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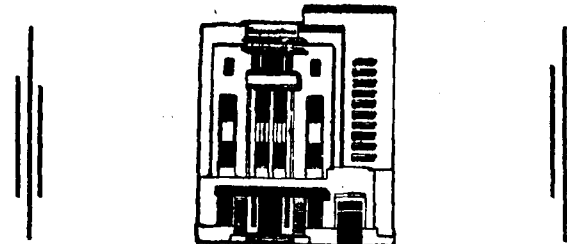
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H. D. RAJAH, General Manager.

AN INVITATION TO HEALTH WORKERS

Dear Co-workers,

One of the regular features with which *People's Health* made its bow to the public four years back was entitled "To Health Workers" by "One of You". The author of that series of articles is, perhaps, the most learned in the subject, and his clear treatment of technical matters earned your praise but not your co-operation. Our invitation, especially to those among you actively engaged in health work, to come forward with your technical difficulties encountered in the field and have them solved by that expert, through our columns, was not availed of by you. While you showered encomiums on his lucid analysis, either shyness or fear kept you from approaching him with your problems. That probably disheartened that eminent "*Health Worker*" and there has been a halt to the series of articles.

The object of addressing you now is to renew that invitation. Those among you doing health work in the remote corners of the country, are once more invited to think of your work and on locating a hard technical nut to be cracked, pass it on to us, and get it cracked for you through our columns.

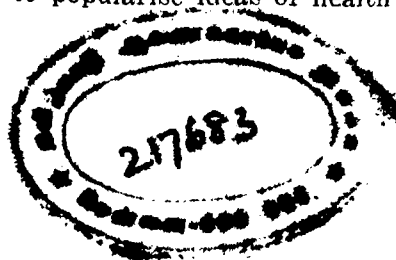
Another way in which you can help our co-workers is by contributing your ideas on matter directly or indirectly relating to the health of our people in the form of articles.

Our editorial department in the appropriate section would do its best to encourage the field staff to write, by going through the articles carefully and publishing those that would be important and interesting to other field workers.

Remember, if you are an official, that most State governments have permitted their officials to contribute articles to *People's Health*; of course, not of a controversial nature, but strictly of a technical character. So why don't you assemble your thoughts and wield your pen—or shout to dictation, whatever is your way of doing things—and help to disseminate knowledge?

Every health propagandist would do well to remember that *People's Health* too is out to popularise ideas of health and sanitation. Why not co-operate?

Thank you,
Madras-14,
Nov. 25, 1950.



Yours Cordially,
Production Editor,
People's Health.

TO OUR SUBSCRIBERS

We have no doubt that our subscribers would have perused an appeal issued to them in the issue of "*People's Health*", September, 1950

We request our readers to note that we do not enrol subscribers for part of a volume nor discontinue the supply of the magazine during the currency of a volume.

The annual subscription is Rs. 12; it is payable in advance at Madras. Those who send cheques in payment of the subscription are requested to add the banker's commission also.

While remitting the subscription, kindly note the subscriber's number.

Kindly intimate to us as and when there is any change of address.

Kindly do oblige the publishers by avoiding correspondence as far as possible, as it throws additional strain on the publishers.

Madras-14,
31-10-50

Manager,
"*People's Health*"

PEOPLE'S HEALTH

A Pioneer in the Field of
Public Health

Vol. V NOVEMBER, 1950 No. 2

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struction, offering a solution to our housing problem, our popular Minister replied that he would sympathetically consider any proposals which might be submitted to Government. We are interested only in offering suggestions to solve the problem; but we are not commercially or otherwise interested in it to go to Government with a petition in hand seeking favour. This is hardly the way in which our popular ministries should treat the suggestions made to our popular government in a spirit of co-operation.

Results Depressing

Co-operative societies have been formed in some cases for providing homes for the people. Judged from the results, it looks as though all is not well with this agency. Viewed from a technical standpoint, we do not know which technical authority gives approval to the designs of dwellings and the layout for schemes taken up for execution by co-operative societies. We had been urging in these columns that whatever be the agency for executing housing schemes, certain minimal standards of health and sanitation should be insisted upon. The Madras Ministry appointed some time back an expert committee to go into the question of designing a dwelling satisfying the minimal requirements of convenience, health and sanitation. This committee was definitely of opinion that the dwelling for South India should be of the conventional courtyard type. It was also of opinion that the buildings should be of semi-detached type. Have the recommendations been accepted or rejected? In the name of housing, the State should not help to create new slums.

In this connection, it would be relevant to draw attention to the stern refusal of the Minister of Health, England, to fix a higher target for housing, lowering the standards, if necessary. He contended and contended very rightly that he would not be a party to create new slums by building sub-standard houses, on the ground of urgency of the problem.

Why Build Sub-Standard Dwellings?

We may also draw attention to the fact that the I.L.O. Committee which met early this month in Geneva, adopted a programme for better housing, health protection and educational facilities for petroleum workers. The Committee approved minimal standards of permanent housing allowing public authorities to set appropriate local standards for the choice of materials and general construction in line with climatic conditions. Thus, it would be clear that definite and clear standards for a building intended for human habitation should comply with minimal standards of health and sanitation. The State governments have not as yet determined them. This is sad. Our State Governments have neither a planned policy nor a programme to promote our Nation's Health.

In no country has the housing problem been solved by any single executive agency, such as co-operative housing societies. The local authorities have played a big part in England and elsewhere to solve the problem. Private capital has also been encouraged to build homes for the people. Employers of labour have been encouraged by the

State to build houses for their employees. The State Governments should lay down broad policies in the matter, taking into consideration all aspects of

the question,—financial, availability of materials, technical personnel, minimum requirements of living space of sanitation and the like.

CHITTOOR MUNICIPAL ADMINISTRATION (MADRAS STATE)

In his book "The Importance of Living", Lin Yutang says that all happiness is biological happiness, which is strictly scientific. He quotes the American College President who used to say with great wisdom in his address to each class of freshmen, "There are only two things I want you to keep in mind: Read the Bible and Keep your bowels open." Freedom from hunger and freedom from constipation keep any man happy. With a satisfied tongue and an effectively utilised sphincter, every human being is biologically perfect.

Dwellings without Sanitary Convenience!

Commenting on the administration report of the Chittoor Municipal Council, the Collector writes: "There are only nine public latrines in the town. Out of a total number of 6,773 houses, the number of houses with latrines was only 3,367". Let us work the result out. The balance of 3,406 houses had no latrines and allowing for an average of even five persons for each house, about 17,030 human beings of the town were being permitted to go into the open and do their damnedst. Chittoor used to be a beautiful place with attractive open spaces and was, in fact, the nature lover's retreat. At present, it must be a defecator's paradise!

No man or woman would like to defecate in the immediate vicinity of his or her home; he or she would like to cross over at least to the neighbour's open space even with tremendous strain to the sphincter during the time lag! Surely, most of the citizens of Chittoor must be biologically very, very unhappy.

Brown Bureaucracy in Saddle!

In "Twenty-one Days in India", the author, an experienced and observant bureaucrat, stated that in the flickering candle light the Madras Secretariat never consumed a subject! The remark may look flippant; but there is some truth behind it. Let us take the drainage and water-supply schemes for Chittoor. For how many decades are they considering the subject? How many epidemics of cholera have swept the town? And yet the urgency of providing the town with water-supply and drainage has not been recognised! The only change we have under the New Constitution in our Independent India is the white bureaucrat has been replaced by brown ones! The same old system of paper disposals is still in vogue! The so-called popular ministers, who are expected to be approachable by the people, have apparently, abdicated their seats in favour of the brown bureaucrats! Quite a novel way of bringing up our infant democracy in our independent India!



OUR PARLIAMENTARY DEBATES!



Vol. V No. 2

NOVEMBER, 1950.

Issued Monthly

EDITORIAL . . .

The term 'housing' signifies not merely houses however perfect, but homes in the sense of the complete setting of the family's and the individual's non-vocational daily life.

—Lawrence Wolfe.

HOUSING

The Minister in charge of housing told the Madras State Assembly the other day that "Government have been considering the question but cannot do anything because of lack of finance." Why then have a Minister for Housing in these days of financial stingency, doing nothing?

Inaugurating the Seventeenth Andhra Provincial Co-operative Conference at Tenali on the 26th November, 50, Sri P. S. Kumaraswami Raja, Chief Minister, admitted that the progress of housing schemes in certain towns had been slow owing to the time taken in the acquisition of sites. Apart from the delays involved in following the procedure laid down in the Land Acquisition Act, there is also the question of compensation for land acquisition. The Chamberlain Committee, after very careful consideration of the vexed question of compensation, decided that in the acquisition of slums and buildings in blighted areas,

the price should be materially lower than the value of lands prevailing in an area. The State Governments would be well advised to urge that suitable amendments should be introduced to that ancient enactment called the Land Acquisition Act.

The Chief Minister also admitted that in some other places, misunderstanding among the directors, and members of the Cooperative Societies, had retarded progress.

Press Complains

Recently, the Madras dailies have editorially commented on the housing problem. In these columns, we have repeatedly referred to it and put forward definite and constructive suggestions not only to solve our housing problem but also to liquidate the slums. When we drew attention of the Minister in charge of housing, to an article (Vol. IV, No. 10, *People's Health*, p. 401-11) written by a high ranking engineer with wide practical experience on certain methods of con-

THESE DISGUSTING COMPLAINTS!

Those who wield power and authority hate to hear complaints about their administration. But our leaders who resent criticism have not given us an alternative method by which our grievances could be brought to the notice of the authorities and surely no one can say that there is absolutely no room for complaint. There must be some way out and if our idea that we live in a "sovereign democratic state" is no delusion, complaints "to our own Government" ~~is~~ ^{from} the only way of getting redress for our grievances. To take no heed of complaints is the privilege of dictators. But to resent adverse criticism is childish way of ignoring facts.

For instance, we have been trying to get copies of our Parliamentary Debates regularly. Despite our best efforts, those copies do not reach us with even a little of the promptness or order which one may expect in the despatch of such printed matter of national importance. Our anxiety to follow the debates in our Parliament on matters pertaining to the health of the nation, is natural. If proceedings relating to the Budget Debate on Public Health which took place on 15th March, 1950, reach us on 16th November 1950, how can we take it easy without complaining, and how can we complain by keeping quiet?

Depressing Parliamentary Debates

A perusal of the debate on the Speaker's motion for a grant to the

President under the Ministry of Health, Medical Services and Public Health, quite depressed us. The Minister of Health has developed a knack of meeting all criticism with misplaced boldness and getting away triumphantly by dubbing it as "uninformed". She can very well take out a patent for that firm expression, which is bound to be useful to other Ministers as well, when they wish to stifle their critics.

Public Health is not a Central subject. One cannot therefore understand why there should be a Minister of Health at the Centre. Judged from the performance of the Ministry of Health, it is clear that there is no need for a Central Minister of Health at all. The achievement of the Ministry of Health at the Centre is scarcely one to gloat over. It seems a farce that we should have a Minister of Health who cannot lay claim to initiating any broad health policy for the guidance of the States.

Health is the concern of the States excepting for a *strictly limited jurisdiction* of the Centre. Why should a poor Minister of Health at the Centre subject herself to the bitter words of indignant members? Like the hub of a wheel with no spokes to it, today, a Central Minister of Health under our New Constitution is a contradiction in terms.



To G. B. S.

I salute George Bernard Shaw—the man that was—"Who the devil was he?". Even a Chinese cracker may speak of the greatness of Dynamite! Even a mongrel may attempt to fraternise with a Great Dane in the normal canine way of appreciating the primordial aroma! So, to G.B.S., the mightiest of Sledge Hammers!

"Remember that an illness is a misdemeanour; and treat the doctor as an accessory unless he notifies every case to the Public Health Authority. Treat every death as a possible, and, under our present system, a probable murder, by making it the subject of a reasonably conducted inquest; and execute the doctor, if necessary, as a doctor, by striking him off the Register". So said G.B.S.

And when G.B.S. died, he cheated the Doctors. He died, not of disease, but of—death!

"Do not try to live for ever. You will not succeed." How very true!

Listen Ye, the wise and unwise, to Mr. P. D. Tandon!

One day in the near future I hoped to give myself the pleasure of meeting Mr. Tandon, the Congress President, but,

after reading what he had to say at the Naturopaths' Conference at Delhi last month, I have changed my mind. I am all for sociability and the need for cultivating our leading person-oddities, but, dash it all, I just can't muster sufficient courage to, or take so great a risk as getting near Mr. P.D.T. who, besides admitting having experimented on his own body, avers to having experimented on his sons and friends! Wasn't it D'Arcy W. Thompson that said,

"Against a foe I can myself defend
But Heaven protect me from a
blundering friend!"

It is Mr. P.D.T.'s suggestion that people should take more and more to "Raw Food". I wonder why he is so raw as to use the expression "Raw Food" instead of "uncooked food". Obviously, he belongs to that generation of Indian gentlemen who preferred the word "Females" to "Ladies" or even "Women", and referred to their children as "Issues" and numbered them in serial order! They never bothered about the nuances of the anglo-saxon vocabulary. 'Raw' food, my foot! my teeth clatter. Remember my dear reader, I plunk for a lot of uncooked food, vegetable salads and fruits, but I hate to call them "raw". It is altogether vulgar.

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"Do not take salt, do not take sugar, but eat jaggery or brown sugar which contains all the natural salts," says Mr. P.D.T. What sadism! Is common salt not a natural salt? If natural salt which is inside jaggery and brown sugar is good for humans, why not common salt? Oh, my poor head, it is reeling. I can't make him out.

Mr. P.D.T. also advises people to do without milk, butter, ghee and honey which are concentrated foods and not 'meant for man'. By man, he means woman also (being strictly legal), but not 'child'. He says he has always 'fought shy' of accepting the view that milk is the best food. Why? Because milk is being obtained from the 'cow'. He is being needlessly sexy vis-à-vis the cow.

Honey, according to Mr. P.D.T. is not a human food and is only meant for the bees that produce it. So, what? Cow's milk is only for the calf, cheese is only for the worm, and grains, grams, millets and pulses are only for the soil that produces them, so they should all be harvested and buried again to grow more and more of them!

Of Mr. Tandon I feel like saying:

"He was in Logic, a great critic

Profoundly skilled in analytic,

He could distinguish and divide

A hair 'twixt south and south-west side".

—(Butler)

A very timid and elderly friend of mine who has been somewhat of an epicure and a gourmet is in jitters over the possibility of Mr. Tandon's "Don'ts" being given legislative sanction in India that is Bharat, as he holds the key position of Congress President. I suggested to him an easy way out—to lift the door of the first corporation sewage man-hole that he saw and slide gently into it—That will put an end to his horrors and will remain a perfect case of undetected self-liquidation. You don't agree? O. K. Have it your own way!

Eradication of Social Evils.

Our President, Babu Rajendra Prasad, would like to stop all that kind of free social intercourse between men and women, which, in the absence of customary restraints prevalent in other countries, is likely to cause havoc in our society where such restraints are absent.

An orthodox Hindu gentleman, commenting on the above, tells me that our President is quite right. He sees it in the Ramayana. He says that if Sita had not rashly engaged herself in a conversation with Ravana, and instead, had said from behind closed doors "The gentleman of the hermitage is not at home, and I, a mere female, may not talk to you, a mere male, so please go away"—if she had observed the 'customary restraints'—she would not have been abducted, and a world of bother would have been avoided! You can't help admitting that there is a lot of horse-sense in the argument.

