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HEALTH

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THE PUBLIC HEALTH COMMISSION

THE rapid deterioration in the health of the people of this country, due to starvation, malnutrition and various other causes which it is unnecessary for us here to detail at length, had given rise to serious misgivings in the public mind, that protests are pouring from many a platform at the supreme indifference of the Government of India to this all-important problem.. In urging for the formulation and adoption of a social security plan for this country, on the lines of the Beveridge Scheme in England, in the last two issues of the HEALTH, we referred particularly to this aspect of the matter. We are glad to note that after all the Government of India have realised their responsibility in this regard. But the bureaucracy has a special way of doing things. They will magnify trivial matters of no moment as if everything depends on them; and they will reserve important announcements on matters of vital importance for one sentence while speaking on subjects not directly germane to the issue. So-called leaders who have identified themselves wholeheartedly in bureaucratic ways, albeit for a short time, attempt to out-beat them in this respect.

The announcement made the other day casually by the Hon'ble Sir Jogendra Singh is an instance in point. In the course of his reply to the debate on the resolution moved by Mr. Hussain Imam in the Council of State on the 6th ultimo urging the import of meat from the United States of America and Australia to meet the requirements of the defence services here and recommending the import of live-stock from nearby countries for supply to agriculturists at reduced prices to encourage the "Grow More Food" campaign, Sir Jogendra Singh announced the forthcoming appointment of a Committee to consider public health in India. Beyond the bald statement that Sir Joseph Bhore has agreed to preside over the Committee, neither its constitution nor its terms of reference have been announced.

But the correspondent of the

Hindu has given us some glimpses about the scope of work of this Committee and the probable time it may take to finish its labours. The Bhore Commission, he says, will investigate every aspect of the problem of health, curative as well as preventive. The adequacy or otherwise of medical relief—as if there is any cause for doubt in this matter—the quality of medical education in India, the availability of drugs and the possibilities of their indigenous manufacture, special measures to be adopted for making medical relief available to rural areas (including such proposals as mobile dispensaries), these and other inter-linked questions will, he asserts, naturally engage the attention of the Commission. Problems relating to women and children will, he adds, be another major aspect of the enquiry with which are associated training facilities for nurses and midwives, establishment of welfare institutions and suitable centres, particularly in provinces like Bihar and the United Provinces, where such amenities are notably lacking, and encouragement of communities which now regard the nursing profession with a certain amount of prejudice. Nutrition research and balanced diets for different sections and classes, having regard both to the earning capacities of the people and their habits will also form, we are told, an important branch of the Commission's task. The subject of industrial hygiene which has so far received scant attention and health problems of industrial labour including housing conditions will, it is asserted, be within the scope of the enquiry. In short, we are assured that no aspect of public health problem will be excluded from the scope of the enquiry. The Government, we understand from him, expect the report to reach their hands within nine months from the date of the commencement of its sittings.

If the scope of the enquiry is as broadbased and comprehensive as the correspondent of the *Hindu* will have us believe, the Government of India, and particularly Sir Jogendra Singh, the member-in-charge of Public Health, deserve our warmest congratulations. But we are not one of those who congratulate in haste and repent in leisure. We would await the official announcement to express our views on the terms of reference and to put forward our own suggestions in respect of every one of the items included in this comprehensive list.

Sir Joseph Bhore is no doubt a civilian with considerable and varied administrative experience extending over several years. He had also had the privilege of holding the reins of Government in a small but culturally highly advanced State in the South. While therefore not disparaging his capacity or ability to preside over a Committee of this kind, we think that a *pucca* non-official with personal knowledge of medical relief and health problems would make an ideal president, infusing confidence in the public mind. There is no dearth of such qualified and competent men among the public ranks in India. The Commission or Committee, by whatever name it may be called, if it is really intended to serve the purpose and help to lay a proper foundation, should have a majority of non-officials in its fold, with a real understanding of the problems of public health and medical relief and an earnest desire to serve the public. This is not all. We must also have a definite assurance from the Government that the recommendations of this Committee will not meet with the fate which overtook the recommendations of many an earlier commission, notably the Industrial and Agricultural Commissions. Otherwise it would be sheer waste of public money and the valuable time of public men. We shall deal with the scope of the enquiry and other cognate matters after the publication officially of the terms of reference.

THE CHOLERA EPIDEMIC

THE most rapid of human parasitic diseases, with the shortest incubation, the shortest course and unfortunately almost the highest fatality, cholera raged in an epidemic form in Europe and North America till the nineties of the last century. It has practically disappeared from that zone since 1892 and taken its abode permanently in Asia, and particularly in India. Its toll had been or is no light matter; it had killed and is killing as many of the human family as any other fell disease, and even to day when its ravages are considerably restricted in area, it is still killing people in millions.

Major-General J. Taylor, C. I. E., D.S.O., Director of the Central Research Institute, Kasauli, who carried on, under the auspices of the Indian Research Fund Association, cholera research, in a brief review of the results, opines that of all the massive diseases of mankind, cholera offers the best chance of extermination by human energy, on the following among other grounds: Cholera is a specific infection limited to man, so there is no reservoir apart from man. The disease is set up by ingestion of the parasite, usually, possibly only, in water fouled by the alvaline excretion of cholera cases. The parasite is not invasive, but lives epiphytically on the alimentary canal. It is frequently fatal, but if not, the parasite is destroyed in the alimentary canal very speedily, generally within five days. There are no chronic carriers of cholera. There is therefore no permanent reservoir. The organism can thrive in water in certain conditions, but not for long, apparently not for more than 16 days. No multiplication occurs in water in the absence of salt. In salt-free water its survival is less than 24 years. There is, therefore, no permanent reservoir of any kind and the temporary habitats of the parasite—patients and drinking water—can be brought under human control. In its method of spread cholera much resembles typhoid, but here the similarity ceases. From the study of the great water-borne outbreaks of typhoid it is certain that the infection dose may be exceedingly small. On infection *Eberthella* enters the body where it can live parasitically for an indefinite period. In cholera it appears that the dosage of the vibrio must be large, the alimentary canal in a suitable state for its propagation and it cannot live there for an extended period.

