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FOR YOUR GOOD

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IN THIS ISSUE

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EDITORIAL

PRIMARY EDUCATION TO COMBAT ILLITERACY

MANY big and important tasks face the new governments of India and Pakistan, and among all these it would seem to us that the conquest of illiteracy is one of the most urgent and important. A knowledge of reading is an instrument with which to work and achieve, though even as an end in itself it is important as a means of enhancing the value of life and satisfaction in existence. To a large degree the progress and improvement of these countries in many ways depends on the education of thirty-five crores of people. No country can successfully compete with the world and hold a respectable place among progressive nations if the great majority of the population are illiterate. Millions of potentially able and productive men and women live on the level of beasts because of lack of knowledge which they could and would acquire were they able to read.

According to commonly published figures only nine per cent or ten per cent of the population of these countries have even a rudimentary knowledge of reading and writing. This is a tremendous handicap to leaders working for the social and economic uplift of the people and a great deal of good labour is done in vain because almost all of the people who should be benefited by instruction cannot be reached except by word of mouth. Good and valuable as such instruction may be, comparatively little of it is effective, and if it is to be remembered by hearers, must be frequently repeated. But the few promoters available here and there cannot return frequently to the same places to repeat what they have said, for the places are too many. But if there were a reasonable number of literate persons in each community a great deal more could be accomplished through print. Cultural, social, and economic uplift must languish as long as the people are bound by the chains of illiteracy.

There are about 16,000,000 pupils, or approximately four per cent of the population enrolled in schools of all types from the primary to university, but the vast majority of these are in the primary classes. This would seem to be a tremendous number, and an achievement that should be reducing illiteracy at a considerable rate. But not so, for illiteracy statistics have remained almost stationary during the past many years. This may seem surprising to such as have not looked into the reasons for this state of affairs. There may be several such reasons, but possibly one of the important reasons is the indifferent quality of village primary education. Many teachers are poorly qualified for their work, school rooms are unattractive or absolutely unfit, equipment is inadequate or even non-existent. Some teachers who are well trained, start with enthusiasm and try to apply to their work the principles of pedagogy they have learned, only to meet with apathy, indifference, and even opposition by parents and village leaders. Unable very long to combat all of this they also lapse into the old ways, become indifferent and careless, and show no marks of having been trained for their work.

The difficulty of keeping village pupils in regular attendance is another obstacle. Illiterate parents, not understanding the value of a knowledge of reading, see more value in their children's service in herding cattle, sheep or goats, or helping with planting, harvesting or household tasks. The appalling poverty of millions who live on the verge of starvation seems to demand that even young children do their bit to produce a morsel to eat, and the illiteracy and ignorance thus perpetuated tends to perpetuate the poverty. Of the vast total of children enrolled in primary schools a large proportion never continue beyond the third or fourth year, by which time they have acquired some elementary knowledge of reading and writing. But in their village homes they meet with no encouragement, there are no books or periodicals, and they do not continue to use their knowledge or to build on the little they have. Moreover, that little is not sufficient to make reading easy or pleasurable, and soon millions of them have forgotten what they learned and lapse into complete illiteracy. An enormous amount of money and effort in behalf of education is wasted because of this.

If India and Pakistan are to keep up with the world, the governments must give much attention to the improvement of primary education. It is well enough to promote college and university education, but primary education is the foundation, and if the foundations are weak, the whole structure will be weak. If during the past hundred years the money and effort that has been spent on so-called advanced education had been expended on primary and elementary education, the literacy situation in India and Pakistan today would certainly be greatly different from what it is, and the social and economic status of millions would have been improved.

The population of these countries is said by students of statistics to be increasing at the rate of three or four millions annually. Naturally this results in a tremendous annual increase in the number of children that need primary education and for whom teachers must be trained. The existing training schools and other educational institutions are inadequate to turn out teachers for this enormous number of children. Herein lies a tremendous problem with which governments must cope earnestly and strenuously if they are to serve the needs and interests of their countries.

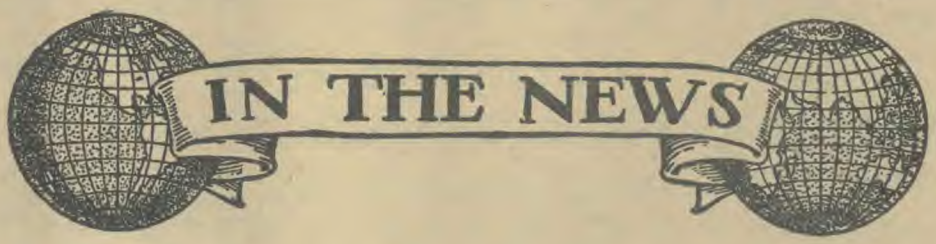
But from some points of view it seems physically impossible to do what needs to be done if there is to be any considerable reduction in the number of illiterate people. Governments cannot make teachers of

straw, nor build school houses without money.

But much could be done if there were more private interest in the matter. Millions of persons who can read, can teach others. It has been proved by repeated experience that even adults can be taught to read in a much shorter time and with less labour than is required for young children. If in all of the 700,000 villages little groups were formed and instructed by volunteers, in night classes or at other times, within a few years the illiteracy could be reduced to a comparatively small number, and India and Pakistan would be well on the way toward raising standards of living and making improvements that would tend to revolutionize the countries in many ways. "Each one teach one," as an educational programme for a few years would achieve what a few universities never can achieve.

Another excellent suggestion that has been made, and which perhaps has become more than a suggestion in some provinces, is that each teacher employed in government schools undertake to teach reading to two adults each year. It has even been suggested by some government leaders that this should be a condition of the teacher's continued tenure of his employment. The suggestion, no doubt possesses much merit, and if implemented would make a worth while contribution toward the conquest of illiteracy. Approximately 150,000 teachers are employed in India and Pakistan, and it can readily be seen that double this number of adults taught each year to read, would within a few years total up to a formidable number. It is to be hoped that the spirit of co-operation and service for their native country will be manifested among a large number of teachers to this end. Perhaps some of the criticisms directed against the educational achievements of former governments were justified, but now that the responsibility lies entirely on Indians and Pakistanis, let the people arise and do that which is better without looking to others to do it for them. The implementation of this suggestion, as well as the "Each One Teach One" programme, depends only on initiative, enterprise, and the spirit of service, and not on money to be provided from some outside sources.

A great deal is being said by many voices in these days about raising the living standards of the people, and lifting millions from living conditions that misrepresent the human race. There is need, no doubt, for much of this in the great cities, but 85 per cent of the population live in 700,000 villages. This is where the real India is to be found—not in the cities. In these villages great need exists, and if the primary needs be satisfied here, many others will take care of themselves.



Vocabulary

"MUCH has been said in recent years about the importance of increasing one's vocabulary. The real problem for many executives is to shrink their vocabularies so that they can eschew verbose and esoteric or exoteric philosophical multiplicities and sedulously avoid all tautological and polysyllabic profundities. In short, so that they can speak simply, clearly and without double talk."—Dr. Henry C. Luik.

Detergents

SOAP substitutes made from petroleum or natural gas, called detergents, are replacing soaps to a very large degree in America, thus releasing millions of pounds of oils and fats of many kinds which are useful as food for human beings. The shortage of fats during World War II stimulated chemical research which resulted in the development of synthetic detergents. For most cleansing purposes they serve as well or even much better than soap and are cheaper in cost. The materials from which they are made are abundantly available almost everywhere.

OUR COVER PICTURE

This month our cover picture represents village festival activities and is supplied by THE CEMENT MARKETING CO. OF INDIA, LIMITED. The cement structures shown illustrate some of the many uses that may be made of this versatile material in village improvements. No other material lends itself to such a variety of uses.

School

BRITISH children may not leave school to work until they have reached the age of fifteen years. Despite the grave manpower shortage in Britain the limit has been raised from fourteen since last September.

Fly

How a fly flies has been settled at last. Motion pictures taken with a shutter speed of 3,000 exposures per second show in detail how a housefly beats its wings about 300 times per second and keeps its balance with a pair of beating rods that move in rhythm with the wings. The action of the wings is similar to that of a single oar used in sculling a boat. How a fly turns upside down to light on a ceiling has not been discovered.

Shinto Priests

SINCE the Japanese government stopped financing Shinto shrines, the people seem to have lost all reverence for the sun goddess, who is supposed to have come to earth in Japan. Times are so hard for the priests who used to keep up fervour

at government expense that they are now resorting to fortune-telling and selling sweets in order to remain in business.

Jet Propulsion

THERE is nothing new about jet propulsion say officers of the Fisheries Division of the Council of Scientific and Industrial Research at Hobart, Tasmania, A type of shellfish they are studying has been using it since creation. They move by taking in water through valves and squirting it out through slits either side of the valve.

Bubble

A CURIOUS pool of water near Gwador in Baluchistan mystifies geologists who are at a loss to explain its origin and activity. Called the "Eye of the Sea," it is very deep, fifteen feet in diameter and round. Every five minutes a bubble forms and increases to about five inches in diameter and bursts.

Rubber

ON THE average it takes two men working full time for a year to obtain a ton of rubber from 450 trees.

Bone Replacement

WIRE mesh of stainless steel is being used in hospitals to repair defects and fractures of the skull. The mesh seems to replace the bone satisfactorily, and no ill effects of any kind have been noted since the process has been in use.

Soil Conservation

THE United States is conducting an extensive programme of co-operation with other countries in soil conservation efforts. Through the training of foreign agricultural technicians and a programme of correspondence, the United States is sharing with other countries the advances it has made in this field. Presently, eight technicians from India and Pakistan are to undergo training in modern soil conservation methods.—USIS.

New Treatment for T. B.

A NEW treatment for pulmonary tuberculosis has been reported in a recent issue of the *Lancet*.

The drug, "Para-Aminosalicylic Acid" (P. A. S.), is a white powder which can be given in solution by mouth. The group of six patients, who have reacted to this drug, were treated for sixty days after which the supply of the drug was exhausted. In all the temperature fell rapidly and the superintendent of the hospital, commenting on the results, stated that clinically their improvement had been most striking.

It is thought that the drug acts by preventing the tuberculosis germ from multiplying. There is a decrease in the number found in the sputum and their shape is changed. But in addition, the effect on the fever, the rapid gain in weight, and the improvement in the clinical signs of the disease suggest that there may also be some direct action on the host.

This is only a preliminary study and confirmation on a larger scale with careful controls must be undertaken before any final conclusion can be reached. Nevertheless the results are certainly hopeful.

THE ANT DEBUNKED

40 Per Cent Loaf All the Time

THE ant is not always as busy as man has long believed, according to scientists of the American Museum of Natural History, New York City. After following two groups of ants for five months as they travelled at the rate of about 500 yards a day through dense jungle in Panama, they reported that many ants spend their time lolling about all day.

The scientific group carefully recorded the movements of individual ants identified by a special marking system. The whole scheme of ant behaviour constitutes a very "complicated social order," they found, and ants have personal differences. Forty per cent loaf all of the time, forty per cent are good workers, and the balance can be counted on to work "occasionally." Queen ants gather workers around them by a "peculiar chemical attraction," as yet baffling to science.

Dr. Theodore C. Schneirla, curator of the museum's department of animal behaviour who led the expedition, is seeking to learn more about human behaviour by studying the behaviour patterns of the ants. In this study the American Philosophical Society, the National Research Council, and the Office of Naval Research has been participating. About 20,000 of the Panama ants were brought to the museum for further tests on what and how they can be taught. Dr. Schneirla observed that ants learn to go through a maze, in search of food, that would baffle a university psychology student.—USIS.

W.N.P.S.

Nigeria Wages War On Illiteracy.

The balloons on each side of this life raft are not for added buoyancy but are "solar stills" which "ditched" airmen may use to distil drinking water from the sea. Through the use of transparent plastic envelopes, containing black cellulose sponges, the sun's rays distil pure vapour from the salt water, leaving the salt in the sponges and providing a pint of drinking water per day in each balloon.

U.S.I.S.

In the Udi Division of Onitsha Province of Nigeria there is in progress a mass educational campaign which is likely to be taken as a model for similar campaigns in other parts of Africa. Photo Shows: Classes being held in Udi. In the background is the Udi Village Hall which is being built by voluntary labour and the materials being bought out of profits from the village co-operative shop.

W.N.P.S.

To prepare a "solar still" for use, the man on the raft pours in two quarts of sea water before inflating. When the sponge is saturated, he inflates the envelope with lung power and drains excess water from the sponge by tilting the "still." The excess sea water washes out salt left from previous use. Then the "stills" are placed on the water and tied to the raft. Thus they do not take up precious space inside the raft while in use. In this picture men seated in a life raft drink fresh water from the reservoirs at the bottom of the balloons.