As a piece of 'customary restraint', the 'Burkha' is an example par excellence. I wonder if our President will persuade his Government to introduce the 'Burkha' in India that is Bharat. Or, perhaps Bharat, having been divided into India and Pakistan (or is it the other way about), India should now be divided into man-istan and woman-istan. You never can tell.

Perhaps, very shortly, we would hear that Dr. Radhakrishnan's book "Religion and Society" (George Allen and Unwin Ltd.) has been proscribed. In page 148, he says "To look upon sex as something unclean or indecent is a sign of moral perversion" (Thoba! Thoba!) Again in page 153, after quoting Omar,

"Here with a loaf of bread beneath the bough,

A flask of wine, a Book of Verse and Thou

Beside me singing in the wilderness",

he writes, "It is good companionship. The song on the lips expresses staunchness, truth, loyalty and loving care, things that we strive after and seldom reach. Friend-

ship is different from sexual attraction. Society of intelligent and sympathetic women for men, and of men for women, cannot be forbidden." Holy Moses, Dr. Radhakrishnan is very rash, isn't he?

Incidentally, if any of you is a female and aspires for a job under Government, I suggest you mention in your application that you have an old aunt or grandmother to chaperone you while at work, and provide the 'customary restraint'. You will find it easy to get the job.

Village Economy.

"Speaking at Rajghat recently, the Congress President urged those who ran the Government to introduce Khadi in various Government Departments, in hospitals for uniforms and other purposes so that the sale of Khadi might go up".

In the belief that Khadi was sold only to a person who tendered the requisite quantity of yarn, I asked a friend how the suggestion could be acted upon, and a wag who was nearby replied:

"Oh well, that's been fixed up! You see, Ministers and other high officials of State spin such a lot of yarn nowadays to fill whole columns of newspapers, and they are all of such coarse texture, that they have been computed to make up for the yarn quota required by several thousands of employees, so there will be no difficulty from that angle"—That was a good one, I thought.

Documentary Film on Tuberculosis.

I had to see this film a few weeks ago and felt disgusted with the lack of artistry and general ineffectiveness. It was more of an advertisement for hospitalisation than a show up of the conditions of life and environment that produce tuberculosis. I had to go out and buy a packet of Scissors cigarettes to obtain a soothing feeling! I don't intend to advertise the brand, but I do intend great praise for the advertising artist! Perhaps one like him would have handled the documentary much better!

British Eye Surgeons in the City.

A party of five eye surgeons visited the city last month. I believe they obtained very good material to satisfy themselves that India was full of very short-sighted people. I also believe they said that short-sight could not be cured—Teek and Acha! What cannot be cured must be endured.

Literacy and Adult Education.

At the Social Work Conference held in Mathurai in September last, Mr. Roche Victoria, Our Food Minister, presented a paper on literacy and adult education. When I saw the heading of the subject in 'Indian Information', I thought perhaps it was a spoonerised misprint for 'Literacy and Food Adulteration', but no, it was not. The Food Minister was talking about food for parts of the human anatomy, other than the stomach. Good man!

Talking of the adult education scheme, he said that lectures in the Colleges will be arranged through professors, lawyers, and doctors, who will be remunerated at the rate of Rs. 3/- per lecture. Yes, sir, he said only "Three rupees", not "Thirty"—With six ounces of rice ration in a lecturer's tummy, he dare not ask for more than rupees three for his brain output! It seems a well correlated figure.

"Indian Information?", a friend asks, "Who reads it?". I answer politely, "I don't know who all do, but the Proof Reader must."

Compost Manure.

In an appeal for increased compost-making, our Minister of Agriculture says, "If the mass of the people can be made manure conscious, our food deficiency problem can be solved to a great extent."

They are very much manure conscious, aren't they? Surely no vacant site in Mowbray's Road, Adyar, Tyagarayanagar and Nungambakkam is left lacking for mass patronage?

Jails in the Madras State.

"While all amenities should be given, I am against producing the feeling that jails are a sort of happy resort or sanatoria where people go to enjoy a rest" observes Mr. K. Madhava Menon, Minister in charge of Prisons.

The fact still remains that jail entry is a qualification for being chosen to several positions and to obtain several favours and perquisites, so, whatever the Minister may say, P for Prison will still remain P for Passport with the present generation!

Lungs in Cities and Towns.

Recently there was tremendous agitation in Madras over the proposal to build an office for the Reserve Bank near the Island Ground, and one very esteemed citizen insisted on the need for providing the city with "Lungs". The agitation gained momentum and the Governor of the Reserve Bank agreed to respect the pulmonary protests of the Madras Corporation.

The sad part of the matter is that no one seems to have bothered to brush up his knowledge of elementary physiology and point out that 'Lungs' stay in the chest, and do not function near the posteriors or the ankle. The city must have lungs; it must be pulmonary and pulmoniferous; it must function strictly as a pulmbronchiote and the City Council must be a pulmometer. But the insistence on the location of the lungs should be based on physiological principles! You can't have your lungs change places with your rectum, can you?

Rural Medical Relief

Dr. T. S. S. Rajan should have felt very uncomfortable after a report of Dr.

Chamanlal Mehta's address before the Coimbatore Dt. Medical Association on October 28th when he seems to have said something on the following lines: "If Doctors should take up rural medical relief, Government should provide them with the necessary amenities like housing, education of their children and special allowances. Your own Minister in this State, in spite of his being a member of your own profession, when I discussed the matter with him, told me that our ideologies were different and that medical men should live the life of the villagers. Gandhiji, on the other hand, showed a correct appreciation of the position of medical men when I discussed the question with him".

Our recurrent trouble, like a bad patch of Eczema, is that mortification of the flesh is still a creed with us. With Gandhiji it was a case of mortification of his own flesh to purify others. With Gandhiji-ites it is a case of mortification of other people's flesh. Like the Indian Mother-in-law they feel that they are entitled to impose suffering on others, they having suffered greatly in their time in the cause of freedom. Gandhiji was intensely practical when imposing his ideology on others; his followers are almost inimical to imagination and practicability. In fact, one may almost say, they are sadistic.

I am reminded of an old chestnut. A woman who had been bitten by a dog was advised by her physician to write down her last wishes quickly, as her end from hydrophobia was very near. Without being shocked with the revelation, she took pencil and paper, and started writing—she took so long over it that the physician remarked on her will being very lengthy.

"You think I am writing a will? Nothing of the sort! I am writing down a list of the people I am going to bite!"

ANTIRABIES CAMPAIGN

by

Lieut-Colonel M. L. Ahuja. M.B., Ch.B., M.D., D.P.H.

Director, Central Research Institute, Kasauli.

During recent years the number of people undergoing treatment for rabies has increased very considerably. In the year 1930, 9,653 patients received treatment at the Pasteur Institute, Kasauli, and centres in Punjab and U.P., in 1940, this figure had risen to 25,077 and in 1949 to 48,489. Of those treated in 1949, 89.2% were bitten by dogs and 6.8% by jackals.

People more Rabies Conscious

This alarming increase in the number of patients treated is mainly due to an increase in the incidence of rabies in the country, although it is in part, attributable to the fact that people have become more rabies conscious, and more people, not bitten by rabid animals, now present themselves for treatment. Increase in the latter group is generally amongst well informed and educated people, who will not take the least risk of developing hydrophobia when preventive treatment is readily available.

Not Impossible

Rabies is essentially an epizootic disease of dogs, jackals and wolves and is conveyed to man by the bites of these animals. To eradicate it, one must therefore get rid of these reservoirs of infection. This is not an impossible undertaking and can be accomplished, as has been done in many other countries, provided intelligent and active cooperation is forthcoming from the public and municipal and health authorities. First and foremost, the public must be educated to realize the grave danger to which their misplaced sentiment is leading them and the municipal and veterinary authorities must be roused from their apathy and made to take suitable action towards the control of a disease which at present is a grave public danger.

Tempt by offering rewards

From the practical point of view, every attempt should be made to reduce the number of stray dogs in the vicinity of towns, villages, refugee settlements and cantonments. Wherever dogs are found in great numbers, the municipal authorities should organise *pariah* dog eradication campaigns. If this were done four times a year, for a matter of two or three years, we would go a long way towards freeing the country from a disease which spares neither man nor beast and which has a mortality rate of 100 per cent—once it has developed. Jackals and wolves are other main sources of infection and must be exterminated but it is the ownerless *pariah* dog which is responsible for biting nearly 90 per cent of the persons reporting for antirabic treatment. It is the stray dog therefore which deserves our greatest attention if we are to check the spread of rabies. Legislative control if enforced scrupulously, even for two or three years, would help a great deal to reduce the incidence of this disease. By levying a tax on dogs and destroying animals which are ownerless and uncared for, municipalities will be adopting a useful and practical measure. To be of any real value, however, these measures must be carried out thoroughly and all dogs not registered and equipped with municipal tokens must be destroyed. Rewards for tigers and panthers and wild animals are considered justifiable but the damage done by such animals is infinitesimal compared with the depredations of jackals, wolves and *pariah* dogs which may not kill on the spot, as man-eaters and other carnivora do, but whose bites leave behind them a trail of death running into incalculable numbers of human and animal lives every year. Municipalities should introduce rewards for the destruction of stray dogs as an induce-

(Continued on page 76)

THE HOUSE TO LIVE IN:



by

Dr. S. Kamesam, Hon. D.Sc., B.E.,
M.E., (Hons.) M.I.E. (Ind.), F.A.Sc.

The author is a research engineer of great repute. He has many original suggestions to make to solve our housing problem. All those who are interested in the subject, both technical and administrative, would be profited by bestowing some thought on the constructive suggestions made hereunder.

—Ed. P. H.

NEXT perhaps only to the food problem, the housing problem is the most pressing and important in India to solve, for the Government, for the engineers, and for the public. Although there has been considerable planning and organization done in the case of the food problem, with special food Ministers at the Centre, and in the State, there has been more talk than action in the case of the housing problem. Before I discuss the technical aspects of the subject, I propose to speak to you generally of the modern house, what it is and what it means, as without such a background, my ideas of housing in its technical aspects will not be clear.

A Paradox

When man left the cave, and the first primary hut was built with stones and leaves, the first house was built. Following a natural process of evolution, related always to contemporary technical development and social conditions, the human habitation progressed in comfort, convenience,

hygienic conditions and artistic quality. It is in the house that the health and character of an individual, and hence of a nation, has its roots. The slow progress in house design in man's history got a shock with the introduction of the power-operated machine, mass production and the ushering in of new class of labour inhabitant, the factory worker. Handwork and small machine production have been rapidly yielding to mass production of house building parts, and even houses. It is some what of a paradox that in spite of all the present technical achievements of man, house building is not a fraction as efficient as, for example, the building of motor cars, aeroplanes or locomotives. The modern house has to cater to modern conditions—economic and social. With the increasingly high cost of building materials and labour, and the increasingly high cost of domestic servants and maintenance, synchronised by the rapid disappearance of the joint family system, the least expensive house initially and in the long

run, in capital cost and maintenance, has to be necessarily a small house—completely functional in design. We can no longer afford to build houses that make an inefficient use of space and employ ornate devices to counteract weaknesses in basic design.

The House—Its Functions

The house is now a machine for meeting certain well-known functions, mostly shelter against the elements and protection from unsocial elements. Every part of it must be designed for a certain specific purpose and each part must gear functionally with the other. The design of the modern house is based fundamentally on utility. It should reflect and cater to the present social conditions of a family expanding with the children coming and growing, and a family contracting to the original two, with the children all grown up, married and setting up their own houses, usually elsewhere. We, therefore, need a plan—an elastic plan—to respond to changing family size and social conditions. Freedom of space, freedom of movement, freedom from wasted effort in the use of furniture and tools, plenty of light and cross-ventilation are some of the features of the houses we want to-day.

The old houses built with the rooms wrongly orientated for climatic control, with thick walls, small windows, ornamental furniture are hot and oppressive. We need furniture that is light mobile or mostly in-built. We do not want room space to be cluttered with furniture. We demand a greater, in fact, maximum service out of every single feature in a house. Each must serve a real purpose. Our houses are basically to be lived in. We wish to get the largest dividend out of all the space and all the furniture it contains.

All are agreed; But....

Although there is no divergence of opinion on what we want to-day, ideas regarding the utilization of space and materials are still confused, and are in a state of flux. Architects like Corbusier and Wright have blazed brilliant trails,

but a lot remains to be done. We are at the threshold of a tremendous revolution in house building as in the social sphere. The appearance of new building materials—born out of plastics and improved traditional building materials—has only increased the confusion. New techniques, using frame construction with wood, steel and reinforced concrete, have made ample fenestration possible with little expense. There are no more straight-jackets for the layout of facades of houses. Housing is out on a new and rational adventure. But there are certain important features in a house building that have started crystallising out.

All house builders are agreed on the functional plan—with the elimination of all waste of space, building materials and waste movement in the house. All house builders take note of the importance of the factor of obsolescence, with rapidly changing economic and social conditions. Thanks to modern technological developments, it is now possible to provide fundamental amenities of civilization like sanitation, maximum ventilation and lighting, indirect lighting etc., for the millionaire and as well as for the middle class men, with not much difference in cost. All house builders are agreed that the blind spots in housing space should be removed, both as regards room space as well as furniture. This can be done by integration of the verandah with all the rooms except the kitchen and the bathroom, so that during the day all the available living room area can be used as living and dining rooms. The idea of a formal dining room is fast becoming an anachronism. This integrated area can be utilised for sleeping with sliding or accordion partitions to divide the large room or hall into two or three closed space. After stumbling for four or five decades, man is now arriving at a new conception of a house, born of a new type of domestic life, increasingly devoid of the artificial and the superficial and without stylish cliches, either traditional or otherwise, and responding to the modern democratic way of life, even among the family members, old and young, male and female.

Chaning Times

Due to increasingly socialistic conditions, with the rich paying high and very high income and other taxes, and with the imposition of death duties in the offing, mansions of the rich will become very soon as extinct as the dodo. The age of large domestic staffs to look after large houses, mansions and palaces, have disappeared or are disappearing with our Rajahs, Maharajas and rich capitalists. For the first time in the history of man, thanks to mass-production and modern building techniques, comfortable, well-planned houses are no longer within the reach of the very rich alone. Industrialism and the increasing spread socialistic ideas, with the factory worker accepted as a partner have changed our ideas of houses for the common man. I realise I am talking a little ahead for Indian conditions, but I see what is coming, coming very soon. We are after all, building houses for tomorrow. Recently, at the request of an Aircraft Company, I have built an experimental house which incorporates most of what I have been talking about for only Rs. 4/12 annas per sq. ft. of plinth area.

Functional in Plan

My house in Bangalore also is functional in plan. Some of you may care to see the experimental house when you next go to Bangalore. It is very near the aerodrome. It is an expandible house and a contractible house. When grown up children live with their parents, they can live in peace in one half of the house, and the parents in the other half—with headaches to neither, and each set entertaining their friends and even having two standards of living. When the children have grown up and leave the parents, there is a nest available for perhaps another newly married couple, either from the family, or outside. The parents are saved the necessity of maintaining too large a house. It is a house built to respond to their use, present and near future family and social conditions. By day, the living and office rooms and even the verandah can be intergrated into practically one space. In the night, they can all be divided into there separate sleeping

spaces. In-built benches serve as seats by day, and as cots by night. By the reduction of cross-walls to a minimum, there is ample cross-lighting and ventilation. Indirect lighting, for the living room is rendered possible by providing a slightly arched asbestos cement ceiling. It is climate-controlled because the roof is thin and light, and double layered with a central breezeway from South to North. It may sound incredible but the house that I have put up is as suitable for factory worker as it is even for the factory manager of even a two crore rupee concern. Closing the gap between the types of houses designed for the rich and the poor afford the best gurantee against social upheavals and revolutionary social experiments like Communism. It is interesting to compare this house with one built according to traditional standards by the company.