We have had reports recently of the outbreak of cholera in an epidemic form in the Malabar District taking a heavy toll. Health authorities rushed to the spot, the Adviser to H. E. the Governor hastened thither, but it still continues, though with less virulence. Its outbreak was so explosive that immediate control was not possible. Now that we have an authoritative statement from Major-General Taylor that the cholera organism cannot multiply in water in the absence of salt and that in salt-free water it cannot survive for more than 24 years, it becomes all the more necessary to find out if the existence of back-waters in the district had in any way contributed to it and, if so, measures must be adopted to prevent similar outbreaks of an equally explosive character. Only a long term policy of sanitary improvement in this area and others where also the epidemic is taking a heavy toll, can result in a great reduction of risk and succeed in eventually eliminating infection altogether.

Hygiene, Public Health and Social Welfare in India

IN THE MAURYAN ERA

(4th Century B. C.)

D. V. S. REDDY, *Andhra Medical College, Vizagapatam.*

(Continued from page 152, Aug. '43.)

National Calamities.—The chapter dealing with remedies against national calamities is highly interesting and throws much light on the state of the society and the common sufferings of the people in the Mauryan Empire. Eight kinds of providential visitations are mentioned. The King was expected to protect the people against these. Detailed rules and instructions are given, some of which may be briefly noted here.

1. *Fire*:—Steps to prevent fire in the harem have been described under domestic hygiene. The public buildings in the fort were all provided with remedies against fire. "During summer, villagers shall carry on cooking operations outside. Or, they shall provide themselves with the ten remedial instruments." In the city or the capital, the city superintendent had to see that the following regulations were observed:

"Kindling of fire shall be prohibited during the two middle-most parts of day (time divided into four equal parts during the summer). A fine of 1/8th of a *pana* shall be imposed for kindling fire at such a time.

"Masters of houses may carry on cooking operations outside their houses.

"If a house-owner is not found to have ready with him, five water-pots (*Pancha ghatima*), a kumbha, a drona, a ladder, an axe, a winnowing basket, a hook (such as is used to drive an elephant), pincers, (*Kanchagrahini*), and a leather bag (*drifi*), he shall be fined 1/4th of a *pana*.

"They shall also remove thatched roofs. Those who work by fire (blacksmiths) shall all together live in a single locality.

"Each house-owner shall ever be present (at night) at the door of his own house.

"Vessels filled with water shall be kept in thousands in a row without confusion not only in big streets and at places where four roads meet but also in front of the royal buildings (*rajaprigraheshu*).

"Any house-owner who does not run to give his help in extinguishing the fire of whatever is burning shall be fined 12 *panas*; and a renter (*avakrayi i.e.* one who has occupied a house for rent) not running to extinguish fire shall be fined 6 *panas*.

"Whoever carelessly sets fire (to a house) shall be fined 54 *panas*; but he who intentionally sets fire (to a house) shall be thrown into fire."

2. *Floods*:—Villagers living on the banks of rivers shall, during the rainy season, remove themselves to upcountries. They shall provide themselves with wooden planks, bamboos and boats. They shall, by means of bottle-gourds, canoes, trunks of trees or boats, rescue persons who are being carried off by floods. Persons neglecting rescue were fined. Rivers were worshipped. Experts in sacred magic and mysticism and persons learned in Veda performed incantations against rain.

(3) *Famines*:—During famine, the king may emigrate to a kingdom with abundant harvest or go to seashore or banks of rivers. He may help his subjects to grow grains, vegetables,

roots and fruits, wherever water is available. He may, by hunting and fishing, on a large scale, provide people with wild beasts, birds, fish, etc. He may provide his people with seeds and provisions. He may distribute his private collection of provisions or the hoarded provisions of the rich or seek from friendly kings.

4. *Rats* :—From the importance given in this treatise, even these small animals were a source of great hardship. To ward off danger from rats, cats and mongoose were let loose; grains mixed with milk of "milkhedge plant" or other stuff were left on the ground. Ascetics and prophets may perform auspicious ceremonials. One would like to ask:—"did plague occur and was the association with rats known?"

5. *Tigers*:—The carcass of cattle mixed with the juice of *madana* plant or carcasses of calves filled with juice of *madana* and *kodrava* plants, were thrown in suitable places to destroy tigers. Hunters were encouraged to kill tigers by offering rewards. Negligence to rescue a person under the clutches of a tiger was punished with a fine. Probably, forests surrounded the inhabited localities. towns or villages. It is added that similar measures may be taken against the inroad of beasts, birds and crocodiles. No reference occurs to mad dogs.

6. *Demons*.—A modern reader would laugh and ridicule the idea of demons. But he should have a knowledge of history of thought and civilisation to appreciate the prominent place given to demons in the primitive and ancient society and medicine. "Persons acquainted with the rituals of *Athervaveda* and experts in sacred magic and mysticism shall perform such ceremonials, as ward off the danger from demons."

Another procedure mentioned bears a close resemblance to the votive offerings in the ancient Egyptian and Grecian temples (Aesculapian shrines). "On full moon days, the worship of *chaityas* may be performed by placing on a verandah offerings such as an umbrella, the picture of an arm, a flag and some goat's flesh." "In all kinds of dangers from demons, incantations offering cooked rice should be performed. The king should always protect the afflicted among his people as a father his sons." The dangers from demons must have included a variety of conditions from hysteria to delirium and all forms of lunacy.

7. *Snakes* :—There were probably numerous snakes and everywhere danger and death from snakes would appear to have been very common. Phrases such as "fear from a lurking snake," "a hidden snake bites and emits poison over whatever alarms it" are frequent. History records that, when Alexander the Great invaded India and encamped near Takshasila, the skilled medical men from Greece could not cure cases of snake-bite and that he had to seek the assistance of the local Indian physicians for the treatment of snake-bites in his army. Treatment of snake-bites was so necessary and so miraculous that "*Sarpavaidya*" was raised to the dignity of a branch of study in ancient Indian curriculum along with *Bhutavaidya* (treatment of demons). Anti-snake operations were to be carried out according to the following directions. "When there is fear from snakes, experts in applying remedies against snake poison shall resort to incantations and medicines; or they may destroy snakes in a body or those who are learned in *Atherva-veda* may perform auspicious rites."