U.S.I.S.

BRINGING HOPE TO THE WORLD'S BLIND MILLIONS

TO CARRY to the countries of the Orient and the Near East her crusade for recognition of the usefulness of the blind to the society in which they live, Miss Helen Keller, who in infancy was deprived of sight, hearing, and speech (she regained the faculty of speech through the untiring efforts of her tutor) by a severe illness, and who so overcame this almost insurmountable handicap to become one of the world's most notable women, left New York City on March 17 on the first leg of a year-long journey that will take her through virtually all countries of the Orient.

Now sixty-eight years old, Miss Keller is famed as an author and lecturer, and is an honours graduate of Radcliffe College, Boston, Massachusetts. She is undertaking the long and arduous trip, she said, while she is still physically able to do so, to emancipate the minds and spirits of her fourteen million fellow-blind, and to bring them hope that they soon may be able to take their rightful place in human society. She will appeal to governments and peoples "to dispel their ancient superstitions concerning blindness; to inaugurate programmes of education and rehabilitation of their blind millions, and to hasten to do everything possible in the field of prevention of blindness."

"I am not a teacher or a preacher," Miss Keller said. "I am just a happy witness to the light that God sheds upon handicapped human beings throughout the earth."

Her present plan is to conduct her crusade through speeches at public meetings, visits with government officials, and to homes and schools for the blind and deaf in the key cities of each country.

Last year Miss Keller toured Europe on the same mission, to bring hope and encouragement to some of the world's millions of blind people, and to prove to disbelievers that blindness does not incapacitate a human being so far as service to humanity is concerned. Her dynamic interest in bettering the position of the blind was vividly revealed in an interview she had with King George of Greece last year. In response to her plea for improvements in the welfare of the 16,000 blind people of Greece, the King replied that he was "greatly interested in their education, training, and usefulness." Miss Keller answered: "Interest is not enough. If your Majesty will lift up your voice for their right as human beings to employment, and ask those who have authority and means to place them in positions as honourable contributors to the state, it will be numbered among your most royal acts." Whereupon the King assured her that he would do what he could to "roll the stone of idleness from their lives and bring them the inner light through work."

Blind and deaf since infancy, Miss Helen Keller has overcome these twin crippling handicaps to become a famous author, lecturer and social worker. She left in March on a world-wide tour, which will include India, to carry hope and encouragement to the sightless, with the cheerfulness, determination and confidence of one who has a mission for the world.

Tentative itinerary of Miss Keller's tour includes visits to Australia and New Zealand, Japan, Korea, China, India and Pakistan, Egypt, Iran, Iraq, Syria, Lebanon, and Palestine. She has tentatively planned to visit, between January 4 and February 10, 1949, the cities of Calcutta, Madras, Bangalore, Vellore, Travancore, Nagpur, New Delhi, Bombay, Lahore, and Karachi, although the final itinerary will be subject to consultations with government representatives, the India Association for the Welfare of the Blind, the National Christian Council of India, the All-India Council of Women, and other groups.

Miss Keller's tour is sponsored by the John Milton Society for the Blind, of which she is founder and president. This society is an interdenominational, non-sectarian agency for the publication and distribution of religious literature in Braille, and Miss Keller's tour marks the extension of its services to a world-wide scale. The society publishes monthly, the *John Milton Magazine*, a Braille digest of the best religious articles appearing in current periodicals for the sighted, and *Discovery*, a religious magazine for boys and girls, containing inspirational stories, articles, and poems. Both magazines are distributed without charge to anyone requesting them. The society also provides a Braille religious calendar for its magazine readers, and a bound volume of Christmas Carols and Hymns, containing both words and music in Braille. It publishes and distributes at less than cost other religious publications not made available by secular Braille publishing agencies, including a Standard Hymn Book, a book of religious poems, a book of devotional readings, entitled *In His Presence*, and a book of *Prayers for Younger and Older Children*.

Originally founded for the blind of the United States, the society, through its publications, has extended its services to include Canada, South America, and Europe. Extension of its services to the Orient and Near East, it was recently announced, will be marked by publications in Arabic Braille for Moslem lands; in Telugu Braille for South India; in Persian Braille for Iran; in Korean Braille for Korea; and in Cantonese Braille for South China. The society is financed entirely by voluntary contributions.

Accompanying Miss Keller on her tour will be the Reverend Dr. Milton T. Stauffer, general secretary of the John Milton Society; Mrs. Stauffer, who from 1918 to 1921 was head of the Nurses Training School at Margaret Williamson Hospital, Shanghai, China; and Miss Polly Thomson, Scottish-born companion-secretary of Miss Keller since 1914.—USIS.

WHAT MAKES THINGS GROW ?

FRANCES L. DITTES

TO WATCH the growth and development of a little child is exceedingly interesting—so much so that many of us wonder what characteristic changes really do take place in each tiny body cell.

Many of these growth changes in various organs of the body, such as the skeletal tissues, the heart, the nerves, the eye, the ear, *et al*, are still fascinating in their obscurity. However, science is revealing more and more of these wonderful secrets.

Living, thriving young plants give us a remarkable picture of growth. Since plants grow in the soil, we must begin with the soil to understand the secret; and since man receives his food from plants, he is fastened to the earth as much as are the trees. His very existence depends upon it.

Growth material in the *plant* is built on a framework of carbon atoms, taken from the air (C02), and clothed with hydrogen and oxygen which have been furnished by water from the soil. This framework contains as an integral part of its structure a certain amount of *nitrogen*, approximately one atom for every three or four carbon atoms. It is this nitrogen which gives to the plant its growth-promoting characteristics. There can be no growth without *nitrogen*. This nitrogen which combines with the carbon atoms must be in a usable form, however; otherwise the plant cannot appropriate it.

Nitrogen is found abundantly in the air. As much as four-fifths of the air is nitrogen, but here it is found as a gas, in which form neither plants nor animals are able to use it. Without a constant supply of new nitrogen, both plants and animals become static. They may exist for a time but *growth* ceases.

Nature has a secret process of using nitrogen from the air, adding to it three hydrogen atoms thus forming ammonia (NH3) which the plant uses very well for growth. This conversion of nitrogen to ammonia is brought about by certain types of bacteria, found in the soil; and the process is known as the *fixation of nitrogen*. This is an extremely important factor in agriculture from the standpoint of tapping the inexhaustible supply of nitrogen in the air, and of building up the soil for better plant production.

These bacteria, living in the soil, attach themselves to the roots of leguminous plants, such as peas, beans, soybeans, clover, and alfalfa, forming small nodules, or knots, on the roots, where this transformation of atmospheric nitrogen into ammonia takes place. The NH3 is then turned over to the plant where it is added to the framework of carbon, hydrogen, and oxygen atoms, thus forming compounds we call *amino acids*, or building stones. Nature is able to take newly constructed amino acids, nineteen in number, and arrange them into many different combinations forming what are known as proteins. Sometimes these proteins become very large and complex. Each plant builds its own type or types of protein with never a variation.

By special types of bacteria *ammonia* may be converted into nitrates or nitrites (salts containing nitrogen) which higher forms of plants absorb and which are changed back again into NH3 (ammonia) in the plant before they are incorporated into particular types of amino acids necessary for the development of the plant and its fruit. Thus we understand how each plant

—such as wheat, corn, nuts, legumes, etc.—produces its own kind of protein.

Nature has another wonderful secret—the conversion of plant proteins to animal proteins. Man and other animals eat plant proteins from which amino acids are freed by digestion. These building stones are thrown into the blood stream and are carried to each individual cell of the body, where the miracle is performed. Each amino acid plays its own role in this transformation of plant protein to animal protein for growth and repair. Each cell makes its own amino-acid mixtures provided it has the material out of which to construct them. Ten of these amino acids, however, are not made by the human tissue. These are known as *essential amino acids* and must therefore be found in the food. Thus man's new cells appear in the muscles, nerves, and all tissues of the body. We call this *growth*. In this way such animal proteins as eggs, milk, and meat are produced.

Animal protein is well used by the human tissues. Man learned to use these foods in the early period of his existence and has found them very satisfactory until within the past few centuries pathogenic bacteria have become so prevalent in them that extreme measures of sanitation have had to be taken to keep them reasonably safe for public consumption. Many people, for this reason, have ceased to use some of them and others have discarded their use entirely. Plants carry diseases also, but not to the same extent as do animals, nor do they carry the same types of diseases as appear among creatures of the animal kingdom.

It has been shown that the highest quality proteins known for building new human tissue are found in the young, tender, living plant foods such as green peas, soybeans, sprouted grains, and the animal proteins, eggs and milk. These foods give us not only the essential amino acids for growth but also in them one finds the most potent vitamins and their precursors. Outstanding forms of various mineral salts such as the radio-active forms of iron are wrapped up in these foods. They furnish not only the best proteins in adequate amounts, and vitamins and minerals for optimum growth, but in their *right relationship* one to the other for the most rapid development of the plant or animal.

Another important factor to remember is the supplementary value of one protein to another. Milk furnishes something cereals do not have. Corn, for instance, may be used as one of the chief sources of protein for the diet. On this, growth or repair goes along until the scarcest amino acid in the corn protein is used and there they must stop. The remaining amino acids present in considerable amount cannot be completely used as building material unless supplemented; and they are consumed, therefore, for energy with considerable waste of nitrogen. Since milk or egg is rich in all the essential amino acids it steps in at the point where corn stopped, thus saving the nitrogen waste.

Some proteins are combinations of amino acids in which one or more building stones have been left out altogether, or sometimes there is much less of one amino acid and large amounts of others. It is this difference in the amounts and kinds of amino acids that makes one protein more efficient than another. It is this

fact, also, that lays the basis for teaching the value of eating one type or protein one day and of another type the next. It keeps the amino acid mixture pretty well represented by all the nineteen building stones, especially the ten essential ones. There is in this way a great saving in nitrogen and other elements with less expenditure of energy.

A mixture of cereals with soybeans may have the same supplementary value by furnishing a wide variation of amino acids. It is of primary importance that a good supply of all the amino acids be kept at high levels in the diet of growing children. Foods that will best furnish this desirable level and variety of amino acids are milk, cheese, eggs, whole wheat, wheat germ, green peas, soybeans, peanuts, dry powdered yeast, and nuts. Protein from other sources may be added to change the diet and to contribute to the supply of amino acids in the blood. Thus a knowledge of supplementary proteins becomes an economical approach to the problems of better meals for less.

Proteins are colloidal in character, in appearance resembling raw egg white. They coagulate upon heating. Most proteins are complex in structure and therefore require considerable cooking to break down this molecule so that the body can utilize it. Legumes, whole grains, and soybeans are good examples of this kind of protein.

Amino acids have the property of acting as acids or alkalies in the blood stream. They are therefore among the best buffers in the blood, maintaining a normal acid-base balance of the blood. Essential amino acids are necessary also for the construction of all the hormones, enzymes, and antibodies, the body defences, as well as for growth and repair of every cell.

The daily requirement of protein for the adult may be expressed as the amount found in ten eggs or ten eight-ounce glasses of milk or ten cups of cooked cereal, or ten tablespoons of cottage cheese or five cups cooked soybeans, or ten ounces of meat alternates, or twelve slices of whole wheat bread, or two and one-half cups of peanuts. By selecting *some* of two or three of these, each day, a good supply and variety of amino acids will be on hand in the blood for cell growth and repair.

Since protein is absolutely necessary for life, many people conclude that every meal should be built around some heavy protein dish. Many people, as a rule, have a tendency to over-eat of this food constituent. Nature has provided the necessary elements for complete nutrition in the vegetable kingdom with milk and eggs, the latter two being added especially for the safety of the growth period in the young. Milk is a complete food, and its use in the diet should be emphasized where there are children in the family.

Fresh, succulent vegetables and fruits, whole grains, nuts, legumes, milk, and a few eggs, when artistically and wholesomely prepared, constitute the best foods for normal growth and health. They impart a strength, a power of endurance, and a vigour of intellect that are not afforded by a more complex and stimulating diet.

Such is the secret of growth and abundant life.

