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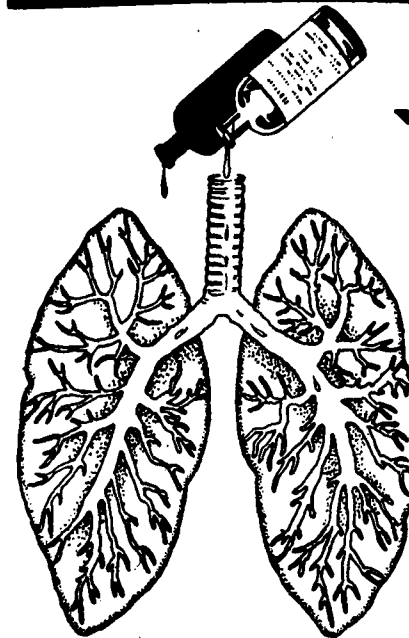
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ADDRESSES AND ARTICLES

Agricultural and Economic Aspects of Nutrition

● A. Sreenivasan, M.A., D.Sc., A.I.C.

(Agricultural Chemist, Institute of Plant Industry, Indore)

It is perhaps inevitable that in the history of the development of almost every branch of science, there should be a certain lag between acquisition of knowledge and its application in practice to the improvement of human welfare. This has been so with the science of nutrition, at any rate, as far as India is concerned. The movement towards better nutrition has become more or less widespread in many western countries within a comparatively short period; but here in India, the problem is yet in its infancy, faced as it is with many difficulties, agricultural as well as social and economic.

Nutrition Problems vary with Local Conditions

The problem of nutrition must necessarily vary from country to country. In some countries, an adequate diet is probably within reach of a vast majority; in others it may be that practically all live but little above sustenance level. In some countries, prices of certain articles of food are relatively low; in others, they are high, especially in relation to income. On account of differences in local conditions therefore, nutrition policies must vary from country to country. And, in a vast country like India with over forty crores of population, there are bound to be differences even from province to province or tract to tract. But the ultimate goal must everywhere be the same—viz., to ensure that an adequate diet is within reach of all sections of the population. An adequate diet is one which has the right proportion of the energy-bearing and the protective foods.

Energy Foods Vs. Protective Foods

The energy foods like cereals, pulses, sugars and vegetable oils are non-protective but nevertheless important from a calorie-point of view. The protective foods (among which may be ranked milk and other dairy products, vegetables and fruits), on the other hand, are highly important from every point of view and are in fact indispensable. An individual only starves when he lacks sufficient calories but he develops serious deficiency diseases when he lacks the protective foods, irrespective of the quantity of calorie consumption. Furthermore, by maintaining a judicious proportion of the two classes of food in our daily food intake and, especially, by paying greater attention to the protective foods, it is possible not merely to expedite the growth and development but also to increase vitality or "the period of the prime".

For the author's previous articles on the subject of Nutrition please see *Ind. Med. Jr.*, Vol. 35, Nos. 7 and 8, pp. 137 and 178.

The present article concludes the series.—Ed.

It is the inability to obtain the protective foods or ignorance of their vital importance which at present is the chief cause for widespread malnutrition in India. Critics may point out that there are many areas in the country where millions are starving from lack of any food at all. But it is possible, by careful orientation of our present agricultural policies, to make food plentiful as well as diversified even in these areas.

Awakening in Nutrition-consciousness

During recent years, there have happily been some encouraging signs of an awakening in the nutrition-consciousness of the people, especially of the upper and middle classes, with the result that there has been some improvement in food habits followed by the building up of health, physique and resistance against illness generally. Together with the recent advances in medicine and sanitation which have aided in the control and prevention of diseases, this has led to a decrease in mortality rates and increase in the span of life and therefore to an increase in population as revealed by recent census returns.

Nutrition and Agriculture

Improved nutrition must naturally prove of general benefit to agriculture as a whole, for better nutrition and consequent increased population means an increase in the demand for foodstuffs and an increase in the demand for foodstuffs implies greater agricultural activities. The need thus arises for more intensive farming which in turn means greater attention to the soil's productivity and maintenance of its fertility level.

Mixed Farming—its Advantages

It is essential to emphasize in this connection, the importance of mixed farming—which, unfortunately, is very little practised in India. A type of simple farming on the basis of two or three better class milch cows or buffaloes in each small holding and the growing of fodder crops in the rotation may increase the output and maintain the fertility of the land. A balanced combination of dairy and cereal farming may thus have the obvious advantages of providing for the proper nutrition of the cultivator's family, increasing the income from the land and minimising the risk of over-production or of soil depletion. There are excellent examples of countries in the west* which are densely populated and highly industrialized and where cattle form an integral part of a system of intensive cultivation based on dairy farming. While there is every sign of a rapid rise in the industrial development of our country as a result of this war, agriculture is and must continue to be the main occupation of a large section of the people.

Mixed farming also provides the source for organic manures, especially of animal origin, about the value of which in improving the physical properties and fertility of the soil and the quality of the crops raised thereon, much has been heard recently.

A system of manuring involving the use of organic farm wastes not only provides several of the important minor elements essential to crop production but also,

* The war must since have changed conditions in these countries.

under certain conditions, enriches the food value of the grain crop. And in India, where one single cereal or another forms the staple, any attempt at enriching the nutritive value of the grain is well worth it.

The Need for Systematic Crop and Food Planning

With the increase in population pressure, not only should cropping be more diversified but a systematic crop and food planning must be pushed ahead. The dairy products, the adequate supply of which is particularly necessary for the proper health and development, especially of a non-meat eating population, are to-day becoming scarcer and scarcer. According to a recent survey of Dr. Norman C. Wright, the average *per capita* consumption of milk in India does not exceed 3 ounces a day! One immediate step by which the country's milk supply could be increased will be the expansion of fodder cropping. The cultivator should be taught the advantages of growing crops for the triple purpose of foodstuff, animal feed and manure. At the same time, the importance of a proper and balanced combination of food crops with industrial crops such as cotton, jute, tobacco, oilseeds, sugarcane, etc., must be emphasized in any system of adaptive crop planning. In this way, agricultural industries will be developed in a manner that will draw off surplus labour from the land.

The Difficulties in its Way

It is not, however, a simple task to make agriculture meet efficiently the requirements of an improved nutrition. Foremost among the difficulties in the way of any alteration in cultivation practices is the conservatism of the average farmer. Even where he could be induced to substitute intensive farming for cereal production, he still lacks the capital and credit facilities to effect the change. The difficulties of marketing and distribution of protective foods, which are mostly of a perishable character, is an additional hindrance causing wide price fluctuations and instability. Sometimes climatic and soil conditions stand in the way of introduction of fodder crops or make it impossible for other crops to be substituted.

What the State can do?

These difficulties in the way of any adaptation and re-orientation of agriculture can, however, be surmounted by efforts on the part of the State or Government, chiefly through the education of the farmer. It is essential not only to spread knowledge about suitable agricultural methods and practices but also information regarding the general trends in the demands for foods which are likely to result from a better nutrition-consciousness. By educating agriculturists to the importance of increasing, where possible, their output of the protective foods, the State is at once contributing to an improvement in agriculture and to an improvement in nutrition.

Protection and encouragement to the farmer can also be given most efficiently by improving methods of agricultural production, by keeping the farmer informed of the latest improvements in cultivation practices, by combating animal disease, by better seed distribution, by guiding his fertilizer and fodder practices, by affording improved market and transport facilities, by strengthening the agricultural credit systems and by "protection" of national produce.

Means of Stabilising the Farmer's Diet as well as Income

A beginning has been made in these directions by many Provincial Governments. These, together with the modern developments in the methods of marketing, distribution, refrigeration and canning, the progress in animal and plant breeding, the invention of mechanical process to supplement or, at times, supplant hand labour, and the applications of biology and chemistry, have all greatly increased the income return of the farmer per unit of land and capital invested.

Much more remains yet to be done; above all, the farmer must be made to realise that protective foods in general, yield a higher net income than cereal foods and, because of the diversification involved, offer a greater degree of stability. The diet of the farmer's family itself would be vastly improved as it becomes less dependant on one crop for sustenance and income.

The direct effects of such a re-orientation of agriculture towards mixed farming would be vastly beneficial on the nutrition standard, international trade, and prosperity of the country as a whole.

Nutrition and Economics

While thus agriculture can be so oriented as to meet the nutritional needs of the country, it must be pointed out that the main cause of malnutrition is not perhaps the inability of agriculture to produce enough food; it is simply poverty and the ignorance associated with poverty, that deny sufficient food to half the population of the country. Many people do not have the means to buy the food they need either because food prices are too high or income too low, or both.

Poverty and Ignorance—Chief Causes of Malnutrition

Poverty and ignorance have, therefore, remained formidable obstacle in the combating of suffering from malnutrition or sub-nutrition and susceptibility to disease. The inelasticity of dietaries in India due to religious prejudice or social custom is an additional factor. Economic and religious considerations together determine whether meat, fish, eggs, and sometimes, even milk will enter the dietary or not. Thus faulty and unbalanced diets are as much responsible for disease and mortality as deficient or inadequate diets.

Purchasing Power Vs. Knowledge of Nutritive Value

It would at first appear that until food costs are reduced or purchasing power of the consumer increased, food consumption of large numbers of people will continue to be restricted. There is, however, full scope for improvement in the dietary habits of even the lower income groups through educational means. Surveys conducted in more than one country have revealed that in families spending the same amount of money per head on food, some secure adequate diets while others do not. Although no such data on the distribution of expenditure for food is available for India, yet it is borne out by experience that purchase and *per capita* consumption of protective foods for the same level of income

is greater among the educated. A feature of nutrition policy should, therefore, be the dissemination of nutritional information by public authorities, voluntary services administering social aid, school teachers and others in a position to influence food habits. The first step must be to educate those responsible for education and the administration of social aid. Education should include information on alternative diets in terms of actual food and on the preparation of diversified menus within limited income ranges.

Education of the Palate

The intelligent education of the palate to welcome and relish the best kinds and relative amounts of foods as judged by their nutritional characteristics is also important. Only those who have known the newer findings of nutrition can realise this—and many otherwise educated and intelligent people still allow their food intakes to be guided by the whims of an uneducated palate.

Need for Provision of More Milk

Of especial importance is the provision in any national food policy for an adequate consumption of milk, especially by the infants, children and expectant and nursing mothers. Its value is unique; it is indispensable. The League of Nations Committee on Nutrition recommends that one of the most important, immediate and practical steps which Governments can take to raise the standard of health of the growing generation is to arrange for the free or cheap distribution of safe milk to children in school and of pre-school age. Lord Linlithgow saw the value of this recommendation and, immediately on assumption of Office as Viceroy took steps to implement it. Unfortunately, however, the movement has not gained much foothold; it is possible that this is due to the fact that our efforts and those of the Governments are now directed towards other issues, more vital today.

How the War affects Nutrition?

A passing reference to the recent trends in food habits of the Western Countries seems called for. The application of the newer knowledge of the influence of food on national health and well-being had met with comparatively more encouraging results in these countries due partly to a higher level of education and partly to a better standard of living. At the present moment, however, the difficulties involved in obtaining higher nutrition have been greatly magnified by the war and its armament programmes. Agriculture has become an essential war-time industry and every effort is being made to secure food self-sufficiency, regardless of either sound agricultural economics or nutrition policies. Since no one country can always produce enough of all foods to sustain its people on a truly mixed diet, domestic production becomes inadequate. Restrictions in food consumption follow; the eating habits of the people are made to conform with the supply. Restriction includes measures such as direct rationing, fixing of exorbitant prices for certain articles of food and the use of various synthetic and other substitute foods—*ersatz* as the Germans call it. Current trends, however, point out that the people of Europe should look forward to a definite lowering in the standards of living for the next few years.

The Problem in India—Need for Improved Agriculture and Extension of Social Services

Here in India, the difficulty in the way of improving the state of nutrition of the masses is certainly far less serious and can be resolved into (i) want of sufficient protective foods, and (ii) low purchasing power of the majority. The first of these can be overcome by a re-orientation of our agricultural policy, by greater attention to the production of our food crops, introduction of new crops and of more fruits and vegetables, improvement of animal husbandry, increased production of milk and milk products, development of fisheries and so on. The problems of storage, distribution and marketing can be facilitated by improved methods of transport and food preservation.

The second difficulty—that of bringing a diet adequate for health within reach of the poor—is a more formidable one. It can only be overcome by adjustments of our economic systems and by greater extension of social services. Indeed, the most important work which can be done at the present time by those who wish to see the new science of nutrition applied is to spread the knowledge. The more widespread the realisation of the extent to which ill-health can be prevented by better food, the more easily will an adequate diet become available to the whole community.

NOTICE

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N.B.—Dr. Joseph Benjamin prize of the value of Rs. 35 for 1939 has been awarded to Dr. R. G. Petkar of Malkapur (Kolhapur) for his best thesis on 'Post-Partum Haemorrhage'.

P. R. Trivedi, D.T.M., L.C.P.S.,
Hon. Secretary,
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Tuberculosis in India

● Dr. R. S. Aggarwal, L.S.M.F. (Punj.), Delhi

Introduction

There is, perhaps, no subject which is so much talked about and so little known not only amongst the lay public but even amongst medical men as tuberculosis. Ever since the discovery of the tubercle bacillus by Koch in 1882 a great deal has been said regarding its aetiology and pathology and numerous attempts made regarding prevention, not always in the right direction. In fact the very first result of the discovery has been a great degree of alarm created amongst all regarding its infectivity and the social odium in which the subject of tuberculosis has been and is still being held. One even feels that apart from the scientific value of the discovery of the organism by Koch, the world has been no better regarding the knowledge of the prevention of tuberculosis as the direct outcome of the discovery of the organism. All attempts made so far to apply our knowledge of the bacteriology of tuberculosis to its prevention by immunizing vaccines and sera have so far proved more or less perfectly futile or at best can be said still to be little more than experiments barely touching the fringe of the question.

There have been marked differences of opinion amongst persons who have had opportunities of making a special study of tuberculosis regarding the degree of infectivity of the tubercle bacillus and the part it plays in the production of disease, especially in adults.

We have heard a great deal about racial immunity resulting from continuity of infection prevailing amongst races! But why is it that India where tuberculosis has existed for centuries, if not for thousands of years, has not yet manifested any signs of decrease of mortality due to such racial immunity in its large population? It is evident that one has to look for a factor other than infection and immunity in the tuberculosis problem.

Unlike most infectious diseases tuberculosis is an ubiquitous disease and consequently the infection is universally present in all civilized communities, so that it is difficult or impossible to escape it altogether. In some degree, however small it may be, the vast majority of human beings have to encounter and imbibe the causative organism so that all attempts at prevention are now aimed not so much at the absolute exclusion of all chances of infection, but at the minimizing the degree of such infection, i.e., prevention of massive infection and the fortifying of the human system enabling it to develop a natural immunity against the disease. Herein lies the great difference between tuberculosis and most of the other infectious diseases. In the latter class, it is the seed which plays the predominant part in disease production and all methods of prevention are directed against the seed, i.e., infective organism, whereas in tuberculosis it is the soil that is more important and excepting during the period of early childhood all efforts should be directed mainly towards fortifying the system and making it unsuitable for the propagation of the tubercle bacillus and the production of disease.

As far as is known, the new-born child inherits no immunity against tuberculosis from the parents. It is, in fact, highly susceptible to tuberculosis. Statistical figures have definitely proved that the tuberculin test which is now universally recognised as the index of infection is perfectly negative in the new-born child, and that the percentage of positive reactions increases with age. The statistics of different countries as regards the prevalence of infection have given results almost identical in nature though not in degree. The figures for countries like Austria, Hungary, and France which are more highly infected than countries like Great Britain, Denmark, and the United States are so conclusive as regards the high prevalence of infection that it is now definitely known that by the time adult age is reached about 95 per cent. of all persons in such countries have imbibed the infection. The statistics of the Tuberculosis Institute of Madras show that by the twelfth month 20 per cent. of children are infected, by the second year 60 per cent., by the fifth year 80 per cent., and by the end of the fifteenth year at least 94 per cent.

Truth about the Causation of Disease

The new-born child takes some toxic matter in itself from the parents, and the nature and quantity of this toxic matter depends upon the health of the parents. After a few months the baby is vaccinated and more toxic matter is introduced into the system and the vitality of the body is lowered. The body is predisposed to the infection of other diseases like tuberculosis.

Proof:—Look at the colour of the iris before vaccination. The eye reveals abnormal conditions and changes in every part and organ of the body. The iris of the eye, after the vaccination, darkens in the areas corresponding to the digestive and respiratory tracts and this fact fully explains why vaccination is accountable for all kinds of chronic disorders of stomach, intestines, liver, bronchi, throat and pharynx; why catarrhal affections and decay of the tonsils and tuberculosis have increased in every country where compulsory vaccination has been introduced.

Later on, when the child begins to eat, toxic matter is introduced into the body by the admission of injurious substances through unnatural mode of life. There are two passages through which toxic matter can be introduced into the body:—

1. By the nose through the air into the lungs.
2. By the mouth through food into the stomach.

As soon as we fail to promptly obey the senses of smell and taste, they grow more lax in the fulfilment of their duty and gradually allow harmful matter to pass unchallenged into the body. Our lung diet is, on the whole, not so degenerate as our stomach-diet, as the former admits of no luxurious outlay.

Therefore the origin of toxin is improper diet and irregular eliminative habits. This can hardly be avoided under our modern ways of living. As long as the colon is functioning properly as the body's sewerage system, we are well and happy; but when the colon is sluggish, the faecal matter is retained in it and

the result is constipation. The funny thing about it is that many a man is constipated who has regular bowel movements every day. Ask about this habit and the answer is "Oh, I am perfectly regular!" Yet the fact is, the lower bowel may be packed with faecal matter.

