible. But in many cases, failure is due to want of perseverance. Suckling of the infant is the natural stimulus to milk secretion, and by persevering longer many of the defects would be set right, the child would learn to suckle, and the natural secretion of milk would have finally set in. But what they commonly do is to use a breast pump. But it is a dangerous thing; because the milk dries up very soon by loss of stimulation of suckling.

Regularity is the most important thing in the feeding of infants. Digestive troubles are always caused by inconsiderate feeding. Habit is formed from the first day of life. So the child must be made to understand from the first day that crying would not help it in any way and it will be fed only when it is time. Infant must be put to the breast about three times on the first day, every four hours on the second day and every two hours on the third day. If the infant is strong and well built, three hours feed is sufficient. For the first five or six weeks, feeding should be continued every 2 hours between 6 a.m. and 10 p. m.; afterwards intervals should be lengthened to 3 hours. At nights couple of feeds are needed in the beginning. Later on one meal in the night is sufficient. The baby would be at the breast for about 15 to 20 minutes each time. The child should be fed alternately from each breast, because the second part of the milk is better and more nutritious. The infant must not be allowed to fall

asleep, nor to suck at an empty breast, lest it should draw air into its stomach.

Mother's milk may be deficient in quantity or poor in quality. A thin and watery milk not only fails to nourish the infant, but also causes flatulence. Causes of deficient milk are fatigue, worry; insufficient food and administration of certain drugs. In such cases mother must be given complete rest, freed from all worries, must have plenty of fresh air and good sleep. An increase in protein foods, such as meat, fish, eggs, milk, etc., is valuable in enriching the milk. Plenty of fluid and barley water will also be useful in increasing the quantity of the milk.

The new fashion, that is slowly coming into vogue in India of using a mouth-soother or what is commonly called a "nipple," deserves to be strongly condemned. We are feeding the foreign manufacturer at the cost of our children. The "nipple" is liable to fall into dirt or dust on the public road or into the sewage gutter, but the same thing will be rubbed and again inserted into the mouth by which all sorts of disease germs will get into the mouth. Constant sucking of the "nipple" will cause unnecessary stimulation of the salivary and gastric glands, and this upsets digestion, and the starting point of many troubles. The reason given by the mother of using such a thing is that without it the child will cry. Of course, it is there when the habit is formed, and to stop it will be a great task. But why should the mother at first teach the child a bad habit? Have not for centuries mothers brought up hale and healthy children without using such a "nipple," and why should the present day mother harm her children by using it?

# Gymnastic Pyramids

By

Prof. K. B. MADHAVA, M.A., A.I.A., (Lond.),

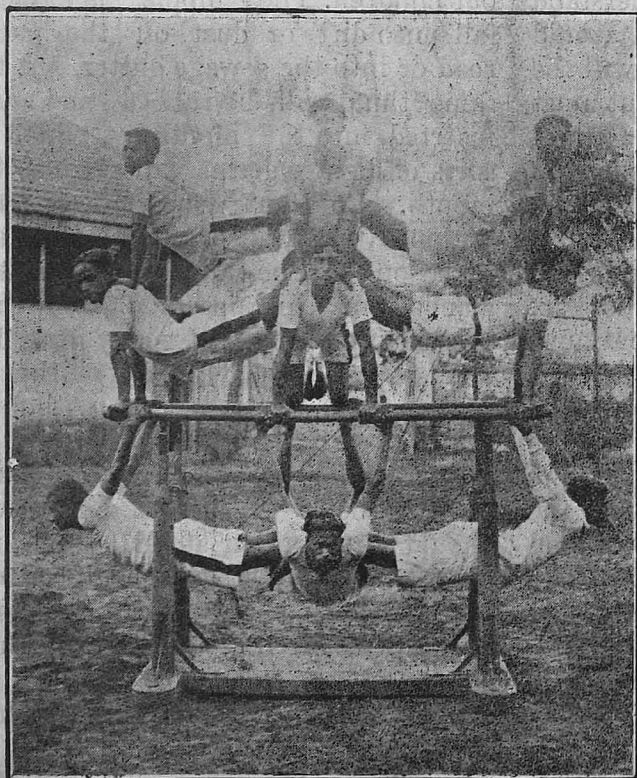
President Mysore University Union. Mysore.

Gymnastics, as is well known, is an open air system of exercise performed with the aid of some apparatus. It exercises fully the several parts of the body from top to toe and makes blood circulation vigorous so much so that, it not only develops the various muscles in the different parts of the body, but after lengthened exercise, it is certain to lend exceedingly beautiful formation and grace to the muscles. But individual exercise of this description has suffered both in that it produces tedium

and fierceness in the individual practising it, and in that it fails to inculcate the *esprit de corps* and team spirit which is the claim and attraction of all modern game and sport, while to the onlookers also there is an inevitable monotony. All the unfortunate features are eliminated in the system of Gymnastic Pyramids which are an advancement on the individual independent feats of strength performed by an athlete. It has all the merits of the individual exercise but without its monotony

and tedium. It develops a fine sense of fellow-feeling, co-operation and dependence of each on the rest. Team spirit, which is again, group discipline or the subordination of one's will to the will of others is encouraged to the finest shade, and above all, even to the onlooker the pyramids produce, as the three pictures reproduced below do, surprisingly charming and artistic spectacular effect.