8. *Epidemics* :—Many passages in the book refer to epidemics. The king is advised to avoid taking possession of any country which is harassed by frequent visitations of famine and pestilences (*Bk. II Ch. 1*). The property of those who died falling victims to epidemics leaving no sons went to the State. In one

context dealing with calamities and contrasting the effects of pestilence and famine, the book adds "Pestilence brings all kinds of business to a stop by causing obstruction to work on account of disease and death among men and owing to the flight of the servants." Pestilence, however, could be remedied (*Bk. VIII Ch. 4*). Pestilential disease is one of the eight national calamities against which the king should protect his kingdom. "Such remedial measures as will be treated of in the 14th book shall be taken against pestilences. Physicians with their medicines, and ascetics and prophets with their auspicious and purificatory ceremonials shall also overcome pestilences. The same remedial measures shall be taken against epidemics (*maraka-killer*). Besides the above measures, oblations to gods, the ceremonial called *Mahakachchavardhana* "milking the cows on cremation or burial grounds, burning the trunk of a corpse, and spending nights in devotion to gods shall also be observed." (*Bk. IV Ch. 3*).

Some types of deformities and diseases.—In describing the daily routine of the king, the book tells that he had to pass through a series of rooms on getting up. In the third room, he should be received by "crooked and dwarfed persons." Whether they were so, congenitally or as a result of acquired disease, and what the actual types were can only be vaguely guessed, from the examination of the series of panels of ancient paintings or sculptures, depicting court scenes and the harems of kings, in which crooked and dwarfish persons are shown. In referring to the spies, the hunchbacked, the dwarf, the pigmy, the eunuch, the deaf, the dumb, the idiot and the blind are mentioned (*Bk. I Ch. 12*). Spies may also go out suddenly under the pretext of long-standing disease, or lunacy (*Bk. I Ch. 12*). Sale of bipeds (including human beings) as strong healthy and clean, though they are unclean or actually suffering from leprosy and other disease, shall be punished with a fine (*Bk. III Ch. 2*). Allusion also occurs to lunatics or mad people attempting to enter a house by force (*Bk. IV Ch. 13*). Among the national and providential calamities, pestilences are mentioned. One particular epidemic disease mentioned by name is called *maraka* (because it killed people (*Bk. VIII Ch. 4*). Lunacy, leprosy and impotence are mentioned in the section on defamation.

(*Bk. III Ch. 18*).

Disposal of the dead.—Apart from the scattered references to the separate roads for carrying the corpses, separate sites for burial or cremation and the special arrangements for the disposal of the dead bodies of travellers and strangers, the following rules indicate the thought and care bestowed on the subject. "Whoever throws inside the city the carcass of animals such as cat, dog, mongoose and snake shall be fined 3 *panas*; of such animals such as ass, camel, mule and cattle shall be fined 6 *panas*; and if human corpses, shall be punished with fine of 50 *panas*." When a dead body is taken out of a city through a gate other than the usual or prescribed one or through a path other than the prescribed one, the first amercement shall be imposed; and those who guard the gates through which the dead body is taken shall be fined 200 *panas*. When a dead body is interred or cremated beyond the burial or cremation grounds a fine of 12 *panas* shall be imposed."

(*Bk. II Ch. 36*).

Census.—Under the general supervision of the Collector-General, the *Sthanikas* (District Officers) and *Gopas* (Village Officers) had to keep the records of the following type of information:

"Also having numbered the houses as tax-paying and non-tax-paying, he shall not only register the total number of inhabitants of all the four

castes in each village but also keep an account of the exact number of cultivators, cowherds, artisans, labourers, slaves and biped and quardruped animals. He shall also keep an account of the number of the young and old men, that reside in each house, their history, occupation, income and expenditure. Spies deputed by the Collector-General ascertained the validity of the data, collected by the village and district officers.

(*Bk. II Ch. 35*).

A *Gopa* or a *Sthanika* shall also know not only the accounts of the villages or districts but also the caste, the gotra, the occupation of both men and women in the households, and their income and expenditure.

(*Bk. II Ch. 36*).

IMMUNISATION

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IT is often found that there is an unjustifiable antipathy, if not positive fear, in the lay public to take preventive inoculations when dreadful epidemics break out in the form of cholera, small pox, etc. My purpose in this treatment of the subject is to show that there is no foundation for this popular antipathy or fear.

Of all the preventive measures against communicable diseases the process of immunisation of the body against the particular disease is considered to be the best. With the advent and improvement of science it has become possible to invent anti-infective inoculation to prevent diseases. The human body has itself a dominant power of resistance to any disease, yet it is not powerful enough to combat any and every disease when the infection becomes heavy and precipitating Whereas if the body be immunised in time against a particular disease, it often has the power of checking the manifestation of that disease in the body, thus preventing an attack of the body from the infection. Even if the attack could not be prevented totally, at least, the gravity and fatality of the disease can be prevented It is true that a person has to suffer from some form of discomfort due to such a preventive inoculation but judging the end result of prevention of the disease by the anti-inoculation, this discomfort is nothing in comparison with the pain, discomfiture and the havoc done by the actual causation of the disease. There are many points often raised, for and against, such immunisation. A person has sustained an open injury contaminated with suspected soil, must he take anti-tetanic serum? A person has been bitten by an unknown dog, must he take anti-rabic treatment? A person, because he lives in a locality where a few cases of cholera have occurred, may not most probably be infected with the germs of the disease, yet must he take anti-cholera inoculation? Whether a person comes in contact with small-pox or not, he should take vaccination within 6 months after his birth and every 5 years or even earlier throughout his life. Is it really necessary? Is it a fact that a person must suffer the discomfort as a result of such preventive inoculation without any hesitation?

The answer to all these questions is 'YES' in one word.

Let us see first—what is Immunisation: for which particular disease uptodate such measures have become possible, what are the contra-indications and what are the values of the immunisation?