Sir Arbuthnot Lane, the noted scientist, found that 90 per cent. of pulmonary diseases originated in putrefactive colonic stasis. By patient research, employing X-ray, microscope and chemical analysis, scientists have gained a new light about diseases of intestinal origin.

The retained faecal matter begins to decompose through body heat, and produces poisonous gases, toxins and bacteria, or serves as a breeding place for germs. These toxins pour through the porous bowel-wall into the portal vein. This absorption of toxins is called auto-intoxication. The absorption goes on in the bowels without our knowledge.

The system tries to expel this poisonous matter through the kidneys, the pores of the skin and the lungs where the blood goes to cleanse itself with oxygen. But only a certain amount can be thus thrown off. If the load is too great for the cleansing organs to carry, then the poison begins to accumulate at these eliminating organs.

The lungs constantly play a great part in the purification of the blood circulating in the body, by the agency of fresh air. When they cannot properly perform this function, the toxic matter which would otherwise have been expelled, remains in the lungs and other parts of the body, continually increasing in quantity. The consequence is that the condition of the blood becomes altogether abnormal, causing a dry, devouring heat in the interior of the body. As a result of this high internal temperature the lungs become chronically inflamed and the vitality of the lungs is very much lowered. The blood becomes too weak to fight with the disease germs. The latent or the new infection of tuberculosis is able to attack the lungs easily. The number of tubercle bacilli gradually increases and causes tuberculosis. It is quite impossible that persons who are really healthy can be suddenly attacked by any kind of tuberculosis, however great be the number of tubercle bacilli they inhale.

The apices do not receive sufficient fresh air in respiration, hence they are the weakest portions of the lungs. It is why, the apices are first infected generally.

Another important cause of lowering the vitality is the opening of a medical hall in the body, by means of injections and poisonous drugs. When the body is at disease, the physician does not wait for the natural recovery or tries to help Nature to expel the poisonous matter out of the body. His attempts are simply to suppress the symptoms of disease by drugging the system. The result is that the patient gradually loses vitality, and becomes the victim of diseases, every now and then.

Bad sanitation, living in dark rooms, lack of fresh air, sun and physical exercise, poor diet and unnatural mode of living are also important causes which make the soil fertile for the growth of tubercle bacilli.

Sexual diseases also help the growth of tubercle bacilli. The toxic matter is accumulated in the system in a chronic state; and at procreation it reappears in the child which becomes scrofulous or consumptive. The seminal fluid is in reality a quintessence containing all the characteristics of the parent and transferring them to the child.

Early Marriage

The first effect of early marriage is early motherhood with its consequent drain on the system which falls an easy prey to tuberculosis. The number of victims to consumption amongst young mothers in India is very great and a visit to a tuberculous hospital or sanatorium in India is enough to convince even the most superficial observer of the glaring fact that the vast majority of female patients are mothers between the 15th and 25th year of life. Many of them gave a history of frequent pregnancies, abortions or child births and amongst a good many the attack of the disease in a virulent or galloping form has followed the birth of a child.

Every addition to the family is an extra strain not only on the strength and working capacity of the mother but on the resources of the family as a whole. Besides the physical and nervous drain on the mother, it means more of domestic responsibility, less of individual attention to each child, less air space, less nourishment, wider spread of tuberculosis infection under the same roof once a member of it gets the active disease, and increasing demoralization in the household. This is what is actually the position in the majority of households in India today.

Civilization

Modern society and civilization, despite all its apparent glamour and charm, has certain factors which favour the spread of this disease. External show of richness has gone on side by side with the increase in internal poverty; the worst aspects of Western civilization have been copied by us. Modern sanitation like modern civilization is too costly for a place like India. External glamour is kept up but the body is allowed to be starved and domestic and personal hygiene neglected.

One important function of the skin is heat regulation. But our habits of living in closed rooms and of dressing in heavy and tightly fitting garments and the use of electric fans, have disturbed this mechanism and have put a great strain on the lungs.

Clinical History

According to the nature of the soil and infection, tuberculosis may run a rapid or slow course.

The external symptoms of tuberculosis are seldom the same in any two patients. One complains of difficulty in breathing, another of headache; a third of bad digestion; a fourth notices nothing at all until, a fortnight before his death, he is suddenly seized with inflammation of lungs. A fifth also notices nothing, until he is all at once attacked by galloping consumption, and dies within a few days. A sixth suffers, as he believes, from dental caries, whilst in reality his complaint

is tuberculosis. Many persons whose lungs are affected get pains in the shoulders. Often it gives rise to disease of throat, pharyngeal catarrh, bronchial catarrh, chronic nasal catarrh, etc., which are traceable to consumption. In some cases haemoptysis and pleurisy are the important symptoms.

The psycho-pathology of tuberculosis is also important. In many cases the disease manifests itself in the form of what may be called neurasthenia or hysteria. The tubercle toxins which are given off from the semi-quiet foci, so frequently present in early life and adolescence, are responsible for these states. The cerebral cells are bombarded and intoxicated by them. The reaction on the part of the patient is shown by the nervous instability and premature sense of physical languor.

Generally the tuberculous patients complain of poor digestion, flatulence and heartburn, vague abdominal pains, constipation, nausea, etc. The development and persistence of dyspepsia of varying severity in a young and otherwise apparently healthy person, without any definite cause, should, therefore, be regarded with suspicion.

Evening rise of temperature, progressive loss of weight and strength are among the most important early manifestations of the disease. Sometimes, though very rarely, the fever appears at a later stage.

In fact the symptoms in the early stage are so vague that one cannot be definite whether the patient is suffering from tuberculosis or not. Percussion and auscultation do not reveal any sign. The patient himself is not cautious about it. After sometime when portions of lungs become necrosed the patient enters into the second stage, and then the patient and the doctor become definite about the onset of the disease.

If the patients do not submit to proper treatment in the incipient stage, the infection becomes well established, and the results are mostly unsatisfactory. The disease may be fatal in three or four months, or it may last twelve or fifteen years, before finally killing the patient; and in this time its progress will be very unequal, often quiescent for months or a year or two, and then making great strides, with haemoptysis or much fever.

Physical Signs

In the early stage, the physical signs may be very slight and vary in different cases.

In the second stage may be noticed depression of the supraclavicular and infraclavicular regions; increasing loss of resonance as the disease proceeds; bronchial breathing of different qualities and pitch; voice and cough are loudly bronchophonic. Râles often present.

In the third stage, modifications in the shape of the chest are most obvious—chest flat, long and narrow; shoulders depressed and sloping; upper ribs in front wide apart and the lower ribs crowded together, and the epigastric angle reduced to its smallest size.

The percussion note may be quite dull or of tympanic resonance. If a cavity is in free communication with the bronchial tube, and the patient's mouth is open, percussion will often elicit *cracked pot sound*.

The breathing may be bronchial, cavernous or amphoric. The vocal resonance is increased (bronchophony), and there is clearness of the articulated sounds (pectoriloquy).

Crackling râles and metallic tinkling may be heard in cavities.

Diagnosis

Early Stage. Mouth breathing; bloated face; frequent attacks of cold and cough may be enough for diagnosis at this stage.

Advanced Cases. The symptoms and physical signs make the diagnosis obvious. Sputum test will show tubercle bacilli. X-ray may be taken to see the cavities and consolidations.

Sedimentation test of R. B. Cs., in a suspected case may be done.

Prevention

1. *Child Welfare.* It has been proved that whilst ordinarily at least 60 per cent. of children born of tuberculous mothers and brought up in the same house as the mothers', develop active tuberculosis, much less than $\frac{1}{2}$ per cent. of children develop active disease if separated from the consumptive mothers immediately after birth and transferred to families in the country known to be healthy for being brought up and looked after, till they grow into healthy children of school-going age. Where the separation of the child from its mother is impossible or impracticable the next best course is to minimize the chances of infection by preventing the mother from nursing the baby and by segregating it as far as possible within the house and feeding it either on healthy cow's milk or by the employment of a healthy wet nurse. In a few words, prevention of infection in the infant and proper care bestowed on the feeding, cleanliness and general attention to the growing child minimize the occurrence of the active disease and lessens the incidence of it in the whole community.

Ante-natal and post-natal care are also of great importance in tuberculosis prevention. They should go together in improving the standard of health of the child population, especially in the period upto ten years of life. This is why child welfare plays a very significant part in the prevention of tuberculosis.

2. *Social Reforms.*—Early marriage system should be avoided by social reforms. A high birth rate means a high death rate and a degeneration of national physique. Delayed marriage and control of births lessen the mortality from tuberculosis. Prevention of early marriage, which the Sarada Act has now legally enforced, is one of the wisest and most fruitful social measures.

3. *Drugging.*—Drugs which lower the vitality and suppress the disease symptoms, and are not able to remove the cause of the disease, should not be used.

Too much drugging should not be done in any patient. We should adopt natural methods of cure, and help Nature to make the system free from the cause of the disease. In England and in other countries too much drugging is discarded and physicians try to follow natural means of healing.

4. *Detection of the Disease.*—Another important anti-tuberculosis measure is early detection of the disease. There is a very large number of children and adults in all communities who, due to a combination of causes especially malnutrition, general ill-health and attacks of other chronic diseases, get their resistance against tuberculosis lessened with the result that the latent infection in them begins to show itself by active signs. If early diagnosis is made of the disease at this stage the vast majority of the subjects with proper attention to diet, air, sun and rest, etc., can get over the disease and recover their normal health.

5. *Sanitation.*—General sanitation of the houses and cities should be improved. Spitting in public places and public conveyances should be prohibited by law. Spittoons should be placed in all public places and offices. The contents of these should be destroyed by burning or disinfection. Phthisical patients should be segregated.

Flies play an important part in spreading tuberculosis, as they feed on sputum and later on contaminate food materials on which they sit. Every attempt should, therefore, be made to deal with the fly pest with proper precaution regarding cleanliness in and around houses.

Personal cleanliness, especially of the mouth, and attention to the teeth is of great importance. The tooth stick or the tooth paste should be used daily.

6. *Air.*—Pure fresh air is the most essential necessity of life. The value of deep breathing cannot be overestimated. Every person, young or old, must practise deep breathing at least once a day in the open air. Deep breathing not only supplies quantities of oxygen, purifies blood and strengthens our lungs and heart, but it marvellously increases nerve and muscular energy.

Great attention and care should be bestowed on the ventilation of the living and sleeping rooms of houses. In a hot country like ours it is better to sleep in open air on verandahs and if that is not possible, in rooms with the windows kept open day and night at all seasons. People should not cover their faces.

7. *Sun.*—We find that a great amount of ill-health and disease is directly attributable to lack of sunlight. It is the ultra-violet rays of the sun that possess wonderful curative and preventive powers, the infra-red rays or the heat rays playing but a minor part.

Experiments have proved that muscles under the influence of sun-rays develop into athletic form without the use of massage or electricity. We must, therefore, invoke the aid of sun-light in the houses, the schools, the factories, etc. Without the sun all life—animal as well as vegetable—will be extinct. "Sunlight is the best tonic, the best stimulant, the best disinfectant, the best health giver; indeed 'it is the greatest of all physicians.'"

All people, healthy or sick, should take sunbath. On a warm sunny day the patient lies on the bed lightly dressed. Cover the body with plantain leaves for half to one hour. If the patient suffers from headache or dizziness, sunbath should be given for short duration at first. Keep the head covered with a towel. The skin pores will soon begin to open and there will be profuse perspiration. After sunbath take cold water bath.

8. *Exercise.*—Exercise is essential for good health. Sedentary occupations lead to physical weakness and decrepitude. It has been found by actual experience that Suryanamaskar exercises*, when done regularly and properly, will fully develop the following three parts of the human body:

- (a) Digestive organs.
- (b) Heart and lungs.
- (c) Nervous system.

9. *Diet and Digestion.*—More important than most other preventives is the adjustment of the diet. Tuberculosis is, in a sense, pre-eminently a nutritional disease and results from an insufficient or wrongly balanced diet. A few of the fundamental principles regarding food may be given here.

(a) Do not eat except when hungry. Civilized man has gone very far astray in his eating habits and has allowed many of his true food instincts to be perverted, destroyed or replaced by artificial or cultivated tastes and habits. They have brought untold evils, causing a loss of strength and vitality and encouraging disease.

(b) Man gets proper nourishment from natural food only. We must eat our foods with all the natural constituents retained in them, i.e., whole wheat, rice, pulse, etc. Husks should not be discarded because they contain mineral salts and vitamins and form important roughage, so necessary for complete elimination of waste matter from the colon.

(c) Over-eating is a most prolific source of ailments and disease. It brings about auto-intoxication.

(d) Chew your food thoroughly. Excessive seasoning with salt, spices, chillies, and condiments should be avoided.

(e) Fasting is an important health-restoring and health-preserving measure. Observe a complete fast once in a fortnight.

As long as the digestion is weak, the body is not able to procure sufficient vitality from the food. The best thing known to me to improve the digestion is

Friction Hip Bath.—Take a bathing tub and fill it half with water at 64°F. to 72°F. Sit in the tub, keep the legs out and rest them on a stool. Rub the entire abdomen from the navel downwards and across the body with a wet cloth. At first ten minutes will suffice, afterwards the time may be prolonged to 30 minutes. For weak persons and children ten minutes are sufficient. The bath may be taken once or twice daily. After the bath put on warm clothes, and it is also better to take a little exercise.

10. *Colon-Irrigation or High Enema.*—I have already explained how auto-intoxication takes place when the fecal matter is retained in the colon, and how diseases

* The book on Suryanamaskar Exercises is available from the Leader Press, Allahabad.

are caused and the vitality is lowered. Therefore it is necessary to keep the colon clean. A clogged colon, like an overloaded city sewer, needs solvent and hydraulic pressure to loosen and liquefy hardened masses and gentle siphonic force to remove them. The proper method of intestinal management removes this poison quickly and painlessly from its source. Colon-Therapy has long ceased to be an experiment; it has proved its great value in thousands of cases. There is no chance of harm, and the treatment is painless, even pleasant; colon-irrigation acts like magic.

Education.—Laws of health should be demonstrated to the public and students by lectures, posters, pamphlets, lantern slides and cinemas, etc. Open air class system should be introduced in schools.

My Own History.—After passing the medical examination in 1927, I was gradually losing my vitality. In 1936 after returning from Nepal, my digestion became very weak and the body began to emaciate. I used to get frequent attacks of cold and there was nervous breakdown. Sometimes there was pricking pain at the apex of the lungs. I thought I might become a victim of consumption after some time, so I put myself under physicians who relieved the disease symptoms temporarily. Then I began to take hipbath, sunbath, exercise, colon-therapy, and regulated the diet. After four months' treatment I became all right. Since I have been benefited, I have introduced these natural ways of healing in my Institute.

Treatment

In the treatment of tuberculosis, the chief thing is to improve the general vitality, so that the body may resist the disease, and the tissues may become less fitted as a soil for the bacillus. This can be done by removing the toxin from the body. Imagine a room left unswept and uncleared for weeks. Very soon vermin of all descriptions will take possession of the room and prove so troublesome to the inmates, that every means will be tried to extirpate them. Now, if we attempt to destroy the vermin by poison, we shall doubtless kill a large number, but by no means effect a permanent alteration in the state of affairs; for the dirt itself is the actual producer and promoter of the vermin and will continually breed fresh swarms. But we shall attain a quite different result, if we immediately cleanse the room itself of all filth; and by continuing this process we shall deprive the vermin of their proper elements and get rid of them for good.

We can clean the system by stimulating the vital and secretory organs. For this stimulation we have to take help of hygienic surroundings, fresh air, good digestible food, sunbath, hipbath, colon-therapy, etc. The patient should lead an easy life in the fresh air, free from care. One should avoid sexual intercourse altogether. In a woman pregnancy should not be permitted, and should be terminated at an early stage if it has begun. Most of the cases will become all right by following these lines of treatment in the early stage. Later on one may take the help of medicinal and surgical treatment, this also according to the need when these lines of treatment become indispensable.

No sooner tuberculosis is discovered the struggle becomes imminent and the patient is faced with the problem of choosing a battleground. The patient ought to realize that his way of living must be altered for the

remainder of his life. It is better if he removes himself to a sanatorium which is more of a boarding school than a hospital. A good library, a music room and a certain amount of the right sort of amusement and diversion is essential to the well-being of the patient. No special medicine need be given. If medicine cured tuberculosis, there would not be so many deaths from tuberculosis. If the patient has some acute trouble, such as a very bad pain in the stomach, of course, the patient would be given such medicine as would correct that disability, but the aim of the sanatorium is not to give medicine, but to teach the patient how to overcome bad habits, and to acquire good ones.

Probably the greatest problem with which the majority of tuberculous patients are confronted is the financial one. Under such circumstances it is necessary that the home be modelled on a sanatorium plan. The greatest handicap to the patient at home arises from the interference and advice of friends and relatives. Tuberculosis is one disease in which the inexperienced must accept without question the statements of the doctor. If it can be arranged a move should be made to a more favourable location. A change to the country, or at least to the suburbs of the city, is wise. A little change in locality is often stimulating to the patient's appetite and digestion. In choosing a house, remember that regard should be given to surroundings. The patient will probably spend four-fifths of his time out-of-doors. An ideal location for a house is to have a sunny exposure. An old Indian proverb says, "He who plants a tree in front of his house begins to dig his own grave."