The first illustration is known as "The Flying Bridge" because of the three chain-like bits, one above the other, linked up by the slender support and seeming as though the whole thing is floating in



*The Flying Bridge.*

the air. It looks like a series of bridges placed one over the other, flying at is were, particularly when looked at from a ynder distance. This exercise is particularly calculated to develop the biceps, triceps and the muscles of the back to the members in lowest row, while for the members in the second row the forearm, the shoulder blade and the abdominal muscles are in particular exercised for the two members on either side. The

relaxation. The frequent movement of this is a sure prescription against constipation which is the root of all ailments.

The second illustration is called "The Drooping Flower."

The man in the centre squats on the bars with four around him with pinned hands and club legs and represents the stage of the bud. The man in the centre also slowly slowly raises his legs, which are no



*The Drooping Flower.*

middle man bears in addition the entire weight and forms in reality the key-stone of the whole arch. The topmost row gives the finish to the whole design and makes it a perfect whole. These are selected from persons having a good knowledge both of the theory and practice of the art and having complete control over bodily movement. The one common feature in this exercise is that the abdominal muscles have great possibility for contraction or

longer on the bars, but the four around him slowly share the whole strain in an intermediate position, known as the blossoming stage which is exceedingly difficult to keep up. The drooping stage is the stage seen in the picture when all the petals fall down on the sides, the stem in the centre stands out bold (represented by the man with the straight arm balance.) The pectorals, calf muscles and the muscles of the thigh are greatly strained in this item

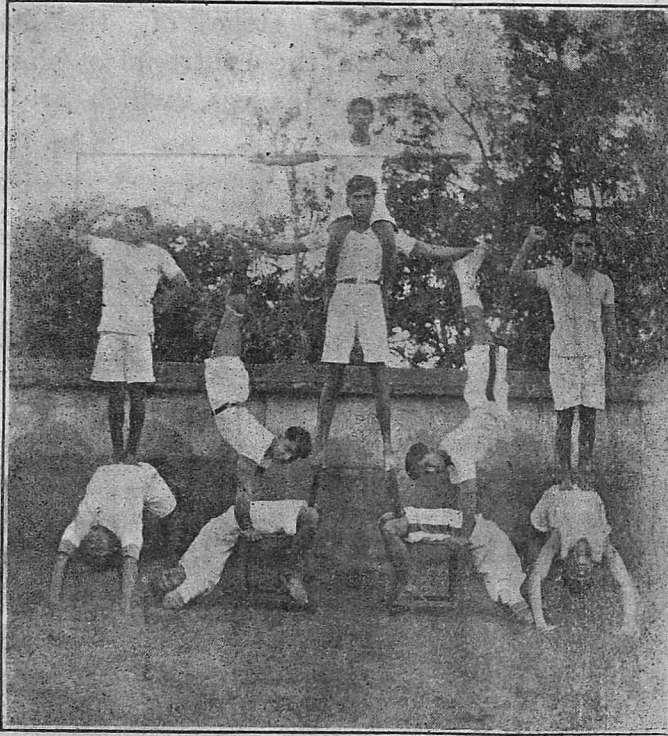


of gymnastics. This increases the vital energy of the athlete and completely renovates his spirits.

The third picture, "The chairs pyramid" gets its name after the apparatus used for the occasion. The whole thing is like a sensitive balance, and the greatest surprise in this feat is

there be any lapse of time the one will go down. The man standing in the centre with another over his neck has an exceedingly precarious position to maintain. The human bridges on the sides are there to give symmetry and harmony to the pyramid. This exercise improves the staying power of the waist and develops vital energy. After a hard show of tough feats this is a relief both to the athletes as well as to the spectators.

The persons appearing in the illustrations are all young students of the Maharaja's College and are members of the Mysore University Union. K. Ramaswamy, G. Ramaswamy, H. B. Ramachandra Rao, B. S. Nagappa and M. G. L. Narayana are in the Intermediate Classes, C. S. Sreenivasa Rao and B. Gururajachar are pass course students, and Lakshmana Rao Sirsi, Krishna Bhatta,



*The Chairs Pyramid.*

how all the men on the sides as well as in the centre perform their respective feats simultaneously, for, if the action be not simultaneous the pyramid comes down topsyturvy. As on a balance to the two pans of which equal weights should be added simultaneously in order to keep the balance always true, so also in this, should

Sadagopala Iyengar (who is also the captain of the Gymnastics club) are Final Year Honours students. They have developed fine athletic skill, genuine team instinct and took part in a recent display given at the Exhibition grounds in Dasara in Mysore at which the photographs were taken.