The Role of Site

With this general background concerning the blue print a small well-designed modern house, built to a functional plan, I now propose to refer to high lights of the role of site in house building. Suppose you go to a new place and intend to purchase a building site on which you propose to put up your "dream" house. It would be best, if other conditions are not unsatisfactory, to buy a building site at the fringe of the town, where usually there is much less congestion than there is at the central two-thirds of the town. From the economic point of view, the value of the building site usually appreciates by 100% in ten years when bought in such an area.

If the town where you wish to purchase a building site is hot, it would be useful to take temperature readings between 2 and 3 P.M. on a hot day going about the fringes of the town in a car. Especially in a town with undulating doads, it will be found at some places, the temperature in the shade is seven to ten degress F. less than in another place. If it is undulating land, and protection from summer heat is vital, as in most parts in India, choose a southern slope and build the house facing

south or south-west. There should be no low land or pits in the vicinity, with water tending to stagnate and breed flies and mosquitoes, during the rainy season. If possible, and if you have no car, the site should be near tram or bus lines leading direct to schools, markets and to the bazaar. A good doctor in the vicinity is an advantage. If the site is obtained near a Municipal Park, it would be enjoyable for walks, and for obtaining fresh air after the day's work.

Amenities at Site

Investigate the strength of the soil at the site. Avoid land with loose or recently filled up soil. If you are fond of a garden, see that the soil is not too gravelly, and investigate the possibility of tapping water at a shallow level by digging a well. Select a building site with good shade-giving trees, and located at suitable places in the site so that they do not come in the way of the house. Such trees should be best located west, or north-west of the house. The importance of such trees in keeping a house cool cannot be exaggerated. Fairly large trees of certain species can easily be transplanted. Water supply, electricity for lighting and power, telephone line and underground drainage in the vicinity are important points which should be given a high priority when purchasing a building site. Next to these, the question of good neighbours can make a lot of difference in happy and peaceful living in house. Level land for a building site has many advantages. Land slightly sloping South or South-East makes it possible to detain a cooler house and ensures better drainage. The roads by the site should be wide, clean and not noisy. They should not have open drains.

When selecting a building site, you should remember that the absence of underground drainage in the vicinity need not stand in the way of your having suitable sanitation in the house, because an independent septic tank and the necessary connections to it need not cost more than Rs. 600/- for a small house. Purchasing a building site at the fringe of a town for a much lower price than in the

middle of the town, consistent with most of the conditions that I have already set out being satisfied, is the best to do.

All the conditions cannot be satisfied. A selection is imperative. Compromise on details, concentrate on essentials, and make the choice of the building site so that you will have no cause to regret later. If you consider all the points that I have mentioned, give them your own weightage factors, according to your likes you will arrive at a most satisfactory solution of the problem of selecting a suitable building site.

The Key-Stone

To-day more than at any time in the history of the World, ideas of construction are more important than money spent on house building. Enjoyment and not show is the keystone of modern house building. The structural design of the modern house is based on its plan, its size and elevation. House design is governed by the requirements of the people who live in, the building materials available at or near the locality, the correct proportion of the rooms, doors and windows, the cost, and lastly, the influence of physical and geographical features on the house being located at a certain point on the earth's surface.

From the architectural point of view the structure should be in keeping with the surroundings for local kinship.

The Present Tendency

There are many new ideas advocated by different thinkers on the design of the modern house—or the "House of Tomorrow". There is a general healthy tendency to get away from the old box-like place which is familiar in India. In this type, there is a verandah at the front of the house, and a porch for the motor car. Behind the verandah are the drawing and dining rooms. On either side of the verandah are office or other rooms. On either side of the drawing room and dining room are the bed rooms with their bath rooms, along the side walls of the house. If the bed, living and dining rooms are to get more air and light a new plan has to

be adopted. The front motor porch which makes the dining room dark has to be shifted to the side. Further, in this type of house, based on what is called "Regional Design" there is a lot of waste of space at least 40% by day—as the rooms are hardly occupied during the day, and the living, office, dining rooms and the verandah being unoccupied during the night. This is the penalty we are paying for rigid room segregation. The present tendency is all for a more open and free style, with the house plans either an "L" or "U". Such a plan makes it also possible for easier climate control. With an open plan, goes the necessity for providing large open windows. This leads us to the adoption of the frame type of construction, preferably of the rigid frame type, with a minimum amount of column and the use of cantilevers in the horizontal framing members. Modern tendency is all for maximum light and cross-ventilation, reduction of cross-walls, to a minimum, and the use of modular design, enabling flexible partitions and in-built or unit furniture to be utilized to the maximum advantage. With the present scarcity and high cost of building materials and the high cost of masonry and carpentry labour, coupled with a similar high cost and scarcity of domestic servants, and the cost of annual maintenance, the need for economy of floor space cannot be exaggerated. Small sized houses are now usually planned and built on a module of 42". If an international conference or an All India Housing Congress can accept this module, considerable pre-fabrication of housing components in factories will be rendered possible, effecting important economy to the nation, as well as the individual. I personally consider that complete pre-fabrication of houses is very remote, but there is scope in the pre-fabrication of a number of house components. Doors, windows, ceilings, kitchen, bath rooms and inbuilt furniture can be pre-fabricated and mass produced, provided there is an All-India understanding and government make it compulsory, in their Municipal building codes, for house builders to incorporate and design houses on say a 42" module.

This may make it necessary to slightly modify the size of our bricks. Here again, our practice is almost primitive. Solid or hollow clay tiles to fit with any All-India module that we may decide on should be manufactured throughout the country to a 9" × 21" size. This size will fit into a 42" module and will help the house builder in effecting savings not only in mortar in building walls, but plastering may be dispensed with in many cases. The dispensing with of plastering on both sides of a wall results in a considerable saving, initially and every year.

Optimum Size of Dwellings

I have been carefully thinking on the optimum size of houses for Indian conditions where, in an average middle class family, besides the father and mother, there are usually 4 or 5 members, against an average of 3 in N. European countries, and the U.S.A. I feel for average Indian conditions where people have been for many years used to living in much larger houses than necessary or economical, a floor plan of 1,200 sq. ft. may be considered as most economical. Such a space divided into two twin portions of 600 sq. ft. each enables one bed room 18' × 10' each side, and a bed, living, dining room each side of 20' × 12' and a kitchen two bath rooms and a store each of 8' × 8'. Beside these rooms, two verandahs of 8' × 8' may be obtained. I feel convinced that such accommodation, with the maximum possible utilization of all the space except only the kitchen, bath rooms and store room is ideal for Indian conditions. For poorer people, half this house may be just sufficient. But, I feel any area less than 600 sq. ft. does not enable human beings to live with the dignity of human beings. Although mathematically, a square plan gives the cheapest house, experience has shown that a ratio of width to length of 3 to 4 is the best for living conditions. I agree with this. I feel Government should pass legislations, if necessary, after using propaganda on the radio, in the cinemas and press, that the house plan area of any house builder in this house should be 600 sq. ft. minimum and 1,200 sq. ft. maximum; except that it may be

increased to 1,500 sq. ft. under very exceptional circumstances. This does not mean that the design of houses should be monotonous. Considerable ingenuity can be displayed by the architect and the engineer to make the maximum functional use of this area. The size of verandahs can be reduced if large shade-giving trees are planted near the comparatively small verandahs.

A Plea for State Initiative

I feel the time has come for Government to take an initiative not merely to fix a module for room and verandah sizes, but also of furniture. When once the module is fixed and the sizes of doors, windows are standardized, Government should proceed to manufacture, either in their factories or Government subsidised factories, doors, windows, sanitary bathrooms and kitchen and roof elements. In this country, I may refer to the kitchen ovens which are generally used in Indian houses. They waste 90% of the heat of the fuel they burn. This should be stopped by Government, but not before they can supply properly designed ovens, which can be used not merely for cooking food, but for heating water so that all the hot gases obtained by the carbonization of fuel are trapped and the heat from them extracted. Many are familiar with what are frequently known as Bonny bridge stoves of cast-iron. It should be possible to make similar ovens with fire bricks for Rs. 30 per oven. In Germany, during Hitler's time, such ovens were developed.

Light Frame Type

If the country is determined to solve the housing problem, after general principles governing the size of houses, functionalisation and orientation of rooms, standardization of doors and windows, walls, roof and ceiling elements have been established, the question of construction should be considered. I have been a warm advocate of not sinking too much materials and money in the earth by digging deep foundations and fitting these trenches with valuable building material and wasting valuable time of building artisans like masons. I advocate a light

frame type of construction after the concrete or brick surki with cement dressing flooring has been laid. Such flooring can be reinforced with either thin steel rods, or even bamboo if the soil is not well consolidated. In most cases, no reinforcement is required.

When once the floor and a rigid framing system, which incorporates columns and the main roofing system, are ready, it is comparatively simple to fix purlins and asbestos cement sheets over the main roofing system, which incorporates a cantilever on either side of each of the two columns. The main roofing system looks like the Greek letter but with the top member slightly inclined. In this connection, it should be noted that in India, we have no snow load to cope with. A horizontal or practically horizontal roof is the best for reducing wind pressure to a minimum. I call it the method of frame construction.

I have so far described to you how to make the floor and the roof. The former costs not more than 8 annas per sq. ft. including the edge wall foundations for the flooring. The foundations for the six columns of the supports in a 1,200 sq. ft. area house, should not cost more than Rs. 100 in all. The roofing with the rigid framework columns, and the ceiling, either of cement asbestos sheets or preserved bamboo or wood veneer mats, should not cost more than Re. 1 to Rs. 1-4-0 per sq. ft. Before I conclude my remarks on roofings, I would like to mention that, for several reasons, a single floor house, is to be preferred. People over 45 should not climb stairs too often as it impairs the heart in the more advanced years of age.

After the roof has been installed, it is only a question of fitting up the walls, with the doors and windows in their proper position. I would suggest using reinforced hollow clay tiles, for the lintels of doors and windows, with a single ½" M.S. rod reinforced cement, you can have windows as wide as 8', the height being anything you like. In this connection, I should warn you not to make the height of the walls unduly large. If these are 10' at the

front, 8' 4" at the back, it should be ample even for hot places. In very hot places, an exhaust fan, worked for an hour, can remove all the hot air between the roofing and ceiling. In many cases, an exhaust fan is most effective than a ceiling fan for keeping a room cool during the night.

Some Important Details

For average soils, I would build a narrow brick or cement wall of about 9" to 18" height, and 9" width, with no foundation all along the floor plan periphery. I would fill up the enclosed space with earth, and stamp it firmly in two or three layers. When you are certain that the earth has been well stamped, and consolidated, the flooring of all stone jelly concrete, or brick surki concrete with an inch thick cement jelly concrete may be laid so that a concrete platform is obtained. In a 1,200 sq. ft. area house, taking an example, before laying the floor adequate concrete foundations, for six columns of treated wood or R.C. may be made, and then six columns with cross frame on members at the top, slightly inclined to one side, may be fixed. Therefore, for 1,200 sq. ft. area all the impediments in a free and unfettered area of the space are only 2 columns, about 4" x 4" in the centre line, where probably a wall goes up in most cases.

Bath, Kitchen, Store

The bath rooms, kitchen and store room may be either along midwidth line or at the edge behind. With the exception of the space occupied by them, four small rooms which may occupy only about 20% of the total floor area, the rest of the house area for living, dining and bed rooms and verandah can be used in a most flexible manner, so that movements for dining and domestic work are reduced to a minimum. For example, a service window in the kitchen wall facing the dining-living room enables food to be served at the counter in the window. Modern kitchen design has been so well perfected in the U.S.A., Sweden and Switzerland that it is most scientific and reduces, to an absolute minimum waste, effort or movement. There is no part of the house in which greater progress has been made

during the last few decades, both as regards technique and design, than in bath rooms and kitchens. Moreover, whatever the style of the house, they are remarkably similar in appearance. To-day, the millionaire, factory owner, and his five hundred rupees a month engineer can have the same kind of kitchen and bathroom. This has been one of the marvels of standardization, prefabrication, and mass production. The bath room in first class railway compartments has a lot to suggest for prefabricated bath room design.

Doors And Windows

Door and window frames can be dispensed with if rawl-plugs or wooden plugs in the sides of the brick openings in doors and windows accommodate hinges. There is nothing so wasteful as the use of 3" x 4" section in door and window frames, when they are not necessary at all. I would have liked to discuss the construction of sliding door, accordion doors, sliding partitions etc., which are indispensable components of modern houses designed on a functional plan, but there is no time for it. Also, it is difficult to speak about their design. All that I can say is that sliding doors are preferable to the usual type of doors which take considerable space when they are opened. In small rooms, designed on a functional plan, one cannot afford to waste a quadrant of 40" radius for each door.

Walls

The walls may be built of hollow clay tiles, or hollow cement bricks, especially on the east side, and half bricks on the remaining sides, or all the walls may be built of half brick, with reinforcement every 4 or 5 courses of a loop of 3/8" mild steel rod 4 ft. long. The brick courses may also be reinforced with steel wire of say S.W.G. 10 or 12 every 4 or 5 courses. If reinforced hollow or cement tiles could be used for the courses of external walls and sides, of door and windows openings, it will be an advantage. The extra high cost of the hollow tiles can be easily compensated by the need of plastering the walls being obviated.

In this short talk, it has been possible to trace only a few of the most important aspects of house building and design. I cannot conclude better than by emphasising the fact that house design should always depend on the most efficient and economical use of local building material.

Environment Within A House

I shall speak to you to-day on what can be done to create the best possible physical environment within a house, without adopting expensive mechanical devices. In South India, through out the year and for the major part of the year in Northern India, the main problem is to keep the house cool. It is true that air conditioning units may be installed in the houses of the rich to keep not the whole house but only one or two rooms cool. In this talk, I shall deal with measures, which any one, rich or poor, may consider taking while building and even after building a house, to keep a house cool in South India where the temperature ranges during the major part of the year between 75° and 100° F.

Private Climate

For improving the private climate of a house, it should face south or south-east. All the rooms which are not used during late evening hours and the first part of the night, like the garage, store room, pantry etc., should be located on the western or the north-western side of a house. The most important point to remember in controlling the private climate of a house is that at any particular place, the path of the sun in the sky cannot be changed. Also, the direction of the prevailing winds during the different seasons cannot be changed. We shall have to adjust ourselves to these conditions of nature. By proper planning, it is possible to make the sun work with us instead of against us. It is possible to get the best out of the prevailing winds. It should be remembered that only on 21st March and 23rd September every year the sun rises due east and sets due west. Between March and September in India and other countries of the Northern Hemisphere, the sun rises north of east and sets

north of west. On 22nd June, the sun rises at the maximum angle north of east and sets at the maximum angle north of west. These limiting angles north of east and north of west for any place depend on the latitude north of equator and can be easily calculated.

Also, the angle of altitude of the sun's trajectory changes from day to day. It approaches the vertical on June 22nd and is flattest on 22nd December. This angle, again, can be easily calculated for any latitude. With these data in one's possession, one is in a position to intelligently start laying out the plan of a house for obtaining the coolest house possible in any particular place. The design of windows, their height above the ground level and their number and size, the length by which sunshades to windows should project, the necessity for horizontal or vertical sunshades etc., are all governed by these data. When one has a certain building site, it is always possible to lay out the house and locate the rooms in them based on climate control conditions.