Food.—Second best thing is food. If the tuberculous patient is to get well, not only must he eat, but he must eat good food. The instinct of the patient for food becomes perverted and manifests itself in a craving for a variety of food which fails to satisfy the urgent physical need. Generally speaking, the patient should be given a generous variety of food, and attention should be given to his special cravings, but his chief articles of diet should fulfil two demands—they should be highly nutritious, and they should not impose too much work on the organs of digestion. The foremost food in this class is milk.

A patient on a general diet should drink from two to four pints of milk daily. The milk should be fresh, or it should be consumed within twelve hours, because changes occur in old milk which render it more difficult of digestion. If milk can be drunk when warm, just as it comes from the cow or she-goat, it is most easily digested. It need hardly be pointed out that the milk should come from healthy, well-fed cattle. Sometimes a little table salt, one or two tablespoonfuls of lime water, may be added to the milk. When milk cannot be taken, there should be an increase in the amount of cream and butter.

Two or more eggs may be taken daily according to digestion. Good red meat is best and should be prepared by boiling or roasting in such a way that the juices are retained. Expressed meat juice is useful, and its value to the tuberculous patient is only equalled by its cost.

When choosing vegetables preference should be given to the green ones, such as stringed beans, peas, asparagus, spinach, lettuce, turnips, etc.

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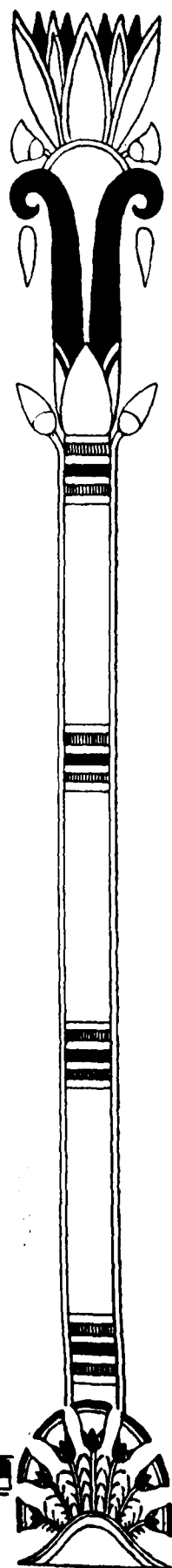
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Treatment of Amœbic Dysentery with A new Quinoline Compound

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Before I deal with the main topic, I believe it will be proper to mention in brief the principal methods of treatment of amœbic dysentery. Emetine, being the most widely used drug, particular reference to it will be made as to its advantages and disadvantages.

The first specific against entamœba infection was the ipecac root brought from Brazil to Europe in the 17th century. It was not till the present century that the active principle, emetine, was isolated. The initial enthusiasm over the results of emetine treatment soon subsided when it was recognised that a cure was at best only achieved in a very small percentage of cases, while most of the apparently cured patients relapsed and some even proved resistant to emetine.

The relapses after emetine are due to the fact that it affects only the vegetative forms of the amœbæ, while it does not destroy the cysts. Apart from this, emetine has a number of other disadvantages. Thus the subcutaneous injection almost always causes painful infiltrations, the intramuscular injection may produce necrosis and abscess, while the intravenous injection may give rise to disturbances of the heart's action and may even lead to death. Although the first and the last are not the usual routes of emetine administration, the intramuscular use is not also free from dangers. Further, the action of emetine is cumulative and shows itself by diarrhœa and paralysis of the muscles which may prove fatal.

In support of emetine it must be stated that in some acute cases the results are dramatic and in complications of entamœba infection (e.g., hepatitis) its good effects are second to none. But judging generally, it may be asserted that emetine is far from being the ideal remedy for intestinal entamœbiasis. Attention was, therefore, directed to the finding of more effective and less toxic substances, and as a result three main remedies, quinquivalent arsenical compounds, kurchi alkaloids and quinoline compounds, came to the field of amœbicides. Among other amœbicidal drugs the names of Rivanol, Iodaseptine Cortial, and Hexyl-resorcinol may be mentioned.

Although so many preparations were tried and placed before the profession none but the quinoline compounds did gain any repute and the present-day popularity is definitely in favour of this chemotherapeutic. The effect of this comparatively new therapy was investigated by a large number of workers all over the world and it may now be said that it has given more satisfactory results in both vegetative and cystic forms of entamœba than have hitherto been achieved by other drugs. In this connection it may be mentioned that

Among bread stuffs cereals are probably of the greatest value. Wheat grinded in pieces called 'Dalia' and cooked in water, is very nourishing and easily digestible. For a patient to eat bread or candies whenever he feels like it is to impose a serious trouble in the way of recovery.

Generally a glassful of water should be taken on rising in the morning, one at the beginning of each rest hour before meals, and one at bed time. Fruit juice mixed with equal quantity of water is of value as a beverage. In general alcohol does harm. Rest in fresh air after eating is very important.

No patient can eat abundantly or digest properly if he does not attend carefully to the elimination of waste products from the bowels. Regularity in this regard is just as important as eating or sleeping.

Autogalactotherapy.—When first the enemy, the tubercle, gains the balance of power in the body, and begins to attack the lung tissue or other areas, the white cells and their allies—the fighting army—in the blood are but raw recruits. The strength of this fighting force can be increased by two means—

1. By well feeding through good nutritious food with proper assimilation.
2. By adding to the army more antibodies through milk taken from the she-goat into which the toxin had been injected previously.

If the toxin of tubercle bacilli extracted from the sputum of the patient is given to she-goat, either by mouth or injection, unmodified antitoxins are formed in the milk. The milk should be taken by the patient on an empty stomach. Thus the patient will be able to resist the action of the toxins active in his body. She-goat is perfectly immune to tuberculosis.

Mix one teaspoonful of sputum with an ounce of distilled water and keep it for 12 hours. Then filter it through Berkefeld filter and inject about 2 c.c. subcutaneously in the lactating animal twice a week. When this process is not possible, one teaspoonful of sputum may be mixed in husk and given to the cattle every day, and the milk from the animal will serve as a specific remedy.

Coughing is a strenuous exercise for the lungs, and unless it is productive, i.e., unless it brings up sputum, is worse than useless. To lock up sputum by preventing cough with medicines is, except under exceptional circumstances, such as during haemorrhage, the height of folly.

One must avoid sudden changes in temperature. Elevated temperature is often accompanied or followed by sweats, which usually occur during sleep. This is Nature's call to lower the temperature and eliminate the toxins. A change of clothing is needed, and care must be taken not to expose the body more than necessary. Cold pack is very helpful to check the temperature.

The influence of mind over the body is of great importance. The patient is much more susceptible to emotional excitement when he becomes ill, so the patient should be put under cheerful surroundings.

quinoline compounds are administered orally and rectally and their actions are purely local. No effect should, therefore, be expected in entamoebiasis outside the intestinal tract.

During the past few months, I have studied the effects of ENTEROZOL, a new quinoline compound, in 14 adult cases of acute and chronic amoebic dysentery.

With the exception of one patient who exhibited symptoms of intolerance in the shape of gastric irritation (vomiting) all the patients tolerated ENTEROZOL well. In this patient the treatment was abandoned. Among the remaining 13 patients, there were 3 acute and 10 chronic cases.

In the chronic series, particular mention may be made of 2 cases each of whom had not only proved refractory to emetine but also to arsenicals and other drugs, but responded magnificently to ENTEROZOL courses. On the other hand, in other 3 cases, the preparation proved a failure even with two courses except a slight improvement during the initial stages of treatment. These chronic cases in this series had both typical and atypical manifestations varying from simple indigestion, a feeling of heaviness and discomfort in the abdomen with alternating constipation or diarrhoea, to occasional appearance of mucus with the stool. These sufferers gave history of having contracted the infection ranging from 6 months to 2 years.

The improvement in the acute cases was generally observed after 9 to 12 tablets of ENTEROZOL. Pain and tenesmus gradually subsided and faeces intermingled with blood and mucus (and the number of motions also) disappeared with the continuance of the course. Regarding the dosage and length of administration, the treatment was completed in two courses, each being separated by the interval of a week. Each course comprised of ten consecutive days with 1 tablet three times each day after food. Thus a total of 60 tablets was necessary for two full courses.

Contrary to the general rule, no reduction in dosage was necessary in 2 female cases in this series in view of their excellent tolerance.

Although it was not possible to follow all the cases, so far as it could be gathered, none of them has yet reported a relapse of their original symptoms.

Lastly, I must add that such a small number of cases cannot allow any definite conclusion. Still, from these observations—incomplete as they are—treatment of acute and chronic amoebic dysentery with ENTEROZOL seems worth consideration and further trials may prove instructive.

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The Human Skin and Radiation

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The basis of ray therapy is the absorption of radiations. On absorption they are converted into thermal chemical, mechanical or electrical energy or perhaps into some unknown form. The effects are produced at the point where they are absorbed. Skin and mucous membrane are the only media known through which light is administered to the body. As penetration varies with different wave lengths, the site of their absorption in the skin also varies. Some are absorbed at the surface, some in the middle, some in the corium and others still deeper. The skin is not only a mere covering of the body but it is an active organ having heat regulation of the body as its prime function and indirectly influencing the nervous, nutritional, circulatory and excretory functions of the whole body.

Thin though the membrane is, it accommodates within its various layers, pigment, sweat and sebaceous glands, hair follicles, nerve terminals and capillaries. Any of these structures may be affected as the rays have different range of penetration.

A brief description of the structure of the skin, therefore, will be helpful in the understanding of its reactions to radiations. When a medicine is administered orally or by injection, the doctor knows that the dose prescribed has gone into patient's system. Radiations, however, do not get entrance into the system so easily. They have to effect entrance through the most wonderful line of defence which nature has provided for our protection against incessantly assailing factors. The human skin is this line of defence. As its strength varies in each individual, the dose has to be varied accordingly. A normal individual has about 15 sq. feet of skin. The skin varies in thickness in different regions of the body from about one half to several millimeters. In a general way the skin consists of three layers—the epidermis, the dermis or corium and the hypodermis or subcutaneous tissue. The epidermis separates the tissues beneath from the outside air. The deeper cells of this layer are constantly growing and dividing. As they multiply, they spread outwards towards the surface. As they spread, they become cut off from their blood supply. Only the deepest epidermal cells are well nourished. The rest are in various stages of starvation. The superficial cells being remotest from the blood stream actually die. The outer-most layer is, therefore, composed of dead cells. These dead cells are dry and horny and form a tough barrier between the outer world and the living tissue. The epidermis has three other layers besides this—corneal one—the lucid, the granular and the germinal.

In the last named layer is developed the important pigment melanin. This pigment is found in the deep part of the germinal layer in the form of granules and diffused colouring matter. Amongst the coloured races, the pigment is found in the derma and even the horny layer is stained. It has been said that the primary

function of the pigment is to arrest the excess of sunlight which has a lethal effect. By absorbing most of the visible rays which penetrate the horny layer, the pigment protects the blood vessels and the living tissues in the deeper layer of the epidermis from the lethal effects of sun rays. This is why we have coloured races in the sun tropics. White men who expose themselves to the Sun tropics become bronzed and thus immunize themselves from sunburn. Pigment protects the underlying structures from an excess of light. It absorbs the visible and ultra-violet radiations and by converting them into heat can activate the sweat glands.

The derma is very dense and tough and so canalised in all directions as to leave passages for blood vessels, lymphatics, sweat glands and nerves. Its muscles are chiefly of the unstriated type. It contains hair follicles and sebaceous glands and a considerable amount of elastic fibres. The tactile corpuscles are located in the elastic fibres. The tactile corpuscles are located in the papillae which project into the true skin. The hair follicles are mainly located in the true skin but many reach down to the subcutaneous tissue. The sebaceous glands which supply the hair and skin with a natural brillianine, are closely related to the hair and empty their ducts in the upper third of their follicles. It is estimated that there are two to three millions of sebaceous glands and they daily secrete about 2 grams of sebum. The ducts of the sweat glands which are located in the deepest portion of the derma and the subcutaneous tissue, pass through the dermis into the epidermis.

The skin performs various functions chief of them being protective, sensory, heat-regulating, respiratory, secretory and excretory. To the radio therapist, the heat-regulating and protective functions of the skin are of great importance in determining the dose. Man is a warm-blooded creature and is generally warmer than his surroundings. The body is, therefore, continually losing heat to the cooler atmosphere around it. To compensate for this loss of heat, there are internal sources of heat production which keep its temperature up. The continual chemical activity of our muscles and glands unremittingly replaces the heat lost by the body through the skin. The balance between this internal heat production and the external loss of heat determines the temperature of the body. Now both these factors might vary. Production of heat is greater in active hours than when we are at rest. During severe exercise the activity of our tissues and muscles is very much increased resulting in an excessive production of heat. Similarly the state of the atmosphere may vary. It may be cooler or warmer, dry or humid in varying degrees. As it is essential for body efficiency that our temperature should be kept constant, nature has provided us with two mechanisms in the skin which perform this work in a most wonderful manner. These are :—

1. Variations in the size of the blood capillaries.
2. Perspiration.

More than one-third of the blood in the body is always flowing along the skin. This enables the skin to exercise the equalising influence on the temperature of the blood and to control its circulation in the deeper structures of the body. When more internal heat is

produced, generally the blood vessels in the skin dilate and the hot blood rushes to the surface to be exposed to the cooling action of the air. Conversely if we feel too cold, the blood vessels contract, the blood, having no excessive heat to give away, avoids the skin.

Perspiration is due to the action of the sweat glands, which number from 2 to 3 millions, and which throw out about 700 c.c. of perspiration per day, and are capable of secreting more when necessary. It consists largely of water. It evaporates and cools us. It is our most efficient temperature regulator. By its activity it is possible for us to withstand the temperature of a hot chamber.

Another function of the skin with which we are concerned in radio therapy is its protective function. It is a tough rampart protecting the body from all harmful contact—physical, chemical or bacterial. It is, in fact, an expansion of the nervous system. Skin has a net-work of sensory nerve terminals, which are sensitive to the slightest touch or irritation. If the attacking irritant is mild, the skin remains unaffected but if it happens to be the cause of constant trouble, the skin in course of time becomes habituated to the irritation and ceases to be sensitive to it. This adaptation of the skin is brought about by hypertrophy of all its parts. But there is a limit to this power of the skin. If hypertrophy were an unending process, the skin would become so thick that it will not be able to perform its various indispensable functions and will destroy the body sooner than the irritant. The body, however, has to be protected from the irritants against which the excessive hypertrophy of the skin is not useful.

Now if the irritant is so strong that it pierces through this line of defence and enters the blood stream, then follows a battle royal in our tissues. The blood vessels in the affected spot dilate, causing an increase in the blood flow. This phenomenon known as inflammation begins with redness and develops further stages according to the strength and intensity of the irritant. The exuded leucocytes and serum offer opposition to the intruder. After the enemy is destroyed, the inflammation subsides gradually. When the irritant is a radiation of sufficient intensity, then too the similar result follows. This hyperæmic reaction of the skin to radiations is technically called erythema. The erythema caused by ultra-violet rays has a peculiarity of its own. It takes a longer time to appear and lasts for several days or weeks which is not the case with erythema caused by other irritants. This erythema of long duration is of a particular help in fighting chronic infections like tuberculosis.

Penetrability

We must, therefore, know how far each of the rays penetrate the skin, the only medium through which they are administered. Out of the whole gamut of spectral energy, solar radiation is the region of least penetrability. In the solar spectrum, red and short infra-red are the most penetrating, and ultra-violet and long infra-red are the least penetrating. While the visible and short infra-red penetrate to a depth of a few centimetres, ultra-violet about 3000A penetrate the skin about 1 mm.

The Male Sex Hormones

● Dr. Kishore Chand, M.S.M.F.

(Demonstrator in *Materia Medica*, Amritsar Medical School)

The scepticism which many medical men formerly held regarding the rôle of internal secretions in normal and abnormal metabolism has been gradually replaced by the opposite tendency to interpret every change in living human organism as a disturbance of the endocrine balance.

Historical

The practical application of the science of endocrinology is much older than its theory. The recognition that the sex glands had great influence on growth and stature of human body goes back to Biblical times during which castration was practised upon animals designed for food with the object of favouring the accumulation of fat. Later, various disturbances thought to be due to disease or deficiency of certain glands were treated by feeding the sick with such glands. Thus was laid the foundation of present organotherapy.

The fact that the testes produce some substances that are necessary for the manly appearance in human beings and masculine appearance in the case of animals has been known for a long time. The operation of castration that was done in olden days, and is still being done in animals, is meant to produce docile animals. Castration was also done in human beings to produce *eunuchs* for the harems of Moghal kings. Castration was also done in Italy to produce singing boys for the churches. These were called *Sopranos*. It was seen that if castration was done in children their voice did not break. The old Hakims also had an idea that testes produced some substance other than the semen that was necessary for the sexual vigour. Application of leeches to the scrotum and then drying them and powdering for internal administration was frequently done for the sexually weak people.

Histology of Testis

The testis is divided into a number of lobules by trabeculi. Each lobule contains convoluted tubes. These are the seminiferous tubules. The innermost cells lining these are the spermatids which finally grow and become converted into spermatozoa and get into the lumen. The interstitial connective tissue of the testis is loose, contains lymphatic clefts and blood vessels. Accompanying the vessels are masses of epithelial cells, the interstitial cells, which are responsible for the elaboration of the internal secretion of the testes. This internal secretion has been known to the medical profession since a long time. Old physiologists called it Prohiron. This later on was called Androgin but recently it has been called Testosterone. This testosterone which is absorbed directly in the blood has been chemically analysed and a formula given to it. The

formula is $C_{19}H_{27}O_2$. The biochemists have discovered a substance similar in action but less potent than testosterone in the urine of young males and have called it Androsterone and the composition of this is $C_{19}H_{30}O_2$. They have also tried to produce a synthetic preparation which resembles testosterone in its action and is called Dehydrosterone. Testosterone has been isolated from the ether soluble material of the bull's testes, but for commercial purposes it is prepared from the appropriate sterol by removal of the side chain and rearrangement of the double bonds. The supply of the male sex hormone is obtained for clinical use by the chemical degradation of sterols, since the naturally occurring hormones are present in quantities too small to be prepared economically from the natural sources.