Certain diseases are communicable from man to man or from animal to man, either directly or through an inter-mediatory host. But, whichever the case, the germ theory of the infectious diseases has been well established. It is also true that a specific period of time elapses, between the entrance of the germ into the system and the real manifestation of the disease into the system. This period is called the incubation period. This delay in manifestation of the actual symptoms of the disease into the system is most interesting and is most probably due to the multiplication of the germs to a sufficient strength after combating successfully with the defensive mechanism latent in the body. This natural defensive mechanism, if it could be enhanced, might prevent totally the occurrence of the disease. It is also seen that all the diseases of men are not communicable to animals and vice versa, and it is also seen that persons of a particular race, country and climate never suffer from a particular disease. They are immune from the disease naturally. It is also seen that if a person has suffered from a disease, he does not get further attack from it. It appears that he has acquired the immunity. Now without actual attack from the particular disease immunity can be produced artificially into a system by some kind of protective inoculation. If it is a fact that a person acquires immunity by suffering from the disease, he might acquire it if the virus of the disease is introduced into the body in a mild form, that is in an attenuated condition. This is actually done by injection into the body of the living specific microbes of the particular disease either in non-fatal dose or in the form of a dead culture of the microbe When a person or animal acquires such active immunity into his system, his body fluid appears to contain anti-body against the disease and now if this body fluid is injected to another person, the

immunity is transferred to that system also. This is actually done by injection of the blood serum of an actively immunised body to another, by which the second individual is passively immunised against the disease and the advantage is that his system has not to take the trouble in the production of the immunising agent.

With the development of medical science, preventive inoculations have been discovered to combat almost all the infectious diseases and the most important of these diseases are . SMALL-POX, CHOLERA, TYPHOID, PLAGUE, TETANUS, DIPHTHERIA, MENINGITIS, DYSENTERY, HYDROPHOBIA, ANTHRAX, GLANDERS, PNEUMONIA, INFLUENZA, COLD, AND TUBERCULOSIS. The protective agent is derived either of living virus, or of an emulsion of dead bacteria, or of serum of some immunised animal, or of some per-oral vaccination.

The vaccination against small pox is done with a preparation containing living microorganism derived from cow-pox. The antibacterial vaccine against cholera, typhoid, plague, etc., is derived from an emulsion of dead organisms of the particular disease in a suitable strength; the agent used against diphtheria, tetanus, meningitis, etc., is the serum generally obtained from horse, which animal has been already immunised by the specific bacteria. Sometimes a vaccine is prepared from the particular germs obtained from the specific part of an individual and this vaccine is termed as auto-vaccine. Sometimes a sero-vaccine is used. All the above agents are injected into or under the skin. The per-oral vaccination is done by swallowing tablets which confer immunity The killed bacteria, when swallowed, is not absorbed through the intestinal mucous membrane, but Besredka of the Pasteur Institute in France showed that if some bile is poured into the intestine, this resistance of intestinal mucous membrane to the dead organism is overcome. Thus in per-oral vaccination a dose of bile is taken first, and then a dose of killed bacteria is taken, all in an empty stomach.

Small-pox — Vaccination was originally considered by Jenner. Small-pox virus passing through the calf loses its virulence and the virus of cow-pox when introduced to a human body confers immunity against small-pox. The vaccine virus is introduced into the skin and not under the skin. The skin is first sterilised with alcohol, the vaccine lymph is placed on it in two droplets on each arm and incision is made to introduce the vaccine into the skin without any bleeding. Superficial papules appear on the vaccinated area and the wound is healed up in about 3 weeks The immunity appears about the 8th day of vaccination and begins to disappear in two years and is lost in ten years. The primary vaccination should be done within 6 months of the birth of the child and should be repeated every five years thenceforth, but persons should get vaccinated if he ever comes into contact with the infection. There are a few contra-indications for the vaccination, bearing which in mind, no person should resist vaccination. The contra-indications are any acute febrile or after active diseases, *e.g.*, acute bronchitis, bronchopneumonia, acute diarrhœa, skin diseases in any actively progressive state as eczema of the head, ears or flexures; acute infectious diseases as measles, etc., wasting diseases as chronic enteritis, tuberculosis, etc., any infectious disease like erysipelas of even any person in the house. There is practically no complication, if the operation is done strictly according to the rules.

Cholera.—The vaccine contains 8000 millions of dead bacteria per c.c. It is injected subcutaneously. Some discomfort follows the injection, which cannot be avoided. To avoid very severe reaction, the vaccine may be injected in two divided doses, first dose of .5 c.c., followed after a week by a second dose of 1c.c. In mass inoculation a single dose of 1 c.c. is preferred. Some form of exercise of the arm where the injection is given lessens the severity of the reaction. The immunity develops within a week and lasts for 6 months. Per-oral vaccine may be also used to confer immunity.

Typhoid —T. A. B. vaccine is generally used. One c.c. of the vaccine contains in normal saline .5 per cent. carbolic acid, killed bacilli from an emulsified culture to the strength of 1000 million of typhoid bacillus and 750 ml. of B. Paratyphosus A and 750 ml. of B. Paratyphosus B. This combined vaccine is known as T. A. B. vaccine, which is obtained either in ampoules or in rubber cap phials. Generally two injections are required. The first one of .5 c.c. is followed at an interval of ten days by a second injection of 1 c.c. This dose is for an adult and the dose should be proportionately less for children and old persons. There are per-oral vaccine tablets which may also be used as a protective measure.

Plague.—Halfkine s prophylactic vaccine is prepared by broth culture. The culture is heated and carbolic acid solution is added. The vaccine is inoculated generally in two doses. First dose 2 to 3 5 c.c. is injected, followed by a second dose of same quantity in 10 to 20 days. A severe reaction follows with rise of temperature. A serum (Yersin's) is also used both for prophylactic and curative purposes. In all cases the immunity produced by serum lasts shorter than that obtained by a vaccine. The prophylactic serum in case of plague confers immunity only for about 15 days, whereas the vaccine protects the immunised person for several months.

Dysentery. — There is no immunisation against amœbic dysentery In bacillary dysentery a vaccine has been used with some success. The horses may be actively immunised and the serum is used in curative purposes.