VITAMINS

THEIR FUNCTION AND IMPORTANT SOURCES

VITAMIN	BEST SOURCES	FUNCTION	DEFICIENCY SYMPTOMS
Vitamin A	Fish liver oils, liver and kidney, vegetables (green and yellow), fruits (yellow), tomatoes, butter, cream, cheese, egg yolk.	Essential for growth, health of the eyes, structure and functioning of the cells of the skin and mucous membranes.	Retarded growth, night blindness, gross anatomical changes in the eye, lowered resistance, changes in the skin and membranes, defective tooth formation.
Thiamine (B_1)	Meat, soybeans, potatoes, melons, milk, whole grain or enriched products, vegetables (greens), fowl, brewer's yeast.	Essential for growth, carbohydrate metabolism, functioning of the heart, nerves and muscles.	Retarded growth, loss of appetite and weight, nerve disorders.
Riboflavin (B_2)	Meat, soybeans, milk, vegetables (greens), eggs, fowl, brewer's yeast.	Essential for growth, health of the skin and mouth, cell activity, functioning of the eyes, carbohydrate metabolism.	Retarded growth, lesions at corners of the mouth, dimness of vision, cataract-like symptoms, intolerance to light, inflammation of the tongue.
Niacin	Meat, fowl, fish, potatoes, whole grain or enriched products, brewer's yeast, groundnut.	Essential for growth, carbohydrates metabolism, health of the skin, functioning of the stomach and intestines, functioning of the nervous system.	Glossitis (smoothness of the tongue), skin eruptions, digestive disturbances, mental disorders.
Pyridoxine	Fish, whole grain products, milk, pulses.	Specific function unknown, probably essential for growth, health of the skin, functioning of the muscles and nervous system, protein metabolism.	Possible symptoms: skin eruptions, vague symptoms: insomnia, irritability, muscular rigidity.
Pantothenic Acid	Liver, meat, milk, whole grain products.	Specific function unknown. Probably essential for growth, health of the skin, normal hair production.	Undetermined.
Vitamin C	Citrus fruits, melons, berries, other fruits, tomatoes, vegetables (especially raw), amla, guava, papaya, chillies, sprouted grain.	Essential for cell activity, maintaining strength of blood vessels, development of the teeth, formation of supporting tissues.	Sore gums, hæmorrhages around the bones, tendency to bruise easily.
Vitamin D	Fish liver oil, fatty fish, milk, eggs, sunshine.	Essential for growth, regulating calcium and phosphorus metabolism, building and maintaining normal bones and teeth.	Soft bones, poor tooth development, dental decay.
Vitamin E	Seed germ oils, vegetables (greens).	Specific function unknown. Probably essential for normal reproduction, normal functioning of the muscles and nervous system.	Undetermined.
Vitamin K	Vegetables (greens), cabbage, cauliflower, tomatoes, orange peel.	Essential for normal clotting of the blood.	Hæmorrhages.

—Food and Nutrition.

TWO rather rapidly increasing forms of cancer are cancer of the mouth and cancer of the lung. Both of these are perhaps due to factors which are essentially characteristic of modern life. The first, cancer of the mouth, is often associated with tobacco chewing; and the second, cancer of the lung, is believed by many to be due to cigar and cigarette smoking, with the resulting irritating effects of the tobacco tars on the bronchial tubes. Some medical observers have also felt that the tar products with which our modern highways are paved have contributed to producing cancer of the lung.

The observation that cancer of the mouth is of considerably higher incidence in men than in women has aroused much speculation and has stimulated investigation of the irritating effects of tobacco, to which men are exposed in a greater degree. It is now believed that tobacco causes cancer of the mouth in many cases.

The first symptom of cancer of the mouth is a sense of soreness, and as time goes on there is an increase in pain, which interferes with chewing. The cancer may develop on the inside of the cheek or on the gums.

The appearance of the cancer is distinctive. It presents sharp margins, and is raised slightly above the normal surface of the skin of the mouth. The surface of the cancerous growth is warty in appearance.

The cancerous growth may be extensive, occupying the whole surface of the inner part of the cheek. When it has spread, there is swelling of the glands of the neck.

The method of treating it is by radium. Large doses are required for complete disappearance. Cancer of the mouth can be detected in its earliest stages. Any growth that persists for more than two weeks should be investigated promptly. As soon as cancer is diagnosed it should be treated. The use of radium will often cure the cancer completely.

If the habitual chewing of tobacco causes the appearance of warty growths within the mouth, it is a clear indication that cancer is forming. The safest thing to do, and the only way to prevent cancer of the mouth caused by chewing tobacco is to leave this vice alone.

Cancer of the lung occurs more often in men than in women. It occurs most often after the age of thirty-five, especially in the decade between the ages of thirty-five and forty-five.

Researchers continue to investigate the causes of Cancer.

The onset of this dreaded condition is usually insidious. It is silent and stealthy in overcoming its victim; however, the onset may be sudden, with pain in the chest, bleeding from the lungs, difficulty in breathing, or symptoms resembling acute bronchitis. Cancer of the lung may begin as an apparently harmless ailment, such as a cold, cough with fever, or a cough with pain in the side. Though the early symptoms are usually those of bronchitis, many patients complain early of pain in the chest, which varies in severity from an indefinite discomfort to that resembling acute pleurisy. When general weakness and loss of weight follow these initial symptoms, a cancer is to be suspected.

The cough in cancer of the lung has no typical characteristic features to distinguish it from any other cough. It usually occurs early in the disease, and the cough may be continuous, but there may be periods of improvement and aggravation. It may be so severe as to interfere with sleep. Wheezing is not uncommon, and has been mistaken for asthma. In late stages of cancer of the lung, with the extension of the growth there is hoarseness or huskiness of the voice.

The expectoration may be absent, scant, or profuse, and may contain pus. Profuse sputum or sputum containing pus is suggestive of an extension of the growth in the lung. In some cases particles of the tumour may be coughed up, and examination under the microscope will reveal the presence of cancer cells.

Bleeding from the lungs also is a common occurrence in cancer of the lung. It may occur early or late, and varies in amount from streaking of the sputum to profuse bleeding. In some patients the frequent recurrence of bleeding produces a marked anæmia. A fatal hæmorrhage, or bleeding, such as occurs in tuberculosis is rare.

Mild difficulty in breathing is common. It may be the first or principal symptom, but more often it develops during the course of the disease and in association with other local symptoms. Blueness of the lips and skin parallels the difficulty in breathing.

Pain in the chest is not only a common but frequently an early complaint. It is next in frequency to cough. The pain is variously located in the chest, and is described as sharp or dull, intermittent or continuous, and tends to become worse as the disease progresses.

The general symptoms—fever, weakness, loss of weight, and pallor—are variable in their time and appearance. They usually occur late in the disease. The fever may be slight or marked with remissions associated with chilliness and sweats. The latter may occur especially when an abscess forms in the lungs. A rapid pulse is found in association with high fever.

The presence of dilated veins of the head and neck, upper extremities and over the chest and abdomen occurs when the cancer has increased in size. Also late in the disease may occur severe hoarseness, pain on swallowing, and inequality of the pulse at both wrists.

X-ray examination of the chest helps to make the final diagnosis, for X-rays reveal the presence of a tumour in the lungs and give its exact location.

There are other diseases of the lungs which may be confused in suspecting a cancer of the lung. For instance, the chronic cough, with sputum, fever, hæmorrhage from the A bronchoscopic examination will help in making the final diagnosis. A bronchoscope is a long tube which is inserted into the lung and through which a part of the suspected growth is removed. This portion of the tumour is then examined under the microscope. If the tissue is cancerous in nature the microscope will tell us so without the least bit of doubt.

Syphilis of the lungs is rare, but it may resemble lung cancer. However, a history of syphilis and positive blood tests will help to establish a diagnosis of syphilis of the lungs.

Pleurisy is a disease in which pain in the chest is the most common symptom. For this reason it may be confused with cancer of the lung. Here again the X-ray and bronchoscope will help to make a correct diagnosis.

The treatment of cancer of the lung is removal of the cancer as soon as it is discovered, the earlier the better. Until a few years ago no

Careful examination revealed that he was suffering from a cancer of the left lung. The cancer was so situated and in such a state that the only hope for relief was in removing the entire left lung. The lung was removed with an electric cautery. All blood-vessels were carefully tied off. Radium was placed in various parts of the stump of the lung to make sure that any remaining seeds of the cancer would be destroyed. The patient left the operating room in excellent condition. The pain in the back began to subside, and within three weeks the wounds were solidly healed. The patient's strength gradually increased, his appetite was excellent, and he was discharged from the hospital two months after the operation, feeling better than he had for many months. In time he regained his former good health. He is still alive, with one lung, but now free from the ever-menacing presence of cancer.

Since then many operations for cancer of the lungs have been per-

TOBACCO AND CANCER

Of the Mouth and Lung.

EDWARD PODOLSKY, M.D.

lungs, and wasting, may be mistaken for tuberculosis. However, a very careful examination of the sputum will help establish the presence of tuberculosis. Cancer of the lung will show no tuberculosis germs in the sputum. It is exceedingly important to establish an early diagnosis between tuberculosis and cancer of the lung. The treatment for the two is radically different, and the patient's life may depend upon the accuracy of an early diagnosis between tuberculosis and cancer of the lung.

Sometimes the X-ray of the chest will reveal a growth in the lungs. Not all lung growths are cancerous. A lung abscess may be mistaken for a lung cancer. Generally speaking, a lung growth occurring in a male past thirty or thirty-five years of age should be suspected to be a cancer.

patient had ever recovered after the complete removal of one lung. As a result, cancer of the lung was considered a hopeless condition. When the X-ray revealed that a cancer was gnawing in some part of the lungs, doctors shook their heads sadly, for they realized that they could do nothing and that the patient would be dead in a few weeks or at the most in a few months. But Dr. Evarts A. Graham refused to accept this verdict. Into his famous lung clinic at the Barnes Hospital in St. Louis (U. S. A.), where some of the most remarkable lung operations have been performed, came a patient, forty-eight years of age, who for a period of seven months had repeated attacks of cough and fever with pain in the left side of his chest. During this time he had lost a considerable amount of weight.

formed. Lung operations are now undertaken without the once dreaded fear of fatal results. In fact, in most cases they are life-saving measures.

The present development in technique in removing an entire lung is perhaps the greatest accomplishment of the lung surgeons. It removes another formerly hopeless condition from the dwindling list of entirely hopeless diseases.

If a lung cancer is not removed the patient will die in a matter of a few weeks or months at most. When surgery is employed to remove the cancer-invaded lung, the patient has a very good chance to live for many years after the operation. Early diagnosis, early treatment, with the quitting of all tobacco in all cases of cancer of the lung, mean that there is a good chance of complete recovery.

THE PROBLEM OF

THIS discussion is concerned chiefly with protein or amino acid evaluation, because this is the big problem of a lacto-ovo-vegetarian diet, and even more so of a strictly vegetarian diet. We must remember though that in evaluating foods for their nutritional value, the appraisal must be based not only on the content of a single food factor but rather on the multiple nutrients present in the particular food.

The building blocks in protein nutrition are called amino acids. Menu planning is concerned with the nutritive values of diets, not of individual foods. In the vegetarian diet the protein need can be met most efficiently if more than one protein food source is used at each meal. Supplementation is then possible. Like the carpenter who can replace an old window with a new one without completely tearing down the building, the body merely removes the old, worn-out amino acid from the protein undergoing repair, and inserts the new one without destroying the original structure of the protein.

In supplemental relationships the strength of the mixture results from the union of two or more protein foods. Both foods must be fed at the same time, and sufficient amounts must be offered if this complementary relationship is to exist. Meals providing from two to three protein-containing dishes, varied from meal to meal, supply the assortment of building stones that can be fitted together to make the needed pattern. Supplementation then means that two foods not having the same limiting amino acid, when used together provide an assortment of amino acids more efficient than either one of the foods used in the mixture.

The protein of wheat is not a complete protein, for example. It is deficient in at least one of the essential building blocks (lysine); and without this amino acid, this cereal cannot do a complete job of body building. But milk is rich in lysine. Thus when milk is used with bread or cereal, it makes the protein of the grain more fully useful. This illustrates the supplementary relationships that may exist. This is the reason why bread and cereal have greater nutritive value when combined with milk, or a food containing the same properties as milk.

Soybean-flour proteins are valuable in making up the amino acid deficiencies of wheat and corn. Lysine is inadequate in wheat proteins, but abundant in the soybean. Peanut proteins are a valuable supplement for the amino acid deficiencies of corn or wheat proteins. In all cases wheat entire is superior to patent white flour. In the comparative studies of the chemistry of proteins from different parts of the grain, bran proteins and wheat-germ proteins are found conspicuously rich in the essential amino acids.

It is now known that the supplementation value of vegetable proteins is great. Small amounts of protein of plant origin may greatly increase the biologic value of vegetable proteins of low value. That is, if there is a deficiency of certain amino acids in the menu, the addition of only relatively small amounts of such proteins as soya flour, corn germ, dried brewers' yeast, or sunflower-seed meal may make a complete and efficiently mixed protein-contributing menu. Some foods are more efficient than others in the sense that smaller amounts of them may be used to achieve the same results in building purposes.