Action

Testosterone starts being produced at the age of puberty. The stimulus for the interstitial cells to produce internal secretion comes from the anterior lobe of the pituitary gland. This internal secretion of testes goes into the blood and is responsible for the manifestation of the secondary sexual characters, i.e., manly appearance, hair on face and other parts of the body, masculine voice, development of the sexual organs and desire for the opposite sex. This secretion continues till a fairly long age though the quantity begins to decrease gradually, so much so that in a person of 70 years of age the quantity produced is 1/5 as compared with a young man of 15 or 16. Androsterone undergoes some change in the body, and when it is secreted in urine its composition is slightly different. An interesting fact about male sex hormones is that the testes is not the only source of their secretion. There are a group of cells present in the suprarenal gland between the cortex and medullary portion which also produce testosterone. This layer of cells is called androgenic layer. Another interesting fact about the secretion is that it is produced in females also. The ovaries and suprarenal gland of female also produce testosterone.

Some biological workers like Professor Steinach and Voronoff tried to make use of the knowledge that the secondary sexual characters depend upon the secretion of interstitial cells of the testes. Professor Voronoff tried the grafting experiment in human beings by grafting slices from the testes of chimpanzees, thereby hoping that the graft would grow and the interstitial cells therein would produce internal secretion. Steinach wanted to achieve the same object by ligaturing the vas deferens and thus killing the spermatogenic part of the testes as a result of disuse, atrophy and making the interstitial cells produce more internal secretion. These biologists had some success at least in the animal kingdom, and there are many now even in this country who believe in the efficacy of these two methods for purposes of rejuvenation, but it was left to the bio-chemist to make use of the fact that the internal secretion of the testes is excreted in the urine and can be extracted from it. The urine of young males is collected, concentrated on a water bath, extracted with chloroform and the male hormone is precipitated with ether, the whole being a very simple process. This precipitate is dissolved in sesame oil. This preparation is now being

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SEPTEMBER, 1941]

Agranulocytosis

● Dr. Khan Chand Wohra

(Medical Officer, Borstal Institution, Lahore)

Recently, due to the extensive use of sulph-anilamide and sulphapyridine, cases of agranulocytosis have been met with in greater number than heretofore.

Aetiology

(1) *Administration of sulphanilamide* group of drugs is the most important cause of this condition. Generally speaking, it only develops after the drug has been continued for over two weeks. Cases have, however, been recorded where the administration of the drug even for a few days, caused this condition.

Spaine¹ reports the case of a primipara, aged 26, in whom a lower segment caesarian section was done on 5-2-40. Nine days later she complained of tenderness in the outer and lower quadrant of the right breast with a temperature of 101°F. In addition to the local anti-phlogistine application, patient was put on sulphapyridine, changed later to sulphanilamide. From February 14th to 18th, she received 4.5 grms. of the sulphapyridine and 4.5 of sulphanilamide. On the 21st morning, her temperature went up to 102°F., with sore throat, and in the same evening it rose to 105°F. with a rigor.

Her blood examination revealed marked agranulocytosis with secondary anæmia. Within an hour of the receipt of the blood report, treatment with pentnucleotide and blood transfusion was instituted, but the patient died on the 5th day of this condition. This case shows clearly that in susceptible individuals, even small doses of sulphanilamide and allied compounds may cause this grave complication.

(2) *Influenza*.—A case of agranulocytosis following influenza has recently been reported in the literature by L. VanDer Molen², in a boy of 5 years. This case recovered after the administration of pentnucleotide.

(3) *Gold preparations*.—Hartfall and Garland³ report that in their hundred cases treated with gold compound, they encountered one case of agranulocytosis. In this series they were giving as much as 0.5 gm. per injection and a total course of 3 grms. or more. Later on the dosage of individual injection as well as the total was reduced when this complication was not observed by them.

(4) *Other Drugs* which may produce this condition are Amidopyrine, Phenacetin and Arsphenamine.

(5) A woman developed fever after antrum operation.⁴ The fever was thought to be probably due to malaria and she was given an intramuscular injection of atebine 0.3 gm. on two successive days and the same dose by mouth on each of the next two days. Phenacetin was given to relieve persistent headache. The patient was accustomed to take this drug in considerable quantities as well as veramon. Her condition grew worse, and on the 7th day after operation the diagnosis of agranulocytosis was made. The number of white cells was only 2100 per c.m.m., 86 per cent. of which were lymphocytes and 14 per cent. monocytes. There was a complete absence of granulocytes. Under treatment with sodium pentnucleotide

extensively used for purposes of rejuvenation in the old and to bring about secondary sexual character in the young males if they are deficient. German and Swiss workers working on testosterone have found out that the substance is absorbed easily and slowly if it is mixed with some propionic acid. They have, therefore, prepared esters, called testosterone propionate. Germans have called this by the proprietary name of Testo Viron. The Swiss call it as Perandren.

Biological Activity of the Male Sex Hormones

(1) Promotion of growth of comb and wattle—in the capon. (2) Growth of external genital organs and seminal vesicle of the castrated immature animal and maintenance of weight of seminal vesicle of castrated mature animals. (3) Inhibition of the anterior lobe of the pituitary gland when given in large doses. (4) Counteraction of the effect of oestrone on the prostate.

Clinical Applications

If the castrated cocks, in whom the secondary sexual character disappears, are given testosterone propionate the combs and wattles begin to grow. One capon unit is the amount of hormone which when injected daily on two successive days will produce on the third and fourth day an increase of 3/4 m.m. in the length of the comb. The recent unit is an international unit of 1 m.g. of androsterone. Here it may be noted that testosterone is 5 times as active as androsterone.

Therapeutic Uses

1. For rejuvenation in old people, 25 m.g. of testosterone propionate intramuscularly twice a week is given, and 12 injections form a course.

2. In sexual impotency same doses are employed.

3. In senile hypertrophy of the prostate injection of testosterone propionate is given with fair degree of success. The quantity required is not so much as in the case of rejuvenation or sexual impotency, but a total quantity of about 100 m.g. is quite useful especially in early cases.

4. Crypto-orchidism is a condition in which the testes remain in the inguinal canal and do not descend into the scrotum. Formerly surgical interference to cure this condition was resorted to but now it has been found that a few injections of testosterone will make the testes descend in the scrotum in many cases.

5. Inhibition of lactation in woman whose child had died, can be effected by the administration of testosterone. The old method of using the breast pump and belladonna paint may be given up. 5 m.g. of testosterone given for 2 or 3 days will stop the formation of milk. This acts by stopping the formation of Prolactin (lactogenic hormone) by the pituitary gland.

6. In painful breasts of young ladies during menstrual periods a couple of injections of testosterone gives great relief.

[Read at the Punjab Provincial Conference of the A. I. M. L. A. on 10-4-41 at Okara.]

the patient eventually recovered. The author considers it probable that a prolonged use of phenacetin and veramon was the primary cause of the agranulocytosis and that the shock of operation and the following atebirin treatment aggravated the condition.

Unfortunately, in our present state of knowledge, there is no known method by which we can predict the onset of agranulocytosis, except by frequent blood examinations.

Signs and Symptoms

Normally the army of leucocytes ward off the danger of attack by micro-organisms in mucous membrane where they normally inhabit. As long as this army is intact the micro-organisms cannot attack the mucous membrane. In agranulocytosis this normal defensive mechanism is very greatly lessened or absent, hence the mucous membrane is attacked, producing inflammation and necrosis in mouth and throat. Similarly, mucous membrane of gastro-intestinal tract may also be involved.

(1) *Oral Lesions.*—They may only consist of sore throat with vesicular patches in the buccal cavity, fauces, tonsils, etc., followed by superficial ulceration. In other cases, there is deep necrosis in the mouth and throat. The condition is painful and dysphagia is a very troublesome symptom. The inflammation may extend downwards and produce oedema of the throat and larynx.

(2) *Fever.*—Temperature generally goes up suddenly with rigor. It keeps at a high level. The toxæmia is a very marked symptom of the disease. There is prostration and the patient looks very ill. Pulse is rapid and of low tension. In unfavourable cases toxæmia and prostration increase. The condition of the mouth and throat may also lead to the oedema of the glottis and this may prove fatal.

(3) *Blood Examination.*—The chief criterion of the disease is the blood picture: (a) There is very marked leucopenia. The number may go down to 1,000 or even less. (b) The number of polymorphonuclear leucocytes (neutrophils) is definitely much below normal. They may even absolutely disappear. (c) There is, however, relative increase of lymphocytes and their number may go up to sixty or seventy per cent. or even higher. (d) There is also a secondary anæmia.

If, during the course of administration of sulphanilamide and sulphapyridine (M. B. 693) or other drugs enumerated above, patient gets sudden rise of temperature with sore throat and looks very ill, the blood should be immediately examined. It is the blood picture which will settle the diagnosis with certainty.

The condition is, of course, very serious. The death rate is about 70 per cent. In the early days when the treatment with pentnucleotide was begun, it was thought that the treatment reduced the death rates to twenty-five per cent., but further investigation showed that this optimism was not justified, and the seriousness of the disease continues as before.

Prophylaxis

The physician should always keep in mind that this serious complication may occur during the course of

therapy with drugs mentioned earlier in this article. All patients getting such drugs should be kept under close observation, and suspicious sore throat or rise of temperature after initial fall should at once be immediately followed by a blood examination. It is a good precaution to perform leucocyte count every week and as soon as leucopenia is found or there is suspicion of agranulocytosis, the offending drugs must be stopped forthwith. That the general public can get these dangerous drugs is indeed deplorable.

Treatment

General Measures. Good nursing is a great asset in the treatment of this condition. The diet must be fluid and of high caloric value. Due to the troublesome dysphagia no solid food is possible when milk may be given every 2½ hours.

Fluids must be given in abundance to eliminate the drug and also to combat toxæmia. Glucose should be added to water and milk to maintain the strength of the patient. Absolute rest in bed is essential.

Local Treatment. The condition of the mouth and throat is very painful. It is, therefore, advisable to spray the mouth and the throat with a solution of pericaine in glycerine (1 in 2,000). After this the patient may be fed. Mouth, throat and gums may be swabbed with fifty per cent. solution of hydrogen peroxide.

Medicinal Treatment. A careful enquiry regarding the drugs the patient has been taking before the onset of this condition should be made and all such drugs must be stopped immediately.

Pentnucleotide is a sodium salt of pentose nucleotide prepared from nucleic acid. It is supplied in the form of a solution in 10 c.c. vials, each containing 0.7 gm. of the salts. This product holds the field in the treatment of agranulocytosis at present. It must be administered early in 10 c.c. doses intramuscularly deep into the gluteal region four times a day for the first three days, and later on twice daily for about a week. In favourable cases the temperature comes down, necrotic lesions begin to heal, general condition improves, granular leucocytes appear and their count rises. If there is no response after 10 days, further treatment with the drug will probably be useless. The injections are frequently painful and the part may be massaged vigorously after the injection.

Intravenous injection causes generally reactions, such as fever, rigor, dyspnoea, prostration and palpitation which may often be severe. Therefore this method may be avoided.

Injection of liver extract, blood transfusion and X-ray therapy in stimulating doses have proved ineffective.

Oral administration of yellow bone marrow has recently been claimed to give good results. It is given in 1 c.c. dose. Further experience is, however, required before a definite idea about its advantage can be formed.

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- (1) *B. M. J.*, 1940, pp. 930.
 - (2) *Medical Annual*, 1940, pp. 252.
 - (3) *University of Leeds, Medical Society Magazine*, 1936.
 - (4) *Tropical Disease Bulletin*, Vol. 37, No. 6, July 1940.
 - (5) *Journal American Medical Assn.*, 1940.
- [Read at the Punjab Provincial Conference of the A. I. M. L. A. on 10-4-41 at Okara.]

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WORKING OF THE I. M. C.—1940-41

Last year we wrote on the legal and constitutional aspects of the Indian Medical Council Act and showed by analyses that the Act was intended mainly to put the Indian Medical Council as the docile and grateful maid-servant of the General Medical Council of the United Kingdom. The fact that even the erstwhile Province of British India, viz., Burma, has intimated its decision* not to enter into any scheme of reciprocity with India except through the General Medical Council is an unchallengeable proof of the subordinate position of the Indian Medical Council.

But a line of difference has to be drawn between the Act and the Council as it is now composed. This has become manifest since Dr. B. C. Roy became its elected President. Since then, under his able guidance, the Council has exposed the fundamental defects of the Act and pressed on the Government to remove them by suitable legislation. Therefore, while criticising the Act, due acknowledgment of our thanks and gratitude should be rendered to the present members of the Medical Council of India who have done their best in vindicating the honour of our country and our profession within the limits imposed by the Act. We utter this note of caution because we observe a tendency among some of the ill-informed members of the profession to criticise more the members of the Council rather than the Act which has made the best of them powerless to take the initiative to reform or remodel it.

The work of the Indian Medical Council during 1940-41 reveals the bold stand which it has taken regarding foreign reciprocity

and establishment of an All-India Medical Register inclusive of the medical licentiates. No other than an intrepid leader like Dr. B. C. Roy would have demanded from the General Medical Council the removal of the defects relating to the Professional Examinations of various qualifying Bodies in the United Kingdom, and refused recognition of some colonial diplomas of such Lilliputian countries like New South Wales and Nova Scotia which arrogantly refused to deal with our Council directly except through the General Medical Council. There is no doubt that in the matter of reciprocity both the President and the Executive Committee of the Indian Medical Council have vindicated, by the steps they had taken and the replies given, the honour and prestige of our country. Results, of course, have not been very good or prompt, but that is because we have got a Government which takes its counsel from White Hall.

No less striking has been the attempt of the Council to standardise medical education in our country and to institute an All-India Medical Register inclusive of the medical licentiates.

In spite of the bold stand and good work of the present members of the Indian Medical Council, it is still absolutely true that the Indian Medical Council Act of 1933 is such that it cannot be effectively utilised for the advancement of the "honour and efficiency" of the Indian Medical Profession. This fact can be clinched by the studied silence of the Central Government in the matter of establishment of an All-India Medical Register unanimously recommended by the Council last October.

The organised profession should therefore continue to bring popular pressure on the Central Government to amend the Act suitably at the earliest time possible.

—Editor.

* Proceedings of the 15th Session of the Indian Medical Council, dated March 21, 1941.

THE ASSOCIATION AND THE I. M. C. ACT

The General Secretary of the Association, in his circular No. 12 dated July 10, 1941, requests all the constituent branches to observe 20th September of this year as the 8th All India Anti-Indian Medical Council Act Day, hold protest meetings in co-operation with the local leaders of the profession and send the following protest resolution, as embodied in Resolution No. 4 of the last Bombay Conference of the Association,* to the local M. L. As., the Provincial and the Central Governments and the Press. "We should continue," he writes, "our agitation with redoubled vigour till this Act is amended to meet the demands of the profession in general, and the Medical Licentiates in certain particulars."

* Resolution No. 4.—Whereas the Indian Medical Council Act of 1933 has been considered by the organised profession in our country as defective in many respects;

Whereas the working of the Act with its many defects has neither effected "efficiency at home" nor "honour abroad" as evidenced by the exclusion from its purview the larger field of medical school education, and by the refusal of reciprocity by many countries unless it was sought through the General Medical Council;

Be it resolved by this Conference that the Act may be so amended as to secure:

(i) Establishment of a uniform minimum standard of medical education throughout India which is the first and foremost function of any statutory Medical Council;

(ii) Establishment of a common medical register made up of all practitioners registered by Provincial Medical Councils, which is the second most important function of a statutory Medical Council;

(iii) Interim recognition of qualifications granted by State Medical Faculties and recognised by the Statutory Provincial Medical Councils till the establishment of a minimum standard within a reasonable time;

(iv) Representation of the Medical Licentiates in the Council by a suitable amendment to Section 3 (c) of the Act;

(v) An elected majority of non-official members in its composition by deleting sub-clause (c) of Section 3 so as to obtain two members from each province from among the provincially registered medical practitioners;

(vi) Exercise of its powers of medical inspection (Sections 15 and 16) not directly as now but through and in collaboration with the Provincial Medical Councils, as otherwise the statutory powers of the latter in this respect will become a mere nullity;

(vii) Amendment of Section 14 (which deals with reciprocity) in such a way as to make the Council wholly independent of the General Medical Council of the United Kingdom.

(It would produce good impression and effect on the authorities if the Branches pass their protest resolution in the same words as above which are both comprehensive and precise. It would also indicate that the Association's opinion on the subject is shared not only by its Branches but also by the members of the profession as a whole—Ed.)

ALL-INDIA MEDICAL LICENTIATES' ASSOCIATION

31st Annual Conference—Ahmedabad

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(as elected at the meeting of the Ahmedabad Branch held on 1-7-'41)

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Two more members to be co-opted later on.

WORKING COMMITTEE:

Dr. K. J. Bhatt, General Secretary, Dr. M. K. Vyas, Joint Secretary, Dr. P. R. Trivedi, Joint Secretary, Dr. J. J. Vyas, Treasurer and Dr. B. G. Mehta.