Diphtheria —An anti-toxin serum is used. The Klebs Loeffler bacillus of diphtheria is cultured in broth, which is then filtered, the clear fluid containing only the toxin is injected into a horse. several times in increased doses for 2 to 3 months The blood is taken from this immunised horse, the serum is separated, is preserved in cold storage with some antiseptic (0.2 p.c. carbolic acid). It is standardised and is despatched in ampoules for

use. The serum is used both for prophylactic and curative purposes. The prophylactic dose is from 500 to 1,000 units. The immunity lasts only a few weeks There is also a vaccine which is toxin anti-toxin mixture, which is injected in 1 c.c. doses twice, the second a week after the first. The immunity lasts for about 3 years. The serum is used generally to contacts, that is, to those children who have been exposed to the infection. The vaccine is injected to those, who are found susceptible by the Schick test, which is done by injecting intradermally, standardised diluted toxin of diphtheria.

Tetanus.—The bacilli of tetanus are often found in the dung of herbivorous animals and exists in dirt and in soil. An wound coming in contact with soil has got every chance of the infection. Hence, whenever such wound occurs, it is desirable to immunise the body. This is done by subcutaneous injection of anti-tetanic serum and the dose is from 1000 to 3000 international units. Immunity is attained in 3 days and lasts only 3 weeks.

Hydrophobia.—The vaccine is used for conferring immunity to those persons, who have been bitten by a rabid or a suspected rabid animal. The vaccine is prepared from the brains of rabbits which have been killed by a fixed virus infection The vaccine consists of a 1% emulsion of brain tissue in 0.5% carbolised saline solution. The vaccine is injected into the loose subcutaneous tissue of the abdomen and the dose is 5 c c. in all cases irrespective of age, weight or sex of the person. For a bite 5 c.c. vaccine is injected daily for 14 days. If there be any reaction, the site of inoculation should be fomented hot, and if required, calcium lactate in doses of 15 grs. twice daily for 3 days should be taken by the patient internally. According to the dictum of the Pasteur Institute, while undergoing this course of prophylactic injections, the patient must avoid alcohol, exercise and chills. There is no restriction of diet.

Tuberculosis —The knowledge of prophylactic treatment is not yet established. One authority advocates that a sero-vaccine be injected once in a week for four months in increased doses. The persons found susceptible by Von Pirquet test, are reported to get good result from this vaccine.

Meningitis.—Anti-meningococcus vaccine is as yet in the experimental stage and it is seldom used as general prophylaxis. Anti-meningococcus serum is generally used as a curative agent and is given intraspinally and intravenously

Cold.—Coryza vaccine is prepared from the various strains of bacilli commonly found in fauces of persons. This vaccine is often prepared from the bacilli of patients prone to repeated attacks of cold and in that case it is the auto-vaccine. Both the stock and the auto-vaccine is given subcutaneously in increased doses twice a week for three weeks commencing from 100 to 200 million organisms.

Influenza —Prophylactically it is given in two doses ½ c.c. and 1 c.c. at an interval of 10 days and the vaccine contains a mixture of B. Influenzæ, B. Pneumococcus, B. Streptococcus.

Pneumonia —The vaccine contains various strains of B. Pneumoniæ, seldom used for prophylactic purpose.

Anthrax.—This is a disease of cattle and the disease may be transmitted to man while handling the diseased animal or its wool, hide and other parts. Artificial immunity can be induced in cattle by injection of attenuated bacilli. This vaccine is not used for man. The preventive measures for man, comprise in suppression of the infection in animals. It is really a veterinary disease

Glanders —It is a disease generally of horses, and man may get the infection from the animals. The immunisation is concerned for the cattle and not for man.

Thus it is seen that active immunisation has not been possible against all the diseases. Some diseases can be prevented by artificial immunisation. The importance is according to the order as given above. There are practically very few contra-indications and people should not refrain from getting the benefit of this anti-virus inoculation whenever there is any chance of the infection.

Children's Hours of Sleep

Dr. C. M. Smith, in his school report for Northamptonshire, publishes an open letter to parents and guardians on children's hours of sleep. The hours he advises—from 14 hours for 4-year olds to 11 hours for 14-15 year olds—are hours in bed, the presumption being that the hours of sleep will usually be about one less. "The bedroom must be kept quiet; no child can be expected to fall asleep within earshot of a wireless set." The influence of noise and light on children's sleep calls for further consideration. Wireless, double summer time and the black-out have introduced three new factors all of which call for further research. We know less about sleep than about any other physiological function, so most of our rules lack a solid foundation. From what we know of respiration we can deduce that adequate ventilation is more important when we are in bed than when we are up, because we are much less mobile and the air surrounding us is more stagnant from lack of our own movements. The effect of wireless is probably quite different from that of discordant and intermittent noises. Mothers hava always sung their children to sleep, but few adults can sleep when the wireless is on, possibly because it arrests their attention. —*The Medical Officer.*

SYPHILIS: ITS CAUSE AND CURE

K. VISWANATHAN, Matunga, Bombay.

(Concluded from page 101, May, '43).

SYPHILIS is now completely curable, but the treatment must be taken on hand early enough at the first symptoms of any ulcer on the lips, genitals or other parts of the body. The treatment should be continued for at least 18 months or two years. General measures are the maintenance of the general health, and the cautious but continued administration of mercury.

A striking value in the treatment of syphilis attaches to the remarkable preparation containing arsenic, known as salvarsan (or commonly called 606 as it was the 606th arsenic derivative from the organic acid) injected intravenously. This was introduced in 1910 by Prof Ehrlich at Frankfurt The disease is treated with this drug with wonderfully good results In 1920, bismuth preparations were introduced in its treatment and though not used as a substitute for salvarsan or arseno-benzol treatment, the efficacy of bismuth has been proved and bismuth preparations are administered as an adjuvant. At first the patient in consultation with the family physician should go to a specialist, seek his advice and begin treatment. Some with a false sense of modesty go to quacks and spoil the case, with even consequent fatality. Too much stress cannot be laid on the importance of consulting a specialist at the earliest stage of the disease

Coming to general precautions, too much stress cannot be laid on the contagious nature of a syphilitic patient His blood, secretions and discharges may communicate the disease to those around him. Razors, pipes, tumblers, spoons, handkerchiefs and clothes used by a syphilitic patient should *never* be used by another, these are often the invisible causes of one's acquiring the disease. His kiss is more dangerous than a leper's. The European habit of kissing is not so common in India and hence much of the danger is lessened. *Never allow any child to be kissed by a stranger.* Avoid the hotel as much as possible. Take food and drink only from places known to be fully free from the infection of the disease The incidence of the disease is high in Europe and America, but it is also controlled by modern scientific methods a good deal.