It takes fewer grammes of protein from eggs, milk, and cottage cheese to make up the needed amino acids than it does of most legumes, the usual assortment of nuts, and commonly used cereals. The latter are less concentrated in protein, and this also holds true of most vegetables. In the problem of protein supplementation, if small amounts of concentrated sources from either the plant, or advised animal source (milk, eggs, unripened cheese, dried whey powder), are used with larger amounts of less concentrated sources, the mixed diet will usually furnish the needed variety of essential building blocks. Studies show that diets high in protein of poor quality may be more harmful than diets low in protein, but having the essential amino acids in good proportion.

Flours prepared from soybeans, peanuts, sunflower seed, cotton seed and other seed meals contain proteins of high nutritive value, and may partially replace proteins of animal origin.

It is essential, in order to cook and prepare adequate, appetizing meals, to have the materials handy or available. Protein foods for a lacto-ovo-vegetarian pantry may include:

1. An assortment of various nuts and nut butters, as almond butter, Brazil nuts, and nut flours defatted, as partially defatted almond flour.

2. Cereals of the whole-grain type, as unbolted yellow cornmeal, oats, unpearled barley, whole wheat, whole rye, millet, brown or natural rice; or corn germ, rice polishings, wheat germ, edible bran, and whole-grain flours. Macaroni is not included in whole-grain pastes.

3. Legume flours, as lima bean

flour, to use in bread, soups, and main dishes; nut flours, as almond, partially defatted; ground nut (peanut) granules or flour.

4. Non-fat milk solids (dried skim milk) or dried whey powder (lactalbumin).

5. Dried brewers' yeast.

6. Legumes, dried or canned lentils, chick-peas, cowpeas, Lima beans, kidney beans, black-eyed peas, common beans, butter beans, pea beans, peas, and soybean products.

7. Seed meals and flours as soybean flour, meal, or fresh immature green soybeans, mature yellow soybeans, or fresh bean sprouts.

8. Bread and breadstuffs made of assorted whole grains, as wheat with six per cent soybean flour.

9. Low-fat unripe cheese, Dutch or hoop cheese.

10. Fresh or tinned mushrooms.

Some amino acids and proteins are master keys, and fit more than one type of combination. But others fit only one specific combination; hence, more than one food protein source must be drawn upon. Variety will furnish an assortment of the nutrients.

In protein foods there may be a deficiency of an essential amino acid. Malnutrition has been reported to develop when there was an abundance of non-essential amino acids other are offered at the same meal, so that all essential amino acids will be on hand at one time. If any one of the amino acids required for the synthesis of a given body protein be lacking, that particular structure cannot be formed regardless of how great a surplus there may be of the other construction parts. The greater the percentage of deficit of the essential building blocks, the poorer the protein as a source of amino acids for the growing animals and man. Two classic examples of poor quality protein usually noted in textbooks discussing cereals are gluten of wheat and zein of corn. Both need supplementation.

Proteins which furnish seventy grammes in this basic plan of daily food intake are:

	Protein Grammes
16 ounces of fluid milk (sweet, skimmed, or buttermilk), or equivalent in protein content, as 1½ ounces non-fat milk solids, or eight ounces evaporated milk, or one pint soybean milk	16
2 ounces soybean flour, or 6½ ounces cooked soybeans, or 5 ounces cottage cheese, or 3 ounces chick-peas, or 4 ounces soft cheese, low fat	23
1 egg, or 1 ounce of cottage cheese, or 2/3 ounce of nut butter	6
3 ounces (½ cup cooked or 1½ ounces dried) peas, beans, lentils, (dal), chick-peas, or pulses, or ¼ cup soybeans cooked, or 1½ level tablespoons almond butter or other nutmeats	6
Potato (½ cup or 3½ ounces)	2
Other vegetables; particularly green leaves, sprouts, or highly pigmented forms	3
Fruits, 2 servings of which one is citrus or tomatoes	2
Whole grains, cereals, and breadstuffs, 4 ounces, some wheat germ or corn germ may be included to advantage	12
Total grammes protein	70

Other protein-rich foods which may be used to augment the content of a mixed and varied diet are as follows:

	Per Cent Protein
Defatted peanut (ground nut) flour and granules	60
Dried whey powder	12
Dried brewers' yeast	45-51
Wheat germ and defatted wheat germ	25-35
Corn germ and defatted corn germ	15-20
Chick-peas, dry	20.8
Gluten flour (to be supplemented with seed meals)	41
Non-fat milk solids (usually 41)	35-45
Almond meal, partially defatted	39.5
Bean flour, Lima	21.5
Soy, whole flour	
1% fat or less	44.7
7% fat, medium	42.5
22% fat, full	35.9

The amount of total food determines the per cent of protein in the diet. Usually from ten to fifteen per cent of the total calories of protein. Diets below 2,000 calories make protein supplementation difficult, because they do not furnish enough

PROTEIN SUPPLEMENTATION

ALFARETTA CLARA JOHNSON, M.S.

present. Foods are measured in their growth-promoting values. In experiments graded amounts of food are fed and measured in gramme weight-gain per animal. Rat experiments have shown that a deficiency of the essential amino acids may sharply shunt or stunt growth. If any one of the essential amino acids is absent or is not furnished in adequate amounts growth and repair of tissues are decreased and even stopped. Supplementation with only a few critical essential amino acids in which the dietary supply is inadequate will increase protein utilization as effectively as supplementation with the total so-called "essential" amino acids.

Better protein values can be reached if foods which augment each

working tools. The character of the non-protein ingredients may determine the effect of the protein in the diet. Certain vitamin shortages may increase the apparent needs for certain essential amino acids.

YO
DIGE

JAMES

THE digestive apparatus in man is approximately thirty feet long or more than five times his average height. Despite this great length the alimentary tract occupies a relatively small space in the human body. In the crowded torso it is coiled up to make room for the lungs, the heart, the liver, the pancreas, the spleen, the kidneys and other organs, some of which also play a direct part in the intricate and interesting processes of digestion.

The food you eat may be the most nourishing in the world, but it can do you no good until it has been properly digested and assimilated by the body. This vital operation is not a quick or immediate one, as many people seem to think, but a long and complicated process. A trip through the alimentary canal may, in fact, require nearly a full day because it takes some foods about that long to make this journey.

There are numerous peculiar ideas about the effects of food on the system. Many persons think that a certain food will immediately "dry up the blood," or will heat it; others suffer the delusion that particular foods will "shrink the stomach" or "line the intestines" or cause "acid" conditions; still others believe that various combinations of foods are injurious.

So, let us make a little excursion through the alimentary canal and see what are the normal operations of this essential part of the most remarkable of all machines, the human being. Our jaunt begins at the entrance, the mouth, goes down straight, dark passages to a chamber known as the stomach, and continues through the tortuous, coiled intestines, with side trips to some interesting chemical laboratories and storehouses.

As soon as food is eaten, in response to the sensation known as hunger, digestion begins. It commences in the mouth, where the presence of food or the mere thought of food causes little glands to pour out an enzyme or ferment called ptyalin. This substance is also known as salivary amylase, which means that it is present in the saliva in the mouth and acts on starch in foods.

This oral digestion is, however, only a preliminary step. How well it is accomplished depends largely upon the efficiency with which foods are chewed. Teeth were given us for the purpose of grinding our foods, and they should be employed for that purpose. This process also prepares foods other than the starches for proper digestion further along in the intestinal tract.

The foods we eat are comprised of fats, proteins, carbohydrates, minerals, vitamins and water. All of these, except water, must be broken down into simpler substances before they can be used by the body. Starch, for example, is a complex carbohydrate which must be changed eventually into the simple sugar, glucose, which is the form in which it enters the blood. The proteins are broken down into amino acids and the fats into fatty acids and other substances. The vitamins may be utilized as they are, but even some of them undergo changes and combinations.

After the food has been chewed it is swallowed, passing through the pharynx, a tube about five inches long at the back of the throat, and straight down the œsophagus, or gullet, which is some nine inches in length. Water flows right down this duct, but food is propelled along it by a series of downward sweeping waves.

At the entrance to the stomach a muscle known as a sphincter relaxes and admits the food.

Food reaches the stomach about one second after it has been swallowed. This organ is a curved pouch lying somewhat left of centre in the abdominal cavity; it is elastic and adapts its size to the quantity of food received. Many persons think that all digestion occurs here, but actually the stomach is only a way station for most foodstuffs.

The enzyme, ptyalin, which was produced in the saliva, accompanies the food into the stomach and continues its work in the upper part of this chamber. As the food moves further along this pouch, however, the action of the ptyalin is interrupted by the natural acid of the stomach. The digestion of starch must be completed later in the system.

The walls of your stomach consist of four layers. The innermost layer is lined with millions of little glands. These pour out the digestive or gastric juices, which are comprised mainly of mild hydrochloric acid and the enzyme, pepsin. Certain types of foods, milk for example, may require other enzymes such as rennin, and these are furnished as needed.

Like the œsophagus, the stomach is in motion. Rhythmic waves known as peristalsis push the food toward the lower end. During this process the pepsin, aided by the acid, goes to work on the proteins in the foods, beginning to split them up into the amino acids, the building blocks of the body tissues.

Food remains in the stomach from one to six hours and sometimes longer, depending on the kind and amount of food consumed. Fats remain in the stomach longer than proteins and carbohydrates, and proteins digest more slowly than starches and sugars. For this reason fats give a feeling of fullness. In other words, they have a high satiety value. An ordinary mixed diet will generally leave the stomach in about four hours, although here again there is considerable variation.

At the proper time the food, softened and liquefied, leaves the stomach by a valve known as the pylorus, a Greek word meaning "gatekeeper." It is now ready for further digestion in the small intestine. Practically none of it has been absorbed into the body.

The small intestine, which con-

tinues from the stomach, consists of a little more than twenty feet of tubing, about two inches in diameter at the beginning and an inch in diameter at the end. It is all coiled up to fit into a small space. The upper part, about ten inches in length, is called the duodenum.

In this upper tube the chyme or liquid mass of food remains for some time, waiting for more additions from the stomach. While it waits the liver sends bile to it and the pancreas on the other side of the body contributes new ferments needed to carry on the digestive processes.

UR

TION

TOBEY

The bile coming through a tube from the liver stops en route in the gall bladder, a pear-shaped sac about four inches long. Here the bile is concentrated and stored until required and ordered by messages over the nerves from the intestines.

The function of the bile is to aid in breaking up the fats in foods, converting them into fine emulsions. The enzymes from the pancreas are more versatile, however, since they not only aid in fat digestion, but help to convert the proteins and digest starch. These ferments finish what the ptyalin of the saliva started, and complete the initial work of the pepsin in the stomach. But the small intestine itself contributes a few enzymes, such as erepsin for protein digestion and others for duties with the sugars still remaining in the alimentary canal.

Movements in the intestines are peculiar. The columns of liquefied food are churned up, an action of only a few seconds, which is followed by a running wave that pushes the food mass on its way. Unlike the stomach, which is normally acid, the intestines are alkaline.

At this stage of the process the body begins to absorb some of the food, such as the vitamins, the minerals and part of the water, but the converted proteins, fats and carbohydrates are not quite ready for absorption. They require still more processing, which they get in the large intestine after spending several hours in the small one.

The large intestine, shaped like an inverted U, is only five feet long, but eight hours more are required for the passage of the remainder of the food products. During this period the amino acids from the proteins pass into the capillaries or tiny ducts of the intestine where they are picked up by the circulating blood and transported to the liver. By this time most of the carbohydrates have been changed into the simple sugar, glucose, and are also carried away by the blood.

For some reason as yet unexplained by science, the fat particles take a different course to the same destination. They go into another circulating fluid, the lymph, but finally make their way into the blood stream and reach the liver by a roundabout course.

That versatile organ, the liver, is the great chemical laboratory of the body. Through the portal vein it receives blood from the stomach, the spleen, the pancreas and the intestines, which it filters, changes and extracts, using some for its own nourishment and sending the remainder on to other organs. The liver is not only a laboratory but a storehouse and a sentinel, guarding against poisons and infections and storing up nutrients for reserve uses.

The liver changes the glucose in the blood into glycogen, stores it for a while, and then reconverts it to glucose, hands it over to the blood and sends it along to the tissues for the energy or fuel needs of the body. Similarly, it sends the amino acids to replace and repair worn-out tissues and delivers their waste products, such as urea, to the kidneys.