To Escape Summer Heat

Let us examine what happens during May and June in India when summer heat is the fiercest. If I describe to you what happens from morning till evening, you can use your ingenuity in a number of ways to counter actual condition at your locality. To get a cool house, you have to doctor the sun and shade effects on your house, as sun and shade on your house feel almost like sun and shade on you in the house. You may say "I am indoors, I am sheltered from the sun by the roof and the walls of my house". The trouble is that in actual practice, the sun beats the roof—particular portions of it—and particular walls continuously for some hours at a time. These get heated on the outside surface so much that after 2 or 3 hours, the inside of the wall gets so warm that it starts radiating heat into the house. It shines heat at you. The oppressive part of summer heat in a house does not and cannot come directly from the sun, but through the roof, ceilings and the walls, including windows. Experiments have shown that if the sun beats against the

glass panes of large windows for 2 or 3 hours, the temperature of a room may be raised by 10° to 15° F. Suppose you open the windows wide and let the breeze blow through. This certainly helps to lower the temperature of air in a house but not very much, as there are so many parts in a house, unaffected by natural draft through the windows. Outdoors, in the shade, you often feel cooler, but there, you have no vertical walls all round radiating heat on to you. Drawing window shades or lowering bamboo thaties etc. prevents the sun from shining into a house, but the real problem is to mitigate the heat produced by the sun shining on the house, on its roof and walls.

The eaves of the roof should be just long enough on the south side to keep the walls on this side of the house in shade. It is the south and western side walls that matter during 11 a.m. to 3 p.m. As the hottest side of a house during summer is the west side, we should doctor the west side walls to keep them cool. There are several ways of doing this. One is to put up a wall with a creeper on it or a green fence on the western side so that the wall becomes a heat barrier, at 4 or 5 ft. from the western side of the house.

Let us follow the sun around on a summer day, such as in May and June. After June when the monsoon breaks, the heat may not be so oppressive.

On a summer morning, the sun rises not in the east, but in most parts of India, East North-East. Hence for an hour or two, the sun shines on the north and east walls of a house. The south and west walls are still in the shade. By about 8 p.m. there is no more sun on the north wall and the sun's altitude is higher and shining till about 11 a.m. on the east wall of the house. Although shining practically perpendicular against the east walls for about three hours, and hence heating the walls strongly, the heating effect on the air inside the house is not very great. The air inside is still cool at this time of the day. The house is still full of stored cool air after the night's lower temperature outside. Towards noon

the sun's angle on the east wall becomes so small that its heating effect comes down gradually. At noon, the east wall goes in to the shade. During the noon hours, 11 a.m. to 2 p.m. the south side faces the sun most. But due to sunshades, chajjas or eaves of the roof, the south walls do not get so hot as one may expect. Also, the angle at which the sun strikes the south side wall is so narrow that the heating effect is not intense. Actually, during winter months, when the altitude of the sun is 47° lower on the south side, walls get hotter as the sun strikes the walls almost normally. By about 3 p.m. the sun is exactly in the west. Now the south wall is in shade for the rest of the day and begins to cool off.

The Western Sun

The west side now gets more and more sun heat as the afternoon hours progress. The lower the sun sinks by 4 p.m. and 5 p.m. the more squarely do the sun's rays hit the west wall, and the more fierce become the heating effect on the walls. Such heat of Madras than on the west coast, where usually low clouds tend to cool the sun's rays shining through them. On the east coast, the skies are clear during May and June, and the sun is at its worst before sunset.

Against this western sun hitting the west wall squarely from 3 p.m. to 6 p.m. the horizontal eaves of the roof or chajjas for windows afford no protection to the west walls and hence the rooms inside.

Against this low sun, the best protection is afforded not by anything horizontal—as chajjas but by something vertical. At present, for protection against the sun, all the sides of a house are treated similarly. This is wrong. It is clear that the chajjas or eaves should be designed differently for east, south and west—doctoring them to the trajectory of the sun during summer. If this is done properly, in winter, automatically the same measures result in a warm house.

One of the best measures to counteract the fierce western sun is the planting of shady trees like the rain tree, or a line of

silver oak or eucalyptus trees which grow rapidly. Till the trees grow up to the required height of at least 20 ft. wooden or bamboo trellis with vines or creepers would be useful. Otherwise, ivy or other creepers on the west wall are also helpful in keeping down the temperature of the western walls. These should run at an angle of 45° to east-west-line, and taper down in height from a point due west, where the height should be a maximum. There should be either no windows or very small windows on the western side. There may be also unimportant residential room like the garage, store room etc., on the western side of a house. Between the garage, and the main house, a "breezeway" about 10 ft. wide passage may be left north to south. The hot air, by evening would get flushed through the "breezeway".

During summer months, it should be remembered that after 5 p.m. the sun shines fiercely for an hour or two, just before sunset, on the north side of the house. Here vertical chajjas next to windows—on the western side—are required as the setting sun beats practically horizontally on north walls. Horizontal chajjas are useless. In fact, they are useful only on south side of a house and to a less extent on the western side. No chajjas, horizontal or vertical, are necessary on the east side.

Cool Roof

I have, so far, dealt with the heating of the house walls during summer months. I shall now speak about the roof and how it can be kept cool. The first thing I wish to tell you about the roof is to know that the popular idea that a thick roof—as used in practice—mean a cool house is wrong, unless the thickness is twelve inches and

over. This, of course, is uneconomical as the roof becomes unduly heavy and costs too much in building materials. Otherwise, with the usual thickness of about 5" or 6" of reinforced concrete roof, one gets the hottest roof possible. It remains hot for 7 or 8 hours after sun set, acting as a radiating heat panel, heating up the air inside bedrooms till about 4 a.m. When one comes home and has to remain under the roof for rest and sleep the rooms remain warm. A thin roof, like a cement asbestos sheet roof, is much better as it gets cool rapidly after sun set, especially if the roof slopes from west to east. If the west wall is raised by 4 or 5 feet more than that necessary for structural reasons, there will be practically no sun on the major part of a west-east sloping roof after 5 p.m. and it cools down rapidly by 8 p.m. and the rooms below it. If there is a flat ceiling for such a roof, it is best to work an exhaust fan for an hour or two after sunset, and pump out the hot air between the roof and the ceiling, replacing with cool air from outside. During summer, it is also useful to have a rotating spray of water on the south and west sides, according to the position of the sun, after 1 p.m. White-washing the roof, in March every year, enables a lot of the sun's heat—about 60%—being reflected. This cheap coating protects the roof from absorbing heat till the monsoon breaks. Painting the roof white, of course, is the best but it is expensive. On the west and south sides of a house it is best to have a green patch of grass and trees, but on no account, cemented or asphalted pavements. Otherwise, heat is reflected to the house from hot cemented pavements. Living green leaves reflect heat effectively.

—Courtesy A.I.R. Madras.

STATE OF HEALTH IN HYDERABAD (DN) AN ADDRESS

by

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*Inspector General, Medical & Health Services, &
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An occasional review of the state of health in each of our States would be useful in that that each State may have the benefit of knowing what is taking place in the neighbouring one. Major-General Bhatia has led the way. Will other heads of medical and health services follow suit?

—Ed. P. H.

I sincerely appreciate and I am deeply grateful for the great honour you have done me in inviting me to preside at the Scientific Session of this Conference. It gives me very great pleasure to meet you all and to have the opportunity of exchanging views with you on medical and health matters.

We meet to-day at a very important stage in the history of our country. Since the attainment of freedom a little over three years ago we are masters of our own destiny. The Medical Profession has a special duty to perform in moulding this destiny. Knowing the amount of ill health and the high mortality rate in this country, it is the bounden duty of us all, medical men and women, to do all we can to ameliorate the existing unsatisfactory state of affairs. We have therefore to do a job of work, which is of the greatest importance, so far as the building up of the nation is concerned. It should be our aim, that every individual in the country lives a healthy and vigorous life, and conditions are so improved that all disease is banished from the land.

Appalling Figures

May I at the outset give a few figures in regard to the health conditions of India. The death rate in this country is 22.4; infantile mortality rate 162; the expectation of life at birth for males is 26.9; and for females 26.56; the death rate amongst infants and children under 10 years of age is 48.4. In India nearly half the total deaths are amongst children under 10 years of age; and of the mortality in this age group, one half takes place within the first year of life. As regards the maternal mortality, it is estimated that the maternal deaths annually are about 2,00,000. The number of women suffering from varying degrees of disability and discomfort as a result of child birth would be much larger, probably about four millions. It is imperative that for improving the health of the community we must pay special attention to the development of measures for adequate health protection to mothers and children.

Causes of Low Level of Health

The causes of the low level of health in India are many; inadequate provision in

regard to environmental sanitation; mal-nutrition and under-nutrition; lack of general education and health education; and lack of adequate number of doctors, nurses and ancillary personnel. The above figures indicate that the health conditions in India are much worse than in most Western countries.

To-day we find ourselves precisely in the middle of the twentieth century. During the first half of this century medicine has made enormous strides and in some countries the health conditions have improved beyond expectation.

An understanding of the developments which have taken place will give us an idea of direction in which medicine is now going. I shall take England for purposes of comparison. In England in the period 1901-05 the infant mortality rate per thousand live births was 138; in 1948 it was 34. Secondly, in the past 50 years the death rate from zymotic diseases in England and Wales has fallen by 94%, and tuberculosis mortality by 74%. Thirdly, the expectation of life at birth has increased considerably. According to Dr. Stocks, "lengthening of the average span of life has proceeded so rapidly that we have not yet grasped all that is implied by the expectation that half of the girls now born will live to 75 and half the boys to 70."

Factors which Influenced Improvement

All this improvement in England has not taken place entirely owing to the efforts of the medical profession. Various factors have contributed to these, namely, more spacious housing, better nourishment of the people, better sanitation, cleaner water supplies, higher wages and healthier working conditions. But an example of the way medicine has directly helped may be seen from the change in the incidence of puerperal sepsis, a dreaded complication of child birth. For the period 1928-30, puerperal sepsis rate was 154; in 1947 it dropped to 18. During this period great strides have been made in medicine, in surgery, in pathology and other branches of medicine. "Sulphonamides and antibiotics

are making themselves mercifully felt as alternatives to the knife and the probe", and I expect that surgery eventually will be confined to the treatment of injuries. Most of the advances are due to the influence of physiology on medicine. We consider disease now more as deranged function, than merely as deranged structure of the body. The outstanding contributions during this half of the century are in the domain of physiology, and here I may mention the physiology of metabolism, nutrition, vitamins, endocrines, physiology of the nervous system and of the cardio vascular system. Most of the advances in medicine and surgery are based on this progress in Physiology.

Advances in therapeutics cover a very wide field and have revolutionised the practice of medicine. Likewise radiology has advanced rapidly and shown us new methods of diagnosis and treatment.

During the fifty years prior to 1900, medicine had already begun to make very rapid progress. That was the time when giants like Claude Bernard and Carl Ludwig, Virchow, Bright and Addison lived and worked. In 1895 Roentgen discovered the X-Rays. In 1898 Curies discovered Radium. In 1900 Karl Landsteiner did his work on blood groups. By the year 1900 most of the bacteria had been discovered and the germ origin of disease well established. Lister had appeared on the scene and revolutionised surgery. Pasteur had lighted the torch, which still continues to burn with increasing brilliance. It was at the close of the 19th century and the beginning of the 20th century that Sir William Osler uttered the following memorable words:—

"To us in the Medical profession, who deal with men, the individual unit, and measure progress by the law of the greatest happiness to greatest number, to us whose work is with the sick and suffering, the great boon of the present age in that the leaves of the tree of science have been for the healing of the nations. Measure as we may the progress of the world—materially in the advantages of the steam,

electricity and other mechanical appliances; sociologically in the great improvement in the conditions of life; intellectually in the diffusion of education; normally in possibly a higher standard of ethics, there is no one measure which can compare with the decrease of physical suffering of man, woman and child when stricken by disease or accident."

A period of half a century has elapsed since these words were spoken. Since then the earth has been shaken by two World Wars, and those of us who have been through them and have seen the havoc wrought by some instruments of science are apt to be a bit sceptic of this facile optimism of the 19th century. But still we can say with truth and conviction that these words are as true to day as at the time they were spoken so far as medical science is concerned. Not only the leaves but also the blossoms and fruits and even the bark of the tree of medical science are for the healing of individuals as well as nations.

Medicine Universal

One outstanding feature of the first half of the 20th century is that medicine is tending to become universal in the true sense of the word, and this is due largely to the work of the World Health Organization and its predecessor, the Health Section of the League of Nations. I had the opportunity of attending the Conference of the Directors of Health Services of countries in South East Asia region of the World Health Organization in Kandy, Ceylon, from September 29th to October 1st, 1950. We had representatives there from Afganistan, Burma, Ceylon, India, French India, Indonesia, Portugese India, Thailand, etc. They did me the great honour electing me as Chairman of the Conference. This was a compliment more to Hyderabad than to me. We had most useful discussions in a very friendly atmosphere on various problems connected with public health, namely Public Health Administration, General Promotion of Health, School Health, Health Education of the Public Training of Health Personnel

and Environmental Sanitation, Control of Communicable Diseases and Health Statistics. I have felt that, apart from the technical value of discussions, such meetings help to bring together workers from different lands and promote international goodwill and understanding, which is a consumation devoutly to be wished.

I have purposely drawn attention to the present dynamic phase of medicine so that we in India should not lag behind. We should also make our contribution to this progress. India has already played an important part in the advancement of medicine both in ancient and in modern times. Time would not permit me to describe these in detail, but I may perhaps mention that the fundamental discovery regarding the transmission of malaria by mosquito was made in Secunderabad by Sir Ronald Ross towards the close of the last century.

Conditions in Hyderabad

Let us for a moment consider what is being done in regard to improvement of health conditions in our own state. While the work of both the Medical and Public Health Departments is of equal importance and the two should, and are now working hand in hand, I shall particularly refer to the work of the Public Health Department, for as you know "Prevention is better than cure". Besides, the public health activities are not readily visible and need special mention.

Our major medical problems here are:—

Malaria. This constitutes a major public health problem. Fifty lakhs of people in the state suffer every year from it and it is perhaps responsible for about a lakh of deaths. We have a number of anti-malaria measures in the State, for example the Nizamsagar Development Scheme, the Thungabhadra Project Area, etc., where owing to anti-malaria operations there has been considerable reduction in the incidence of the disease. In Warangal District as you know there are anti-malaria operations in Laknavaram, Pakal, Wyr, etc., where useful work is being done.

Tuberculosis. There are about 1½ lakhs of Tuberculosis cases. About 25,000 deaths from this disease occur every year. In our T.B. Organization we have a fully equipped clinic at Dabeerpura, Hyderabad City and another at Secunderabad, and an out-door clinic in the Osmania Hospital. The Tuberculosis Hospital at Eeramnumma with 300 beds and the Tuberculosis Sanatorium at Vicarabad with 150 beds are also doing good work. The Hyderabad Branch of the Tuberculosis Association has been formed under the aegis of the Central Association at Delhi. A Refresher Course in Tuberculosis will commence in Hyderabad from the 1st of November and a campaign for collecting funds for tuberculosis work by the sale of "seals" will also start in the near future. B.C.G. Vaccination work is now being vigorously pushed on by a team of workers in Hyderabad and Secunderabad cities with good results for the immunization of the general population against tuberculosis.