Space forbids my quoting figures and comparing the incidence of syphilis in different countries and the percentage of fatality in each. While in the West the incidence of the disease is high, virulence and fatality are reduced to the minimum through scientific methods of treatment and proper prophylaxis; in India the incidence is not so high, but the virulence and fatality are pretty high To give an example: In Calcutta city two out of every 100 are suffering from syphilis. This is borne out by the records in private and public hospitals and dispensaries. But many should be consulting private medical practitioners and many more must be resorting to quacks and advertised remedies for fear of publicity. If these are taken into account the percentage of persons suffering from syphilis must be much higher than two, and we would not be wrong if we take it at 5. Think what this means.

Summarising, syphilis results in any of the following:

(1) Paralysis—general and/or specific.
(2) Locomotor ataxia
(3) Congenital blindness.
(4) Cerebral hæmorrhage.
(5) Deformity of various types.
(6) General debility, neuresthenia, nervous prostration.
(7) Idiocy.
(8) Sterility in women and impotency in men

In the Bible occurs the sentence: "The sins of the parents are visited on the children even upto the seventh generation." Who knows that this was not referring to syphilis, specially looking to the fact that then sexual morality in those countries was very low. Syphylis is known to be hereditary upto the tenth generation.

Among the Hindus the incidence of syphilis is not high. That is mainly due to the very high standard of sexual morality fixed by our ancient *gotra rushis*. The rigid watch kept over Hindu girls and young women was not to make them slaves as often misinterpreted by interested Westerners but to reduce the incidence of sexual diseases almost to the zero point. And it must be a matter of real pride to every true Hindu that syphilis in the Hindu community both among males and females is the lowest

Summarising the general precautions to be taken in this connection:

For the sake of your wife who shares with you all the troubles and anxieties of life, for the sake of your children who are innocent and the flower of your eyes, for the sake of your family the honor of which is in your hands and which you are bound to protect as a sacred trust, for the sake of the country you love and live in, for the sake of society and humanity, and for your own sake.—

(1) Don't have any illicit sexual intercourse with any woman.
(2) Never visit any house of ill-fame.
(3) Never think of the house with the red lantern.
(4) Never visit any obscene party.

(5) Avoid taking food and drink, the purity of which cannot be guaranteed.

(6) Never use another's towel, spoon, tumbler, razor, etc.

(7) Never kiss any one nor allow yourself to be kissed.

(8) Never touch a person with an ulcer on the lip or other part of the body.

There is a nice Hindu prayer which brings out all these. I cannot help quoting it. It runs:

परदारं परावासं परवस्त्रं परप्रियम्।
हर पाहि परान्नं मां पुरुनामन्पुरुष्टुत॥

(9) At the first sign of any ulcer on the genitals, lips, chest, throat etc., consult a specialist.

(10) Never go to a quack, the much advertised doctor who completely cures syphilis for Rs. 50, Rs. 100, etc. Never try the published remedies unless recommended by a qualified doctor.

The name of this disease is traced to a poem written in Latin hexameters by the Italian Fracastoro and published in 1530. The films "Damaged Goods" and 'Damaged Lives' give the ordinary man the ravages wrought by this fell disease, and how domestic felicity is marred.

COLLEGE STUDENTS

AND THEIR HEALTH-WASTING HABITS

S. D. GANDA, M.A.

SOUND body and sound mind go together. Body comes first, and mind next. A diseased person, man or woman, is never seen to possess a sound, intelligent and shrewd mind. He is predisposed to every type of disease, and is occupied with the medication of his system. He does not live, but exists. On the other hand, a person, with a strong build, does not take chances with his life. He lives a strong man with an unimpeachable character; he automatically acquires the courage of his convictions and stands up to his self-respect. He allows no compromise of his social status in life. He is envied, respected and loved nearly by all.

Unfortunately, students do not realise the importance of good health, and particularly so in the age of the Survival-of-the-Fittest. They are miserably ignorant of even the fundamental laws of hygiene; their knowledge of human physiology and human anatomy is poor. They indirectly reflect on the system of education obtaining in the country.

Students are told that some of the cardinal factors of health are: fresh air and sunlight; adequate amount of work, exercise and rest and an adequate and well balanced diet. They are told to forget these; they know to ignore these. Only a very few harness their knowledge to their actual life. Their most favourite pastimes are cinema shows, restaurant and hotel visits (mostly seats of evil), dignified gambling (like card playing with stake etc.), self-abuse, home sexuality, and baseless talks on sex. Generally they go to cinema shows with ulterior objects. They do not derive any genuine pleasure out of the picture. Story, its purpose and execution—stage setting, music and dialogue directions, photography etc.—lack all interest for them. Out-door games do not form an item of their daily programme; these serve as stop-gap arrangements when somehow or other all city distractions fall through. Gymnasium is a place to rest the body. Picnics are seldom arranged; healthy discussions and genuine study circles are rare phenomena. Pursuit of knowledge cannot be said to exist. In short, the first two cardinal factors of health are violently violated.

An adequate and well balanced diet affords another difficult problem to the students. Firstly, under war conditions, it is impossible to procure good, healthy and unadulterated diet. Balance in diet suffers in direct proportion to deterioration in the quality of food. Secondly, students know little about dietary; proteins, carbohydrates, minerals, vitamins etc., are meaningless words jumbled together in their vocabulary. They do not understand their functions; they cannot adjust these different constituents to form a balanced diet. They live to eat by whims.