By the time the food products have arrived at the colon in the lower intestine, they have accumulated considerable waste material. This waste or fæces consists of the indigestible residue of foods such as fibre and roughage, bacteria,, dead cells, mucus and water. It must be eliminated regularly from the body by the act of defecation, during which the fæces pass into the rectum and are expelled from it. Other waste products are eliminated from the body by the lungs. Water and salt are lost from the system through perspiration but sweating does not rid the body of any appreciable amount of waste.

In the healthy person who eats sensibly digestion proceeds in a normal manner. Digestive disorders are common, however, and more prevalent than any other ailment except the respiratory diseases. These troubles may be due to abuse of the digestive system, or to infections and inflammations, poisons, malnutrition, allergies, nervous troubles and various other causes.

A diet of good food, selected with a view to including essential nutrients, prepared with reasonable care and neither too rough nor too smooth for the needs of the individual, will assist in maintaining health, and this in turn aids in the maintenance of normal digestion. Probably of some assistance in promoting the functioning of the gastro-intestinal tract is the vitamin known as thiamine or vitamin B_1

Thiamine is widely distributed among the foods we eat, but relatively few may be regarded as especially good sources. Among these are fresh soya beans and fresh green peas. Other good sources are legumes, such as beans either fresh or dry, whole grains including both wheat and oats, enriched bread and lean meat. In general fresh vegetables are a better source than dried. Rich accessory food sources are brewers' yeast and wheat germ.

In his play "Macbeth" Shakespeare advises us, with his usual good sense, to let "good digestion wait on appetite, and health on both."

—*Hygeia.*

THAT DREAD PYORRHOEA

EDGAR D. COOLIDGE, D. D. S.

PYORRHŒA ALVEOLARIS is the name of a disease which can be defined easily. The term "pyorrhœa" means flow of pus, and "alveolaris" indicates the alveolar bone, which surrounds and supports the teeth.

When tartar is allowed to gather upon the teeth, inflammation of the soft tissue about the necks of the teeth results. This condition is called gingivitis. If the tartar is allowed to remain and accumulate, the inflammatory condition increases and the deeper tissue becomes inflamed. Then the soft tissue begins to loosen around the neck of the tooth because of the irritating effects of tartar deposits. This loss of attachment of the tissue to the tooth root causes deepening of the gingival crevice, which now cannot be kept clean with the toothbrush and so becomes a pus pocket, or, more correctly, a pyorrhœa pocket.

Inflammation of the gingivae is a treacherous condition if neglected. The earliest symptom is bleeding. After a time the bleeding ceases, and if the cause is not eliminated the deeper tissue becomes involved. The blood stream spreads into the bone that supports the teeth, the toxins arising from the presence of bacteria in the pyorrhœa pocket. Pyorrhœa does not often spread directly from one tooth socket to another, but progresses into the bone around a tooth and causes the bone to be resorbed. This process gradually weakens the tooth's support and eventually causes its loss. Pyorrhœa is sometimes confined to a single tooth socket; but, in pyorrhœa of the inflammatory type, usually several sockets, or all of them are more or less involved. The inflammatory type of pyorrhœa responds favourably to treatment in most cases and, with regular care by the dentist and interdental tooth-brushing daily by the patient, it can be cured.

Generally speaking, there are two types of pyorrhœa. The first type is caused primarily by the presence of dental tartar or other irritants of the gums, and by infection. This is the type described above. Probably ninety per cent of all pyorrhœa cases are included in this class, as stated by the eminent pathologist Bernhard Gottlieb. This type of pyorrhœa can be cured by elimination of the cause, dental operative treatment and prophylactic care. This treatment must be supplemented with thorough home care by the patient.

The second type of pyorrhœa differs considerably from the first type. There is no bleeding of the gums, no accumulation of tartar on the teeth, and no evidence of infection at first, but the teeth, which have appeared to be firm and healthy, suddenly begin to separate and drift apart. The front teeth are frequently affected. An unsightly space appears between two teeth, and often one or more teeth begin to protrude. Each month the teeth move farther out of line and farther apart. Even X-ray films do not always reveal any disturbance that might cause the trouble or show the loss of bone characteristic of the first type of pyorrhœa. From nine to twelve months after the onset of the disease the bone begins to resorb rapidly. At this time, X-ray pictures will reveal the effect and extent of the trouble, but not the cause.

The second type of pyorrhœa, less

common than the first, is found at almost any age, but most frequently in young and middle adult life. It is occasionally found during the adolescent years, more often during the period from twenty to thirty, and still more often between thirty and forty years in women, but later in men. It seems to be caused by a disturbance of, or a deficiency in, nutrition and may be related to the unbalancing of an internal secretory function which affects the bone-forming cells.

It seems that those who drink little or no milk and thus have a low intake of calcium and phosphorus are particularly susceptible to this type of pyorrhœa. Those whose intake of fruit and vegetables is extremely low also seem to be susceptible. It frequently develops when the system is undergoing some severe physical or nervous stress and strain.

There are certain inherited characteristics that have a bearing on physical functions. It does not necessarily follow that children will inherit pyorrhœa because one or both parents have it, but some of the children are liable to be susceptible. It should be remembered that this type of pyorrhœa represents only a small percentage of the total number of cases, and even these can be controlled, so that few teeth need be lost because of the inherited tendency. Regular treatment and the co-operation of the patient in persistent care are required to control the disease. The patient's responsibility is greater in these cases because he must not only carry out vigorous home care, but also maintain a diet that will tend to correct any nutritional deficiency and promote bone building.

It is sometimes difficult to differentiate between the two types of pyorrhœa. There are usually some symptoms of each type in every case of pyorrhœa. There are varying degrees of nutritional deficiency as well as varying degrees of an inherited tendency in each family. In a family of five children, one may be susceptible and may inherit characteristics similar to those of the parent who has pyorrhœa. The sooner such tendencies to neglect one's normal nutritional demands are recognized and corrected, the less trouble will there be with the teeth in late years. Parents should not permit the child to develop dislikes for necessary foods that may have been disliked by them. Rather, parents should seek information from good dietitians and assistance from the dentist so that children will be well fortified for the years of stress that are liable to come to all at some period of life.

Other systemic conditions that are frequently characterized by the loss of teeth should be mentioned. The gums usually become diseased in diabetes, and often the teeth loosen and have to be removed. In blood disturbances such as anaemia, and leukemia, and agranulocytosis, the gums invariably are greatly affected; and in infectious diseases the teeth often loosen, apparently because the supporting bone is resorbed. The physical aging process is another factor in the loss of teeth. Parts of the body may age faster than others, and it is found that many persons suffer from an atrophy of the bone around the teeth which can be attributed only to the premature aging of the alveolar bone and bone-forming cells. Any of these hereditary tendencies or systematic disturbances may hasten and intensify the common causes of pyorrhœa and make control of the disease more difficult.

BABY HAS SWALLOWED A PIN!

JAMES GAULD

THE mother who hears this cry gets a terrible shock and at once drops everything to find out if there is any truth in it. Only too often does she find it justified, for young children instinctively convey everything to their mouths and it is so easy to swallow so small an object as a pin.

Her first duty is to find out if the child has actually swallowed the pin. Another child may have seen the baby playing with it, and when it disappeared, has jumped to the conclusion that it has been swallowed. A close examination ought to be made immediately and every pin about the baby's clothing accounted for. Sometimes the fact of the swallowing is all too certainly established by the child coughing and choking, in which case a doctor should be called in at once, but in every case where any doubt whatsoever exists, medical advice should be obtained.

The doctor will want to know what kind of pin is missing, and how long it was since it was swallowed. If the baby doesn't seem to be suffering pain, he may prescribe a good meal of sticky porridge in the hope that it will take up the pin and carry it through the intestines. A product which swells in the intestines, like Normacol, may be even better than porridge for this purpose.

If the child is obviously suffering, however, and failing the possibility of an immediate X-ray, the doctor may try an inspection with the laryngoscope to try to locate the pin. This is often difficult with a child, and if the pin has travelled far down it will probably fail to locate it, so it is best for everybody concerned if the child is taken as quickly as possible to the nearest hospital. An X-ray will reveal exactly where the pin has got to in the child's body, and what kind of a pin it is. Once he knows those two facts the doctor will be able to decide on the correct treatment. If it is a safety pin and it is closed, usually the porridge treatment will suffice, but if the pin is open a surgical operation will be urgently necessary, even if the point of the pin is not pointing forward as it moves through the body.

In the same way, if the pin is an ordinary small one and is travelling head first, the porridge may bring it through without any injury to the bowel, but if it is moving point first an operation will be imperative.

As a rule the operation for the removal of the pin is not a dangerous one, and in the hands of a good surgeon the child will usually make a speedy and complete recovery.

EDWARD LEARNS HIS LESSON

MILDRED HAKEY

EDWARD had the habit of throwing things. First of all, he liked to play ball. That was all right; but when it came to throwing other things, he sometimes worried his mother. Often when he became provoked with his bigger brother, John, he would throw anything that he happened to have in his hands.

Sometimes when this happened, John would catch Eddie and give him a spanking as only a brother can. Mother did not stop him either, for she felt that Eddie needed it. Maybe, she thought, if he gets hurt enough for it, he might stop throwing things.

Nothing seemed to help. One day Eddie was coming home from shopping with his mother, and a car passed them. Promptly he picked up a stone and prepared to throw it at the car. Mother stopped him, in time, however. "You must not throw stones at cars," she told him. "You might break some glass, cause an accident, or hurt someone in the car." But Eddie did not care.

Days passed without more than the usual quarrels between the brothers. Then one day John came in and told his mother that Eddie had again thrown a stone at a car and hit the windshield. No damage had been done and the car did not stop. Mother called Eddie into the house.

"Now," she said, "you are going to stay in the house the rest of the day. If you cannot stop throwing when you are outside, you will have to stay in."

"I want to go out, I want to go out," cried the boy. Mother let him cry. After a while he promised that if he were allowed to go out, he would not throw stones again. So Mother said, if he really meant that promise, he could go out again.

Things were quiet for a while until Mr. Rogers, a neighbour, went by in his car. Eddie tossed a stone, and it hit the car. Mr. Rogers, who knew of his bad habit, stopped his car and backed to where the boy had been. Eddie ran into the house as fast as his legs could carry him.

"What is the matter?" asked his mother.

"Nothing," he replied and ran into his bedroom.

Mother went outside to see what her neighbour wanted.

"I think I scared that boy of yours when I stopped," he told Eddie's mother, "Maybe, if you tell him that I want him to pay for the damages, it will calm him down a bit."

Mother thought that might be a good idea.

"There really are no big damages to pay. It scratched the car a bit where it hit, but I thought I would stop to see the results."

"I am glad you did."

When she returned to the house she told Eddie that Mr. Rogers said he would expect him to pay the damages, and Eddie looked scared. "You will have to think of a way to pay him, and you will also have to go and talk to him and find out how much he needs."

He did not like the idea of going over to the neighbour's place to find out for himself. He thought Mother could do that for him.

Mother said, "No, John can walk over with you, but you must do the talking yourself."

One foot did not seem to want to go ahead of the other on the way. They seemed to be made of lead. John urged him on. He wanted to get back to what he had been doing before, but he knew how the boy

felt. At last they reached their destination and the man came to meet them.

"I-I'm sorry I threw the stone, Mr. Rogers," Eddie stammered. "How much will I have to pay?"

"I think five rupees will cover it."

By the look on Eddie's face he knew that if he had said five hundred rupees it would not have sounded any bigger to him. I'll send the money back with the other boy if he pays it, he thought. He needs the lesson. Eddie's feet were not nearly as heavy on the way back home, but he walked slowly trying to think of ways in which he could get the money. When Dad came home that night, he asked him if he could have the old iron he had in the back yard. Dad said Yes. Mother had told him he could have the old papers that were in the attic. In time he had sold them all and his store of money grew until he had the five rupees he needed. He had worked hard. It had given him an outlet for his energy other than throwing, and he was a happier boy. How glad he was when he was able to go to Mr. Rogers and give him the money. Even the man could see the change in him.

"I'm glad to see that you have settled down a little," he told the boy. "I have discovered that I won't need the five rupees after all, so you may keep it." He gave it back to Edward. "If I were you, I'd keep it and try to earn more to put with it until I had enough to buy something useful."

Eddie's feet seemed to have wings as he ran toward home with his money. He already had ideas how to add to it. He also knew how he wanted to spend it. Next month was Mother's birthday!

THE PATENT MEDICINE MENACE

H. F. DeAth

"ANALYSIS shows that many supposed cures, which are sold at enormous profits, possess little medicinal value. One, heralded as a great discovery, has been found to consist mostly of sugar and starch. Another, apart from 0.001 of oxide of iron, is mainly composed of milk and sugar."