Association Notes

(The following proceedings refer only to the Branches and Committees of the A. I. M. L. A., unless otherwise stated.)

Dr. Dal Singh, Provincial Secretary, Punjab Branch, Talwan, Dt. Jullundur, writes under date 14-7-'41:

The Punjab Provincial Branch of the A. I. M. L. Association has no fund whatsoever of its own. It is highly desirable that we must have some funds to enable us to hold annual conferences and to meet the cost of other essential work so necessary and urgent in the interests of our class and the Association.

Only recently I have addressed a printed appeal to each and every Medical Officer in charge of rural dispensary in the Punjab to contribute rupee one towards the Provincial Fund. This contribution, though individually not a big sum, yet in the aggregate would be sufficient enough as a good beginning. When the members meet at the next Provincial Conference we will settle the details of the working of the Fund and put it on a permanent footing. May I, therefore, appeal to all Punjab members to kindly remit to me the suggested annual contribution at the earliest time possible.

Dr. Hira Nand who was elected as Hon. Treasurer is no longer a member of our Association. So I am obliged to request all members to remit the contribution to my address till the Working Committee makes arrangement for the election of a new Hon. Treasurer.

U. P. Standing Committee.—Meeting held at Fyzabad on 6-10-40 at 3 p.m. Seventeen members were present.

Resolutions on the following subjects were unanimously passed.

1. All the delegates present do form the Subjects Committee.

2. The following programme of work for the ensuing year was decided upon.

(a) To secure facilities for existing Licentiates to obtain M.B., B.S. degree at the Agra Medical College.

(b) To see that Licentiates are included within the purview of the I. M. C. Act.

(c) To secure joint electorates in the U. P. Medical Council with specified number of seats for Medical Graduates and Licentiates.

(d) Full recognition of our association by the U. P. Government.

(e) To secure redress of the following service grievances:

(i) Increase of percentage of promotion from P. S. M. S. to P. M. S. and from P. S. H. S. to P. H. S.

(ii) Increase of percentage of promotion to selection grades.

(iii) Restriction of four months' limit for officiating Civil Surgeoncy by promoted P. M. S. to be removed.

(iv) Two Civil Surgeoncies to be offered to promoted P. M. S. Officers.

(v) Leave reserve in P. M. S. cadre to be two in place of one.

(vi) Grant of study leave.

(f) To increase the number of members and active branches in U. P.

(g) Rural Development M. Os. to be absorbed in P. S. M. S.

3. The letter of R. S. Dr. R. N. Lal circulated to workers of branches in U. P. on and about 27th September '40 was considered. Resolved that the circular letter in question is based on misunderstanding of rule 65 and its circulation amongst workers is irregular and unconstitutional as it was evidently calculated to discourage attendance at the conference, the proper course open to R. S. Dr. R. N. Lal as a representative of Mussoorie branch was to represent to the Standing Committee through the Provincial Secretary or in person at today's meeting.

4. The election of President and other office-bearers was made as follows:—

President: Dr. Jawahar Lal, M.L.A., Cawnpore.

Vice-President: R. S. Dr. Brij Mohan Lal, P.M.S. Retd., Fyzabad.

" " K. S. Dr. Zahid Hussain, Meerut.

" " Dr. P. S. Varma, Gobardhan, Dt. Muttra.

Prov. Secretary: Dr. K. B. L. Varma, Meerut.

Joint " " Dr. R. S. Garga, Faridpur, Dt. Bareilly.

" " Dr. Prem Sagar, Meerut.

" " Dr. T. Zachariah, Chandpur, Dt. Bijnore.

Treasurer: Dr. M. L. Sharma, Meerut.

Auditor: Dr. Diwan Singh, Meerut.

NOTE.—These elections were subsequently ratified by the open session of the Conference on 8th October '40 and are recorded as resolution No. 26.

Chapra (Bihar): Monthly meeting held on 22-6-'41 with Dr. M. M. Bose in the chair. Seven members present.

General Secretary's Circulars No. 10 and 11 were read.

A lively discussion took place on hemophilia in which all the doctors took part.

Contingent bill for June 1941 was passed.

Gauhati (Assam): Monthly meeting held on 15-6-'41. Dr. Wazid Ali presided.

Minutes of the last meeting were read and passed.

The idea of holding the meeting of the District Branch in a village was highly appreciated by the members present, and it was suggested to arrange such occasional meetings in the rural parts.

Resolved that the D. P. H. be requested to reconsider the promotion of selected S. A. Ss. in P. H. Department to Assistant Surgeon cadre, in view of the fact that medical graduates who have not D. P. H. qualification are appointed in the P. H. Department.

Interesting discussions on hepatic colic, dysentery and the use of mag. sulph. in various diseases were held.

Jullundur (Punjab): Ordinary meeting held on 8-6-'41. Five members present.

Minutes of the last meeting read and confirmed.

There was a keen discussion regarding the disparity in pay and service conditions offered to the licentiates as compared with the graduates when joining military service. Dr. Dal Singh informed the House that an influential deputation on behalf of the Association has already waited upon the D. G., I. M. S. on this subject and that they should await the decisions of the Government.

A paper on "the Effects of the Extremes of Temperature (particularly during Summer in the Punjab) on the Human System" was read and a very lively discussion took place.

Dr. Dal Singh was congratulated in his election as Prov. Secretary, Punjab, at the last Okara Conference.

The House recorded its pleasure at the re-election of R. B. Dr. Mathra Das to the Punjab Medical Council and expressed the hope that he would continue to serve the best interests of the Licentiates.

Karachi (Sind): (1) General meeting held on 27-3-'41. Three members present.

Meeting adjourned for want of quorum.

(2) General meeting held on 24-6-'41. Twelve members were present. Dr. A. Said was voted to the chair.

Resolution No. 18 : That this Branch has heard with great sorrow of the sad death of their President, Dr. Parmanand Lekhraj Chabiani. Dr. Chabiani was one of the oldest members of this Association and had served as Provincial Secretary for Sind in his earlier days while at Hyderabad. During his stay in Karachi, he helped much in reviving the above Branch and was elected as its President. He took keen interest in the affairs of the licentiate class.

This Association offers its heartfelt condolence and sympathies with his son, Mr. Satsaran and other members of his family in their sad bereavement.

The meeting was adjourned as a mark of respect for the deceased.

Resolution No. 19 : Proposed by Dr. A. Said and seconded by Dr. P. P. Lalwani that Dr. K. Balwant Singh be elected President of the above Branch, vice Dr. Parmanand L. Chabiani deceased. *Carried unanimously.*

Dr. Balwant Singh then occupied the chair.

Considered Circular No. 1 from the Prov. Secretary, Bombay.

Resolution No. 20 : In view of the Sind Government having appointed a committee to submit a scheme of starting a medical college in Karachi, the subject be deferred.

Considered letter No. Gen. 15/37 from the Hony. Jt. Secretary, Karachi Medical Association, *re.* military emergency services.

Resolution No. 21 : (i) It is surprising to find that while the matter *re.* military emergency services has been referred to Karachi Medical Association, no reference is made to the above Branch by the Director of Health Services and Inspector-General of Prisons, Sind, Karachi.

(ii) That the members of the L. C. P. S. class will offer their services provided they are taken up in the military services on the undermentioned conditions :

(a) *Designation :* Military Assistant Surgeon.

(b) *Rank :* As laid down for permanent Military Assistant Surgeons.

(c) *Pay and allowances* should be same as that of Military Assistant Surgeons, attached to British military hospitals. Seniority in service should be on either the length of service or the number of years in private practice.

(d) Overseas allowances, leave and furlough should be same as for permanent Military Assistant Surgeons.

(e) Quarters and accommodation should be same as for permanent Military Assistant Surgeons.

(f) Disability, wound, widow and children pensions should be same as for permanent Military Assistant Surgeons.

(g) Outfit and uniform allowances should be same as for permanent Military Assistant Surgeons.

(h) *Selection to I. M. S. :* On the same lines as for permanent Military Assistant Surgeons.

(i) On eve of demobilisation, they should be permanently absorbed in services according to their seniority of service and, if not absorbed, should be provided in the civil.

(j) Gratuity on demobilisation from the Army should be Rs. 1,000/- for each year of service.

Bombay : Managing Committee meeting held on 22-5-'41. Dr. Narayan Rao presided.

Minutes of the last meeting were read and confirmed.

The meeting scrutinised and passed the Branch accounts showing the expenditure of Rs. 9-8-0 for the months of March and April 1941.

The meeting further decided that the circulars of the Prov. Secretary should be placed before the general body meeting.

Poona (Bombay) : A Clinical and General meeting held on 17-6-'41. Rao Bahadur Capt. N. H. Kulkarni presided. Twelve members present.

Last meeting's minutes were read and confirmed.

(i) Letter from the Secretary, Indian Medical Association, Poona Branch, for nominating two representatives from our Branch on the Working Committee for the ensuing Maharashtra and Karnatak Medical Conference, to be held in Poona, was read and Drs. S. V. Mone and V. D. Sathaye were nominated by majority.

(ii) Following resolution was passed unanimously :

"This meeting resolved that in view of the fact that admission to medical schools is now open only to those students who have passed the Inter science examination and the course of studies is now raised to four-and-a-half years, the present schools should be immediately raised to the standard required by the Medical Council of India, in respect of equipment, courses of study and recognition of qualification obtained on passing.

"It is also resolved that all senior members of the staff should have post-graduate qualification and teaching experience. The staff in anatomy, physiology, pathology and pharmacology should be whole time.

"It was decided to send the copies of this resolution to the College of Physicians and Surgeons and to the Bombay Medical Council."

Burdwan (Bengal) : Meeting held on 27-6-'41 with Dr. Satya Charan Maitra in the chair. Eight members were present.

Read and confirmed the proceedings of the meeting held on 7-5-'41.

Resolved that the members accord a hearty send-off to Drs. Pannalal Nandy and Anandamay Maitra on their way to join the Military Medical Service and pray for their safe return with laurels.

Contingent bill amounting to Rs. 2-12-0 was passed.

Mymensingh (Bengal) : Meeting held on 13-7-'41. Five members present. Dr. D. C. Roy was proposed to the chair.

Dr. D. C. Roy was proposed by Dr. A. Tahukder and seconded by Dr. S. Patranavis to be a member of the Provincial Standing Committee from this Branch in addition to Dr. B. Chaudhuri, Branch Secretary.

Regarding Prov. Secretary's letter No. 148 dated 8-7-'41 *anent* resolution No. 9 of the last Provincial Conference, the Prov. Secretary is respectfully referred to resolution No. 2 of the meeting of this Branch held on 11-6-'41.

Contingent bill of Rs. 15-2-0 from 1-4-'41 to 30-6-'41 has been scrutinised and passed.

Rangpur (Bengal) : (1) Meeting held on 26-3-'41. Seven members present. Dr. J. C. Lahiry was voted to the chair.

Proceedings of the last meeting were read and confirmed.

Resolved that the following members be elected as delegates to the Provincial Conference, 24 Parganas during Easter holidays : Drs. J. C. Lahiry, J. D. Gupta and N. N. Mukherji.

Further resolved that Rs. 5/- be sent to the General Secretary, Reception Committee of the 24 Parganas Provincial Conference.

(2) Meeting held on 6-4-'41. Dr. J. C. Lahiry was voted to the chair.

Proceedings of the last meeting were read and confirmed.

Resolved that the members assembled at a meeting held today emphatically protest against the Government Scheme of arrangements for appointing medical graduates in place of medical licentiates as aesthetists of the Campbell Medical Hospital and Dacca Mitford Hospital who have till now performed their duties as aesthetists most satisfactorily. The Government should be approached and moved not to debar the licentiates from their legitimate rights which they have been enjoying from a long time.

Corrigendum

In July 1941 *Supplement*, Page 73, Resolution No. 10 of the Bengal Conference, please read "50%" instead of "60%".

THE Indian Medical Journal

All communications regarding contributions, advertisements, books and reports for review, changes of address and non-receipt of the Journal should be addressed to: "The Managing Editor" INDIAN MEDICAL JOURNAL, 131, Coral Merchant Street, Madras. It is important that the subscribers should report their change of address, if any, immediately to this office to ensure regular supply of the Journal.

All communications regarding subscriptions and remittances of the same should be addressed to Dr. Khan Chand Wohra, Hony. Treasurer, All-India Medical Licentitates' Association, Borstal Institution, Lahore (Punjab).

All communications regarding policy, programme and work of the All India Medical Licentitates' Assn., should be addressed to Dr. Manohar Lal Kapur, General Secretary, M.O., I/C. Eye Centre, King Edward Memorial Hospital, Karnal Post (Punjab).

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Vitamin K Therapy

Vitamin K deficiency of severe grade is very difficult to produce in mammals by dietary means alone in the absence of disturbances in its metabolism or its absorption. Once when vitamin K is absorbed, it is intimately connected with the production of pro-thrombin in the liver, and hence vitamin K deficiency has become synonymous with diminished pro-thrombin activity of the blood plasma and the resultant prolongation of the blood coagulation time. The sufficiency or otherwise of vitamin K is, therefore, assayed by means of tests¹ to determine the deviation of the pro-thrombin index of the blood plasma as indicated by the length of time in seconds elapsing before the formation of a definite clot. Normally the blood clots in 25 to 30 seconds.

The absorption of vitamin K may be interfered with in more ways than one. In obstructive jaundice, bile is absent from the intestinal tract and this prevents proper absorption of vitamin K resulting in depressed pro-thrombin level. In chronic enteritis or sprue with intractable diarrhoea, there is

inevitably depression of the pro-thrombin level due to diminished intake of food and absorption. The most classic type of vitamin K deficiency is found in the hæmorrhagic disease of the new-born where there is extreme pro-thrombinemia. In all these clinical conditions vitamin K therapy has produced very good results.

But Andrus² is of the definite view that for the normal and the therapeutic effect of vitamin K it must not only be absorbed but also the liver must be normal in its functional ability to produce pro-thrombin. In other words, vitamin K therapy is absolutely unavailing in patients with persistently diminished levels of plasma pro-thrombin. Hence it is not of much use in scurvy, hemophilia or thrombocytopenic purpura. On the other hand, Andrus claims that such a failure can be used as an index of liver damage in distinguishing between jaundice of extra hepatic origin and that due to parenchymal liver disease.

Vitamin K, like A and D, is fat soluble and is richly distributed among green leafy plants and vegetables, and putrefied fish. Dam and his co-workers (1939) have prepared concentrated extracts of this vitamin. This is soluble in oil, and can be given by mouth as well as intramuscularly. When given by mouth bile salts are given along with it to help absorption, and when given intramuscularly an oily solution is used. It is reported by Andrus that intramuscular injection is free from toxic symptoms and the effect of a single dose is maintained for a considerable period. He emphasizes also the fact that the numerical designation of the various compounds with vitamin K activity does not indicate, as in the members of the B complex, any qualitative difference in their action but only quantitative difference in their vitamin K contents according to the sources from which they are obtained.

¹ Quick's test is commonly employed for this purpose.

² The Newer Knowledge of Vitamin K. William De Witt Andrus. The Bulletin of the New York Academy of Medicine, Feb. 1941, pp. 116-128.

We regret to announce the death of Dr. Ganapatram D. Mahadevia of Ahmedabad on 27th June, 1941 who was ailing for some time from diabetic carbuncle. He was a member of our Association for the last 35 years without any break. We offer our sincere condolences to his distinguished son, Dr. Chimanlal Ganapatram Mahadevia, M.B., B.S. and other bereaved members of his family. — Ed.

The Next Issue is a Special Number on Obstetric Emergencies

SPECIAL ARTICLES

Malaria Problem

● Dr. Paul Russell

(Director, Malaria Investigations, Pasteur Institute, Coonoor)

Malaria is a disease due to microscopic parasites which destroy red blood cells, and which are carried from man to man only by certain *Anopheles* female mosquitoes. These insects, by propagating malaria, are responsible for the death of at least two persons in India every minute of the day and night, year after year, 2,880 victims per day!

Malaria kills only about one in every 100 or 200 victims. Malaria is essentially a debilitating disease which weakens bodies and minds, and produces anaemia of muscle and brain. A man with chronic malaria is only half alive. He cannot do a proper day's work, he is incapable of thinking logically, he is easily dispirited and quickly discouraged. He accepts his unhappy lot as *Kismet* or *Karma*. When a third of the population of a country is attacked by malaria each year, as in India, it is utterly inconceivable that this country can be progressive or prosperous.

Malaria in India is primarily a rural disease and, since agriculture is by far the chief and greatest field of industry, the losses caused by malaria are almost beyond calculation, undoubtedly amounting to millions of pounds sterling each year.

Recently a careful survey was made in a typical malarial village in Pattukkottai Taluk, Tanjore District. The actual cost to this village, in money or kind paid to priests, temples, quacks, or physicians for treatment of malarial fevers, amounted to Rs. 2-8-0 per capita per year, and wages lost amounted to an additional Re. 1-6-0 per capita. Here was an actual loss to these people of Rs. 3-14-0 per capita per year, in a village where the average per capita income was Rs. 35-3-0. Yet it is now a fact, as will be explained in more detail later, that malaria in this village could be controlled for As. 4 per capita per year. Here is a tangible economic loss amounting to Rs. 3-10-0 per capita per year, in a village which is typical of at least 150,000 others in India. If, as seems possible, at least 125 million persons live in rural malarious villages, and if our figures are typical, as also seems probable, here is a direct annual loss to India of over 450 million rupees. That is to say, malaria costs the ryots of India each year directly more than 33½ million pounds sterling, in villages where the disease could be controlled by investing two and one-third million pounds. The losses named are in addition to the much greater indirect losses due to the relative inefficiency of labourers and farmers chronically anaemic because of malaria.

