

Health and welfare - 28

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For God
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(DEVOTED TO ECONOMIC AND WELFARE PROBLEMS)

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HEALTH.**DANGERS OF THE FASTING FAD.**

BY DR. JOHN HARVEY KELLOGG.

Is fasting a reliable or foolish fad? The scientific facts presented in this article by Dr. John Harvey Kellogg prove that fasting is a dangerous method; especially in the hands of fake "healers" most of whom have no medical or scientific background. Dr. Kellogg's conclusions are based upon fifty years of experience as Medical Director of one of the largest scientific institutions in the world—where several thousand cases annually receive medical attention and where medical authorities and therapeutic methods are investigated in research laboratories and tested by clinical observation.

So many articles have appeared in the public prints from various sources proclaiming the virtues of fasting, it is important that the other side of the picture should be presented. The advocates of fasting recommend it not only as a means of reducing surplus weight but as a means of body purification, of rejuvenation, prolongation of life, and the most successful means of combating many forms of chronic disease.

Many of the articles published in recent years on the subject of fasting have been decidedly sensational and, for the most part, misleading. In general, they have been written by members of the laity who possess no knowledge of the physiologic facts connected with abstinence.

Recently, great numbers of women have undertaken the task of fasting for the purpose of reducing in weight, giving them years become a fashionable fad.

Women who consider themselves too plump often do themselves very great injury by prolonged fasts, which not only damage the body in the ways which have been mentioned but lower resistance and thus increase the tendency to contract acute and chronic infections. Between the ages of twenty and forty reduction of weight to a point considerably below normal is particularly dangerous because of the risk incurred of contracting tuberculosis.

When weight reduction is really necessary the advice of a competent physician should be sought. Care should be taken to avoid rapid weight reduction and the dietary should be managed in a way which will not rob the body of necessary salts, vitamins, roughage and other nutrient elements, the regular daily supply of which is as essential for good health as are the daily intakes of air and water.

A person past forty or fifty years of age when overfat should reduce the weight as nearly as possible to the normal limit, for the statistics of insurance companies show that overweight after fifty lessens life expectancy. An underweight of ten per cent. is more favourable than even a slight overweight in persons past fifty. In young persons, however, an overweight of five or ten per cent. need give no concern.

While there is little danger that fasting will ever become popular owing to the

self-denial and self-control which it occasions—there is grave danger that some people may do themselves irreparable harm by depriving the body of valuable food elements at a time when they are most needed or by imposing too heavy burdens upon the bodily organs.

Voluntary fasting probably originated as a religious rite. It was prescribed as a penance, or was undertaken for the purpose of encouraging a state of spiritual elevation.

The idea that fasting is highly beneficial as a means of freeing the body of poisons has little scientific foundation. The worst poisons from which the body suffers are those resulting from putrefaction in the intestines. If the intestines can be thoroughly freed from putrefying substances and kept free, the body quickly clears itself from other poisons through the cleansing power of the blood, which washes every tissue and is itself purified through the action of the kidneys, lungs and depurating organs.

Prolonged fasting necessarily leads to constipation, unless some preventive method is adopted. Washing out the colon by use of the enema can do nothing more than remove materials which have been deposited in it from the small intestine; and, in fasting, the small intestine as well as the stomach is in a state of complete inactivity. Bile, mucus and other secretions, as well as poisonous excretions from the blood, are accumulating from day

to day, then, toward to evacuation, because no food is taken into the stomach. Food is the natural laxative. Under its influences, the stomach and the entire alimentary canal are stimulated to rhythmic activity, through which the food is mixed with the digestive juices, spread out over the mouths of the absorbents, and when reduced to a small remnant of indigestible and unusable residues, is dumped into the colon and finally dismissed from the body. When food is not taken, these rhythmic movements disappear, and no indigestible and non-absorbable material is passed along into the colon. Consequently, the colon remains inactive. From these facts it is evident that absolute fasting except when made necessary by some intestinal trouble or other equally imperative exigency, is rarely likely to prove beneficial.

So long as life continues, the fasting animal body continues to consume energy although at a reduced rate. The energy output of the body during fasting is three-fifths to three-fourths the ordinary output. In the absence of the usual source of energy food, the body feeds upon itself and is consumed at the rate of about one-eighth of its weight each day. The stores of fat are first drawn upon, then the muscles, glands and other structures are consumed to keep the fires of the body burning. The heart muscles and some other organs may lose as much as one-half their weight. This process of destruction

may be carried so far that the body cannot recuperate itself. According to the London *Lancet*, the professional faster, Succi, although only thirty-eight years of age, had the appearance of a very aged person; not only his face but his entire body was covered with deep wrinkles.

Acidosis, with symptoms of nausea, headache and lassitude, usually makes its appearance by the second or third day of the fast. This is due to the fact that the glycogen or carbohydrate of the body has been consumed, so that the fats and proteins of the body are not well burned and poisonous acid products resulting, are beginning to accumulate in the tissues. Recent metabolism studies have shown that by repeated short fasts the body may be trained to utilize its own tissues better, so that acidosis is postponed and is less pronounced. By this method the patient fasts first for one or two days, then eats sparingly for two or three days, then fasts again for two or three days. After another interval of low feeding a still longer fast of four or five days may be taken without developing unpleasant symptoms. It seems probable that the body not only learns by repeated fasts to make better use of its own tissues, but also improves in its ability to store and utilize carbohydrate in the form of glycogen. This method is resorted to for clearing the body of toxins or to temporarily reduce the work of the liver and kidneys to a minimum.

surplus fat and of accumulated wastes, it at the same time involves a notable wasting of the muscles, including the heart, the shrinking of the liver, kidneys and other tissues, a marked reduction of the blood volume and destruction of the blood corpuscles and a great loss of the essential salts, lime, iron and other materials of which the bones, brain and blood are robbed.

The body contains, almost wholly in the blood, about forty-five grains of iron. In fasting, more than one fifth of a grain of iron is lost daily. The life of the blood cells is about six weeks. When the cell dies it gives up its iron, part of which is eliminated in the bile by the liver and becomes a waste product. Experiments upon animals have shown that the body loses forty per cent. of its store of iron within three weeks when the daily intake of iron is wholly suspended. In a fast of four or five weeks, the body would lose more than half of its blood iron, and must necessarily likewise lose a proportionate amount of its oxygen-carrying capacity. In like manner the body, when fasting, daily loses a certain amount of lime, which in the course of several weeks amounts to a quantity sufficient to rob the bones and the blood of an element essential to their integrity.