Unscrupulous But Valuable Advertisers

The trouble is, the patent or proprietary medicine trade, as it is now called, has become enormously influential because of the vast sums it pays to the public press for advertising. Naturally, the press is not disposed to expose the fallacies of its best paying clients. Hence what should be a *free* press is no longer free.

Of course every person is free to treat his own illness in his own way. And if he does so deliberately and intelligently, and after careful investigation, the risk is not great. But many of those who boost their proprietary medicines by persistent and misleading advertisements have "no medical or pharmaceutical qualifications." They are merely un-

scrupulous get-rich-quick schemers. And unfortunately the public is, to a lamentable degree, uncritical and indiscriminating. People generally do not bring to bear upon their ailments any real intelligence. Consequently, they become an easy prey to the shrewd and artful people who ply the proprietary medicine trade.

Tonic Wines and Vitamin Pills

"Several manufacturers of tonic wines have been prosecuted, and analysts have proved that some of these 'wines' consist largely of coloured water, worth about an anna a bottle. Vitamin tablets, for which extravagant claims have been made, have received attention. Some patent foods are little more than some cheap farinaceous powder with a little milk powder and glucose added, and not worth anything like the prices charged. The medicated 'sweets' sold by chemists at high prices probably cost less than the ordinary article to manufacture."

It is sometimes thought that doctors who deplore uninstructed self-medication are merely selfish or jealous of their profession. But this is not the case, as, in the long run, the doctor gets his fee. They object mainly to the unnecessary suffering and hospital work to which self-treatment often leads.

Public Education Essential

"A good many people, in the first stages of some serious disease, try deceptive advertised remedies in the hope of a cure. When they are eventually forced to consult a doctor, it is generally too late to effect the cure, or to ensure the greater prolongation of life that proper treatment in the early stages often makes possible."

However, things are not so bad as they used to be. Many "cure-alls" have disappeared altogether. And monopoly companies who have bought up others do at least see to it that supposed "remedies, compounded under the supervision of qualified people, are of the best ingredients possible."

Nevertheless, the situation leaves much to be desired. Public education is essential in order to cope with this modern evil. The problem is by no means confined to this country. In America, "action is continually being taken, or attempted, to curb the activities of the exploiters of the sick."

If only more and more people would become less and less susceptible to the influence of plausible and persistent advertising; the problem would soon solve itself. But human nature being what it is, some sort of protection is due to the public from the powers that be.

A Puzzle

You have eight metal rupees, all but one of which are of equal weight. Find the lighter coin by weighing only twice.

RECIPES

ESSENTIALS OF NUTRITION

WHAT shall we eat today? is often the question that confronts the housewife. Knowing that every member of the family needs a properly balanced diet, including the protein, the starches, fats and the vitamins. Every housewife interested in the health of the family plans meals which will contain as many as possible of these essentials.

Now what are the essentials?

1. Green and yellow vegetables in the form of greens, pumpkins, gourds, onions, etc. 2. Oranges, tomatoes, mangoes, sweet limes, bananas or other fruits. 3. Potatoes, yams, sweet potatoes, peas, beans, lentils, gram, etc. 4. Bread made from wholewheat flour; cholam, cereals. Rice milled with all the natural whole grain. 5. Milk and milk products like curds, cheese, buttermilk, etc. 6. Protein foods like ground nuts, soybeans, almonds, walnuts, coconut or any other nuts. Also eggs if desired. 7. Fats, such as butter, ghee, margarine, coconut oil, sweet oil, ground nut oil and gingili oil.

India has an abundance of all the above mentioned foods and there is no need for a person who can buy food to live on an impoverished diet; yet how many people, even wealthy people, look undernourished. Choose these good foods, eat with a happy heart, chew your food thoroughly and all will be well with you. Eat at regular times. Do not eat between meals, but drink an abundance of water or fruit juice between regular meals. Be moderate in eating. Most people eat too much.

NUT CHOWDER

1 cup cashew nuts; 4 cups milk; salt and seasoning to taste. Grind the nuts into a paste and heat the milk to boiling point. Add the nut paste and seasoning while boiling and serve hot. Almonds may be used instead of cashew nuts. This is a very nourishing soup. Serves four or five.

ESCALLOPED BRINGALS

2 tablespoons butter; 2 medium-sized bringals, peeled and cubed; 1 large capsicum, seeds removed and chopped fine; 1 onion chopped fine; 1 teaspoon salt; ½ cup water; 2 eggs; ¾ cup breadcrumbs; 1 teaspoon sugar.

Heat butter in a heavy saucepan and add the capsicum and chopped onion. Cook five minutes. Add bringal cubes, salt and water. Cover and cook about fifteen minutes. Cool a few minutes. Add ½ cup crumbs, sugar and beaten eggs. Put in a shallow baking dish, sprinkle with crumbs and bake until done; about twenty minutes in a hot oven.

OATMEAL PATTIES

2 cups rolled oats; ¼ cup ata; 1 onion grated fine; 4 cloves garlic, crushed; ½ cup milk or tomato juice; 2 eggs; ½ teaspoon sage or poultry seasoning; salt to taste.

Mix all thoroughly. Mould into patties and fry on both sides allowing them to brown slowly. Place in a deep saucepan. Make a broth of 1 teaspoon Marmite and one grated onion and pour over patties. Now let them simmer for one hour taking care that the water does not all evaporate. (Add more if needed). Serves six. A good vegetarian meat dish.

STEAMED NUT-MEAT

½ cup peanut butter; 1½ cups tomato juice; ¼ cup cornflour; ½ teaspoon salt; ½ teaspoon sugar; 1 egg beaten; 1 tablespoon grated onion.

Thoroughly mix the peanut butter and tomato juice. Mix cornflour to a paste with a little water. Add to other ingredients and pour the mixture into oiled tins. Tins must have tight-fitting covers. Steam for four hours. Take out of tins when cold. Slice and serve. A good protein dish.

RICE AND NUT CROQUETTES

1½ cups bread crumbs; 1 cup cooked rice; 1 cup chopped nut meats (your favourite nuts); ½ cup celery, chopped very fine; 2 eggs.

Beat one of the eggs and add the rice, nuts and celery with salt to taste. Shape into oblong croquettes and roll them in crumbs, then in the remaining slightly beaten egg (mixed with a table-

spoon of water), and then in crumbs again. Fry in deep fat. Serves four.

REFRIGERATOR ICE-CREAM

1 tablespoon flour; 1 cup sugar; 3 eggs; ¼ teaspoon salt; 2 cups milk; 1 cup cream; 1 can evaporated milk; 2 teaspoons vanilla.

Make a custard with the milk, flour, sugar and eggs. Cool and add salt and vanilla. Whip cream, whip evaporated milk which has been in the refrigerator over-night. Fold these into the custard which is in the freezing tray partially frozen. Continue freezing. Stir with a spoon two or three times. Chocolate, nuts or crushed fruit may be added. Freeze until ready to serve.

BITTER GOURD

6 bitter gourds, small; 6 small onions; 6 cloves garlic.

Cut gourds in thin slices. Fry in deep vegetable oil until crisp. Garnish with fried onions and garlic and serve. Sprinkle with a little salt before serving.

SNAKE GOURD

1 snake gourd chopped fine; 1 bunch of coriander leaves, chopped; 1 cup Bengal gram flour; ½ coconut; salt to taste.

Grind coconut on curry stone. Chop snake gourd and coriander leaves. Add to the above the gram flour and salt, mixing the whole well. Make into small balls and fry in deep fat. Bitter gourd or any other gourd may be used instead of snake gourd.

NUTTOSE

1 cup tomato pulp; 1½ cups warm water; ¾ cup bread flour or ata; ¼ cup cornflour; 1 teaspoon salt; 4 tablespoons nut-butter made of almonds or cashew nuts; ¼ teaspoon sage.

Mix all ingredients and place in tin. Cover tightly and steam for 2½ hours.

CARDINAL SALAD

2 beets, boiled until tender; ½ cup cooked green peas; ½ cup cooked green beans; 1 head lettuce; 1 bunch radishes; juice of two limes.

Remove skin from beets and slice rather thin. Cover them with 1 teaspoon brown sugar and lime juice. Let stand an hour or more. Arrange the well-washed and drained lettuce leaves on a salad plate; on this arrange slices of beets. Mix the cooked drained peas and beans with a very little French dressing. Place this mixture in centre of beet slices. Top this with a teaspoon of very thick curds or cream to which a little lime juice has been added. Garnish with radishes cut like rosebuds. Serve very cold. Water in which peas and beans are boiled should be saved for soup or sauces. It should never be thrown away.

THE DOCTOR SAYS

This question and answer service, free only to subscribers, is intended for general information. No attempt will be made to treat disease or to take the place of a regular physician. In special cases, where a personal reply is desired or necessary, it will be given if a stamped addressed envelope accompanies the question. We reserve the right to publish the answers to any questions sent in, if we deem them beneficial to our readers, though no names will be published. Address the Associate Editor (Doctor Says) "Health," Post Box 35, Poona 1, and make questions short and to the point.

NERVOUS DISORDER: Ques.—"My wife who is thirty-four years old and the mother of four children has, for the past four or five years, been suffering from a complaint which is either mental or temperamental. When her mind is perplexed, either over some sorrow or from anger, she falls down unconscious. For a moment it appears that she is not breathing at all. She will roll on the ground, knock her head against the ground, beat her forehead with her fist, and speak out what was passing through her mind when she fell down. These attacks sometimes last from five to thirty minutes. She appears to be healthy but says she is weak and unable to work. She is highly sensitive, intelligent and idealistic, but when provoked quickly loses her temper. I shall be thankful if you will let me know what I should do to help her over this trouble."

Ans.—A sudden change of personality in women between the years of thirty and forty-five may often be one of the accompaniments of the normal cessation of menstruation, the menopause or change of life as it is commonly called. Some women suffer very little discomfort or nervous instability at that time in life. Others, however, may have very severe nervous reactions. In a few cases it amounts to a nervous breakdown. However, modern treatment by a skilled physician together with kind treatment by the woman's family, can help her over the nervousness connected with the menopause. You should take your wife to a competent physician who understands these matters.

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SEX DETERMINATION; INSANITY: Ques.—"(1) My wife was examined for sterility and was operated upon for an ovarian cyst. The right ovary was removed, but the left one which was also affected was punctured and left. She is now pregnant. Is there any truth in the statement that a particular ovary (left or right) can only produce a particular sex? (2) My brother's wife conceived when she was insane. The child is now nine years of age, is very thin and does not improve in health. I am afraid she may fall a victim to insanity also. Kindly advise regarding any precautions which should be taken for her if insanity is hereditary."

Ans.—(1) There is absolutely no truth in the popular supposition that either ovary produces children of only one sex. The truth of the matter is that all ovum are exactly the same. It is the spermotozoa (male sperm) which are of two kinds and which produce either male or female children depending upon which type of sperm chances to fertilize the ovum. Up to now there is no way of controlling which it shall be. Nor is there any reliable way of determining what sex the baby actually is until it is born. (2) Insanity may or may not be inherited. It depends upon the type of insanity. The only precautions necessary are to give the child a good diet, good care, pleasant surroundings, and as much love and attention (but not too much) as you give your other children. Any other precaution is unnecessary and useless.

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SUSPECTED TUBERCULOSIS: Ques.—"I have recently recovered from a lung complaint, and although I am free from cough and fever at present, physically I am not what I was four years ago. In view of this I seek your answer to the following questions: I am twenty-four years of age and in spite of my strong objection my parents want me to get married. Is it advisable for me to act according to their will? My people want me to live in a crowded town and earn a decent wage, but I protest, because I find rural life is more

advantageous to my health. What is your advice?"

Ans.—Your lung condition may have been tuberculosis. It is a question whether people who have had tuberculosis should marry or not. All of them, when the disease is arrested, desire to lead normal lives again. There is always the possibility that an arrested case of tuberculosis may become active again. This is particularly true in women who, when subjected to the physiological stress of pregnancy, often develop active lesions again. On the brighter side of the picture are the numerous cases of young men and women who have never had any recurrence once their tuberculosis has become arrested. It is impossible, therefore, to say whether patients with arrested cases of tuberculosis should marry or not. The real answer is that some should and some should not. I leave the decision in the matter to the judgment of the doctor who is treating the individual concerned. Out-door occupations are always preferable but they should be non-strenuous occupations. If you can find employment in the city which gives you much time in the open air I see no objection to it.

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SPRUE: Ques.—"I had arsenic poisoning in 1931 due to taking too many drugs when I had dysentery. This was followed by sprue. I have been in hospital in Calcutta for about six months and am still on a diet. My bladder has become very weak and I have pains in my back and legs. The doctor is afraid to give me any medicine by mouth as it upsets the stomach. My nerves are in a bad condition also. Please let me know if there are any injections which would help me."