[This statement is not supported by the view recently expressed by the National Tuberculosis Association (U.S.A.), which we published on page 6 of October 50 issue (Vol. V, No. 1)]

Ed. P. H.

Plague, Cholera and Small-pox are responsible for large morbidity and mortality. Their incidence and mortality, however, have been reduced from year to year. In Ceylon, by the way, I was much impressed by the fact that Plague, Cholera and small-pox had been completely eradicated. This should serve as an object lesson to us. Preventive measures are adopted by 18 plague units in endemic areas of districts, resulting in definite decrease. With the use of DDT plague is now better controlled than previously. Plague cases are also treated with streptomycin with beneficial results and the mortality rate has been decreased from 75% to 15%. 4 Flying squads are also established, one at each of the Suba Headquarters. Each squad is equipped with a Jeep car working under an Assistant Health Officer, assisted by a panel of Health staff. This scheme promptly

controls epidemic diseases to a great extent especially in the remote rural areas. 6,46,909 anti-cholera inoculations were performed last year; by means of mass inoculation and disinfection of drinking water, this fell disease is always kept under control. 14,28,349 vaccinations against small-pox were also performed last year on a mass scale.

Leprosy. There are about 80,000 lepers in the State of whom 20,000 are infectious cases. A colony of lepers is established at Narayanpet and another run by a voluntary organization at Zaheerabad. In Hyderabad City a Leper Home is functioning under the Hyderabad Municipality. Weekly leprosy clinics are now being conducted for out-patients in 126 hospitals and dispensaries throughout the State. There is a leprosy hospital at Dichpalli with 400 beds. Recently a village Isolation Treatment Centre has been opened at Ghonsi village in Udgir Taluq in the Bidar District where 300 patients are undergoing treatment every week within a month of the opening of the Clinic. Schemes are under consideration for the establishment of more agricultural leprosy clinics.

Yaws. More than 60,000 cases of Yaws have been treated with Thiosarmin in 5 districts of the States with appreciable results.

Infectious Diseases

An Infectious Diseases Act has recently been sanctioned by Government and when this is brought into force, better control of epidemic diseases would be possible.

Vaccination

A Vaccination Act is under consideration of Government. The existing legislation provides for compulsory vaccination of children between six months and one year only.

Health Education

The Bureau of Health Education carries out health propaganda work by means of lectures, health education and publicity in school, newspapers, publicity leaflets and papers, and organization of health weeks,

public shows, exhibitions by holding stalls and cinema shows. There is a Health Museum at Hyderabad City, which is one of the best I have seen in this country. The Public Health Institute attached to this Bureau trains health personnel for the department. A section of industrial hygiene has recently been added to this bureau under a trained officer. The health conditions of workers in different types of factories and coal mines are now assessed and the public consciousness to the evils and abuses of child labour is also awakened. Investigation into occupation hazards to workers employed in mills and factories is also undertaken.

Maternity & Child welfare

For maternity and Child welfare work a full time officer has been appointed as an Assistant Directress. There are 13 centres in Hyderabad City and 4 in the districts. A proposal to establish a child welfare centre at each district headquarters and 5 more in Hyderabad City is under consideration. The centres are run partly by Government, partly by the Municipality and partly by the Hyderabad Women and Children's Medical Aid Association.

Nutrition

A permanent nutrition section is attached to the Health Department under a trained full time Nutrition Officer. Extensive diet and nutrition surveys have been carried out. 12 districts have been surveyed and more than 8 thousand families of different economic groups have been investigated and more than 80 thousand children have been examined for nutritional deficiency diseases. Special surveys have been made to find out the dietary habits of the tribe known as Chenchos. A good amount of education and propaganda work has also been carried out in regard to nutrition.

School Health

District Civil Surgeons examine school children at district headquarters, while taluq medical officers examine middle school children. There is a separate Medical Inspector of Schools. Two school clinics have been opened in Hyderabad

City. Parents and teachers frequently visit the clinics and collaborate with the medical officer. Nearly a lakh of boys and half a lakh of girls are examined annually. The defects of school going children are noted and recommended for prompt treatment.

Laboratories

Our Central Laboratories in Hyderabad manufacture nearly ten lakhs doses of lymph annually which meets our requirements. The Vaccine Depot is also a training centre for Vaccinators. Cholera Vaccine is also manufactured in a large scale. More than eight lakh doses are manufactured annually. Anti rabic treatment is also resorted to in this institution by a special medical officer. The anti rabic treatment is also provided at all district headquarters.

Rural Medical Relief

It has been receiving my special attention. Hyderabad has a vast rural population, the number of villages being about 23,000 containing 87.6% of the total population. Medical relief is provided to the rural population by Assistant Health Officers working in the districts apart from the dispensaries which are scattered in these areas. 4 Rural Sanitation Units are functioning in the four subas and they have a small dispensary attached to each of them. On an average 1,000 villages are visited and about 35,000 villagers received medical aid annually.

Eye Camp

Recently an Eye Camp was established in Warangal. It was started on the 15th of September and closed down on the 15th of October 1950. This was a great success, which was due largely to the enthusiastic work of Dr. Phatak and his colleagues. A large number of cases of eye diseases was treated, especially cataract. Many cases of refraction were attended to and glasses prescribed. I understand that besides Warangal district a good many people came from Kareemnagar, Adilabad, Nalgonda and Hyderabad Districts to seek medical aid at the camp. The camp will

move from place to place and give medical relief to the people in different areas.

We are about to start the Suba Hospital here soon. Its foundation stone is to be laid tomorrow by the Hon'ble Health Minister. This has been the crying need for some time. It will provide at the outset specialist treatment for eye diseases and the good work started by the Eye Camp will thus be continued.

With a view to extending medical relief in rural areas it is under the consideration of the department to establish one ideal medical cum health unit, which will cater for about 20 villages, combining both preventive and curative work.

There is also a proposal to provide medical boxes for villages for the relief of rural population.

659 uruses and 1806 Jattras are held in the state every year. Due to timely action and epidemic control measures taken by the department no epidemic has been reported so far at any of these congregations.

A steady improvement is taking place in regard to expansion of medical institution, but there is great dearth of trained nurses and other ancillary staff. I would make a special appeal to our women folk to take to the honourable profession of nursing which is really their special domain.

We have a number of proposals for improvement of hospitals and dispensaries I would not like to go into the details at this stage. I would personally wish that every district headquarter hospital should have an X-Ray plant and a good pathological laboratory.

There are about 73 hospitals and dispensaries belonging to Jagirs, Paigahs, Samasthans and Sarfikhans (non-Government illaqs). These have been ordered by Government to be taken over by the Medical Department which has been done and we are trying to bring them up to the Govt. level.

Budget

The Budget of the Medical Department has steadily grown. In 1931 it was

Rs. 12,50,069 and during the year 1950-51 it is Rs. 81,24,582. The sanctioned budget of the Health Department amounts to Rs. 52 lakhs for the current year. This budget has risen from 31 lakhs in 1945 to Rs. 52 lakhs in 1950.

A Board of Ayurvedic Medicine has been recently constituted to advise the Government regarding the various problems affecting the Ayurvedic department.

Apart from the Refresher course in Tuberculosis to which I have referred we hope to organise refresher and post-graduate courses in other subjects also before long.

The question of medical education in the Hyderabad State has been engaging my special attention. At present the Medical College at Hyderabad grants M.B.B.S. degree which are not yet recognised by the Medical Council of India. Certain improvements have already been introduced in the Medical College and we hope that steps will be taken before long to ensure that our medical degrees are given the same status as those granted by other Indian Universities and recognised by the Medical Council of India.

Medical Research

I would like to stress the need for medical research in our teaching institutions. Medical education should be imparted in an atmosphere of research, so that young students may imbibe a spirit of scientific enquiry which may help them to undertake research in the years to come.

History of Medicine

The study of history of medicine is woefully neglected in India. I have always stressed the need for the study of the history of medicine at every available opportunity. I am firmly convinced that a study of the history of medicine will resolve all the difference which now exist about the various systems of medicine in vogue in India. Modern medicine has grown out of the ancient Greek Unani and

(Continued on page 78)

EXPERIMENTAL DWELLINGS



by

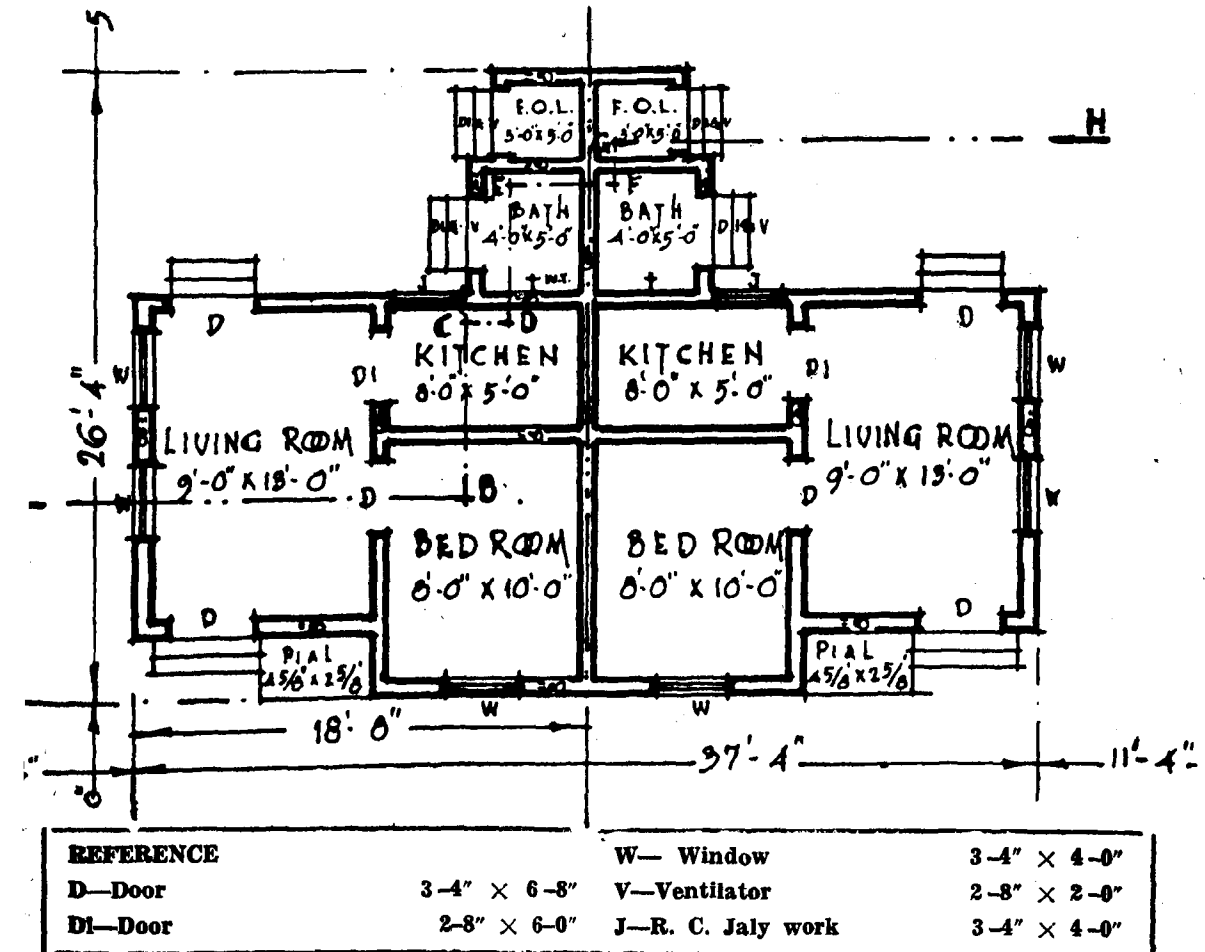
A. Raghava Reddi,
Chairman, Madras City Improvement Trust.

THE City Improvement Trust Board has constructed, an experimental house, abutting Venketanarayana Road, opposite the Mount Road Telephone Exchange. This building has been designed for housing the lower income groups. Here, the usual verandah has been eliminated and the traditional pial substituted at the entrance to the house, the reason being that a small verandah is generally found useless in inclement weather and with a single room there is no privacy. In the present design, two rooms are provided, one to take the place of the verandah and the other to serve as a bed room, to secure privacy. A suitable kitchen, bath and F.O.L. have been provided, making the house self-contained. The design is of a semi-detached type and the advantage in a building of this type is that maximum open space is secured. Having due regard

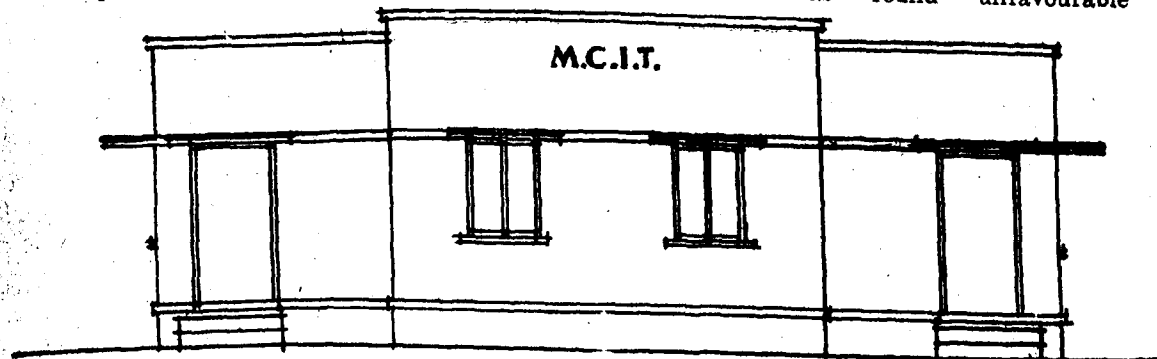
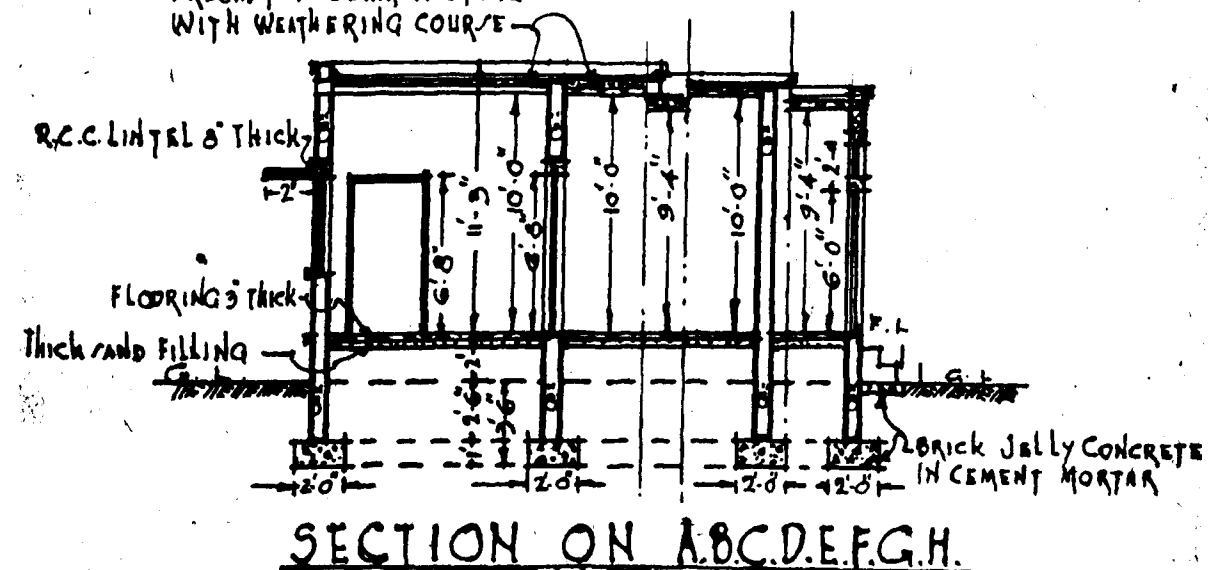
to the cost of the land, the cost of the building and the capacity of the lower income groups to pay economic rents, one ground has been taken as the minimum area on which one unit of two houses could be built upon.