The body is continually losing vitamins, which are essential for the promotion of the processes of repair and the maintenance of the various vital functions. The

daily supply of vitamins is as necessary as the daily supply of air and water. Vitamins cannot be produced by the animal body. They are an exclusive product of plant life. The liver hoards a small store of vitamins sufficient to serve in emergency, but the supply is not sufficient to last indefinitely and, as shown by the experiences of sailors who contract scurvy and those who become the victims of beri-beri through living upon polished rice, the vitamin store of the liver soon becomes exhausted and the body then falls into serious disorder. Fasting deprives the body of vitamins and thus involves the risk of serious injury for which no adequate compensation is offered. The total loss of all vitamins must certainly involve greater damage than the loss of one only, yet the absence of but one for even a short period produces noticeable injury.

From the foregoing consideration it must be apparent to the candid reader that prolonged fasting is by no means a harmless procedure, and that it is indeed a method fraught with danger and liable to produce irreparable injury. The writer recalls several persons in whom through long fasting the heart muscle was so weakened from the wasting to which it was subjected that many months were required for even partial restoration.

All these dangers may be avoided by scientific fasting, which consists in a word, of the elimination from the diet of the harmful elements, fat and protein, while not depriving the body of the precious resources of energy in carbohydrates. ~~of 10,711 persons and of these 7,211 or 67.3 per cent. were found to be infected.~~ es, with which it must be constantly supplied in order that its functions may be maintained.

It is a discredit to civilized man that in his daily habits, especially in his eating habits, he imposes upon his vital organs tasks far greater in magnitude than those involved in the natural functioning of the body under normal conditions. The body under normal conditions, some of which are superfluous burdens, some of which are the intake of tea, coffee, condiments and other poisons, are, of course, temporarily suspended during a fast, and greatly to the advantages of the kidneys. But fasting is not necessary to secure these benefits. A permanent reform of dietetic habits is much more rational.

The greatest advantage ordinarily gained by a fast is restriction of the amount of protein taken into the body. Essentially the same advantage may be obtained by adopting a dietary which contains little or no protein for some days. The elimination of fats is also sometimes beneficial. There is rarely any advantage in withholding carbohydrates, that is, sugar and starch. Carbohydrates are antitoxic and render valuable service in destroying the poison-forming bacteria.

A one-day fast now and then is found by many individuals highly beneficial in recovering lost appetite, relieving headache, dullness, depression and various other unpleasant symptoms. The fasting should be accompanied by copious water drinking. Four to six quarts is none too

much. A good plan is to take a glassful of water every hour. A little fruit juice may be added to the water to give it flavor. An ounce of agar or bran should be taken during the day and two to four ounces of paraffin oil. It is also well to take, morning and night, an enema consisting of two or three pints of water at eighty to ninety degrees.

A still better plan and one which will yield excellent results is to live on greens, bran or agar and fruit for a week. Fresh for canned tomatoes should be used liberally with fruit juices of all sorts and melons. Twice a day a liberal serving of greens, four to eight ounces, should be eaten with large serving of lettuce and celery. One to two ounces of bran should be taken during the day or an ounce of agar, with paraffin oil each morning and night.—*Good Health.*

HEALTH.

A Lecture delivered to the Members of the Darjeeling Planters' Association on the Incidence, Effects and Prevention of Hookworm infection, as they concern the Planter.

In opening this lecture I wish to thank the managers of those gardens in which work has been done for the very cordial and wholehearted help which I have received from them. Without this help it would have been quite impossible to achieve results in any way comparable to those which have actually been obtained.

In the course of the investigation into the prevalence of infection by ankylostomes or hookworms among the inhabitants of tea gardens we have examined the stools of 10,711 persons and of these 7,211 or 67.3 per cent. were found to be infected.

Statement showing the amount of worm infection in certain tea-gardens in the district of Darjeeling.

	Number of samples examined.	Number of cases of infection by hookworms.	Number of cases of infection by roundworms.	Number of cases of infection by whipworms.	Number of cases of coprophagia.		Percentage of infection by hookworms.	Percentage of infection by roundworms.	Percentage of infection by whipworms.	Percentage of coprophagia.
Garden A.	1,150	752	798	372	856	...	65.38	69.03	32.34	74.60
" B...	800	533	616	344	669	...	66.62	77.00	43.00	83.62
" C...	631	450	523	275	558	...	71.31	82.88	43.58	88.43
" D...	1,700	1,145	1,256	531	1,301	...	67.35	73.88	31.23	76.52
" E...	338	273	266	104	276	...	80.76	78.69	30.79	81.61
" F...	1,504	1,014	1,003	550	1,078	...	67.42	66.68	36.56	71.67
" G...	782	521	560	232	579	...	66.62	71.59	29.39	74.05
" H...	1,488	1,019	985	427	1,060	...	68.48	66.19	28.69	71.23
" I...	1,754	1,096	1,045	414	1,092	...	62.48	59.5	23.60	62.25
" J...	564	408	356	142	381	...	72.34	63.12	25.17	67.55
Total ...	10,711	7,211	7,408	3,391	7,850	Average.	67.32	69.06	31.65	73.28

(Continued on page 9.)

We start then with the ascertained fact that nearly 70 per cent. of the inhabitants of the coolie lines are infected with hookworms, and the first point to be considered is that of the effects which this infection has upon these people.

It may be assumed with reason, and with practical certainty, that any effects which this infection is known to produce in one part of the world will be equally produced in another. It is an ascertained fact that infection with hookworms reduces the bodily energy of those who harbour them even in comparatively small numbers, so that they are incapable of doing the same amount of work as they would be were they free from infection. For example, by freeing from infection the labourers on coffee plantations in Porto Rico their working efficiency was increased from 30 to 40 per cent., and in some estates was doubled. To come nearer home I give as an instance of the same thing the case of one of the nurses being trained under the local branch of The Lady Carmichael Nursing Association for the training of Indian Nurses. She seemed unable to do a proper day's work and it was proposed that I should dismiss her as physically unfit for the work. An examination of her stool showed however that she had a considerable infection of hookworms, and under appropriate treatment these were got rid of, and she is proving now quite capable of doing the work which is required of her. I here ask those managers in whose gardens work has been done to do their best to give me figures showing what effect on the out-turn of work the freedom from hookworm infection has had.