Ans.—It is difficult to give you specific advice by mail because I cannot possibly know all the details of your condition. There is a new product being used in the treatment of some cases of sprue. It is called folic acid. You should ask your doctor if he believes it would be helpful in your case.

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STRICTURE OF THE URETHRA: Ques.—"Due to neglect in childhood I have adhesions and phimosis of the penis. For the past few years I have had difficulty in urinating. I am very much worried about this hardening of the urinary tract and seek your kind advice."

Ans.—Thinning of the urinary stream or stoppage, often indicates a stricture of the urethra. The treatment is surgical and not too complicated. It consists in having the urethra dilated by a competent surgeon and then returning to him at frequent intervals for re-dilatation. You see the scar tissue in a stricture tends to shrink and cut off the flow of urine, therefore, it must be dilated repeatedly. Many patients with this sort of thing visit their doctors twice a year regularly.

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INADEQUATE DIET; DENTAL CARIES: Ques.—"(1) I am forty years of age, 5' 4½" tall and weigh only 90 pounds. I had an attack of malaria in 1937 and was treated and cured. I have had four or five attacks since then at long intervals, but have taken courses of quinine, atebrin, etc. whenever I have suspected the approach of an attack. As a result of this I am very weak and extremely nervous; so much so, that I can hardly bear to hear any noise or hold a pen in my hand. I took yeast tablets for a few days and have been given some liver injections, but have not improved. My liver has become sluggish, my bowels irregular, and I have a very poor digestion. Kindly advise me what to do to overcome this nervous debility and put on a little flesh. (2) My son aged nine years is

also thin though very active. He has caries in his teeth and now that his permanent teeth are coming in shall I give him calcium every day to strengthen them? Even my five-year-old daughter is developing caries."

Ans.—The description of your condition sounds as if you may be lacking adequate vitamins in your diet. I am not surprised that you have found no relief after taking a few injections or swallowing a few yeast tablets. This condition usually remains unaffected for about two months in spite of constant and persistent treatment and diet. Only after following the doctor's instruction faithfully for two months does one begin to see improvement in these cases. The first thing is to change your diet so that you receive adequate amounts of all the food elements. You should eat the following daily: 1. Three servings of unpolished and unpounded rice (red rice) or whole grain cereals of another type. Polished rice or refined wheat flour is lacking in vitamin B. If you are unable to get unpolished rice you should obtain some rice bran or polishings from the mill and either make a soup from the polishings or eat it as a cake or chapati. 2. Fifty ground nuts with the bran on them, roasted. 3. Half a seer of milk in any form. This milk should be boiled for ten minutes and allowed to cool before use. 4. One egg. 5. Two servings of green or yellow vegetables and one serving of some other vegetable. 6. One serving of dal, dried beans, peas or other legume. 7. One citrus fruit daily or a tomato or raw cabbage salad. 8. One other fruit. You should supplement this diet by taking some vitamin preparation three times a day. We usually recommend one teaspoonful of Marmite with each meal. (2) Prevention of caries of the teeth includes a good diet with plenty of milk, avoidance of sweets and brushing the teeth twice daily with some mild dentifrice. If it is noticed that caries develop in spite of this, one should visit a dentist immediately and have the cavity filled as this will preserve the tooth. It is a good health practice to visit your dentist twice a year even though you do not suspect anything to be wrong.

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INFANTILE PARALYSIS: Ques.—"My four-year-old son has contracted infantile paralysis. Kindly let me know the details of the treatment for this disease."

Ans.—Treatment of infantile paralysis should be under the direction of a competent physician. There are so many variations in the severity and effects of the disease that it would not be helpful to discuss the treatment in this column.

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SUPERFLUOUS HAIR AND PIMPLES: Ques.—"Is there any remedy for the superfluous hair on the face of an unmarried woman who is twenty-three years of age? The hair is mostly on the sides of the face and on the chin. She also has large hard pimples on her face. Does the plucking of the hair or the appliance of facial creams encourage further growth of hair?"

Ans.—There are various hair removers on the market. Some of them contain poisons which may seriously effect one's health. Others are very irritating to the skin. The most satisfactory method of removing unwanted hair is by electrolysis. This is a rather slow and tedious process and requires a skilled technician and a special machine. I am not sure that the method is available in India. Pimples are usually infected blackheads and the two should be treated together. (a) Wash the face thoroughly twice a day with warm water and some good, mild toilet soap. (b) Take a sun bath on the face about twenty minutes daily. (c) Remove the blackheads once or twice a week by the following method: Steam the face for fifteen minutes with a towel wrung out of hot water. Then rub in some good grade of vanishing cream or olive oil over the areas bearing the blackheads. Steam the face again for five minutes. Then remove the blackheads by using a comedo remover obtainable for a few annas at any chemist's shop. Finally wash the face with water and dry. After daily face washing and after removing comedoes, apply some alcoholic face lotion or after-shaving lotion. Thiazamide ointment is beneficial if the blackheads are infected.

SEMINAL LOSSES: Ques.—"I am a bachelor, twenty-six years of age, and suffer from nocturnal emissions about twice a week. I feel dull, weak and listless and my eyes burn. Please tell me what medicine to take to check these losses and thereby improve my health."

Ans.—Night pollutions or nocturnal loss of sperm is common and normal in unmarried young men. It is not a disease in spite of all that the newspaper advertisements say, and there is no need to take any medicine for it. It is a normal condition. My advice is: a. Get at least eight hours sleep every night on a firm bed with only enough cover to prevent chilling. b. Eat a varied diet including milk, whole grain cereals, fruit, vegetables, dals, nuts, curd and eggs. c. Take one hour of exercise in the fresh air every day. d. Do not worry about the night pollutions. At worst they are only an annoyance, not a disease.

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IRRITATION OF THE EARS: Ques.—"I have suffered for a long time from an itching sensation inside my right ear, but there is no discharge. This irritation is most intense in the morning when I rise from bed and becomes almost

chronic. Please tell of a treatment or remedy."

Ans.—Itching in the ear canal may be due to a low-grade infection, to fungus growth, or to eczema. The proper treatment depends, of course, on the cause. I would suggest you consult either an otolaryngologist (ear, nose, and throat specialist) or a dermatologist (skin specialist).

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DIFFICULT DIAGNOSIS: Ques.—"I am twenty-two years old and have had poor health all my life, but for the past three years have suffered from some chronic disease. I have consulted five doctors during this time with the following results: Numbers one and two told me that I am suffering from anæmia and serious heart trouble caused by rheumatic fever (a disease I have never had). Number three said 'neurasthenia and auto-intoxication.' Number four diagnosed my case as being one of neurasthenia only, and number five told me 'sluggish liver and disorder of the bowels and heart.' Three years ago I had jaundice and am still not completely cured for my eyes and body have a yellowish tinge. After meals I feel tired and sometimes my limbs lose their feeling. Please advise me what to do. Should I consult and be misled by one more physician?"

Ans.—It is rather disconcerting to a patient to visit five different doctors and receive four different diagnoses. It is unfortunately true that a doctor is not infallible and that he does not always make the right diagnosis. I think a little reflection upon the fact that your condition does not present too many points upon which to base a diagnosis will lead you to feel a little more charitable toward the five doctors you have visited, even though at least three of them and possibly all of them are mistaken in their diagnosis. It is sometimes very difficult to locate the exact source of the trouble when confronted by a patient who "feels tired all the time and is unable to gain weight."

In selecting a physician you want a man who will examine thoroughly and treat skilfully and be absolutely honest with you. Such a combination is easier to find than you may imagine. The perfect way to find a good doctor is to ask a friend who has a good doctor to let you visit his doctor. If none of your friends have been ill you can call on the secretary of the Medical Society in your town and ask him for the names of the doctors who specialize in the type of complaint you have. Then you can visit those who live nearest you and make your own selection. I should advise you to have a thorough physical examination and stool, urine and blood tests done. And carefully follow the advice of the doctor you select.

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NAS.—21

Microscopic battle

The incessant war that our body wages against the infection that threatens it on all sides, is generally hidden from our knowledge by its microscopic nature. This conceals from us the fact that this is indeed a war to the death.

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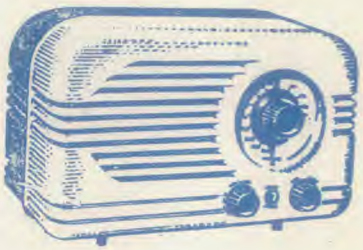

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CERTAINTY IN A TIME OF UNCERTAINTY

TAYLOR G. BUNCH

"TODAY we seem certain only of uncertainties," declared President Whale of Chestnut College, Cambridge. History has recorded the existence of many civilizations, all but a few of which have disappeared. Those still remaining seem to be crumbling beneath the the disintegrating impacts of present-day tragic events. We live in a time of quick and unexpected changes, of shocks and surprises, never knowing today what tomorrow will bring forth.

This uncertainty has been greatly increased since our entrance into the atomic age, and the consequent alarming statements of the leading scientists and other men of affairs. General Eisenhower said recently that "unless there is a moral regeneration throughout the world there is no hope for mankind and we will all disappear in the dust of an atomic explosion." Robert M. Hutchins, Chancellor of the University of Chicago, after describing the conditions of fear and uncertainty ushered in by the atomic age asked the question: "Is the situation, then, altogether hopeless?" He then answers: "I think not; but the only hope is to increase the rate of moral progress tremendously, to increase it beyond anything we have ever dreamed of, to increase it to an extent which in itself, at first glance, may seem hopeless." This is certainly a very small ray of hope for the future.

J. Lovell Murray in his book, *The Call of a World Task*, said: "This is an hour in which the souls of men are hard beset for certainties to which they can make fast. . . . Their cry is pathetic for pilots who can bring them to a safe anchorage. . . . Not suppositions, but certainties are demanded; not observances and dogmas, but realities." The illustration is that of a ship trying to make the harbour without a pilot who knows the channel and the locations of the dangerous rocks and shoals hidden beneath the surface. The most dangerous part of an ocean voyage is in the crossing of the bar. At that time safety demands a pilot whose certain knowledge can bring the ship to an anchorage in the protected harbour.

The call of this present hour is for certainties in a time of unprecedented, rapid changes when uncertainty is the order of the day. One great leader said: "We are in a fog. We are going, but nobody knows where we are going." Being lost in a fog is a strange sensation that can be appreciated only by those who have experienced it. The modern world is lost in a fog of doubt, suspense, and uncertainty, and the wisest statesmen do not seem to know the way to security. A high-ranking government official said to a graduating class of a large university: "As one looks ahead there is little light save when dazzling flash on flash writes a great interrogation on the murky background." There is just enough light to make the pathway ahead one great puzzling question. A gloomy prospect for university graduates!

"We are headed toward chaos," are the words of one of the most noted of modern historians, and "there is no sure ground under our feet," declared the editor of a great daily newspaper. Another leader said that "the present outlook is enough to induce despair in the stoutest hearts," and General Smuts of South Africa said: "We live in a very dangerous world, and however much we may try to remain cheerful we cannot help being gripped by secret fear for the future."

Vernon Nash, writing in *The Christian Century* of September 27, 1947, under the caption, "Utopia of Cataclysm," said: "With increasing clarity week by week, the United Nations demonstrates its futility as protection against war. Disillusionment and pessimism over its performance are now general. This mood, unless checked, is likely to develop into a cynical fatalism. To the unreflective the import of still another failure will be that the task itself is impossible. The deadly corollary of hopelessness will be all-out support for nationalistic militarisms. Many are already saying that since collective security seems unattainable, a country has no choice but to make itself as impregnable as possible in a jungle-world. It seems axiomatic to increase numbers despite authoritative evidence, scientific and military, that there will be no victors in a third world war. It will be mutual destruction and collective suicide. . . . Is it humanly possible to elicit enthusiasm for something which obviously is failing? . . . If it really is utopian to hope that absolute nationalism can be ended in one consistent and coherent act, then resign yourself to a cataclysm of unimaginable fury. The competitive arms race, unless stopped soon, can have but one end. There is now no third choice possible; it is either the utopia of world government or the cataclysm of an atom-germ-poison third world war."

The world is sinking deeper into the slough of despondency with each passing month as the outlook for the future becomes more helpless. It is evident to all thoughtful observers that the United Nations is failing as miserably as did its predecessor, the League of Nations. Since this world organization constituted the only apparent way to international peace and security, its evident helplessness in the face of intense nationalism and the new governmental ideologies is filling the hearts of millions with despair.