The fact that it is cheaper to control malaria than to permit it to ravage a population has been realized for some years by the owners and managers of agricultural enterprises in Malaya and India, and elsewhere in the tropics. But the revenue officials of governments in malarious countries generally have not yet accepted or acted upon this important finding.

Chief Menace in Madras Presidency

In Madras Presidency, only two species of mosquitoes have vital importance in this regard, *Anopheles culicifacies* of the plains, and *Anopheles fluviatilis* of the foothills. Other species may occasionally do harm, but these two constitute the chief menace. Furthermore, it is not necessary to destroy all of the mosquitoes of these two species. A certain density of mosquitoes is required to propagate malaria. There is a natural death-rate among mosquitoes and there are certain other natural limiting factors. So if one can reduce the numbers of the carrying mosquito below that critical point where transmission of malaria is possible, one can prevent malaria in a community.

So malaria control to-day can be sharply focussed on the one or two anophelines in each area that are of real importance. The first step in all control programmes is to find out where malaria is, what species of anopheline is carrying it, where this mosquito is breeding, and where it spends the daytime, while resting. Knowing these facts, one can plan how best to attack the malaria-carrying insect, either in its aquatic stages or in its daylight resting places.

Control Measures

Malaria could not be checked by better food or housing. It is true that malaria sometimes maintains its greatest prevalence in areas of lowest economic status. This may be due, for example, to poor drainage of cheaper lands. The evidence all goes to prove, not that poverty is responsible for malaria, but that malaria frequently maintains poverty. It is a very difficult task to raise anaemic, malaria-beaten individuals to a plane of greater agricultural or industrial activity by any amount of political afflatus or social service. But it is surprisingly easy to stimulate a community which has been lifted up from the sloughs of chronic malaria by anti-mosquito measures.

There are available numerous malaria control measures, such as screening, using bed-nets, oiling, spreading Paris green, draining and filling, using certain fishes, spray-killing of adult mosquitoes with pyrethrum extracts, using intermittent irrigation, etc. It is not possible here to discuss these measures at length. But it should be noted that each malaria control project must be studied separately.

Some 17 lakhs of rupees have recently been spent to control malaria in New Delhi. Such a sum seems large until one realises that it is less than two per cent. of the cost of building this modern city, which is located in what is potentially a very malarious area, subject to severe epidemics.

A few words may be added about one of the newer methods of controlling rural malaria. This measure is called "spray-killing" and consists in attacking adult anopheline mosquitoes in their daytime resting places with a spray made from pyrethrum extract. Very small droplets of pyrethrum extract are fatal to adult mosquitoes on contact, and, when these insects rest quietly on the inside walls of houses and cowsheds during daytime, it is possible to kill them by spraying with the pyrethrum extract. Many malaria-carrying

September, 1941]

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Health of Married and Unmarried Persons

● Dr. T. D. Mukherjee, M.B., D.P.H., Burdwan, Bengal

Man and woman are social beings and marriage is perhaps the noblest of all human institutions established since the creation of society of which it is the cornerstone of the whole structure. I am not concerned here with the intricate questions of the sanctions of marriage attributable to religious or legal principles accepted by the followers of different creeds. What I propose to discuss as a medical man is the relation of health of individuals *vis-a-vis* the institution of marriage. Health, we know, is a factor dependent on the environments of the man, and of his various environments, the association of the male and female sanctioned by society is of vital importance to their health. With the present trends in our civilisation our ideas are changing in various respects leading to the so-called reforms of many social institutions not excluding that of marriage. The problem of the health of married and unmarried persons is, therefore, a topic of considerable interest to which serious consideration ought to be given by the advocates of reform.

After adolescence, the age of marriage comes and if a person remains unmarried during this age, some interesting points arise of which the question of health comes to the forefront. Modern economic conditions have brought such a very great strain on married lives that both the male and the female are found to avoid, as long as possible, a married life. Formerly a strong and pungent criticism in social circles, especially against a girl if she remained unmarried after the age of puberty is reached, acted as a spur to married life. Nowadays, however, there is no such sharp criticism. Marriage is thus postponed or avoided. But I do not think this is good in the interests of individual's health.

First, I must point out the normal physiological phenomena which take place in the human system when the age of puberty is reached. This age is different in different countries, in different societies and in different individuals. The signs of puberty are recognised by the development of the secondary sexual characters, which are known to all. This complex phenomena are due to the actions of the hormones. These hormones not only influence the secondary sexual characters but also influence the whole nervous system. The hormones act both as a stimulating agent as well as an inhibitory one. The pituitary, adrenal, thyroid, ovary and testes, all play their respective rôle. The ovary secretes oestrin and progesterone. The testes secrete testosterone. The pituitary gland secretes a hormone which is called prolactin and which again is concerned with menstruation and pregnancy. Under the influence of all these endocrines and the resultant secondary sexual characters, the human being is naturally attracted towards the opposite sex; and the marriage thus becomes a natural union between a male and a female, permitted by social customs from time immemorial.

The question arises: is there any difference, from the point of view of health, between a married and an unmarried life. The married couple settle in a society, try to lead a quiet life and become somewhat cautious of their health. They are to look after the health of each other and of their children, and seldom become extravagant.

The unmarried one leads a single life and is generally fond of irregular habits. His passion is often unrestrained. His internal life is often of the "don't care" type. He is prone to indulge in perilous excursions and enterprises.

The main portion of the earnings of a married man is utilised for the maintenance of his family; and thus there may be some deficiency in the family diet causing injury to health; and the married woman has risk of life during her child-bearing period. But these defects are counterbalanced by numerous advantages of married life.

The single person may be financially sound, if the mind and the natural physical cravings be overcome from being led into unrestrained temptations. But the alcohol and the woman appear with all the attendant temptations in the path of life of the unmarried man to the fullest extent. The result is that the persons become victims to various venereal diseases which injure the health to an irreparable limit.

In married persons the mode of life is somewhat regular and the glandular products getting proper vent sustain the system in a normal condition.

In unmarried persons the glandular and even the normal metabolism is often upset. In my experience, specially among single women, the defect in calcium metabolism is found to be marked, and some disturbance in menstrual cycle is found to be constant. Perverted appetite in all its forms (hunger, thirst and sex) are more common, sometimes leading to the physical wreck of the individual. Above all, it tells upon the nervous system in a severe manner. Neurasthenia is common among unmarried persons. The continence as well as the abuse are the chief causes. Pain in the spinal column is most common. Phosphaturia is also a common symptom. Palpitation of heart is often complained. Dyspepsia is generally present and constipation becomes marked. Eye trouble is common. One becomes irritable. Mental work becomes impossible. Certain phobias may develop. Insomnia and bad dreams are sometimes troublesome. Hysteria may be manifested. The remedy of all these troubles lies in the natural married life.

Permanent abstinence of any healthy person rarely exists; moreover, a person living in the modern civilised society it is perhaps impossible. The effect of long continence brings various sorts of physical and mental disorders leading even to insanity. Neurasthenia is the most common ailment. Other diseases may also appear and affect the health to a varied extent. If continence is to be followed, the mode of life should be different. Nature demands reproduction and the two sexes have been created not in vain.

To sum up: the expectation of healthy life of a married person is greater than that of the unmarried. In other words the married persons live longer and enjoy better health.

FOREIGN MEDICAL NEWS

Our American Letter

(From Our Own Correspondent)

Drug Shortage in America?

"The only drugs of which supplies in this country may run short if war in Europe is prolonged are those drugs obtained from certain plants," S. De Witt Clough, president of the Abbott Laboratories, pointed out in an interesting report. "Of vitamins, including cod-liver oil, vaccines and hormone remedies such as insulin for diabetes, sulfanilamide and other sulfa remedies, anesthetics of all types, antiseptics, disinfectants, bandages and surgical dressing, the United States has plentiful supplies," Mr. Clough's survey shows. "The drug industry today," he declares, "is in a much better position to supply the medical profession, hospitals, the Red Cross, the War Department and governmental agencies, with pharmaceuticals and medicinal chemicals than it was during the last World War."

The botanical drugs of which there is some danger of a war shortage include such items as belladonna and scopolamine. There is already a growing scarcity of such items as belladonna root and hyoscyamus, a source of scopolamine, according to the report. On the other hand, the United States are in excellent condition to produce large quantities of biologic items such as vaccines and antitoxins. They could take care of a large part of the world requirements for bandages and dressings. They are in an advantageous position to produce enough vitamin oils to take care of the entire western hemisphere, and they lead the world in the production of anesthetics.

Clubwomen in the State of New York have given their attention to the growing of medicinal herbs. On the advice of Dr. William Mansfield, dean of the Albany College of Pharmacy, they concentrated on the growing of three herbs for which the climate in upper New York is best suited. Of the three herbs chosen the most important is *Datura Stramonium*, commonly known as Jimson weed or Jamestown weed. The plant grows better under cultivation, but can be found growing wild in the central regions of the State. The leaves and flowers contain atropine and hyoscyamine. Second in importance is *Digitalis Purpurea* or Foxglove. It has been administered medically in this country since 1820. Third is *Delphinium Ajacis*, the annual Larkspur which is employed in the form of an ointment to destroy parasites on the scalp. This probably is only the beginning of extended efforts to cultivate medicinal herbs in greater proportion.

Kidney Extracts and High Blood Pressure

High blood pressure kills more people than any other disease,—and the efforts to overcome it are great. New research work in the Lilly Laboratory, at John Hopkins, and in the Rockefeller Institute for Medical Research, have opened new views on the therapy of hypertension. We know for some years that there is some relation between the kidneys and some types of high blood pressure, besides the mechanical obstruction. We have

evidence that normal kidneys contain some chemical which can reduce arterial blood pressure over prolonged periods of time.

Drs. Page, Helmer, Kohlstaedt, Fouts and Kemp of the Lilly Laboratory for Clinical Research have recently published results which they have obtained in successfully reducing dangerous hypertension by injections of kidney extract. Drs. Grollman, Harrison and Williams have reported similar results. Extracts from pork kidneys are prepared in various ways. The extracts are given either by injection or by mouth. At first the extracts increase the blood pressure, an effect produced by the renin that they contain. After several days the pressure falls which means that the active principle is slow acting, and that a sufficient amount must be injected to fill emptied stores of the material before it becomes effective. Vision was improved, mental activity restored, the old shortness of breath disappeared and records made by electrocardiographs tended to approach the normal.

In dogs, Dr. Page and his associates have been able to raise and lower the high experimental blood pressure almost at will. They did this as many as five times by cutting off the treatment and then resuming it. The length of time the blood pressure remains lowered varies greatly in both animals and men. The trend is usually upward after discontinuing treatment for 4 to 6 days. This work so far is purely experimental and it may or may not lead to the use of kidney extracts in treating hypertension. Eating kidney stews will do no good, because cooking destroys the pressure-reducing properties of the kidneys.

Dr. Schroeder of the Rockefeller Institute for Medical Research finds that tyrosinase produces much the same effect as kidney extract. This tyrosinase is an enzyme which is found in mushrooms and many fruits and vegetables. Just as in the case of kidney extracts, the blood pressure returned to its old level in 3 to 6 days after injections of tyrosinase were stopped, but the symptomatic improvement lasted several weeks and even months.

Drug Therapy of Cardiac Arrhythmias

This topic has been given a survey by Robert L. Levy, Department of Medicine, Columbia University College of Physicians and Surgeons, and the Medical Clinic of the Presbyterian Hospital. One of the early signs of myocardial insufficiency are premature ventricular contractions. Taking digitalis usually causes the irregularity to disappear. This drug is best given by mouth, as the whole leaf, dispensed in the form of tablets, pills or capsules. One digitalis unit (approximately 0.1 gm., or 1½ grains) of a biologically standardized product is administered three times a day for 4 days, twice a day for 3 days, and then once a day for a week. Quinidine sulfate is another drug that is occasionally useful, but less so than digitalis. The dose is 0.2 gm. (3 grains) three or four times a day, in capsule or tablet form. Phenobarbital, from 0.015 to 0.03 gm. (one-fourth to one-half grain), may sometimes be given with quinidine to advantage.

When auricular fibrillation occurs, digitalis is effective in either the presence or the absence of congestive failure. Quinidine therapy should be carried out with the patient in bed under observation; it is not a procedure applicable to ambulatory patients.

The effects of any particular form of therapy in cases of paroxysmal tachycardia cannot be foretold. If tachycardia persists and the patient is distressed, a triple bromide tablet, 1 gm. (15 grains), may be taken every four hours for several doses. Sometimes morphine sulfate, one-fourth grain (0.015 gm.) allays discomfort and appears to aid in stopping the attack. If these measures are ineffectual, acetyl-beta-methyl-choline chloride (mecholyl) may be injected subcutaneously in a dose of from 20 to 40 mg. (one-third to two-thirds grain). Some patients, however, prefer the discomfort of the paroxysm to the distress caused by the remedy. Atropine sulfate 1.2 mg., injected intravenously, will neutralize the effects of mecholyl almost at once and may be given if the reaction is stormy. In some cases quinidine sulfate by mouth restores sinus rhythm. Doses of 0.4 gm. (6 grains) are given every two hours until five or six have been taken. One or two doses may suffice.

When auriculo-ventricular block is complete digitalis may accelerate slightly the rate of beating of the ventricles. Quinidine is apt to exert a harmful action in the presence of heart block and should not be employed, even though the auricles are fibrillating. If the attacks are associated with ventricular asystole and are frequent, epinephrine is the best preventive; it is given in doses of from 0.5 to 1 c.c. (8 to 15 minims) of the 1:1,000 solution by subcutaneous or intramuscular injection.

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Our Canadian Letter

(From Our Own Correspondent)

Health in 1940

Unusual interest attaches to the mortality record of the Canadian people since their declaration of war in September 1939. The fortunate geographic position of the country has entirely spared its civilian population the horrors of war which are being experienced by millions of people on three continents. An influenza epidemic which struck the Dominion toward the end of 1940 resulted in increased mortality during December and the first quarter of 1941.

In spite of this, for the year 1940 as a whole, the standardized death rate of the Canadian Industrial policyholders, under 75 years of age, was only 592.1 per 100,000, or 12.1 per cent. below the average rate for the preceding five years, according to a report of the Metropolitan Life Insurance Company. There are, however, certain health problems of particular importance in the various Provinces. For instance in the Province of Quebec, mortality is high from tuberculosis, the diseases of childhood, and the puerperal conditions. But even here the outlook is not unfavourable, inasmuch as all of these conditions can be reduced appreciably by intensive health work.

In 1940, the death rate for influenza and pneumonia combined was only 43.3 per 100,000 as against 71.5 per 100,000 in the preceding five years, a drop of almost 40 per cent. Another achievement was the marked decline in diarrhea and enteritis, a reflection, in good measure, of the advances in the care of infants and young children. Diseases of the heart, arteries and kidneys, which together account for about one third of the mortality, have, as a group, shown no appreciable change in death rate in recent years.

Sulfanilamide for Laryngotracheobronchitis

R. R. MacGregor, of Kingston, Ont. points out that the highly fatal disease laryngotracheobronchitis has been ignored by the general practitioner. Heretofore, until the cases became obstructive emergencies most of them were considered cases of simple croup. Medical instructors should give more attention to this serious disease of childhood. The author reports 13 cases, 9 of which he has treated with sulfanilamide and 4 with sulfapyridine, using the usual standard dosage.

As an adjunct, blood transfusion was given on admission to the hospital and the child was maintained in an atmosphere of intense humidity, and for a few children the oxygen tent was utilised. Of the 13 children 2 died, 1 in the admitting room. The other child, ill for three days, was moribund on admission and died in three hours; the parents refused to have a tracheotomy performed. While the condition passes quickly from an apparently non-critical stage to one of extreme seriousness, most patients may be saved without surgical intervention if treatment is given when persistent obstructive symptoms appear. While in the beginning the parents may not consider the child sufficiently ill to call a physician, in from 6 to 24 hours the disease becomes more serious, with laryngeal and obstructive symptoms as outstanding features.

FOR THE PRACTITIONER AND THE STUDENT

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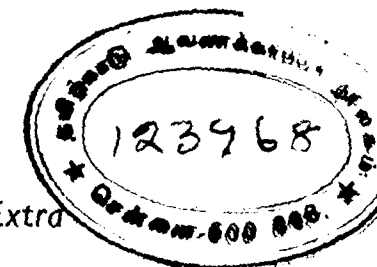
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"The book should prove popular with all the practitioners of obstetrics in the tropics."

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"Admirably fulfils its purpose of providing a sound introduction for students."

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"A valuable addition to the library of those working in the tropics."

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INDIAN MEDICAL NEWS

Our General Letter

Madras University and the Medical Licentiatees

It is a great pity that owing to unpublished and uncommunicated change in the Regulations of the Madras University regarding the admission of L.M.P. Diploma holders to the M.B. and B.S. degree examinations, nearly seven such candidates from Northern India were informed, after their admission into the Madras Medical College, that they have to pass the Pre-Registration examination of the Madras University before they could be allowed to sit for the M.B. B.S. examination. This means that they have to spend three years instead of two and a half years. It is contended that since the alumni of the Madras University who seek admission into the Medical College have to pass the Pre-Registration examination, students of other Universities could not claim any special privileges. But it is forgotten that the I.Scs. of the Madras University do not have to pass both in Theoretical as well as in Practical examination in Practical Tests in Physics, Chemistry and Biology, while the I.Scs. of other Indian Universities have to pass both in Theoretical as well as in Practical tests in these subjects. It is, therefore, not a question of special preference but of fairness and equity. The standard laid down by the Medical Council of India is that the candidate for admission into a Medical College should have passed:

The Intermediate Examination in the Medical Group of a British Indian University which includes a practical test.