Their sedentary habits, thus acquired, further aggravate the situation. Exercise helps digestion, but sedentary habits kill it. Consequently they are regular customers of a medical practitioner, and medication ruins health. "Health comes from the Kitchen, and not from the Chemist's shop."—*Capt Dr. R. C. Ganda.*

"Eat, drink and be merry," (actually eat, drink and be sorry), they claim as the end of their life. "Let us take care of our pleasure and nature will take care of our health" is their second principle. Thus they mean to deceive nature; but they do it at their own peril and ruin themselves. Ways of nature are not mysterious; her laws tolerate no defiance. Whoever abides by them stands, and whoever breaks them falls.

Groundnut or Peanut Pressed Oil Cake As Human Food

R. V. Lakshmi Ratan Senior,
Mylapore

ON page 424 of her book, 'The Foundations of Nutrition' (1936 edition, Mary Swartz Rose has referred to the following finding:—

> "Peanut flour made from the press cake left after the extraction of the peanut (groundnut) oil, has been found an excellent supplement to the proteins of wheat, a bread made with 75 per cent. wheat flour and 25 per cent. peanut (groundnut) flour giving a mixture in which the protein was adequate for the normal growth of white rats"

Sometime ago I obtained from the Department of Biochemistry, Indian Institute of Science, Bangalore, samples of bread made by Krishnamurthi, a research worker, consisting of a mixture of 75 per cent wheat flour and 25 per cent. peanut (groundnut) cake flour. My friends and myself found them palatable.

Health Bulletin No. 23 (1941 edition) suggests on page 18, that half to one ounce of groundnut kernels consumed *daily* helps to supply *some* of the elements in which poor rice diets are deficient and that if taken in large quantities groundnut may be found 'indigestible,' presumably because of their high fat content.

The matter under reference is about the oil-cake left after the extraction of the groundnut oil.

On a reference made to Aykroyd of Coonoor, he wrote to me on March 10, 1943 as under:

> "In reply to your letter of March 1st., there would be *no objection from the nutrition standpoint*, to adding a proportion of peanut flour (cake) of good quality to wheat or other cereals for biscuit making, etc I think, however, that many people would not find admixtures of peanut flour with other flours very palatable and agreeable as staple article of diet."

We wanted to make *chappatties, adai, dosai, iddali, appam, outappam*, biscuits, etc., with a mixture of cereal flour (wheat, rice, ragi, and other millets) and groundnut oil cake flour but were not able to obtain in the market fresh and good groundnut oil cake pressed from graded and selected seeds, rejecting the rotten and suspicious ones.

It may be worthwhile to go through the article, "*Groundnut as human food*" by C. M. John, Oilseeds Specialist, Agricultural Research Institute, Coimbatore, which appeared in *The Madras Agricultural Journal* of October, 1942.

I shall therefore thank you if the valuable columns of your Journal are employed to evoke public interest and to draw the attention of the nutrition research scientists to these points.

Inadequate Diet and Vitamin Deficiency

A survey of approximately 400 consecutive patients admitted to the clinic ward of Stanford University Hospital with reference to inadequate diet and signs of of vitamin deficiency showed that approximately one fourth had been taking an inadequate diet but the occurrence of clinical signs of vitamin deficiency was very low, Marcus A. Krupp reports in a recent issue of *The Journal of the American Medical Association*. Of those with inadequate diets only 11.4 per cent. showed definite signs of vitamin deficiency. Only 2 instances of clinical vitamin deficiency were detected among 297 patients with adequate diets and in the entire group the incidence of definite vitamin deficiency disease was 3.1 per cent. It is said that the survey shows that even with a serious disease, such as cancer, deficiency disease does not readily supervene provided the diet remains adequate.

"Recent surveys of vitamin deficiency disease," Krupp says, "have on the whole shown a disturbingly high incidence. Most of these reports have been made by careful well trained investigators, and the results seem dependable. However, it is important to take into account the locality in which the survey is made, the particular population group and the criteria for diagnosis. Some of the statements made in the lay press, on the other hand, must be interpreted with caution, such as those claiming that 50 per cent. of the employees in a certain factory in Southern California had clearcut evidence of one or more sorts of vitamin deficiency. It is on this account that many more accurate surveys should be made in various parts of the country.—*Hygeia.*

Topics from Medical and Health Periodicals

MENTAL illness may be compared to an iceberg-while a small part appears, the great bulk is beneath the surface—J. E. DAVIS in *Hygeia*.

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Don'ts for the Family

1. Don't try to diagnose illness.
2. Don't try to advise the patient.
3. Don't tell the doctor what to do.
4. Don't blame the patient.
5. Don't interfere with hospital treatment.
6. Don't make excuses to the neighbours.
7. Don't take bad news to the hospitalised patient
8. Don't look on the illness as a social stigma.
9. Don't segregate the patient from his friends.
10. Don't tell him when to leave the hospital.—*Hygeia*.

●

Infection from Books

BOOKS and magazines read by persons with active tuberculosis are possible sources of *infection* and should *not* be read by those who are well. This conclusion was reached by Dr. C. Richard Smith, as he tells in the *American Review of Tuberculosis*. He found that tubercle bacilli were recoverable alive on books and magazines for from two weeks to three and a half months. Patients in sanatoriums do not always cover their mouths when coughing and thumb-wetting occurs. There seems no convenient way to sterilise these articles, but in most cases they can be handled with safety if put aside in quarantine for a month.—*Good Health*.

●

To Live Long, Eat Right

MEDICAL care of the elderly should begin about twenty years before they can be classed as such, that is, at the age of around forty, writes Dr. George Morris Piersol. He lays stress on the part that diet plays in human longevity and in delaying or preventing some of the disorders common in senescence. He quotes Professor H. C. Sherman of Columbia University as saying that if old persons would eat largely of fruits, vegetables (particularly of the green and yellow varieties), milk and milk products, the expectancy of effective human life may be extended by at least ten per cent. Dr. George R. Minot of Harvard holds the same views. Dr. C M. McCay came to similar conclusions after a series of carefully carried on experiments with rats. He believes that diet modifies the chronic diseases that become important in the latter half of life.—*Good Health*.