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For God, Crown and Country.

Wealth & Welfare.

Lucknow, Friday, 8th July, 1927.

EDITORIAL.

THE SEPARATION OF FINANCE FROM SUPERVISION.

The present functions of our co-operative banks in U. P. are (a) organization, (b) supervision, and (c) finance. Under the proposed scheme the first two functions will be made over to the Provincial Committee and central co-operative banks will have to deal with finance alone. At present most central banks have to maintain (1) an office staff of clerks and accountants, (2) a number of supervisors and organizers, and (3) a manager or assistant manager to supervise the work of the supervisors and also to some extent that of the office staff. Under the new-scheme the banks will only retain their clerks and accountants, and if they wish their managers who will be under the entire control of banks; while control over the supervising staff (i.e., the organizers and supervisors and such of the managers and assistant managers as the banks no longer desire to retain) will vest in the Provincial Committee which will have full rights as to appointment, promotion, transfer and punishment; it would take such action either on its own motion or on the recommendation of the department or on those of central banks. The supervisors and organizers would work under the guidance and supervision of inspectors, and their duties will be the same as they are now; they will continue to render help where necessary in connexion with finance, liquidation, arbitration and execution of decrees. Each supervisor will have from 30 to 40 societies to look after.

There would be various grades from Rs. 35 upwards right up to Rs. 100 to which the present managers, assistant managers and supervisors would be appointed; and really good men would also have a chance of being promoted to inspectorship. Their main duty will be that of supervision and education of primary societies; and it will be their business to see that the society discharges its functions properly, and above all is prompt and business-like in its dealings with the central banks; a supervisor who cannot do this is of course unfit for the post. Only trained candidates would be appointed as supervisors, and practically the whole of the existing trained staff will be taken over by the committee. The question of course arises as to how the banks will be able to advance loans and make recoveries if they have no direct control over supervisors. For advancing loans banks would depend partly on the abstracts of the *haisiyat* statements verified by supervisors and available in the offices of the banks; partly on their own knowledge of the state of the society as revealed by the inspection notes, copies of which would be sent to the banks as hitherto; and above all on the past conduct of the society, i.e., its promptitude in repayment or otherwise. These are the points which the manager looks into at present, and they can be examined by the accountant in future. In doubtful cases the supervisors would be consulted. Banks would of course refuse or reduce loans for good reasons. All applications for extension will be made to the banks through the supervisors and circle officers. As regards the recovery of loans, it would be the duty of supervisors to see that advances are promptly repaid; any supervisor neglecting this part of the work would be liable to dismissal; the supervisors and the inspector being responsible for the education and proper working of the society, unpunctuality in repayment of a large amount of arrears prove their incapacity or negligence or both. Hence there is not likelihood of supervisors neglecting this part of their work, just because they are not under the direct control of banks. Of course, supervisors would not actually handle the money, the sarpanch or punch would come to the bank for receiving and repaying loans. Where sub-agencies exist at present attempt should be made to secure the services of a local Director or some other respectable person of the neighbourhood to work as a sub-treasurer under the direction of the central bank concerned; where however this may not be practicable, pecuniary transactions with societies may be carried on through money orders or Remittance Transfer Receipts. The Directors of central banks would, of course, be welcome to make inspections of societies and suggest improvements. If a central bank desires the formation of a large number of new societies, the Provincial Committee would, after due inquiry and subject to funds being available, depute an organizer to it who will submit his proposals to the inspectors; and the latter will after local inspection forward the papers to the central bank concerned for transmission to the Registrar along with its resolution as to the approval or disapproval of the proposal, just as is done at present. Ordinarily the work of new organizations will be attended to by supervisors. The Provincial Committee (to be known in future as the Provincial Co-operative Committee) would be the present Standing Committee of Co-operators enlarged by the addition of ten representatives elected by primary societies from amongst their own members, of one representative elected by industrial societies and of the second Deputy Registrar, so that it would have 40 members instead of 28 as at present. It would elect a small executive committee from among its own members for the purpose of taking any executive action that may be required. The Provincial Committee will be vested with the control of the organization and supervision of primary societies in addition to its advisory functions. It will maintain a provincial graded list of all the supervisors in the province and keep proper control over them. It will administer a fund subscribed by contributions from central banks and by Government grant, and the supervisors and organizers will be paid from this fund. Central banks will contribute one-eighth of their accrued interest towards this fund, just as primary societies subscribe one-eighth of their accrued interest towards the Secretary Pay Fund. Government will be asked to subscribe a sum not less in amount than the contribution received from banks for the purpose of maintaining the necessary supervisors and organizers. The project would result in a considerable saving to central banks; at present banks spend

Rs. 2,56,000 on the staff, of which two-thirds is for the supervising staff, i.e., Rs. 1,70,000. If they pay one-eighth of their profits for this purpose, it would come to only Rs. 90,000; there would thus be a clear saving of Rs. 80,000. It will thus be seen that under the proposed scheme the interest of central banks will not suffer in any way. The Provincial Committee, which will be the representative of banks and primary societies, would be equally interested in the welfare of both: the societies will be carefully supervised and trained in their duties, and taught to manage their own affairs, with the result that they will be more prompt and business-like; and so central banks will have less difficulty in recovering money than they have at present. This, combined with the financial benefits of the scheme, will strengthen the position of central banks, and it will help to make co-operation a living force in the land. The scheme will be put in force only in such banks as accept it: it is hoped that all banks will take advantage of the scheme.

CO-ORDINATION BETWEEN AGRICULTURE AND CO-OPERATION IN U.P.

The problem of co-ordinating the activities of the Agricultural department with those of the Co-operative department may be classified as the problem (1) of distributing the seeds, (2) of popularising the implements of undoubted utility, and (3) of supplying necessary instructions for the growth of improved varieties of seeds, as regards proper time of sowing, harvesting, manuring, etc.