The insistence on passing the Pre-Registration examination in the case of these students means that the Madras University considers that the standard of its Pre-Registration examination is higher than that of the Intermediate examination in the Medical Group of other Universities. The latter should take up the matter and see that their alumni are duly recognised by the Madras University.

It is reliably learnt that the memorandum which the affected students wanted to present in person to the Vice-Chancellor of the Madras University was rejected by the Principal.

All-India Pharmacy Bill

In order to ensure that all persons exercising the calling and business of pharmacists possess a competent knowledge of the art, the Government of India, it is learnt, are contemplating the enactment of an All-India Pharmacy Bill on the lines of the All-India Drugs Act.

The objects of such a measure will be to prohibit the dispensing or sale (wholesale and retail) of drugs, chemicals and biological products used for medicinal purposes except by qualified pharmacists. By this, control will be exercised on all chemists and manufacturing business places where the sale or manufacture of drugs are carried on.

It will be recalled that the Drugs Enquiry Committee, appointed by the Government of India in 1930-31, recommended the simultaneous introduction of a Pharmacy Act along with the Drugs Act. The Government of India are now implementing this recommendation of the Enquiry Committee.

U. P. Government Explains Policy of Recruitment

Complaints have recently appeared in a certain section of the press that, in the arrangements made recently in the Medical Services, the members of the Provincial Medical Service have been unjustly deprived of the promotion to which they have been entitled. Inquiries made in official circles show that the Medical like other services consist of three distinct branches: (1) Imperial, (2) Provincial and (3) Subordinate.

The recruitment to each is separate, although provision is made for the promotion of a limited number from Subordinate to Provincial and from Provincial to Imperial. There are forty-eight districts in the U. P. each with a Civil Surgeon. At one time all these forty-eight Civil Surgeoncies were held by officers of the first category, i.e., I.M.S. Gradually a number of these Civil Surgeoncies were listed, that is, thrown open to the Provincial Service. This number now stands at thirty out of forty-eight. Thus only eighteen Civil Surgeoncies are manned by I.M.S. Officers.

Owing to war conditions, fourteen out of these eighteen I.M.S. Officers were recalled to military duty, and Government had before it the question of filling up these fourteen extraordinary vacancies. It decided to fill up ten of these so that a limited number of experienced doctors who had retired might be made available to the public as Civil Surgeons. An identical policy has been followed in other Departments. Serving members of the P.M.S. thus hold forty districts, out of the forty-eight and quite junior officers—as junior as thirteen years' service—are now acting as Civil Surgeons. There is not a single officer of sixteen to eighteen years' service who is, as alleged, "rotting as an Assistant Surgeon."

Recognition of Andhra Medical Graduates

A Press Note says that medical graduates of the Andhra and Patna Universities, who have up to the present been unable to obtain Emergency Commission in the I.M.S. on the ground that their medical degrees were not registrable, are now eligible for such Commissions.

This follows acceptance by the Government of India of a recommendation made by the Medical Council of India, at its last meeting, that medical degrees of the Andhra and Patna Universities be recognised with retrospective effect from the dates on which these Universities were permitted to confer the degrees of M.B. B.S. under the Indian Medical Degrees Act (1916).

The L.M.S. of the Punjab State Medical Faculty

Conditions under which candidates who have already passed the L.S.M.F. Examination of the Punjab State Medical Faculty may be awarded the Diploma of L.M.S. of the said Faculty, according to the notification in the *Punjab Gazette* dated 31-5-1941, are:

(1) They should undergo necessary courses of study laid down in Biology and English and pass examinations in those subjects.

(2) They should undergo study in Experimental Pharmacology, Experimental Physiology and Embryology, and pass examinations in those subjects.

(3) They must pass a clinical examination in Medicine, Surgery, Midwifery and Diseases of Eye, Ear and Throat, after they have been in a recognised hospital for one academical year.

(4) No candidate will be entitled to get the diploma of the L.M.S. before the year 1944.

I.M.A. and Recruitment

"A mere appeal to the patriotic sentiments of medical men in India to accept either an emergency commission in the Indian Medical Service or an emergency appointment in the Indian Medical Department would be ineffective unless fundamental changes are made in the Indian Medical Service and unless the terms and conditions of emergency service now offered are materially altered."

These views were expressed by the Working Committee of the Indian Medical Association at its meeting held in Calcutta on 12th July 1941.

The Central Council of the Association, which met on 11th July 1941 at the premises of the Association under the presidency of Dr. K. S. Ray adopted the resolution as passed by the Working Committee. About 40 members, representing the different branch associations, attended the meeting of the Council.

The Working Committee, by its resolution, recommended to the Central Council that the President of the Indian Medical Association should press for the adoption of the following propositions at the conference convened by the Government to be held at Simla on July 21 and 22:—

"All officers belonging to the I.M.S. and I.M.D. working on the civil side constituting as they are said to be a war reserve for the army, should be recalled to the army immediately and that the vacancies, created by such reversion of the officers, should be filled by selection after open advertisement, because there should be no civil side of the Indian Medical Service and the Indian Medical Department hereafter. These appointments should be made on a temporary basis for the duration of the war so as to enable the officers returning from war service to apply for and compete for these posts on equal terms.

"During the period of the war no distinction shall be allowed to continue as between the Indian and European members of I.M.S. and I.M.D., regarding pay, allowances, status, eligibility to command specialist appointments, family allowances, leave, promotion, gratuities, disability compensation, whether these officers hold temporary posts in the I.M.S. or in the A.I.R.O. or hold emergency commissions.

"The policy governing the changes proposed above should be under the direction of a central board on which the Indian Medical Association should be adequately represented, so as to facilitate recruitment to the Emergency Commission; and the holders of emergency commissions should be given first preference for holding permanent posts in the I.M.S., the selection of such appointments to be made by a selection committee on which the Indian Medical Association should be adequately represented.

"Members of the profession volunteering their services for emergency commissions in the Indian Medical Service or for appointments in the Indian Medical Department should start with a rank and seniority in consonance with their experience and standing in the profession, and that all commands should be open to them on the basis of seniority.

"Ten per cent. of the officers in the I. M. D. (Indian branch) shall be granted honorary King's Commission."

Interesting News Items

In reply to the U. P. Provincial Secretary's Letter No. 3124-B, dated 17-2-1941, he is informed by the authorities that the Governor has considered the request of the U. P. Provincial Branch of the All-India Medical Licentiates' Association for the amendment of the U. P. Medical Act so as to secure a general electorate, but regrets his inability to accede to it.

In reply to the U. P. Provincial Secretary's letter No. 6779-E, dated 29-3-41, the Government have requested him to inform all the Branches of the A. I. M. L. A. that the resolutions which they pass should be sent to the Parent Institution instead of to the Government, and that only if approved and passed by the Provincial Branches should they be submitted to Government for consideration.

Dr. Kunj Behari Lal Varma has withdrawn his candidature for election as a member of the U. P. Medical Council.

Recruitment to Emergency Medical Service

The two-day Conference on recruitment to the Indian Medical Service under the chairmanship of Sir Girja Shankar Bajpai, concluded on 23rd June 1941. It considered the terms and conditions of recruitment to the service and came to a number of conclusions which are briefly summarised in a communique as follows:

Greater publicity should be given to (a) the existing terms and conditions for emergency commissioned officers of the Indian Medical Service, to bring out the fact that they involve no discrimination between European and Indian entrants in regard to rank, emoluments, promotion or other conditions of service; and (b) the fact that for the period of the war, no new permanent appointments will be made to the Indian Medical Service.

The procedure for recruitment should be decentralised and adequate machinery for the purpose should be set up in the provinces. It was accepted that in the major provinces the Selection Board should consist of five members, two of whom would be non-officials, while in the minor provinces the Board would consist of three members, one of whom would be a non-official.

A Central Advisory Body should be set up which would review the progress of the arrangements now proposed for improving recruitment and make recommendation when necessary. This Central Advisory Committee should consist of five members, three of whom would be ex-officio, viz., Director-General, Indian Medical Service, and the Secretaries of the Defence and Education, Health and Lands Departments, and two private medical practitioners.

Further proposals to make the conditions of service more attractive, especially for medical practitioners of some years' standing, were put forward and will be examined by Government.

The Conference finally recommended that a percentage of permanent commissions in the Indian Medical Service after the war should be reserved for emergency commissioned officers who have rendered approved service. Some of the non-official members of the Conference suggested that the civil side of the I.M.S. should cease to exist, but it was pointed out that this question impinged on the constitutional field and the suggestion could not, therefore, be considered during the war.

Our Bombay Letter

Bombay's Welcome to I.M.C. and I.M.A. Leaders

For the first time since its formation the Working Committee of the Indian Medical Association met at Bombay and considered the very important resolutions passed at the Simla recruitment conference. For the first time, again, the Executive Committee of the Indian Medical Council met in this City at the same time. The Bombay medical profession took advantage of this unique occasion of meeting the pick of the medical leaders of India by arranging a number of meetings and at-homes, all of which proved grand successes. One really felt that such occasions should come off almost yearly.

Col. Bhatia Goes to Simla

After twenty-one long years of unstinted service in Bombay, firstly as Lecturer in Physiology and later on as Dean of the Grant Medical College, and Superintendent of the J. J. Group of Hospitals, Col. Bhatia left for Simla to take up his new post as Additional Deputy Director General, I. M. S. It was with a heavy heart that he left the Institution which he loved, and where he spent the best part of his life. It was with a heavier heart that Bombay—its society and public in general, and the medical profession in particular—bade farewell to Mrs. and Col. Bhatia. A gentleman of outstanding personality and charming manners,—let alone the possession of high and coveted academic qualifications, and with an equally good-natured life-partner,—and with an equally long sojourn in Mrs. and Col. Bhatia have, during their long sojourn in the city, endeared themselves in the hearts of every one that they met. This was evinced by the innumerable functions held in their honour prior to their departure. *Au revoir* Mrs. and Col. Bhatia! Bombay wishes you more distinctions, long life and prosperity.

Additional Beds provided in Government Hospitals in Bombay

In his statement to the Press on the Provincial Budget Estimates for 1941-42, His Excellency the Governor announced Government's intention to open, during the current financial year, 136 additional beds in Government hospitals in Bombay at a cost of Rs. 1,25,000.

Government have now announced that all these additional beds have been opened—90 additional beds at the G. T. Hospital, 27 additional beds and an additional operation theatre at the Sir C. J. Ophthalmic Hospital, 15 additional beds at the B. J. Hospital for Children, and four additional beds at the Sir D. M. Petit Hospital, Bombay.

The total number of beds now maintained in Government hospitals in Bombay City is 1,218.



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SCIENTIFIC RESEARCH COMMITTEE, A. I. M. L. A.

NOTICE

A research scholarship of Rs. 200/- will be awarded to a deserving licentiate by the Scientific Committee of the All-India Medical Licentiates' Association. Only the members of the Association are eligible for the said scholarship. The application should be made to the undersigned giving full particulars of the proposed problem on which the candidate wants to work, the name of the laboratory and the doctor-in-charge under whose supervision the work will be conducted.

A cash prize of Rs. 50/- will be given to the writer of the best article on "Ocular Complications of Beri Beri". This is named as "Rai Bahadur Dr. Sarju Prasad Memorial Prize". The article should not exceed 20 foolscap sheets (written on one side only). Only the members of the Association are eligible for the competition. It should reach the undersigned by 30th of November 1941. The following members have been appointed as examiners:—

1. DR. V. D. SATHAYE (POONA)
2. " JAI GOPAL (MUKEREAN)
3. " A. VISWANATHAN (MADRAS)
4. " K. J. MISRA (AGRA)

T. C. Basu Chowdhury,

Prosadpur House,
Agra, 5-6-'41

Secretary,
Scientific Research Committee,
A. I. M. L. A.

Reports and Reviews

Annual Report on the Civil Hospitals and Dispensaries in Sind, 1939

Lt.-Col. Briggs held charge of the Medical Department. Two I.M.S. Officers held the charge of Civil Surgeoncies of Karachi and Hyderabad. There were 16 medical officers in the P.M.S. and 126 in the P.S.M.S. The number of beds available was 1,862.

Regarding Honorary Medical Officers the report observes:

"They at the various hospitals continued to do useful work and the following additional posts were sanctioned for the Civil Hospital, Hyderabad, during the year:—

- (1) Honorary Surgeon.
- (2) " Physician.
- (3) " Ear, Nose and Throat Surgeon.

Revised rules governing the appointments and working of Honorary Medical Officers in Sind were introduced by Government and these are working satisfactorily."

In order to provide facilities to private medical men and women to obtain experience of hospital work, Government authorised the Director to allow medical practitioners to work informally at State Hospitals if they agreed to abide by the rules and discipline of the institution concerned. This serves the purpose of affording practitioners an opportunity to widen and increase their clinical knowledge, and at the same time provides additional assistance for the hospital staff.

In order to give medical practitioners an opportunity to improve their clinical knowledge, Government propose to institute intensive post-graduate refresher courses. The instruction to be given consists of clinical lectures and demonstrations at the Medical School, Hyderabad, and confined to the following subjects:—

- Medicine,
- Surgery,
- Midwifery and Gynaecology,
- Veneral Diseases,
- Diseases of the Eye.

"The number of students to be admitted to the course are not to be less than four and not more than ten at a time. Government Medical Officers are allotted two seats out of ten. The duration of the course is 10 days."

Motor Travelling Dispensaries are a characteristic feature of rural medical relief in Sind, apart from grant-in-aid dispensaries in some municipal areas.

The Hospital receipts amounted to 17.98 lakhs and expenditure 13.65 lakhs. The average cost per diet was Re. 0-3-9.

Annual Report on Public Health in Sind, 1939

This report is, as usual, very interesting and fully illustrated by graphs and diagrams.

The year under review showed an improvement in the general state of health in the Province. There was a marked increase in the number of births recorded and decrease in the number of deaths. As usual the greater number of deaths was recorded under the heading "Fevers." Except in the case of deaths due to injuries, the mortality recorded under various heads in the statistical returns appended to this report, showed a decrease as compared with the previous year. The death rate during the year under report was 11.55 as against 12.40 in the previous year. The number of deaths recorded under various groups compared with the previous year and the quinquennium ending 1938 has been shown in paragraph 21 of this report.

For the second year in succession, the City of Karachi enjoyed immunity from plague.

Six cases of, and 3 deaths from, cholera were reported to have occurred as against 611 cases and 343 deaths in the preceding year.

The work of P. H. Department was, throughout the year, well directed along useful channels.

Annual Report on Mental Hospitals in the Province of Bombay for 1940

The principal forms of mental disorder treated during the year were:

(1) Mania	694
(2) Melancholia	583
(3) Schizophrenia including Dementia Praecox	500
(4) Maniac Depressive Insanity	453
(5) Mental Deficiency	290
(6) Paranoia and Paronoid States	208
(7) Secondary Dementia	187
(8) Cannabis Indica Psychosis	185
(9) Epilepsy and Epileptic Insanity	152

The principal pre-disposing and exciting causes among patients were:—

Mental Stress	354
Toxins	172
Bodily Infirmary	138
Old age	128
Epilepsy	122
Hereditary Predisposition	81
Infection	75
Previous attack	74

There are five mental hospitals: Thana, Ratnagiri, Yervada, Dharwar and Ahmedabad with a total accommodation for 1,502 males and 757 females. Proposals for the introduction of Hydrotherapy at the Mental Hospitals at Ahmedabad, Dharwar and Ratnagiri, are under consideration.

Campbell Medical School Re-union Annual, 1941, Vol. I 9th Session

Commencing with a loving message from Sir Nilratan Sircar, the *Annual* enlivens its pages by biographical sketches of Drs. P. C. Roy and A. D. Mukharji, the accredited leaders of the Medical Licentiates of India, and by useful contributions on a variety of medical, surgical and obstetrical subjects by eminent teachers.

The *Annual* is certainly worthy of Campbell Medical School and its students, past and present.

Silver Jubilee Number of the Marwari Relief Society, Calcutta

The origin of this Relief Society was first laid in the mind of a young Marwari, Sri Onkarmal, when in the year 1913 he chanced to see a young boy meeting with an accident for whom no medical aid could be quickly summoned or arranged for.

This tragedy impelled him to work up a scheme of medical relief, and to-day it is in full bloom in the form of the Marwari Relief Society. This Society maintains well-equipped Allopathic and Ayurvedic dispensaries catering to the medical needs of hundreds of helpless people in Calcutta.

But medical relief is not the only form of charity which the Society offers. It has materially contributed to people destituted by flood, famine and earthquakes in the different provinces of our country.

The Marwari Relief Society is a brilliant example of Voluntary National Service, and it is time that each province starts an organisation of this kind.

Recent Advances in Therapeutics. Part II. By J. R. Goyal, M.B., B.S. Publishers: The Medical News, P.O. Box 81, Delhi. First edition 1941. Price Rs. 3/8.

So many new drugs—synthetic, endocrine, organic and inorganic—have been introduced for definite therapeutic purpose during the last ten years, and there was, till now, no compact form for ready reference these new discoveries in a book under review aims to meet this need, and, together with information, supplemented by case-illustrations from different publications. But the arrangement of the subjects and their description are somewhat slipshod and jerky, and at places inaccurate and exaggerated.

The typography and get up are too poor—even bad—compared to similar foreign publications. The Publishers would do well if they improve them in subsequent editions.