Cocoanut-water for Babies

WHILE cocoanut water is chiefly used for its refreshing qualities, it is also a valuable food. Dr. Emilio Soto Pradera and associates of Havana University have learned that it contains twelve of the amino acids, some of them being essential in the human diet (*American Journal of Diseases of Children*). The water is also a good source of the B vitamins, particularly riboflavine. It has been used successfully in Havana in combination with evaporated milk as a food for infants. Its acid content is relied on to increase the digestibility of the milk. This mixture was fed to a number of such babies with satisfactory results, and when given well to children, they developed normally. —*Good Health*

●

Indiscriminate Use of Vitamins Harmful

IT is argued that since the diet of many people is deficient in vitamins, the taking of massive doses of them can do no harm except for the waste of money this practice involves. Agnes Fay Morgan of the University of California does not agree with this view, as she states in the *Medical Woman's Journal* There is possible damage, she thinks, from the heavy doses of vitamin A given to aviators, although this is not absolutely proved. Too much vitamin D may cause calcification of the kidneys and the formation of kidney stones. The intake of vitamins A and D should be balanced. In certain regions of India where sunshine insures plenty of D but A is scant in the food, there are many cases of kidney and bladder stones. Fish oils may contain so much D that they are not suited for adult consumption. Heavy, black molasses has been recommended for the B vitamins, but it is so full of accumulated debris as to make it unfit for food.—*Good Health*.

●

Pregnancy Test Held Unreliable

THE colostrum (the fluid secreted by the breast of a woman a few days before or after childbirth) skin test for pregnancy, announced last year by three University of Illinois College of Medicine physicians, did not appear to offer a valuable diagnostic procedure to Lester M. Goldman, Henry B. Kessler and Mildred E. Wilder, Newark, N.J., in an investigation conducted by them, they report in *The Journal of the American Medical Association*. The test is based on the theory that pregnant women will show no reaction when the substance is injected beneath the skin whereas, nonpregnant women, and men as well, will develop a wheal at the site of the injection.

In 500 tests the three Newark investigators say there were approximately 70 per cent. correct reactions in all groups, both male and female, tested. They say they find it difficult to explain why their figures vary so widely from those of the University of Illinois physicians who had reported no reaction in 98 per cent. of pregnant women and reactions in 96 per cent. of nonpregnant women.—*Hygeia.*

●

Eating between Meals

GROWING children are likely to eat candy, cake or sandwiches between meals, and many of their elders also indulge in this practice. This was revealed incidentally in a diet study carried out among private patients in a Philadelphia hospital. Forty-two per cent. admitted eating at other than meal times. This took no account of drinking fruit juices or milk or partaking of fruit, which were supposed not to interfere with appetite. Since these persons were sick, it is possible that this habit had in some instances played a part in bringing on the illness. In that case, the proportion in the general population would be somewhat less. This indulgence in "snacks" is certainly a factor in the overweight which is so common in this country. Moreover, it puts a needless burden on the digestion. The stomach is as much entitled to rest as the body as a whole, and its protest against ill treatment may take the form of poor functioning.—*Good Health.*

●

High Blood Pressure and Heart Disease Rare in China

MEDICAL missionaries are sent to China to cure the sick and to teach hygiene. The Chinese know nothing about the bacterial origin of diseases. But they understand better than the Americans the prevention of the degenerative ailments. Dr. George C. Basil spent some years in Chungking as superintendent of a hospital and describes his experiences in a book, "Test Tubes and Dragon Scales." The Chinese, he says, work steadily but without hurry. When they relax, they do so completely. When a man eats, he does it slowly and with enjoyment When he is ready to sleep, neither noise nor activity interferes with that purpose. "High blood pressure, heart disease, even appendix and gall bladder troubles—all of which take a terrific toll in American life—are seldom seen among the Chinese. In my personal experience, necessity for surgical intervention in China and America seemed proportionately about one to a hundred." Obviously, the Chinese should send missionaries to teach us how to live—if anybody would listen to them.—*Good Health.*

●

A Tobacco Funeral

TOLSTOY was a zealous health reformer as well as a great writer. In his earlier years he spent much time in hunting and on one expedition was almost killed by a bear. Later he became a vegetarian. Convinced of the evils of intemperance, he called a meeting of all the inhabitants of the village near which he lived. He spoke at length on the bad effects of alcohol and tobacco, using anecdotes and similes which would appeal to peasant folk. He asked all the men to sign a pledge agreeing to drink no more. The women were from the first very strongly in favour of Tolstoy's views and urged their husbands to put their signatures to the document. The men were won over and consented. Tolstoy had them dig a ditch, then ordered, "Let the smokers throw in their tobacco and pipes."

Cigarettes, cigars, jars of tobacco, pipes, cigar cases, all went into the ditch. A tall, handsome youth brought a silk-fringed tobacco pouch, the gift of his sweetheart. He emptied the contents into the yawning hole. When he started to put the bag back into his pocket the others seized it, tore it up and flung it with the rest of the treasures of sin. While all smoking and drinking were not stopped, both were much reduced.—*Good Health.*

Teacher :—Why is our language called the mother tongue?'

Scholar :—Because the fathers never get a chance to use it.—*The Treasure Chest.*

Teacher :—Tommy, why are you late?

Tommy :—You told us to observe and obey all the traffic signs. While I was on my way to school I saw a sign saying, "School—go slowly." So I did.—*The Treasure Chest.*

Sacred Thoughts...

CULTURE is to know the best that has been said and thought in the world.
—*Matthew Arnold.*

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I CONFESS I have no notion of a truly great man that could not be all sorts of men.
—*Thomas Carlyle.*

***

LITTLE minds are tamed and subdued by misfortune; but great minds rise above it.
—*Washington Irving.*

***

MEN of character are the conscience of the society to which they belong.
—*Emerson.*

***

A FOOLISH consistency is the hobgoblin of little minds. —*Ralph Waldo Emerson.*

***

OPINION in good men is but knowledge in the making. —*Milton.*

***

LET us press on unto perfection.
—*Heb. 6 : 1.*