In the first instance it is absolutely necessary that the co-operative supervisors should be ordered to live in central places treated as their headquarters, so that every supervisor should have at his place the ordinary agricultural implements which can be hired out to members of co-operative societies at a rate to be fixed by the district bank. The business of the supervisor will be to see that the seeds distributed by the central bank are properly utilized and that the grievances or the complaints of the villagers about purely agricultural difficulties are promptly referred to the Agricultural department. The Agricultural department will also depute one or more superintendents periodically to inspect the societies in charge of each of the co-operative supervisors and to find out how far the work of popularising agriculture is proceeding and who would try personally to remove the difficulties of the villagers. The staff of the Co-operative department will then be in a better position to judge how far the supervisors and the agricultural superintendents have been able to succeed to popularise improved agriculture. The question of distributing seed is a matter of working out the details. It is well known that a good portion of the loan taken from the district bank is utilized for purposes other than those alleged. It will therefore be a salutary measure if each society were to be given a portion of the money sanctioned for it in kind—in improved seeds suitable to the village concerned. This percentage should be worked out by supervisor subject to the approval of the Managing Director. We should think that 12 or 15 per cent. of the money value sanctioned for each society should be given in kind. The villagers will, of course, have the option of paying back this portion of the advance in cash or under the *sawai* system. It is, however, futile for the co-operative bank to store its seed requirements either at the headquarters or at the headquarters of the supervisors. It will be best to come to an agreement with the Agricultural department whereby the latter can distribute seeds direct to the society punches by means of written orders of the Managing Director or the manager of the bank. This will do away with some delay, and what is more, a portion of the inevitable corruption which takes place when such matters are handled by the subordinates. In other words, the system of cheques should be brought into operation which can be issued by the Managing Director on the Agricultural department. We shall then be in a position to find out whether the villagers' grievances about delay in getting the advances are justified or not. The selection of seeds should at present be limited to the staple varieties such as Pusa wheat, millets, Indian corn, ordinary varieties of rice, gram, peas, barley and bajra. Sugarcane seeds should only be distributed at special request. The Court of

Wards seed depots will also be glad to make arrangements for honouring the cheques of the co-operative banks which may reduce the amount of transit expenditure to some of the societies situated near the Court of Wards' seed depots. Regarding the implements the question is simpler. The only implement which is likely to command general acceptance is the Meston plough which is cheap enough to be bought for every supervisor's headquarters and let out on nominal rental. Old societies with a reserve fund exceeding Rs. 200 should be given one or two ploughs bought from their own funds. The punches will work out the details of hiring out the ploughs to their members. It will be left to them to decide whether they would charge for them anything or not. The other implements sufficiently cheap and likely to be popular are the lever harrows costing about Rs. 35 each. The Court of Wards will also be glad to buy the implements including the seed drill costing Rs. 200 each for purposes of demonstration and hire. The chaff-cutter may also be useful. It costs Rs. 80 and onwards. It is desirable that old and solvent societies should be persuaded to buy these costly implements for purposes of hiring them out first to members, and after their needs are met, to non-members provided they pay rent in advance. Regarding manure there is nothing to be said. It should, however, clearly be understood that improved agriculture is not likely to be successful unless the supervisors transmit the grievances of the agriculturists to the Agricultural department for prompt instructions. The supervisor should also get clear instructions in writing about the proper time for sowing, irrigation, manuring, etc., from the Agricultural department. In fact the latter would do well to publish brief notices giving these details along with the seeds which can be distributed at the same time.

The Registrar of co-operative societies will be glad to open panchayats wherever the Co-operative societies have shown really successful work together with the activities of Co-operative and the Agricultural departments; the work of the district health staff will also be linked up and the villages with successful co-operative societies will be the first to benefit by the schemes for building new wells for drinking purposes and for cleaning up the village areas. All this, however, pre-supposes not only hard work on the part of the Managing Director, but also genuine co-operation with the Registrars' staff above and with the Agricultural department locally. The district officer will only be in a position to help the movement by being regularly kept informed of the activities and the difficulties of the regular staff of the bank. It is also desirable that wherever there is a panchayat already existing, the members of the panchayat should be persuaded also to be members of the co-operative society. It is worth trying whether it is not possible to persuade the punches and sarpanches to pass a self-denying ordinance not to borrow more than half their maximum *haisiyat*.

A FALL IN CRIME.

In his Annual Report on the Bombay City Police for the year 1926 the Commissioner of Police observes that the year was a very quiet one from the police point of view. There were no strikes on a large scale, there was no Pathan scare, there was no communal discord, though there was so much of it elsewhere; there was no great political excitement; there was a rise in police morale and a drop in crime—on the whole, the sort of year we hope for but do not often see. Political activity in Bombay during the year was at a low ebb; meetings were numerous but were, as a rule, poorly attended. Even the elections aroused much less public interest than was anticipated and served to focus public attention more on the candidates than on the policies for which they stood. The action of the Nejdīs in the Hedjaz in demolishing tombs aroused some genuine feeling among the Mussalman community. The total number of cognisable and non-cognisable cases reported during the year was 138,675 against 135,827 in 1925. The increase mainly relates to petty cases under local acts etc. On the other hand the total number of cognisable cases reported to the Police was 95,314 against 100,629