EPITOME

Ind. Med. Gaz., June 1941

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(1) Sulake, analysing 75 case-records of enteric fever finds: (i) majority of cases were due to infection with B. typhosus, (ii) maximum incidence was in the months of June, July and August, (iii) cases with diarrhoea at the onset showed a higher mortality than those with diarrhoea, (iv) slow pulse was an uncommon feature, (v) leucopenia was found only in less than half the number of cases, (vi) Widal positive only in 64% of cases, (vii) death rate 25%.

Jr. I. M. A., June '41

(2) Aetiological incidence of heart disease in Bombay —analysis of 4335 autopsies— <i>Raghavan</i>	365
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(2) Raghavan summarises his observations as follows: (i) There were 568 (13.1%) cases of cardio-vascular disease. 87.7% of these were males.

(ii) The majority of these cases fell within the age period between 30 and 50 years. This fact may be accounted for by the small number of autopsies on children, and the high incidence of cardiovascular syphilis, in this series.

(iii) Inflammatory conditions were encountered in 107 (18.4%) cases. The pericardium has been the seat of involvement in 62 (10.1%) cases. Of these 23 were of tubercular pericarditis thus accounting for one-third of all cases of pericarditis. The condition has been part of a picture of generalised carditis. The condition has been part of a picture of generalised tuberculosis.

(iv) Rheumatic heart disease was encountered in 35 (6.2%) cases. The data from available literature as well from our own material supports the contention that rheumatic heart disease is not very uncommon here. Acute, subacute and thrombotic endocarditis account for 55 (9.5%) cases.

(v) Cardiovascular syphilis was found in 170 (29.3%) or nearly in one-third of the cases. The incidence is no higher than in cities of other countries. Nearly one-third of the cases were of aortitis uncomplicated by of syphilitic heart disease were of aortitis uncomplicated by valvular dysfunction or aneurysm. Aneurysms accounted for nearly another one-third (58) of the cases of cardiovascular syphilis.

(vi) There were 126 (21.7%) cases of hypertension. arterosclerosis. Of these 26 were of essential hypertension. Cerebral haemorrhage was very frequent as the terminating event in the cases of essential hypertension, uræmia in nephropathic hypertension and acute myocardial infarction in cases of arterosclerosis.

(vii) Pulmonary heart disease was encountered in 45 (8.1%) cases. Seven of these were associated with conditions belonging to other aetiological groups. Death in all these cases was due to congestive cardiac failure.

(viii) 50 cases could not be assigned to one or the other aetiological group, though they had shown evidence of cardiovascular disease because the available data were insufficient.

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Gas cysts of the intestines— <i>Tribedi</i>	285
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Secondary abdominal pregnancy— <i>Ghose</i>	301
(3) Recent advances in pediatrics— <i>Leila Gosh</i>	309
(3) Leila Gosh in the course of her interesting article writes:	

The first example, one wishes to quote, is that regarding the prevention and cure of *infantile beri-beri*, more particularly in regard to the study published by Lydia Fehily, which was made in Hong-Kong. Fehily having studied the work of recent Chinese investigators became interested in the question of a toxic substance, methyl-glyxol, in the milk of mothers who were suffering from vitamin B₁ deficiency, demonstrated by a negative peroxidase reaction of the milk. 38.5 per cent. of the nursing mothers studied yielded peroxidase negative milk. Of this 44 per cent. had definite beri-beri symptoms. It was found that 81 per cent. of the infants fed on peroxidase negative milk had beri-beri, the symptoms being those of toxæmia associated with vomiting and nausea. The peroxidase test is liable to be negative in the presence of syphilis, during the puerperium, at the time of menstruation and in the pregnant women; it is therefore necessary to eliminate these factors in diagnosing the presence of this toxic substance.

There is little doubt that vitamin B₁ deficiency, even where par-boiled rice is eaten, is not uncommon in communities where oil is the cooking medium. This may be due to the fact that in such cases vitamin A deficiency is likely to be present also and there is therefore greater likelihood of infection and irritation of the gastro-intestinal tract which the oil may help to activate with resultant elimination of vitamin B₁ by way of the gut. One has, therefore, to look forward to the possibility of sub-clinical beri-beri manifesting as a toxæmia associated with nausea and failure to gain weight amongst infants in Bengal. As the test is very simply carried out, it is worth while to bring it to notice.

(b) *Developments in tetanus immunity.*—Tetanus toxoid has been given to pregnant mothers, 1-3 injections of 1.5 c.c. near the time of delivery. As a result of this, a transitory immunity was obtained of not more than 10-15 per cent. of that induced in the mother. Whereas non-immunised infants' blood did not protect against 1 MLD of toxin, whereas in the cord blood of new-born infants whose mothers have been immunised by three injections, protection against 20 MLD dose of toxin was the average obtained. In this province infant loss from tetanus greatly exceeds maternal loss.

(c) The drug hexyl-resorcinol in doses of .5 gm. has been used with conspicuous success for the removal of round worms in children, followed by a purge of magnesium sulphate. In 24 hours 95 per cent. of the worms were found to be removed by such treatment which is relatively non-toxic in its effects.

(d) *Treatment of rickets with one large dose of vitamin D₂.*—Great improvement in the calcium level and removal of symptoms of tetany within 48 hours has followed an injection or dosage by mouth of 15 mg. of vitamin D₂. Such effects last for a period not longer than two months, but can, however, permit of the establishment of slower routine treatment with comparative safety. One would like to draw attention to the necessity for eliminating by blood analysis and X-ray examination, the presence of sub-clinical rickets in cases where growth is retarded and development is somewhat slow. Sub-clinical rickets undoubtedly manifests itself not uncommonly in the average Bengali community.

Warmth is probably the most important requirement and protection from changes of temperature and from draught. In this connection, one would like to mention the importance of wiping drops of milk or water from the infant's neck and chest. A little chilling of such fluid may have a very serious effect on the child. One would like also to draw attention to the dangers of forcible resuscitation of premature infants who respire feebly at birth. The art of resuscitating the premature infant is one which deserves more widespread attention. Very few facilities for such resuscitation are available in community service and they might also be developed more freely in our institutions. The chief causes of death of premature babies are, undoubtedly, chilling, unsatisfactory methods of resuscitation, malformation and pneumonia. It is important to remember that morphine given within four hours before delivery greatly increases the mortality among prematures, and, in fact, all toxic and depressant drugs should be eschewed as far as possible in cases where premature labour has commenced.

Diabetes shares, with lack of exercise and a sedentary occupation, the distinction of being the only metabolic condition which is likely to bring about a large foetus. The size of the infant of a diabetic mother may be so great as to necessitate interruption of pregnancy while the child is under seven pounds in weight. Fifty per cent. of the foetuses of diabetic mothers die during gestation or in early infancy. It is of the utmost importance to diagnose and treat diabetes and to remember the likelihood of occurrence of hypoglycaemia in the infant. 10 c.c. of dextrose in saline solution given intramuscularly immediately after birth will, in many cases, protect the infant against hypoglycaemia.

As regards the treatment of such cases, prognosis is fair in the frank ascitic types. In addition, of course, to the general treatment of tuberculosis in any part of the body, which consists of good food, fresh air, sunshine and administration of vitamins and calcium, operative measures are very often useful. The principle in treatment consists in evacuating the fluid and replacing it by air or preferably oxygen. This evacuation can be done by laparotomy and the use of suction apparatus to remove the fluid and introducing oxygen through a rubber catheter which is removed as the last stitch in the peritoneum is tightened. Sometimes it is better to remove the fluid by ordinary aspiration apparatus while the peritoneum is being filled by oxygen through another needle puncture. The quantity of oxygen injected varies; but 300 to 500 c.c.s may be required at the first operation. This procedure may have to be repeated a few times. I have met with only two or three cases of this type; but the results of oxygen replacement are very encouraging and one case which was treated in 1930 is still alive and free from symptoms. In the mixed and dry types, prognosis is not very good and operative measures are very often useless except when they are undertaken for the relief of obstruction. One has to fall back necessarily on only medical measures in other cases.

Diagnosis in the advanced cases is easy. But in early cases, confusion may arise because of similarity of symptoms as in other cases of surgical dyspepsias. The commonest difficulty in diagnosis is that between tubercle and chronic appendicitis. Many cases clinically diagnosed as tubercle of the cæcum may

(1) *Sulphanilamide group of drugs.*—These have been given a trial recently and have been found of definite value. In cases with ulceration and in which there have been secondary infection, benefit appears to have accrued, but it is probable that the drug has a lethal effect on the virus itself. At present, it is impossible to say why the virus of lymphogranuloma inguinale alone is susceptible to sulphanilamides, while so many other viruses are not. The course of treatment extends for a month, the dosage suggested being 4 gms. per day during the first week, 3 gms. per day during the second week, and 2 gms. per day during the third and fourth weeks.

Sulphapyridine is equally valuable but is not more effective than suphanilamide.

(2) *Antimony compounds.*—(a) Antimony in the form of antimony-potassium tartrate or tartar emetic is commonly used. This is given by intravenous injections of 0.02, 0.04, 0.06 gms. to a maximum of 0.10 gm. in 1 per cent. solution for a total of 15 injections.

(b) Fouadin, an organic trivalent antimony compound prepared by the "Bayer" Laboratories, is well tolerated. It is injected intramuscularly twice weekly, about 20 injections constituting one course. The initial dose is about 2.5 c.c. and this is gradually increased to 5 c.c.

(c) Fantorin is a preparation similar to Fouadin and is prepared by the Glaxo Laboratories.

(3) *Solganal B*, in doses of 0.1 to 0.4 gm. intramuscularly has been employed extensively and recommended.

(4) *Vaccine therapy.*—The vaccine is prepared by excising a suitable portion of the gland mass, which is cut up in small pieces, emulsified in saline and injected in increasing doses every other day. No reliable results have been obtained by this method.

(5) In place of drugs, treatment by means of *non-specific therapy* may be used with advantage. It is especially advantageous when suppuration is threatened in the bubo. T. A. B. vaccine is employed commencing with 50 millions organisms given by the intravenous route and gradually increasing to 200 or 300 millions, the injections being given every other day.

Our practice at present in these cases is to give a fair trial with sulphanilamide in adequate dosage for a month. After sulphanilamide therapy, those cases which do not require surgical intervention are given local X-ray therapy and one of the antimony compounds. Non-specific therapy is also employed.

A. I. M. L. A. FAMILY FUND

Copy of letter No. 717 dated 31st July 1941, from Dr. U. B. Narayan Rao, Secretary, All-India Medical Licentiate's Assn. Family Fund, 1, Damodar Mansions, Girgaum Road, Bombay to the President, A. I. M. L. A., Calcutta.

The matter of winding up of the Family Fund by applying to the Court as per your instructions, was placed in the hands of a lawyer for doing the needful; he has in consultation with solicitors suggested that the Court order can be obtained duly after a *special Resolution* has been passed by the Fund to that effect. Hence, I am arranging to call the said meeting immediately on receipt of your confirmation.

Copy of letter dated 30th July 1941 from Messrs. Mankodi & Co., Solicitors, to the Secretary, A. I. M. L. A. Family Fund.

Referring to the interview you had with us some time ago we have to inform you that a special resolution will have to be passed by the members of the Fund to wind up the Fund before the necessary petition can be presented to the High Court.

We have to draw your attention to Sec. 81 of the Indian Companies' Act which requires that the said Resolution will have to be passed by a majority of not less than three-fourths of the members entitled to vote as are present in person or by proxy (if proxies are allowed by the Bye-laws) and not less than 21 days' notice of such meeting must be given. A draft of the notice in question is enclosed herewith for ready reference.

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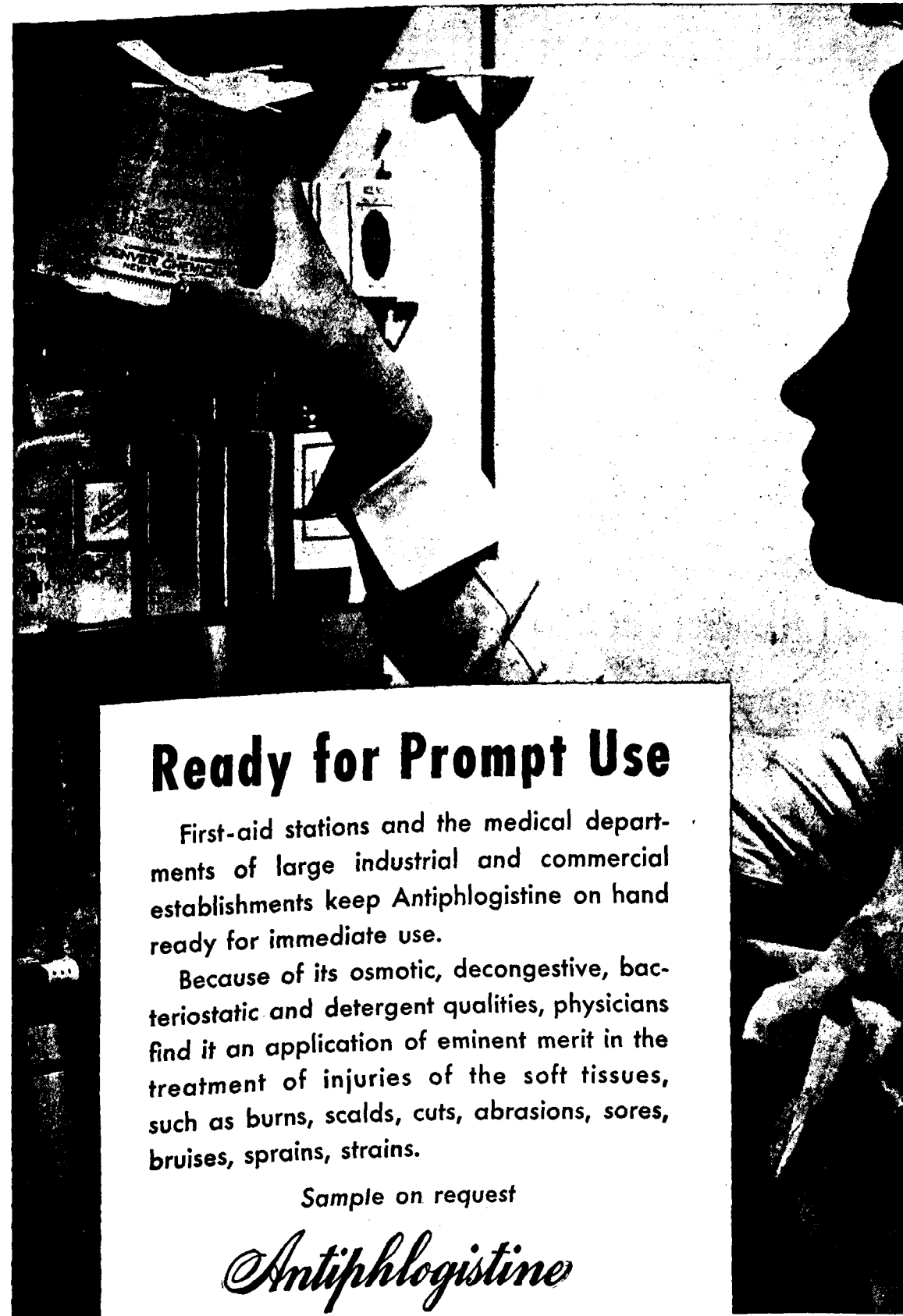
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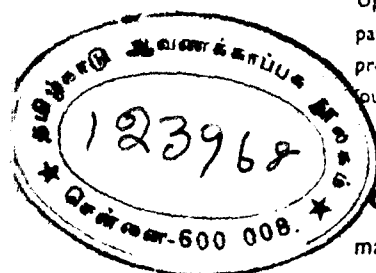
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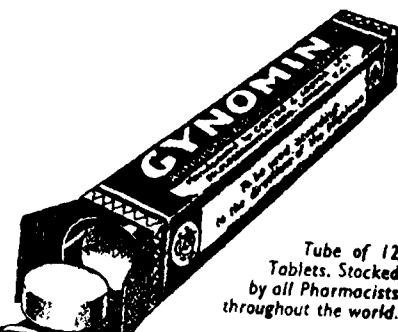
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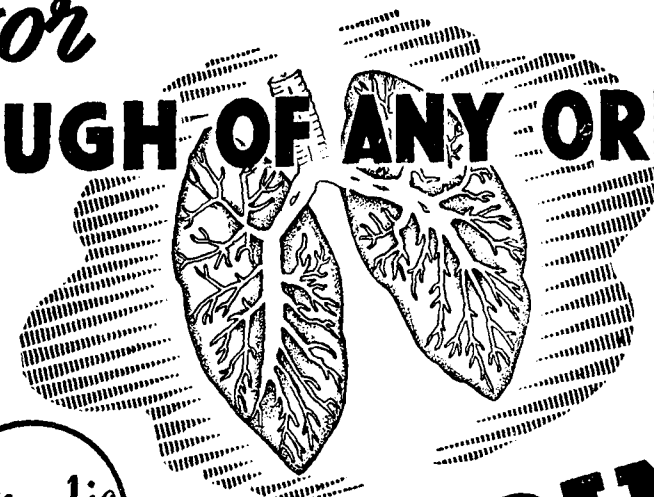


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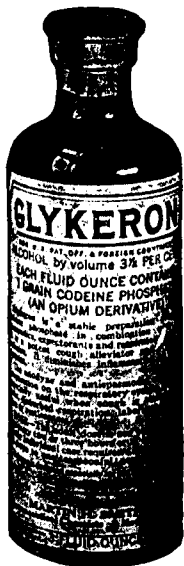
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