Even the members of the world council are losing their courage. A recent report declared that "there is no levity among the delegates" and that some are even "dejected," and "most of them remain deadly serious in the belief that this was the last chance to work for international co-

operation." The pessimism has become even greater since the tragic failure of the London Conference of Foreign Ministers. The "cold war" of verbal bombs is becoming more intense, and in the light of the history of the past they could easily change to weapons of physical combat and bring on World War III, the possibilities of which are frightful beyond the most fertile imagination.

The world is sitting on a powder keg with sparks flying in all directions, and the explosion could happen at any moment. We must remember that the detonation will not be comparable to anything in the past because of our recent entrance into the atomic age. The concussion will be a thousand times more dreadful and destructive. In fact scientists tell us that it will leave the world a desolate wilderness with the only remaining inhabitants hiding in the swamps and mountains.

A recent writer describes the situation in the following dramatic language: "We are on board a wild train. The brakes are broken. Ahead are miles of down-grade, curves, and cliffs. We are picking up speed.... The train also carries dynamite—tons in every car.... Then come the coaches. Children are tearing up and down the aisles among orange peels and sweet wrappers. Adults are reading cheap magazines and comic strips and listening to cheap music on somebody's portable radio. A very intelligent looking man has just hurried through the coaches announcing that there is something the matter with the brakes. Mostly, human din drowned him out. The few people who did hear told each other that he was a crazy professor and pointed out that the broken brakes are problems for the train crew and responsibilities of the railroad management."

The writer then describes a second trip of the scientist through the train to repeat the warning. A few people take him seriously and meet on a platform between the coaches to discuss the situation. He then concludes: "Do not we realize that man must change, nations, the world—if we are to save the hides of most of the people, in all likelihood, who are alive this very day."—Philip Wylie, in *Off My Chest*, January 13, 1946.

But there is a road to certainty, and only one. It is the way of the Prince of Peace. In genuine Christianity there are certainties on which we can build and to which we can anchor with the assurance of calm security. The New Testament writer Luke begins his Gospel with the statement that he is setting forth "in order a declaration of those things which are most surely believed among us." Addressing Theophilus he then states the principal purpose of his book: "That thou mightest know the certainty of those things, wherein thou hast been instructed." Luke 1:1-4.

The apostle Peter said that the Christian faith is not based on "cunningly devised fables," but on the "sure word of prophecy" which is more dependable than our natural senses and sheds a brilliant light on the darkest problems of the human race and lights up the dark and unknown future all the way to "the day dawn" of the "perfect day." (2 Peter 1:16-19.) What the auto-

mobile headlight is to the driver on a mountain road on a dark night, the prophetic Word is to the Christian church in the darkest place in the universe—this world under the cruel reign of sin.

Christ is the Pilot who knows the way into the harbour of security, and He is also the Anchor that holds the ship Zion during the fiercest storms of life. Said the apostle Paul: "That by two immutable things, in which it was impossible for God to lie, we might have a strong consolation, who have fled for refuge to lay hold upon the hope set before us: which hope we have as an anchor of the soul, both sure and steadfast, and which entereth into that within the veil; whither the forerunner is for us entered, even Jesus, made an high priest for ever after the order of Melchisedec." Hebrews 6:18-20.

Here is real hope and certainty. Christ is "an anchor that can neither break nor drag." (Weymouth.) Fastened to Jesus Christ as He carries on His mediatorial priestly ministry in the heavenly sanctuary, we can know a security that is in bold contrast to the distress, perplexity, and haunting fear of the modern world. Paul concludes his description of the undermining influences of false teachings and ungodly conduct with the statement, "Nevertheless the foundation of God standeth sure." 2 Timothy 2:19. While human foundations everywhere are crumbling and giving way, it is comforting to know that there is one substructure of stability and permanence. Those who build on this immutable base will never be ashamed.

A well-known writer said: "A storm is arising that will wrench and test the spiritual foundation of everyone to the utmost. Therefore avoid the sand-bed; hunt for the rock: Dig deep; lay your foundation strong. Build, oh, build for eternity!" *Testimonies for the Church*, Vol. 5, pp. 129, 130. If we erect our character buildings on the Rock of Ages they will stand in the storm that is coming, relentless in its fury. We must dig deep and go beneath the shifting sands of human reasoning and philosophy and get down to the bed-rock of divine truth.

Another writer recently said: "Historical events are rushing forward like a succession of heavy breakers thundering upon the shore. Our minds, our resolutions, and our courage must be of the quality of a granite coast." This quality of character is available to every person through Christ who is Himself the immovable granite Rock against whom the restless waves of the sea of humanity dash in vain.

How consoling in these troublous times is one of the parting messages of Christ before His ascension: "Peace I leave with you, My peace I give unto you: not as the world giveth, give I unto you. Let not your heart be troubled, neither let it be afraid." John 14:27. Here is the only peace that will endure. Hope of peace cannot be found in the United Nations or in any other human organization, but only in the Prince of Peace. "And the work of righteousness shall be peace; and the effect of righteousness quietness and assurance for ever. And My people shall dwell in a peaceable habitation, and in sure dwellings, and in quiet resting places." Isaiah 32:17, 18.

THE THREE CROSSES

H. H. MATTISON

IT WAS a dark day in the history of this unhappy world, that strange day some nineteen hundred years ago, when three crosses stood black against the sky on a hill just outside Jerusalem; and yet it was a day of solemn triumph, a day of costly victory on behalf of a fallen and unperceiving race. Eternal history was made that day. A universe stood by in awe.

There was nothing unusual in the sight of crosses on that hill, or in the thought of death by crucifixion. Under Roman law that fate was reserved for hardened and desperate criminals, but upon this occasion the one who hung in the midst, in the place of deepest shame, was One of whom the Roman Governor was forced to say, "I find no fault in Him." John records, "And He [Jesus] bearing His cross went forth into a place called the place of a skull, which is called in the Hebrew Golgotha: where they crucified Him, and two other with Him, on either side one, and Jesus in the midst." John 19:17, 18.

Let us stand by and watch. The two thieves wrestle desperately with the soldiers appointed to fasten them to their crosses. The air is heavy with their groans and cursing. Finally they are secure and their crosses set up in their places. The sweating soldiers turn to the last victim and are astonished and awed to find Him completely submissive. As the cruel spikes pierce His quivering flesh He prays, "Father, forgive them, for they know not what they do." The gentle hands that healed the sick and blessed little children are outstretched upon the arms of the cross. The willing feet that have borne the Master on countless errands of mercy are securely spiked to the upright beam. Still this Man, wrongly accused, illegally tried, and now suffering shameful execution, utters no word of reproach.

Jesus' enemies stand near the cross reviling Him and in mockery commanding Him to come down and prove His divinity. The thieves join in the chorus for a time, but ere long one of them begins to think seriously. He remembers Jesus' teachings and His works of mercy. He remembers His God-like bearing all during His trial and His pitying forgiveness of His tormentors. He hears the ridicule of the Jewish leaders and the voices of His friends raised in His defence. He turns his face to gaze on Jesus' face. It is haggard with weariness and pain, but gentleness and innocence are enshrined there. Turning to his fellow criminal he says, "Dost not thou fear God, seeing thou art in the same condemnation?" Luke 23:40. The dying thieves have no longer anything to fear from man. But upon one of them presses the conviction that there is a God to fear, a future to cause him to tremble. And now all sin-polluted as it is, his life-history is about to close. "And we indeed justly," he moans, "for we receive the due reward of our deeds; but this Man hath done nothing amiss." Luke 23:41. The Holy Spirit illuminates his mind and little by little the chain of evidence is joined together. In Jesus, bruised, mocked and hanging upon the cross, he sees the Lamb of God that taketh away the sin of the world. Hope mingles with anguish in his voice as he cries out, "Lord, remember me when Thou comest into Thy kingdom."

These words fall like sweet music upon the ears of Jesus. The faith of the penitent sinner cheers Him and strengthens Him for His last hour. Quickly He answers, "Verily I say unto thee, today thou shalt be with Me in Paradise."

Despite the apparent failure of His mission here on earth; despite the darkness of the hour through which He was passing, Jesus offered hope to the dying man. "I tell you today," said Jesus, "on this day when My disciples are disappointed in Me; on this day when My people the Jews have crucified Me; on this day when nature offers no hope; when even My Father is about to turn His face from Me; I tell you now that your sins are pardoned and that you shall be with Me in Paradise." As Jesus, crucified with the thieves, was placed "in the midst," so His cross was placed in the midst of a world lying in sin. And the words of pardon spoken to the penitent thief kindled a light that is still shining to earth's remotest bounds.

Soon after this, darkness enveloped the scene, and the Saviour entered into His last agony relying upon evidences of His Father's acceptance which had been given Him up to that time. By faith He was victor.

Keep in mind, that there were three crosses. Often we remember only two, the cross of Jesus and the cross of the penitent thief. Let us not forget the third cross. It was just as close to Jesus as was the cross of the repentant thief, but no words of cheer were spoken to the sufferer there. No hope beyond that dreadful hour was held out to him. Why? Was he the greater sinner? No. He refused to acknowledge Jesus as the Son of God. He continued his railing. His was the cross of rejection. He saw the same demonstration his fellow sufferer saw. He heard the testimony of Jesus' friends. He saw the sun darkened and felt the earth tremble. He heard the awed voice of the Roman soldier, "Surely this was the Son of God." He heard Jesus pray for His enemies and heard Him offer hope and pardon to the other thief. Yet, he died without a Saviour, a lost man. Friend, do not lose the lesson. The cross of REJECTION was just as close to Jesus as was the cross of RECEPTION.

How are you facing the future, brother-man?—With Christ or without Him? Are you, like the lost thief, refusing to acknowledge Jesus as your Saviour? Are you joining with the scorners and closing your heart to His invitation of mercy? These two crosses represent the whole world as related to the plan of salvation today. The cross of salvation is still in the midst of a sinful world. Thank God for that. Jesus is still waiting for lost sinners to own Him as Lord and Saviour. On the one hand stands the cross of RECEPTION, on the other the cross of REJECTION—so near to Jesus and still so far away. Which cross represents your standing before God? He will draw very near to any who will accept Him. Friend, today IS the day of salvation.

GOD OR ACCIDENT?

H. W. Lowe

A SMALL child had died in a north African village. His mother was afflicted, and a few professional mourners endeavoured to mingle their tears and wailing with hers. A group of village adults discussed the matter; but it was soon decided, with a stoical shrug of the shoulders, that nothing could be done when *kismet* intervenes.

Had that child lived and died in the days of the great Greek or Roman teachers, the highest explanation of the event might have been expressed thus: "Whom the gods love die young."

Men have never escaped some form of this idea of destiny, the great over-ruling force which, as Shakespeare says:

Shapes our ends,
Roughhew them how we will.

All sorts of cruel crudities cling to men's interpretations of destiny. Byron puts these words in the mouth of one of his characters:

For I am as a weed,
Flung from the rock on ocean's foam to sail,
Where'er the surge may sweep, the tempest's breath prevail.

There is no doubt that a controlling hand directs the destiny of man. Even Hippocrates admitted "that each thing, both in small and great, fulfilleth the task which destiny hath set down."

Yet we must observe that all through the ages there has been, apart from the Christian interpretation of life, a marked trend to interpret destiny in impersonal terms. The first ideas of men in the Hebrew record of creation centred round the personality of God—"In the beginning God;" but soon the curve of human thought swung downward in the measure that men moved God out of their reckoning.

Pilate, like most Roman governors, no doubt revelled in extensive power, and its limitation or termination had probably never occurred to him, except insofar as he and his class played politics with Cæsar. Thus these powerful men often threatened those before and around them. "Speakest Thou not unto me? knowest Thou not that I have power to crucify Thee, and have power to release Thee?" he snapped at Jesus of Nazareth. With electrifying confidence this Man replied: "Thou couldst have no power at all against Me, except it were given thee from above."

That was not the only intervention of Providence in Pilate's affairs. When he was inquisitive and tried to draw Jesus into a committal on the sedition question, he at first was sharply rebuked. Then, a second query as to His kingship brought this supreme declaration of providential direction in human life: "To this end was I born, and for this cause came I into the world."

Here was One who knew whence He came and whither He was going. Moreover, it seems, as we read His life, that everything He did, and everywhere He went, and each word He spoke was ordered by God.

How much we need to know this personal God today! Life apart from God has reduced men to atoms that hold together or blast apart at the dictates of abstract laws of physics.

In point of fact we need to learn again that God cares for us and orders every circumstance of the life submitted to His care. Then, in ways chosen by God Himself, we shall come to look on our life patterns as something more than mere fortuitous designs in the machine of life. Then shall we truly believe:

Thou cam'st not to thy place by accident;
It is the very place God meant for thee.

The glories of creation were not made by accident.