in the previous year. It is gratifying to be able to record, says the Commissioner, another substantial fall in crime under the Indian Penal Code this year. 7954 cases were registered during 1926 as against 9,603 in 1925, a fall of 1649. This is the lowest total recorded since the year 1912. Every one of the 18 Police Stations in the City, except the Harbour Police Station, contributed to the decrease. Robberies dropped from 117 in 1925 to 81: burglaries from 1700 to 1363: thefts from 5444 to 4349 and rioting from 13 to 8. Compared with the year 1920, the present high water mark in crime, there has been a reduction of over 30 per cent. The total number of cognisable offences under Special and Local Laws and others was 87,360 against 91,026 in 1925. A decrease of nearly 4,000 in these cases was mainly on account of the licensing of hawkers by the Municipality and an agreement by the police with the municipal authorities that the hawkers should be allowed to ply their trades in certain localities. There were in all 58 cases of murder and attempted murder including 11 pending from previous years. Of these 23 ended in conviction, 7 in acquittal and 16 remained undetected. There were 14 cases of culpable homicide. Of these 7 ended in conviction, 2 in acquittal, 1 remained undetected and 4 were pending at the close of the year. Of the 47 murders and attempted murders reported during the year, the victims in 32 cases were males and 5 females. The remaining 10 were cases of infanticide. The motive of crime in 12 cases was jealousy, in 2 cases gain and in one case the motive was to evade arrest by the police. In the 10 infanticide cases the motive was apparently the desire of the mother to conceal her shame. The total number of undetected cases of all classes was 3,393 against 4,207 in the preceding year. The percentage of non-detection works out at 3.52 against 4.14 in 1925. During the year action was taken against 1811 professional beggars and 262 beggars were deported under section 27 (2) of the Bombay City Police Act. The present machinery for dealing with beggars is not satisfactory. Beggars are to be seen all over the city in all stages of deformity and poverty. Prosecution for beggary results generally in warning or discharge or 1 day's simple imprisonment and operations are then immediately resumed. A beggar who is convicted twice may be deported by the Commissioner of Police but deportation is generally a waste of money as the beggar comes back, and if he does the Magistrate is not ordinarily inclined to take a very severe view of his defiance of the order. The Corporation are now in correspondence with Government with a view to comprehensive measures for dealing with beggary and until some such measures are devised, we see no hope of keeping the city reasonably clear of beggars. The total value of property alleged to have been stolen in police cognisable cases amounted to Rs. 17,24,571 as compared with Rs. 17,91,360 in the previous year. The total value of property recovered was Rs. 9,98,806 which gives a recovery percentage of 57.92 as compared with 27.23 in 1945. The amount of property stolen is the lowest since 1918 and the percentage of recovery is the highest recorded in this city since 1907. The total number of motor vehicles running in Bombay City during the year was approximately 11,300 including 800 motor lorries. The number of taxis was 901 or an increase of 114 over last year's figure. There were 1976 motor accidents or 144 more than in the previous year. This figure includes accidents in which no injury was caused to persons, for instance, collisions with victorias, tram cars, labour carts, etc. Out of this number 52 were fatal accidents. The returns for street accidents show 77 persons killed and 2,324 injured as compared with 88 killed and 2,197 injured in the preceding

year. The decrease in the number of persons killed is, no doubt, closely connected with the increasing attention given by the police to the regulation of traffic. A separate Traffic Department was formed in December 1924 and since its formation the policemen have been systematically trained in the regulation of traffic and are kept for definite periods on traffic duty alone. The combined system of patrols and fixed posts which the Commissioner introduced has been a remarkable success. There had been a certain amount of public dissatisfaction at the substitution of patrols for fixed posts, and the Commissioner had consequently prepared a scheme which would combine both and he had had to abandon the scheme because Government instead of being able to afford any more money for the police had decided to cut 2½ lakhs out of the police budget. The combined system of patrols and fixed posts was the location of fixed posts at certain strategic points and the formation of a flying squad for each section, and its introduction in proper working order would have meant an increase of less than 300 men to the Force. Government have admitted that an increase to the Force is necessary and have undertaken to consider the proposals as soon as the financial position permits. But as there was no hope of getting the extra men, it was decided to start the system with such men as were available. The result has been most satisfactory even though the staff were so short-handed. The flying squad is sent out in each section for a certain number of hours each night: the men are in plain clothes: they are under the control of a Sergeant or Sub-Inspector or officer of higher rank: no body knows at what time they are to go out except the officer in command: nobody knows in what part of the section they are to operate except the officer in command. As the thief or burglar is no longer able to obtain definite information of the movements of this patrol and as he no longer gets any warning of danger by seeing a policeman in uniform approaching him, he is now frequently caught in the streets and sometimes with the property on him. Given a sufficient number of men to work the system effectively, it ought to be possible to rid Bombay city of many undesirables who are here only for the purpose of committing crime. The following are the figures of crime at some of the more important police stations for the past few years:—

	1923	1924	1925	1926
Lamington Road ...	1,060	1,102	827	590
Princess Street ...	1,090	1,132	841	666
Nagpada ...	1,172	1,154	1,018	798
Palton Road ...	862	854	821	631

As regards the Discipline of the Force, though the total number of punishments inflicted was nearly as high as in the previous year, there was a distinct improvement in the *morale* of the Force. It was very pleasing to see the professional interest taken in their work by officers of all ranks with very few exceptions and to see their labours rewarded by a very substantial reduction in crime at the end of the year. If officers will continue to work with the same zest as they displayed during the year and will continue to exact the proper performance of their duty by the rank and file there is every reason to hope that crime may be maintained at its present comparatively low level and, if Government will sanction the increase in the Force that is urgently necessary, that it may even be brought to a much lower level. The total strength of the Police Force including officers is 3,832 and its total cost about Rs. 33,60,000.

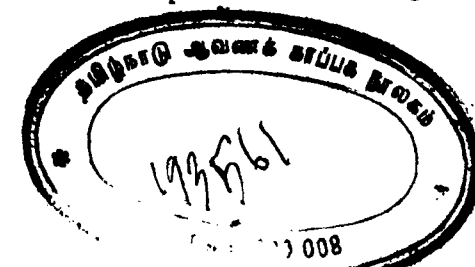
ON THE LINE.

BHADRAVATI IRON WORKS.

Mysore has not done badly after all on its past capital investments amounting to about Rs. 12 crores. Government are already getting a return of 4 to 5 per cent. on the outlay and if other indirect benefits to the public accruing therefrom are

taken into account, this return will be regarded as eminently satisfactory in any country. Over-capitalisation at the construction stages has been the chief misfortune of this undertaking. It is now proposed to write down the capital from Rs. 191 lakhs actually expended to Rs. 107 1/2 lakhs, the present estimated true value of the work. "Foreign experience shows

that works of this magnitude usually take four or five years before they begin to pay and judged by this test, our works are shaping as satisfactorily as one should expect under actually prevailing conditions. In the current official year, this undertaking had paid its working expenses. Surplus revenue of over Rs. 3 lakhs is anticipated in the coming year. Certain



new proposals costing about Rs. 55 lakhs are now being made for extensions and additions to the Iron Works such as enlarging the blast furnace, extension of the pipe foundry, establishment of steel and subsidiary forest industries like pulp and paper sleeper treatment and bobbins with a view to rectify inequalities of output and further improve the financial prospects of the undertaking.