Accommodation: A living room measuring 9' x 13' and a bed room measuring 10' x 8' are provided. In the kitchen which measures 8' x 5' a smokeless hearth and a shelf to keep utensils, etc. are provided. The bath and F.O.L. are independent, and the carpet area available for use is 272 sq. ft. against a plinth area of 347 sq. ft.

Foundations: The traditional type of brick masonry has been provided. It was originally planned to provide cement blocks for foundation as well but as the level of the land was found unfavourable



PRECAST 'T' BEAM ROOFING
WITH WEATHERING COURSE



REPORT OF THE ENVIRONMENTAL HYGIENE COMMITTEE HIGHLIGHTS AND SIDELIGHTS

by

A. V. Raman

This is the second of the series of articles on the subject. The first one appeared in the October issue of *People's Health*, (Vol. V, No. 1).

—E.C. P. H.

SEEING that all was quiet in the Delhi front, I was almost abandoning my attempts in utter despair. While I was in that depressed state of mind, I was agreeably surprised to receive a letter dated April 12, 1948 from Dr. Jivraj Mehta. As this letter formed the very basis for the formation of the Environmental Hygiene Committee, I give hereunder the terms of the letter in full:

"My dear Mr. Raman—It has been proposed that a small committee should be set up to advise the Government of India on the problems of environmental hygiene. A planned programme of development in this field is essential in order to provide the basic conditions necessary for healthful living, without which the most elaborate health services made available to the people will fail to achieve the desired results. It will be the task of this committee to survey the whole field of environmental hygiene and to put up proposals for consideration by Governments in India in the formulation of their own programme. May I invite you to serve as a member of this committee and thus contribute your share to a task of supreme importance from the point of view of the health and welfare of the country?

If you agree to join the committee, a formal invitation and the terms of reference will be sent to you in due course. I shall be grateful for a very early reply to this letter.

—Jivraj N. Mehta".

By return post, I hastened to reply to Dr. Jivraj Mehta. As this letter dated 15th April, 1948 sets out the spirit in which I offered to place my services at the disposal of the Ministry of Health, Government of India, it would be relevant to give my reply in full, which runs as under:

"My dear Dr. Jivraj Mehta—I am in receipt of your letter dated 12th April, 1948 by Air Mail.

Certainly with pleasure, I place my services at the disposal of the Ministry of Health, Government of India.

I am sure that provincial administrations and the people alike would feel grateful to the Ministry of Health for appointing a committee to go into the question of environmental hygiene. In the absence of a lead from the Government of India, the chances are every provincial government would go forward in their own way leading nowhere.

I convey to you my personal thanks for your decision to have a committee constituted.

In view of the fact that the subject is new to the country and it has to be viewed from several standpoints, you will be good enough to make the terms of reference as wide as possible.

Kindly send me a formal invitation and the terms of reference in due course.

—A. V. Raman."

Even without waiting for my reply Dr. Jivraj Mehta was good enough to send

me the proposed terms of reference to the committee and asked me whether I had any comments or suggestions to make. I felt happy that the Government of India were really earnest to appoint a small committee to go into the problem of environmental sanitation. I applied my mind immediately to the proposed terms of reference and recast it incorporating therein the suggestions I had to make. I sent the redrafted terms of reference to Dr. Jivraj Mehta with my letter dated 18th April, 1948.

While acknowledging receipt of my letter and the terms of reference to the committee, Dr. Jivraj Mehta wrote to me again on 22nd April, 1948. It would be of interest to readers to peruse this letter, which runs as under:

"My dear Mr. Raman—Many thanks for your letter dated 18th April and the one preceding it as also for the suggestions made regarding the terms of reference to the committee. I much appreciate the promptness with which you have agreed to help in the work of the committee.

If I remember aright, you told me in Madras that so much material on the subject of the enquiry was already available for consideration by the committee and that the committee should take a relatively short time to complete its work. I do hope it would be possible for you and your colleagues to complete the work in good time before the Conference of the Health Ministers is convened, which is expected to be done in August next.

Based on the terms of reference, I would be glad if you can send me draft questionnaires to be sent to various types of organizations and individuals to cover all aspects of the enquiry.

—Jivraj Mehta."

Seeing that there was a ring of earnestness on the part of the Ministry of Health, Government of India, in having the problem of environmental sanitation being investigated into by a special committee, I was keen to be of such assistance as I was capable of. Immediately on receipt of the letter of Dr. Jivraj Mehta referred to above, I wrote to him on 25th April, 1948 as under:

"My dear Dr. Jivraj Mehta—I am in receipt of your letter dated 22nd April 1948 by Air Mail. I am obliged to you for your expression of appreciation of what little I have been able to do in the matter.

Yes, I did tell you that I had much material on the subject at my disposal and that the committee need not take long time to submit the report. I do not know the composition of the committee and the material which the other members might have gathered already in their individual personal capacity. Much depends upon the lead which the chairman of the committee would give to the members of the committee. Personally I do think that it would be quite possible to complete the work in good time before the conference of Health Ministers which you expect to convene in August next. This is again my personal view.

As regards the draft questionnaire which you want, I shall try my level best to send it to you in the course of a few days. I am already applying my mind to it. I did not anticipate that I would be called upon to send you a draft questionnaire. Had I known, I would have applied my mind to the subject earlier and kept the draft ready. However, I do hope that I would be able to send you the draft in the course of a few days.

—A. V. Raman."
(To be continued.)



Roofing: The roofing is of precast T beams with a weathering course of 3" brick jelly with two courses of flat tiles on it.

Doors and windows: For the doors and windows, timber frames have been totally eliminated, having due regard to the fact that timber is the most costly material required for housing. For one door, cement R. C. frame has been used and for others, wooden shutters have been fixed, to the wall itself, to wooden blocks built in the wall. In the case of windows, iron bars have been riveted and set in cement concrete sills. This window has the appearance of the traditional type, without the frame.

This unit consisting of two houses has cost Rs. 5,000/-. It is built departmentally and it is now felt that with the experience gained on the construction of this building, a number of improvements can be effected at the same time reducing cost by 3 to 4 hundreds.

A similar unit if built in brick masonry, in the traditional way, will cost Rs. 7,000/- as against Rs. 5,000/- which is the cost of the present building. Water supply and lighting are also provided for this house but this estimate does not include their cost.

requiring a lot of filling, brick masonry alone had to be provided. The foundations are taken to 3½' below ground level and the plinth is 2' above ground level.

Superstructure: The superstructure consists of cement hollow blocks 16" x 3" x 8" set in combination mortar consisting of one part of cement, one part of lime and 9 parts of river sand, all measured, in volumes only. At the top, a course of solid block has been provided, to receive T beams. Precast R. C. lintels and sunshades, have been provided.

(Continued from page 55)

ment to certain class of people who might otherwise place the cost of ammunition before the risk of rabies.

Enlist Cooperation of Army

With the departure of the British Army from Cantonments the stray dog population has increased and there are very few cantonments today which are free from these pests. In the writer's opinion, the cantonment authorities are not paying sufficient attention to this problem. They should introduce a stray dog shooting week

once every three months in every cantonment. We are greatly indebted to our Army for many boons and particularly to its Commander-in-Chief for the practical manner in which he has shown how our Army can serve the public not only during war but also for social uplift. In the destruction of *pariah* dogs, there is a field in which the Armed Forces can be of great service in helping the public to rid the country of pests which are of great potential danger to the health and welfare of the country.

FINGER-PRINTS IN MEDICAL DIAGNOSIS!

by

Dr. Trever I. Williams

Deputy Editor of the Scientific Journal "Endeavour"

RESearch carried out at New Scotland Yard, the centre of Britain's criminal investigation department, suggests that finger-prints, the patterns of which have long been recognised as unique for every human being, may in future have considerable value in diagnosing disease. Results obtained in this remarkable new branch of medicine have recently been described by Superintendent F. R. Cherrill, Chief of the Finger Print Branch, whose experiments have been carried out in collaboration with other medical experts.

Study of this completely new field of research was prompted by an all-too-common part of routine police work—the examination of dead bodies. Experience over many years led to the observation that, as a general rule, after death the left hand, no doubt because it is in life less hardened by use, shows more rapid signs of decomposition than the right. This suggested that careful examination of the left hand might disclose early evidence of the onset of diseases of certain types, and experiments have gone far towards confirming this supposition.

In making diagnoses by this new method the clues are not to be found in the complex patterns of the whorls which are used criminologically for purposes of identification. These patterns are formed even before birth and remain unchanged throughout life, and no two people—not even identical twins—have ever been found to possess precisely the same pattern. For diagnosis reliance is placed on quite different markings, creases which run across the ordinary whorls and appear, when finger-prints are taken by the ordinary method of inking, as short white lines.

Lines in Left Hand

These lines are not very sharp and not everybody possesses them in their finger-

prints; in fact, only about one person in 10 has them. They are quite distinct from lines which result from injuries such as cuts, exposure of the skin to irritants and so on, though the eye of an expert is needed to pick them out decisively. Unlike the whorls, these white lines are not permanent throughout life but when present vary in both number and size. They are rarely found except on the left hand, and then only on three of the fingers—the second, third and fourth finger. The areas in which they appear seem to be those served by one particular nerve branch.

The cause of these white lines is still obscure, but they seem to be connected with definite changes of the underlying layers of skin, and it is no doubt these changes, rather than the actual lines themselves, which are characteristic of certain diseases. Evidence of such changes may be obtained in other ways, for example, by examination of a section of the skin under a microscope.

Such examination may show that the mouths of the sweat glands, which run continuously along the fine whorls which make up the normal finger print, are abnormally distended. Examination of the tiny drops of sweat exuded by such glands by delicate chemical tests shows that it contains less salt than normal. Microscopic examination of a section of the skin may also show that some of the lower layers have atrophied. It can, therefore, be taken as proved that thin though they are, the various layers which make up the skin of the finger tips can undergo definite changes and these can be expected to cause corresponding changes in the surface which in turn will be reflected in the finger-print.

Diseases Revealed

Careful examination of the prints of epileptics reveals that they very frequently

show considerable numbers of the white lines in the third and fourth fingers of the left hand. When the finger-prints of a doctor who had suffered excessive exposure to radium were examined, clearly defined white lines were found in the prints of the fingers of the left hand and, oddly enough, these changes showed a considerable resemblance to those found in the prints of lepers.

In another case, finger-prints were taken of a girl suffering from Darier's disease—a form of dermatitis—at intervals over two years. The prints taken clearly revealed the deterioration in the skin during this time. Prints of the left hand of a victim of polio-myelitis also revealed distinct white lines, particularly on the third finger of the left hand. Prints of a sufferer from tuberculosis showed a degeneration of the ridges on which the sweat glands are located. It has also been discovered that fluorine poisoning, by its effect on the skin, produces definite changes in finger-prints.

The possibilities of this new research are tow-fold. On the one hand it can obvi-

ously be a useful addition to the many ways of making medical diagnoses, though only expert knowledge can interpret the results.

Diagnostic Value

The diagnostic value of so apparently insignificant a thing as a finger-print need cause no surprise for even more tenuous clues can prove of vital importance. For example, a chemist analysing a single drop of urine from a patient he has never seen can decisively diagnose a particular form of mental disease.

On the other hand, the research opens up fascinating new possibilities in the field of criminology. The day may come when examination of finger-prints collected at the scene of a crime may enable the police to be instructed that the man they want is suffering from a certain disease. It must, however, be understood that there is no expectation that finger-prints will provide a clue to the diagnosis of all disease; all that is expected is that they may prove a useful means of diagnosing a certain number of diseases.

(Continued from page 71)

Ayurvedic systems of medicine and even today modern medicine is prepared to accept all that is good and useful in the other systems.

Spirit of Service

More than ever, it is imperative to-day that we should practise our profession with a spirit of service. As mentioned by Colonel Waghray this morning, we should observe the highest ethical ideals in the practise of medicine.

Finally I would like to urge the need for a scientific outlook on disease which really means that we should gain knowledge by observation and experiment. This method of investigation has yielded a rich harvest of useful knowledge and should be further pursued. So far as the provision of adequate medical relief to the people is concerned, I feel that we hardly touched the fringe of the problem. Although some work has been done, much still remains to

do, and in this I seek the help and co-operation of the Indian Medical Association. I am certain that by the joint effort of the Association and the Government much can be achieved.

I see that you have a number of interesting papers in the Scientific Session. I am sure they would be found to be most interesting and instructive. I wish your Session the very best of success in its deliberations.

With these words I have very great pleasure in declaring the Scientific Session of the Conference open.

References:

1. Fifty years of Medicine, The British Medical Journal, 7th January 1950, pp 61-63.
2. Fifty years of Progress as shown by Vital Statistics by Percy Stocks, The British Medical Journal, 7th January 1950, pp 54-57.
3. Bhole Committee Report, 1944.

FIGHT AGAINST LEPROSY

"CALL IT HAMSENS DISEASE"

By

Bernard Minns

A tattered form of a man lies listlessly in a deep pit. His face is covered with sores; a withered arm hangs loosely at his side. He stirs occasionally to collect the scraps of food lowered to him at the end of a rope.

Resigned to his fate, he may squat there for months, just waiting to die. When he passes away the hole is filled up and the villagers breathe more freely—another leper has been removed.

This sad spectacle can be seen today in the tropics where ignorance still compels sick men to languish in pits like animals—for no real or necessary reason. In other places, lepers are forced to leave their villages and wander off alone to live in the jungle. Again, it is far no real or necessary reason.

In most of the world there is a haunting fear of the leper and his contamination. Instead of accepting leprosy as an illness, many superstitious peoples regard it as a punishment for sin.

Since the Middle Ages the word leper has called up a terrifying picture of infectious disease and slow, agonising death. The illness is actually less terrifying than its name, although the strange appearance of the leper with thickened features and face and hands covered with nodules is alarming to the uninformed.

Because the term leprosy has become so repelling, doctors are demanding that the name be universally changed to Hansen's Disease. That is the name of the man who first exploded the myths and prejudice woven around the disease of leprosy.

It is 92 years since he discovered that leprosy was caused by a germ similar to that of tuberculosis. Yet, many of the ancient notions about leprosy still persist in many countries.

Caused by Germ

Some people believe that the touch of the leper is infectious, and that death may finally result from it. This is one of the popular old wives' tales which modern medical research has disproved. Medical investigations have shown that leprosy is normally contracted through wearing the clothes of the leper or by sleeping with him. Social workers—taking simple precautions—have cared for lepers for many years without becoming infected. A number of medical specialists have stated that it is less dangerous to be among lepers than to be in contact with those suffering from active tuberculosis.