COTTON CROP OF 1926-27.

SUPPLEMENTARY MEMORANDUM.

This memorandum deals with the final estimates of the cotton crop of the Madras Presidency and supplements the final general memorandum on the crop issued on the 24th February, 1927.

The area in Madras is now estimated at 2,330,000 acres, which is 20 per cent below the area of last year. The yield is estimated at 400,000 bales, as compared with 569,000 bales last year, or a decrease of 30 per cent. In the south, bursting of bolls commenced a month earlier than usual, and the first pickings began about the middle of February. In the Central districts first pickings began in March. In the Deccan pickings of the late crop commenced about the middle of January and were finished by the end of March. Pickings are almost over in the Cocanadas' tract. In Ramnad and Tinnevely, the rains in February and March damaged some part of the crop which was in the process of maturing or picking. The staple is, however, reported to be very satisfactory. The quality of the crop in other districts is also satisfactory, especially in Coimbatore. The crop was generally free from disease but was affected by prolonged drought in most districts during the major portion of the growing and maturing periods, especially in the Deccan districts, Guntur and Nellore. The seasonal factor for the presidency works out to 82 per cent on the average (the lowest reported in recent years) against 93 per cent last year.

The area and yield by trade descriptions are :—

Acres.	Heres.	Sales.
Tinnevellys ...	584,000	145,000
Salems ...	188,000	32,000
Cambodias ...	320,000	122,000
Westerns and- Northerns ...	1,029,000	73,000
Cocanadas ...	188,000	25,000
Others ...	21,000	3,000

Consequent on the revised figures noted above, and the receipt of later information from the Alwar State in Rajputana, the estimates in the table appended to the final general memorandum issued in February last require modification; and the revised totals for all-India for the year 1926-27 will therefore stand at 24,976,000

acres 4,973,000 bales, as compared with 28,491,000 acres and 6,250,000 bales last year.

The total area and yield thus show a decrease of 12 and 20 per cent, respectively, as compared with the preceding year.

The exports for the seven months of the season 1926-27, i.e., from September 1926 to March 1927 amounted to 1,781,000 bales as compared with 2,368,000 bales in the corresponding period of the previous year.

Cotton in Foreign Countries.—From information specially obtained from the United States Department of Agriculture, Washington, it appears that the estimates of the cotton crops of the United States of America for 1926 are 47,653,000 acres and 23,272,000 bales of 400 lbs. each as compared with 46,053,000 acres and 20,130,000 bales in 1925. The yield of the cotton crop of the Anglo-Egyptian Sudan for the current year is estimated at 142,000 bales of 430 lbs. each, as compared with 127,000 bales in 1925-26.

From the latest available bulletin published by the International Institute of Agriculture, Rome, it appears that the area and yield of cotton in Egypt for the current year are estimated at 1,854,000 acres and 1,789,000 bales of 400 lbs each, showing a decrease of 7 and 8 per cent respectively as compared with the preceding year. In Uganda the area under cotton for the current year is estimated at 586,000 acres, as against 617,000 acres in the preceding year or a decrease of 5 per cent. In Korea the area and yield of cotton for current season are estimated at 522,000 acres and 184,000 bales of 400 lbs as compared with 485,000 acres and 149,000 bales in the preceding year.

GOVERNMENT SCHOOL OF DYEING AND PRINTING, CAWNPORE.

The new session of the Government School of Dyeing and Printing, Cawnpore, which has now an advanced course in calico-printing besides the Foreman and Artisan classes will commence on Friday, the 15th July. Admission will be made to the foreman dyer class from matriculates and S. S. L. C. and to Artisan course from those who can read and write Hindi or Urdu.

PREVENTION OF CHOLERA.

Cholera is now raging violently in some of the districts in Bihar and Orissa. The reason for this is not far to seek. Very few of the millions of the rural population know that the discharges of cholera patients (vomit and faeces) are the principal source of infection, as these contain the germs of the disease and set up the disease when they get inside our body along with our food or drink. All these discharges of cholera patient therefore require to be promptly disinfected with substances like bleaching powder, izal, syllin, etc., which have the power of killing the cholera germs. High temperature and fire are also very good for this purpose. Of the disinfectants bleaching powder or chlorinated lime is very popular as it is cheap,

effective and prompt in action. For disinfecting rooms occupied by cholera patients a strong solution of it—which is made by dissolving about half a seer of the bleach to a tin of water—is needed and the floor of the room is to be thoroughly washed with it. Bleaching powder has rather a corrosive action on the skin and should not be handled more than is necessary. It has a strong and pungent smell of chlorine and the fresher it is the stronger is the smell. A lotion in the above strength (i.e. 1 in 30) is good for washing hands and also for disinfecting privies, drains, etc. It is also good for treating infected wells and an ordinary well requires about 2 or 3 drams of the bleach. Mud floors infected with dejecta of cholera patients can best be disinfected by covering it up with *blusa* or cow-dung cakes and then setting fire to them. All soiled clothes, etc., should be burnt or thoroughly boiled and not thrown about the house as these help to spread the disease through the agency of flies. As flies breed in filth all rubbish should be promptly removed and burnt. The proper disposal of the dead is also a matter of considerable importance. Villagers are generally careless about this when there is an epidemic of cholera and usually throw cholera infected bodies on the river bank or in the water direct. This practice which is absolutely criminal in nature requires to be stopped with a firm hand. Soiled clothes should not be taken to tanks or wells for washing as this leads to pollution of the water and to the rapid spread of the disease.

The domestic fly plays no mean part in the spread of the disease. It is interesting to note that no sooner the vomit or excreta leaves the cholera patient than flies immediately collect together and settle on it. The reason for this is that flies cannot eat anything solid and so they at once gather round the cholera stools or vomit which is a good food for them, as it is not only liquid but also nutritive at the same time, because both these contain much serum (i.e. the watery part of the blood). And as the flies then go and sit on food they contaminate it with their dirty feet which are liberally provided with hairs on which particles of infected materials get entangled. Food stuffs should therefore always be kept covered to prevent flies settling on them.

All these preventive measures—however good and efficacious they may be—cannot prevent the occurrence of cholera among those who are already carrying the infection. Moreover when this infection is wide spread the most stringent of ordinary precautions may fail to protect the non-immunes who are brought into close contact with carriers of the germ. In these circumstances no measure can be so effective as anti-cholera inoculation which by conferring relative immunity from cholera upon every individual treated serves to protect both carriers and non-immunes from attack and thus prevents the occurrence of outbreaks of the disease.

(Continued from page 4.)

Regarding the effect of hookworm infection on *growth* recent work on school children in America has shown that even those lightly infected with *Necator americanus*, the hookworm which is the only hookworm to be found in the United States, were stunted in growth, as evidenced by an average diminution of height and weight as compared with children of the same age who were free from infection.

That severe infection has a marked stunting effect on growth is a well established conclusion. A glance at Figs. 1 to 3 from negatives kindly given me by Mr. Mackie shows that this effect of severe infection is as marked in this district as in other parts of the world.

Stiles has shown further that apart from its effect on the growth of school children a light hookworm infection, and in this case also a light infection with *Ascaris lumbricoides* the Roundworm, meant that the children so affected were of lower school grade, that is were of lesser intelligence than their fellows of equal age who were free from such infection.

Stiles has also produced very remarkable figures on the effect of hookworm infection on *childbearing*.

In the case of 234 pregnancies taking place in cases infected with hookworms, and occurring in one village, 9.3 per cent. of the possible children were never born alive, that is the pregnancies terminated in abortions or miscarriages or if they were born dead. Further regarding the chance of survival after birth it was found that, at the time the figures were compiled, the children representing another 15 per cent. of these pregnancies had since died, although their mothers were still alive. That is to say that 24.8 per cent. or practically a quarter, of the possible offspring were lost, while the mothers survived. This is a much larger loss than the normal.

These are the facts. How do they affect the tea industry?

They mean obviously putting aside entirely the humanitarian point of view, and taking no consideration of such moral obligations as the employer of labour has imposed on him by his position, firstly that infected labour is not capable of the same output of work as is uninfected labour, and secondly that it is less reproductive. More labour, that is, must be employed to do the same amount of work. Where the supply of labour is unlimited it is merely necessary under such conditions to employ fresh healthy labour to take the place of or to supplement that which has become defective in the capacity for work. I believe however that I am quite correct in saying that so far from your labour being unlimited it is restricted and difficult to replace, and I judge from what I see in the papers that the same difficulty confronts managers of gardens in other parts of India. You are then in the position that for your present and for your future labour you are

largely dependent on the population now on your gardens, and that if you are to increase your output of work you can only do so within certain limits by increasing the working efficiency of your present labour force and by adding to its reproductive capacity.

I have shown to what extent your labour force is infected with hookworms, and the manner in which this infection interferes with its working value; and if you accept my arguments as valid, and I do not think that you can do otherwise, you can obtain a considerable increase of working power at once, and you will increase the population of the next generation, and so the labour, by freeing from hookworms the labour you now have.

Let me remind you of the method by which your labour becomes infected with hookworms, for obviously a knowledge of this is essential if you are to prevent further infection.

The hookworm lives in the bowel and the eggs are passed in the stools. After hatching from the eggs, the larvæ live in the stools for a time and undergo further development. When they have become "mature," that is have reached a stage at which they are capable of infecting a human being, they leave the stool for the adjoining soil or water. If they then come in contact with the skin of any person they penetrate it, reach a blood vessel and are carried by the blood stream to the lungs. Here they bore their way out of the blood vessels, and get into the air passages, having reached which they are, by the natural mechanism which clears the air passages of foreign matter, carried up through the bronchi and windpipe to the throat. They are then in the natural course of events swallowed and so reach the stomach and bowel, to the wall of the latter of which they attach themselves and so grow to maturity. For our present purpose the point is that soil pollution and infection is an essential part of the process, that your soils are, in places at least, heavily infected, and that this infection of the soil will continue for a year after further pollution ceases.

You will appreciate the fact that on the gardens on which work has been going on, the population is at the moment free from hookworms, but that the soil is still infected, so that a number of those who have been freed from infection are certain to be reinfected from the still-infected soil. The essential problem before us consists in enunciating or discovering the means by which the soil is to be freed from and kept free from infection, and it is to considering the best means of effecting this, under the conditions which obtain in a garden, that the bulk of the remainder of this lecture will be devoted.

But before doing so it may be well to consider certain measures which, while leaving the soil polluted, aim at preventing infection from it, or of mitigating its effects when it takes place. It is obvious that if larvæ be prevented from entering the skin by perfectly watertight boots, the wearer of these may walk on infected soil with

impunity. If, however, the soil gets on his hands while removing the boots he will be as certainly infected as if he walked barefooted on the infected soil; and equally if the boots are not watertight, the larvæ will penetrate with the water and infect the wearer. This has been found to be the case even with managers and their families in badly infected soils in Porto Rico. Regarding the use of tar, which is regularly employed on some of the gardens here, the coolies being made to paint it on their feet during the rainy part of the year, there seems to be no doubt at all that it reduces considerably the amount of "helo," as "water itch" is called locally, and so gets rid of a considerable amount of disability. At the same time the gardens which use it have still from 62 to 66 per cent. of their population infected. Investigation does not then lend countenance to the suggestion that in this material you have means of preventing hookworm infection.

It cannot be considered then that either in boots or tar you have a really satisfactory method of preventing hookworm infection, so that we come back to the point already stated, namely that the problem before us is to enunciate or discover the best means by which the garden soil is to be freed from and kept free from infection.

A pasture soil, contaminated with the hookworm, and allied worms of sheep and cattle, can be freed from infection by projecting on to it a scorching flame from a special apparatus. Such a method is, of course, useless on a garden, since any heat which will sterilise the soil, will destroy the tea bushes.

Some months back I saw in a publication that it was hoped that sulphate of ammonia would prove destructive to the eggs or larvæ of hookworms. It was obvious at once that if this proved to be correct, it would allow of the sterilization of the soil, so far as hookworm was concerned, and of its enrichment at the same time, and I started experiments in this direction. I am sorry to say that I have found it as useless as was lime. My experiments lend no countenance to the suggestion that the soil may be sterilized by these chemical means, so that the fact remains that we know at present of no physical or chemical means by which the soil may be freed from hookworm larvæ, without destroying the vegetation growing upon it. We are then reduced to this position that we know of no method, practicable on a garden, of destroying the ova or larvæ, but must wait till they die a natural death in the soil.