Nobody knows exactly how many lepers there are in the world since cases are not reported from the thousands of villages where it is most widespread. One American authority puts the figures as high as 15 million. Leprosy is prevalent in most tropical and semitropical countries, and is considered to be worst in India and China.

In the leper-ridden countries, tens of millions live in utter squalor. Underfed and overcrowded in dirty hovels, they cannot easily escape infectious disease. When a man or woman has contracted leprosy there is often no means of receiving treatment. Lacking the simplest social services, these countries cannot provide the number of clinics and hospitals needed to fight and conquer this pernicious disease.

Yet, wherever patients can be treated by modern medicine, leprosy is being steadily reduced. With the appearance of the new sulpha drugs, the leper as a symbol of the lonely outcast is disappearing.

For with sulphone, newer cases of leprosy can now be arrested and cured after 12 months' treatment at a leper colony. In one case, a 24 year-old-girl was admitted

to a hospital. Her face and hands were covered with nodules. Yet, after being treated with sulphone for six months, her skin was almost healed.

Courageous Struggle

Doctors first using it are surprised by the results of sulphone. Disfigured faces return to normal, ragged ulcers heal and patient with early blindness see again. Most of this medical work is being carried out in leper-ridden countries by private welfare organisations like the British Mission to Lepers which operates in 20 countries. Through its homes and hospitals it cares for 6,900 lepers and 775 healthy children. It renders aid to homes and institutes that look after another 7,000 inmates and 650 normal children.

Medical figures published by the organisation tell the story of a courageous struggle to conquer leprosy. After treating 14,138 inmates for at least three months, disease was arrested in 1,672 cases, deformity was cured in 885 cases and 937 were finally discharged. In human terms, this means that 2,600 men and women were saved from becoming blind and deformed; perhaps from being finally compelled to choose the pit or the jungle to wait for death.

For the rest, 3,850 had greatly improved and 3,846 less so. At the same stations,

of 12,395 outpatients, the cases of 518 had been arrested and 3,108 showed improvement. The battle has not been won; for all leprosy sufferers cannot yet be cured. But less serious cases are able to leave the settlement after one or two years of treatment.

In the old days, almost all lepers were forced to take leave of their families for ever and go alone into the wilderness. To-day, many of them can expect to return to their families—freed from disease.

There is normally a good deal of mental suffering among lepers in homes and colonies. To divert their minds from the disease, doctors encourage occupational therapy. This also helps to train inmates for jobs outside. Treatment often entails much financial sacrifice, so in some cases small allowances are provided for inmates with dependents.

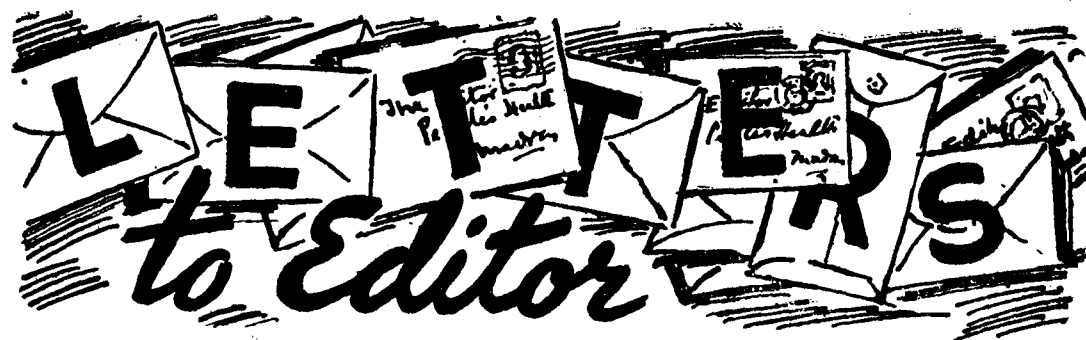
These are model leper colonies and the inmates receive the best treatment known to medical science. Today they touch the fringe of the vast problem of leprosy in the under-developed countries, but they are preparing for tomorrow when higher social services and wider medical attention will make leprosy a disease of the past.

—New Pakistan Medical Journal

The sulphone treatment has been used in India on a very limited scale, mainly because of the high cost of the drug. The treatment has to be given for long periods before satisfactory clinical response can be seen in persons treated.

The Leprosy Advisory Committee considered a note submitted by Dr. Pandit in which a plea was made for "the treatment of leprosy patients in their own homes as an approach to the problem of control of leprosy in endemic areas." The Leprosy Advisory Committee have accepted in general the principles contained in the note, and have suggested that it should be brought to the notice of several State Governments in the country where leprosy is a major public health problem.

(Indian Research Fund Assn.—Annual Report, 1949)



RECIPES FOR HEALTH

Sri T. R. Venkatarama Sastri writes:

Will you find space in your valuable journal for some remarks I am tempted to make on seeing the recipes for health by Dr. Lakshmiipathi, based on our Acharyams and by Mr. Tandon based on his personal experience?

Dr. Lakshmapati says that a daily oil bath is prescribed. I was not aware of it, though I took daily oil bath for five years (1912-1916) but I was too lazy to continue it. I think I profited by it. My skin becomes quickly dry and needs oiling. But many thrive and maintain good health without oil bath but they seem to get what they require from their food and not to require oiling.

Early rising is another prescription. I could never rise early without spoiling the whole of the day in drowsiness. I am aware that sleep during sunrise is condemned in our books. I am a confirmed *Abhyudita*, I confess without shame.

No water drinking without thirst, says he. I wonder what an Allopath says. Even if the natural warning of thirst was not much in evidence, I follow the doctor's prescription to drink as much water as possible.

Before I add my comment, I will notice the recipe of Mr. Tandon. He prescribes omission of salt, sugar, honey and milk. If we are to judge from his health, he has

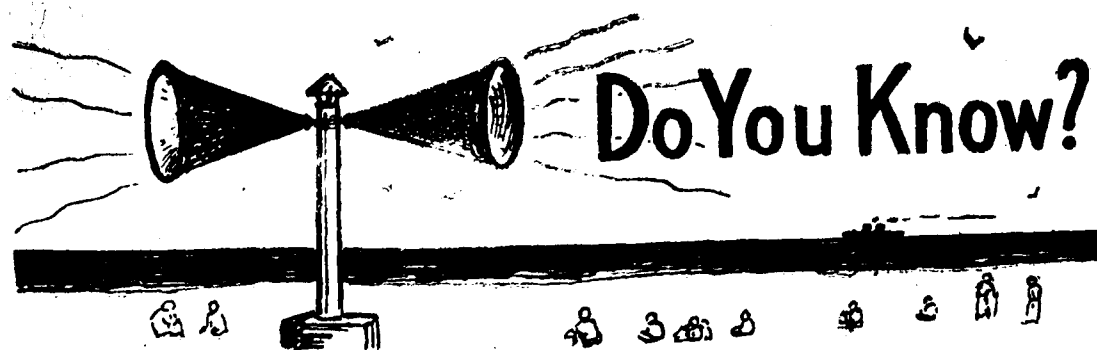
got on well without them. One might infer from it that they are unnecessary. But is he right in inferring that they are harmful to man? Milk is prescribed as permissible even in ceremonial fasting.

While principles are largely built on personal experience, one ought not to forget that one's meat might be another's poison and there is such a thing as allergy. Principles drawn from experience ought to be held flexibly and ought not to be erected into inflexible rules for all cases. People should study themselves and adapt these rules so as to suit their own experience. The natural tendency to extend one man's experience to all cases must be resisted. Institutions and those in charge of them too often apply these prescriptions as suitable for all. Madras, 15th Nov. 50.

SPARKS FROM THE ANVIL

Sir T. Vijayaraghava Acharya, K.B.E., writes:

I do not know who is the 'Sledgehammer' that writes "Sparks from the Anvil" in the October number of *People's Health*. Whoever he is, I congratulate him on his sparkling wit and intelligence. I could not help laughing aloud when I was reading some of his sly turns of phrase. The servants must have thought I was mad. Madras, 11th Nov. 50.



Sick Bed Manners

When a patient is convalescent, the wrong type of visitors can do a lot of harm, writes *Woman's Magazine*.

So when your friends are ill, and you want them to get better quickly, don't go to see them too often, don't take all your family with you, don't take food or fruit they may not be able to eat, don't talk too much and don't stay too long. Also try not to talk about their illness and never talk about other people's or announce the death of anyone you or they know.

Damp-bed Dangerous.

Q.—Why is it dangerous to sleep in a damp bed?

A.—Although water is not a good conductor of heat, it will take up a certain amount of heat and by its means change from the liquid into the gaseous state; that is, it will go off as vapour.

When we sleep in a damp bed, then, the water in the sheets or blankets rapidly takes a large quantity of heat from our bodies—far more than dry and as the vapour escapes it carries our heat away. This means that the temperature of our bodies is lowered because heat is taken from them more quickly than we can make it up by our burning. But if the temperature of the body and of the blood is lowered, its power of resistance to all sorts of microbes, such as those which cause pneumonia or inflammation of the lungs, and those which cause rheumatic fever, is also lowered to some extent.

And so we are very liable to get any of these diseases, or influenza, or bronchitis, or a common cold, or some others. If we think that the sheets on a bed are damp,

we should take them away and sleep in the blankets. It is not so comfortable, but is much better than getting pneumonia.

—Children's Encyclopedia.

Stainless Steel

Q.—What makes stainless steel stainless?

A.—The original stainless steel, patented by the late Harry Brearley of Sheffield in 1916 and used for cutlery and other purposes, contains between 9 and 16 per cent of chromium. Ordinary steel rusts because impurities in the iron, in conjunction with air and water, provide the conditions which causes a minute flow of electric current and the combination of iron with hydrogen and oxygen. The ferrous hydroxide thus formed easily flakes away and the rusting goes on. But when there is chromium in the iron, the chemical process is different. Oxygen is taken from the air to form a very thin but very tough coating of a mixture of oxides of chromium and of iron, which is invisible and transparent. It prevents corrosion in the same way as would a coating of paint, with the difference that if it is broken it forms again and seals the gap.

—Rushworth Fogg.

Removal of Ink Stain

Q.—Can you remove ink from carpets?

A.—Soak up the ink with a piece of blotting paper, then pour milk on to the stain and rub with a clean flannel. Repeat this until the stain disappears. This is also useful for woollen table-cloths when you have the misfortune to upset the inkbottle.

Sunlight and Health

Q.—Why is sunlight essential to health?

A.—Direct sunlight is very injurious to all forms of bacterial life; that is why

sunlight and fresh air are essential in a sick-room. It is a great mistake to let down your blinds on a sunny day—it may save the colour of your carpet, but it means unhealthy rooms.

Arm Swinging when Walking

Q.—Why do we swing our arms when we are walking?

A.—Nobody seems to know for certain, but it is more than likely that we do it to balance the body. Soldiers, when marching, find it easier to walk in step together than to shuffle along anyhow. Probably there is the same reason underlying the two instances. By keeping time with various portions of the body the forward movement is assisted. But as we once walked on all fours, it appears to be an inherited habit.

Headaches and Thunderstorms

Q.—Why do some people get headaches before a thunderstorm?

A.—The reason is not known; but it is probably due to electric disturbances in the body caused by the electric condition of the atmosphere.

Before the actual outbreak of a thunderstorm, there are very heavy electric charges ready to be discharged between the clouds and the Earth and these naturally affect the body, and perhaps particularly the brain and nerves. Perhaps the effect is indirect, and not so much electrical as chemical. We know that in thundery weather milk turns more rapidly sour, and likewise there may be unfavourable changes in the chemistry of the body.

—Children's Encyclopedia.

Astrology and Astronomy—Distinction

Q.—Do you know the difference between astrology and astronomy?

A.—Astrology and astronomy were originally identical, but whereas astronomy remains a science confined to the study of the heavens and the movements of celestial bodies, astrology has proceeded further,

and claims that the planets influence human life and mundane affairs. It is the science of interpreting these influences from astronomical data. Though much derision has been cast upon astrology, the fact remains that astrologers have been and still are able to predict events, months and even years beforehand. Testimony of this is to be found in the fulfilment of innumerable prophecies regarding individuals, countries, nations, and so on, which have appeared in the *'British Journal of Astrology'*, *'Rephael's Almanac'* and the world-famous *'Foulsham's Original Old Moore's Almanack.'*

Multi-purpose food

Multi-purpose Food which is manufactured by a Corporation called "Meals for Millions" (U.S.A.) consists of 86 per cent soya-bean grits and various dehydrated vegetables. A meal weighing 2 ozs. costs three cents or roughly one anna and six pies. 2 ozs. (one serving) of the food, supply one-third of an adult's requirements as regards calcium, iron, protein and vitamins, A,B-1, B-2 and D. It is declared to be equal in nutritional value to an ordinary repast of beef, milk, green peas and potatoes.

This food could be used as a meal after cooking one part of the food with three or four parts of water. The cooked food is of a consistency somewhat like "kanji" though slightly fibrous.

The Weight of Brain

The average brain weight for European adult males is 1,375 grams; for females, 1,235. The brain of Turgenev, the Russian novelist, weighed 2,012 grams and was exceeded by only two others, one of whom was an imbecile. A common laborer had a brain weighing, 1,925 grams, while Gambetta's registered only 1,294 grams. The largest woman's brain recorded is 1,742; she was insane and died of consumption. Many others with big brains were insane. There is no evidence that size of brain (or of head) is necessarily connected with actual or potential intelligence.

—George A. Dorsey.



*Wit's an unruly engine, wildly striking,
Sometimes a friend, sometimes the engineer.*
—George Herbert.

Humour and Wit—A Distinction

Humour is akin to agnosticism, which is only the negative side of mysticism. But pure wit is akin to Puritanism: to the perfect and painful consciousness of the final fact in the universe. Very briefly, the man who sees the consistency in things is a wit—and a Calvinist. The man who sees the inconsistency in things is a humorist—and a Catholic.

—G. K. Chesterton.

Something Stupid!

Q.—“Did you see any one about this pain in the leg?”

A.—“Yes, doctor”. “I consulted a native physician next door.”

Q.—“He must have asked you to do some stupid thing eh.”

A.—“Yes doctor, he asked me to go and see you.”

Value of Life

Be glad of life because it gives you the chance to love, to work, to play, and to look up at the stars.

—Henry Van Dyke.

ObeY Instructions

The doctor was pleased with patient. “You look much better today.”

“Yes, I obeyed the instructions on the bottle”.

“What instructions?”

“Keep the bottle tightly corked.”

No Coalition

A man went to see his doctor with a complaint that the sleeping tablets he had prescribed did not cure his insomnia.

“Can’t I have some of that twilight sleep they talk about?” he asked.

The doctor snorted: “Twilight sleep! Why, that’s only for labour.”

The patient came back in a disgusted tone: “Isn’t there anything for us Tories?”

Well Said; but.....

Subdue the angry by friendliness; overcome evil with good; conquer those that are greedy by liberality, and the liar with the speech of truth.

—Dhammapada.

More There

“We doctors,” said the pompous surgeon at a dinner party, “have, I am afraid, many enemies in this world.”

“Oh, but far more in the next,” answered the girl on his left.

Experimenting as Usual

Q.—Will this operation give me a cure, doctor?

A.—That is exactly what we want to find out.

Oh! These Doctors

“I hear you have been in hospital, Abe.”

“Yes, the doctors have taken my appendix.”

“These doctors will take any thing. It’s a great pity you didn’t have it in your wife’s name.”

Few Love it!

Wit is so shining a quality that everybody admires it; most people aim at it, all people fear it, and few love it unless in themselves.

—Chesterfield.