If you then keep the soil free from further infection for a year, you may rely on having then a practically clean soil, from our present point of view; and if you then free your labour force from hookworms you have a reasonable prospect of keeping it free. You will perhaps say that I have begun this work at the wrong end, in the sense it is true, but the alternative to taking up the work in the way in which it has been done was to say to you,

contact with the sick. All that the medical school can hope to do is to supply the foundations on which to build. When one considers the amazing progress of science, in its relation to medicine during the last thirty years, and the enormous mass of scientific material which must be made available to the modern physician, it is not surprising that the schools have tended to concern themselves more and more with this phase of the educational problem. And while they have been absorbed in the difficult task of digesting and correlating new knowledge it has been easy to overlook the fact that the application of the principles of science to diagnosis and treatment of disease is only one limited aspect of medical practice. The practice of medicine in its broadest sense includes the whole relationship of the physician with his patient. It is an art, based to an increasing extent on the medical sciences, but comprising much that still remains outside the realm of any science. The art of medicine and the science of medicine are not antagonistic but supplementary to each other. There is no more contradiction between the science of medicine and the art of medicine than between the science of aeronautics and the art of flying. Good practice presupposes an understanding of the sciences which contribute to the structure of modern medicine, but it is obvious that sound professional training should include a much broader equipment.

The problem that I wish to consider, therefore, is whether this larger view of the profession cannot be approached even under the conditions imposed by the present curriculum of the medical school. Can the practitioner's art be grafted on the main trunk of the fundamental sciences in such a way that there shall arise a symmetrical growth, like an expanding tree, the leaves of which may be for the "healing of the nations?"

One who speaks of the care of patients is naturally thinking about circumstances as they exist in the practice of medicine but the teacher who is attempting to train medical students is immediately confronted by the fact that, even if he would, he cannot make the conditions under which he has to teach clinical medicine exactly similar to those of actual practice.

The primary difficulty is that instruction has to be carried out largely, in the wards and dispensaries of hospitals rather than in the patient's home and the physician's office. Now the essence of the practice of medicine is that it is an intensely personal matter, and one of the chief differences between private practice and hospital practice is that the latter always tends to become impersonal. At first sight this may not appear to be a very vital point, but it is, as a matter of fact, the crux of the whole situation. The treatment of a disease may be entirely impersonal; the care of a patient must be completely personal. The significance of the intimate personal relationship between the physician and patient cannot be too strongly emphasized, for in an extraordinarily large number of cases both diagnosis and treatment are directly

dependent on it, and the failure of the young physician, to establish this relationship accounts for much of his ineffectiveness in the care of patients.

INSTRUCTION IN TREATMENT OF DISEASE.

Hospitals, like other institutions founded with the highest human ideals, are apt to deteriorate into dehumanised machines, and even the physician who has the patient's welfare most at heart finds that pressure of work forces him to give most of his attention to the critically sick and to those whose diseases are a menace to the public health. In such cases he must first treat the specific disease and there then remains little time in which to cultivate more than a superficial personal contact with the patients. Moreover, the circumstances, under which the physician sees the patient are not wholly favorable to the establishment of the intimate personal relationship that exists in private practice, for one of the outstanding features of hospitalization is that it completely removes the patient from accustomed environment. This may, of course, be entirely desirable, and one of the main reasons for sending a person into the hospital is to get him away from home surroundings, which, be he rich or poor, are often unfavorable to recovery; but at the same time it is equally important for the physician to know the exact character of those surroundings.

Everybody, sick or well, is affected in one way or another, consciously or subconsciously, by the material and spiritual forces that bear on his life, and especially to the sick such forces may act as powerful stimulants or depressants. When the general practitioner goes into the home of a patient, he may know the whole background of the family life from past experience; but even when he comes as a stranger he has every opportunity to find out what manner of man his patient is, and what kind of circumstances make his life. He gets a hint of financial anxiety or of domestic incompatibility; he may find himself confronted by a querulous, exacting, self-centered patient; or by a gentle invalid overawed by a dominating family; and as he appreciates how these circumstances are reacting on the patient he dispenses sympathy, encouragement or discipline. What is spoken of as a "clinical picture," is not just a photograph of a man sick in bed; it is an impressionistic painting of the patient surrounded by his home, his work, his relations, his joys, sorrows, hopes and fears. Now, all of this background of sickness which bears so strongly on the symptomatology is liable to be lost sight of in the hospital; I say "liable to" because it is not by any means always lost sight of, and because I believe that by making a constant and conscious effort one can almost always bring it out into its proper perspective. The difficulty is that in the hospital one gets into the habit of using the oil immersion lens instead of the lower power, and focuses intently on the center of the field.

When a patient enters a hospital, one of the first things that commonly happens to him is that he loses his personal identity. He is generally referred to, not as Henry Jones, but as "that case of mitral stenosis in the second bed of the left." There are plenty of reasons why this is so, and the point is, in itself, relatively unimportant; but the trouble is that it leads, more or less directly, to the patient being treated as a case of mitral stenosis, and as a sick man. The disease is treated but Henry Jones, lying awake nights while he worries about his wife, and children, represents a problem that is much more complex than the pathologic physiology of mitral stenosis and he is apt to improve very slowly unless a discerning intern happens to discover why it is that even large doses of digitalis fail to slow his heart rate. Henry happens to have heart disease, but he is not disturbed so much by dyspnea as he is by anxiety for the future and a talk with an understanding physician who tries to make the situation clear to him, and then gets the social service worker to find a suitable occupation does more to straighten him out than a book full of drugs and diets. Henry has an excellent example of a certain type of heart disease, and he is glad that all the staff find him interesting, for it makes him feel that they will do the best they can to cure him; but just because he is an interesting case he does not cease to be a human being with very human hopes and fears. Sickness produces an abnormally sensitive emotional state in almost every one, and in many cases the emotional state repercusses as it were, on the organic disease. The pneumonia would probably run its course in a week, regardless of treatment, but the experienced physician knows that by quieting the cough, getting the patient to sleep, and giving a bit of encouragement he can save his patient's strength and lift him through many distressing hours. The institutional eye to become focused on the lung, and it forgets that the lung is only one member of the body.

(To be Continued)

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