Experience Counts

Q.—“Are you an experienced doctor?”

A.—“Yes, I have been practising for the last 20 years.”

Q.—“You are still practising! Let me go to some one who is perfect.”

Relative Value

The relative value of health and wealth always depends on which one you have lost.

Essential in Education

The essential thing in children’s education is to set their faces in the right direction—to help them to value what is right and hate what is wrong, to stimulate them to form industrious habits till their character is formed.

—E. H. B.

Universal Truth

The whole history of civilisation is strewn with creeds and institutions which were invaluable at first, and deadly afterwards.

—Bagehot.

Always Good!

Sunshine is delicious; rain is refreshing; wind braces us up; snow is exhilarating; there is really no such thing as bad weather—only different kinds of good weather.

Essentials of Life

The bread of life is love,
The water of life is faith,
The salt of life is work,
The breath of life is prayer.

How to Strive on?

With malice towards none; with charity for all; with firmness in the right as God gives us to see the right—let us strive on to finish the work we are in.

—Abraham Lincoln.

Government Aid

A sick mother with a baby is told by the physician that she has tuberculosis and that she must seek a higher altitude. Lacking means, she applies to the Government and is told that there is not a dollar to save the mother or child from death. At the same time, a farmer observes that one of his hogs has cholera symptoms. He sends a telegram collect to the government. An Inspector comes the next day, treats the hog with serum, and cures it.

Moral: Be a hog!

A Vigorous Creek

Prospective Buyer: Doesn’t this stream sometimes overflow the valley?

Realtor: Well, sir, I will say it’s not one of those sickly creeks that’s always confined to its bed.

Something to That

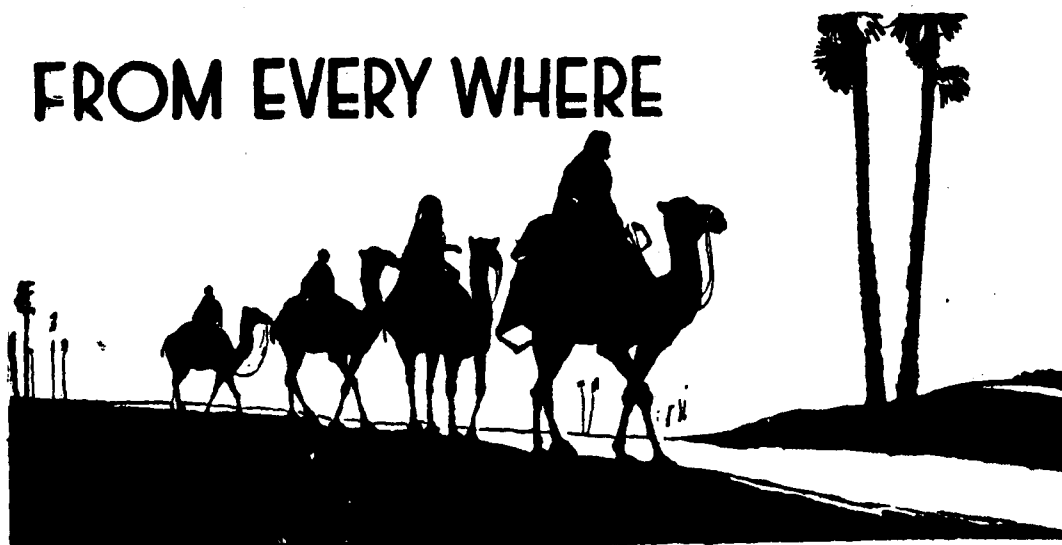
“To what do you attribute your remarkable health?”

“Well”, replied the old farmer, “I reckon I got a good start on most people by being born before germs were discovered, thereby having less to worry about.”

Not pleasant, Anyway

There was a faith healer of Deal
Who said, “Although pain isn’t real,
If I sit on a pin
And it punctures my skin,
I dislike what I fancy I feel.”

FROM EVERY WHERE



WHAT DO THEY SAY ABOUT IT?

Readers can contribute to this section. They are requested to send extracts of current literature which, in their view, would interest the readers.

—Ed., P.H.

Fermentation for Garbage Disposal. R. A. Williams. Eng. News-Record (Apr. 13, 1950). Refuse Disposal by the "Verdier" process of fermentation will become an actuality for Miami, Fla., next year when a new refuse-treatment plant will be completed in that city. The process is said to produce no odors and its end results is an immediately usable agricultural fertilizer. Rated capacity of the plant is 900 tons of refuse per day. Revenue received from the sale of the fertilizer will be used for the operation of the plant. The Verdier process is identified as an "aerobic oxidation process of fermentation", meaning that the bacteria live in the presence of oxygen and create a low-grade commercial fertilizer as an end product. The process is odourless. It should not be confused with the anaerobic process used for sewage sludge disposal, which produces odorous gases. The aerobic process requires only 18 to 24 days for complete treatment, involving a slow form of combustion, giving off steam vapor and carbon dioxide; both being odorless. Fermentation of the rubbish in the concrete storage cells reach a temperature of 160° to 180° F. This destroys all pathogenic

organisms, producing an aseptic end product ready for agricultural usage. The fertilizer also is weedless, free from seeds. Information on how the disposal plant operates and the handling of the refuse are included.

—W. W. M.

How to Control Insects in Refuse Dumps. Elton J. Hansens. Public Works, (Feb. 1950). "Dumps are normally inhabited by—crickets, cockroaches, flies and mosquitoes." Crickets and cockroaches usually do not emerge unless forced out by population increase or heat and smoke, at which time they may migrate and cause a nuisance. Wrapping garbage in paper and burning of dumps are ineffective control measures. The house mosquito, the blue-bottle and green-bottle blow flies breed in dumps; the house fly to a lesser extent although all the flies are considered carriers of disease germs. A 5-percent emulsion sprayed on surrounding weeds and on the active face of the dump twice a week will give effective fly control. Dusts, although not commonly

From Every Where

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used, "are easier to apply, require less expensive equipment, and will sift through the refuse better than sprays." Mosquitoes are controlled by the same methods, provided water surfaces are covered. A 2-percent chlordane emulsion or dust applied monthly gives very good cricket and roach control. Local personnel with a little training, or a professional exterminator, can effect good insect control in refuse dumps.

—J. A. SALVATO, Jr.

Sanitary Landfill Reclaims Waste Land. The American City (March 1950). Early in 1948, Danville, Va. abandoned a badly loaded incinerator and began disposing of refuse by the sanitary-land fill method. About 100 tons of refuse are collected daily. The refuse is dumped into a particular ravine selected, where bulldozer pushes the refuse into a prepared area. Once the refuse is loaded into the ravine, the bulldozer compacts the material by steady travel over the area. A 18 inch dirt covering is then placed over the garbage. When finished, there is no evidence that garbage was dumped on this spot. After the layer of dirt is levelled, it can be sown with grass seed, landscaped—the final results of this method of garbage disposal.

—W. W. M.

Sewage Chlorination, Emergency B.O.D. Reduction and Odor Control. A. J. Gully. Proc. of the Twelfth Annual Short Courses for Water and Sew. Plant Superintendents and Operators (1949). Chlorination is probably the most versatile tool used in the treatment of sewage. Sewage treatment may be divided into three processes: primary process, secondary process, and disinfection. Chlorine is used on all three processes. From the standpoint of chlorination as aids in the primary and secondary processes, we are primarily interested in emergency B.O.D. and odor control. Control of odor may be accomplished in two ways: prevention of the formation of H_2S or the

destruction of H_2S after it has formed. Destruction requires ten times as much chlorine as prevention, since chlorine acts upon fresh sewage, killing or inhibiting the growth of bacteria which cause the H_2S formation for which only 25 percent of chlorine is necessary, while for the destruction of H_2S 50 to 75 percent chlorine is necessary.

Chlorination of the sewage reduces the B.O.D. load or pollution contributed to the receiving stream. Chlorine reacts with organic matters in the sewage forming chloro compounds which are unfit for bacteria food. These compounds appear to be somewhat toxic to bacteria and do not exert an oxygen demand. They may be very slowly made available as bacteria food but the length of time required is such that the stream has ample time for re-aeration before oxygen demand is exerted upon it by the chloro compounds.

For nearly all the chlorination uses, liquid chlorine is the cheapest form of chlorine produced. Hypochlorite of lime, a powder containing about 30 percent or high test hypo which contains 65 percent chlorine is sometimes used. The more expensive equipment required for liquid chlorine application may not be feasible for emergency dosage in small plants.

—W. W. M.

Treatment of Compressed Yeast Wastes. W. Rudolfs & E. H. Trubnick. Ind. and Eng. Chemistry (April 1950). "Compressed yeast wastes have been treated in a compact plant comprising anaerobic digestion and trickling filters, with resultant B.O.D. reductions of 80 to 98 percent, by means of careful control of the loading and other factors, including, in the case of the digesters, acclimatization of the seed sludge, maintenance of proper proportions of seed and substrate, and provisions for adequate contact between the seed and substrate; and in the case of the trickling filters, maintenance of proper concentration and a neutral pH value in the filter influent. Any desired

degree of treatment can be attained in either of the units by control of the applied loading, so that loading is a useful yardstick in evaluating plant performance, and a treatment plant can be designed on the basis of B.O.D. reduction requirements. Maximum loadings attained with either unit compare with results obtained in sewage treatment under similar conditions."

—W. W. M.

Designing and Operating Septic Tanks for Homes. Eng. News Record (April, 1950). In these first major findings and conclusions arisen out of a comprehensive investigation into all phases of septic tank practice the design factors discussed are:

Sub-urban residence water consumption; functions of septic tanks; criteria for successful tank performance; average per capita sludge accumulation; type of tank outlet; effect of sludge and yeast on digestion; freezing aspects and tank corrosion. These and studies currently underway—the first of their kind and scope—are sponsored jointly by the Housing and Home Finance Agency and the U.S. Public Health Service, and are conducted by the service's Environmental Health Centre in Cincinnati. Further investigations may modify first-step findings, principally because effect of soil-absorbing characteristics for septic-tank effluents has not been explored. Until such factors are evaluated, judgment of tank performance—on suspended—solids reductions alone—may be of limited value.

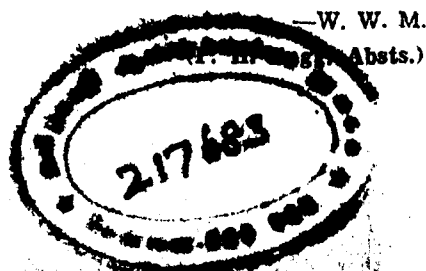
—S. R. WEIBEL.

Advancing Frontiers in Insect Vector Control. J. M. Andrew. Amer. Jour. of Public Health, (April 1950). Insect control designed to prevent human disease has been carried on for only half a century, but this short time is characterized by an almost incredible range of technical, administrative, and organizational developments. Early effective control principles and practices consisted of drainage

and filling for the destruction of mosquito breeding places; the use of larvivoracious fish; larviciding with petroleum oils; killing or repelling insects with smudges, fumigants, and heat; and excluding them from buildings and sleeping areas by means of wire or cloth screening. Paris green reduced the costs of anopheline larviciding and made possible the use of highly mechanized as well as manual methods of application. Pyrethrum, a traditional component of insect-killing powders, was elevated to new heights of effectiveness by extracting its insecticidal principles and using them in space sprays and aerosols.

From the standpoint of insect control technology, World War II was huge success! The wartime pressure on insect toxicologists to find a better insecticide liberated DDT from the oblivion of potato beetle killing, to fulfill its glorious destiny as a mass executioner of lice, fleas, mosquito and the various flies which spread disease. Army operations especially in the tropics, provided unparalleled opportunities to use this compound against malaria, epidemic typhus, plague, dysentery, dengue, filariasis and sand-fly fever. In spite of its unprecedented successes, DDT is by no means a flawless insecticide. It now appears unable to uphold its early reputation as a house fly killer because of the extraordinary resistance of survivor strains which have developed in time wherever DDT has been used. Insecticide manufacturers have been driven by frenzied efforts to materialize products more effective than DDT against insects, less toxic to man and his domestic animals, with longer lasting qualities and at lower cost. Chlordane, lindane, chlorinated camphene, Compound 497, and various analogues and variants of DDT all have made or are making their bids for insecticidal supremacy.

—W. W. M.



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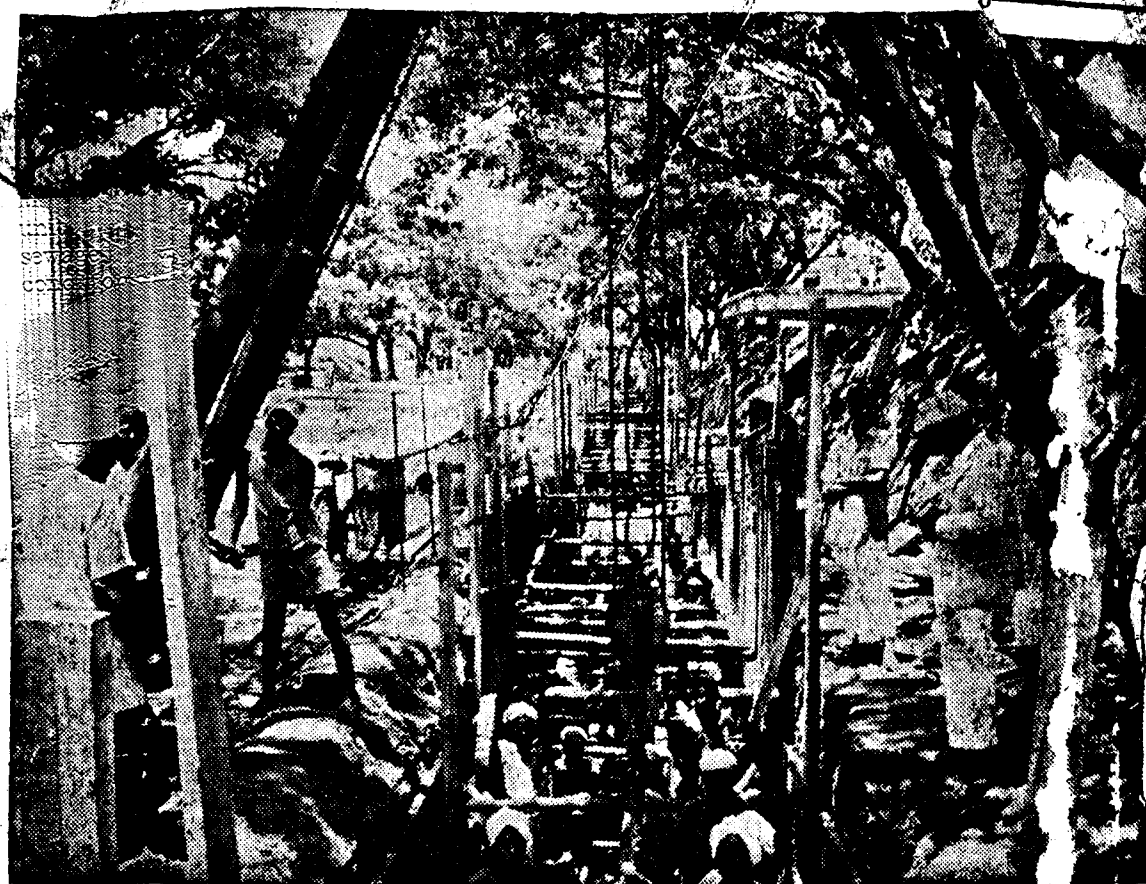
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