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<table>
<thead>
<tr>
<th>Region</th>
<th>Secretary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bengal and Assam</td>
<td>Dr. H. W. KIRBY, Jorhat, Assam.</td>
</tr>
<tr>
<td>Bihar and Orissa</td>
<td>Dr. J. M. MACPHERSON, Bamdah, via Simultala, E.I.R.</td>
</tr>
<tr>
<td>United Provinces</td>
<td>Dr. DOUGLAS FORMAN, Allahabad.</td>
</tr>
<tr>
<td>Punjab</td>
<td>Dr. R. J. H. Cox, Peshawar, N.W.F.P.</td>
</tr>
<tr>
<td>Mid-India</td>
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<td>Bombay</td>
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<td>Dr. GALEN SCUDDER, Ranipet, N. Arcot.</td>
</tr>
<tr>
<td>Ceylon</td>
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</tbody>
</table>

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Contraception

By ROBERT J. GITTINS, M.D., Ch.B., D.T.M. & H.,
Friends Mission Hospital, Itarsi

(Read at the Third Biennial Conference of the C.M.A.I., at Allahabad,
January 28th, 1929)

Introduction

I AM very glad that today we have an opportunity of discussing this subject of contraception, or conception control, as it is rapidly becoming of increasing importance. I would wish that I were more competent to introduce it to you and that I were able to contribute some ideas or observations of an original kind. However, the study of the tincture of the subject are indeed wide; and were we able to devote thrice the time which we have at our disposal today, we should but be able briefly to survey the ground. It is not my aim to attempt to be exhaustive, as I am sure that it will be more profitable if I curtail the possible length of this paper, so that we may have more time for discussion, which is of paramount importance in dealing with such a controversial matter as conception control. You will, therefore, pardon me, I hope, due to my anxiety to be brief, if some of my remarks tend to be somewhat blunt and even dogmatic.

At our Christian medical meetings in Jubbulpore, we spent some time on the subject of sex hygiene, but were unable to devote much time to the specific subject of contraception. I am especially glad that we have now an opportunity of considering it, since this gathering represents not only medical but also deep ethical interests.

No sound conclusions can be arrived at without the careful weighing of both approaches—the medical and the ethical. Our meeting today is desirous of bringing to bear on our problems not only the best professional opinion of which we are capable, but also
the soundest moral outlook which we as Christians hold. I think that even those who hold conservative views on this question will be ready to admit that a doctor must be in a position to advise those who, from right and proper motives, are anxious to limit reasonably the size of their families. At this stage I do not want to enter into the question of what constitutes reasonable limitation, but I imagine that most assembled here agree that at times some degree of conception control is legitimately demanded by those parents who seek the best interests of their families. Further, a doctor especially may have the duty to his patients of advising on this question, apart from the personal views and practice which he himself adopts.

Whatever may be our views of the desirability of conception control, I think that we shall all agree that, owing to the way in which this subject has recently been forced upon the attention of all sections of the public, it is well for us seriously to consider it. In these days we cannot for long get away from it. Certainly in the Christian community, amongst which I work, the subject has not yet troubled many minds; yet, at the same time, books in Hindi on it can now be purchased, and I am sure that it will be but a short time before many Christians and others in our small country towns will be enquiring about it, and even experimenting with it. I do not, of course, suggest that at present the situation is comparable to that in the West, where so much promiscuous information has been given broadcast to all and sundry. It is quite probable, though, that gradually the course of events will be somewhat similar, and that we shall see a decreasing birth-rate and a lowering of the rate of population increase, such as has occurred in all Western countries, and that, similarly, a great concomitant of this lowered birth-rate will be conception control. But I am anticipating here, for I was about to say that I have been at a loss to know how to approach my main theme. There are so many approaches to our subject—that through a consideration of the birth-rate, which is principally an economic one; the purely ethical approach; again a purely medical one. I have felt, however, that the best for our purpose will be, at first at any rate, a medical one, which in itself is wide enough indeed, and I therefore propose to enumerate briefly some of the medical aspects of conception control. For this purpose it will be necessary to run over the chief methods, summarily pointing out the advantages and drawbacks of each. We shall, then, I think, be in a better position to take up our subject from a wider medical point of view, passing on to a few ethical considerations. I choose this course because I am sure that no sound conclusions can be reached with me, a not widely nor even individuals.

Probable partner has is probable methods e most serio and all aut both to the

The Cc efficient m variety of t which is in

safer, thou sexual sem and perish, fine chalk; water after is that the and the nat interference at a time o authorities vaginal sec woman; of advantage o. It is claim data, that s impulses w to cause st with other grounds.

Female be fitted i considered. paper, whi
reached without some understanding of the methods at our disposal. I hope that those who are familiar with these will bear with me, as I am sure that the limitations of several methods are not widely realized, nor are the possible ultimate dangers appreciated, nor even is anyone yet able to dogmatize on the final results on individuals or the race.

Contraception Methods

Probably the oldest is Coitus Interruptus, in which the male partner has to withdraw the penis before the emission of semen. It is probable that this is widely practised, although many other methods are available. It is scarcely necessary to consider this method further in order to condemn it out of hand. It involves most serious interference with the fulfilment of the sex impulse, and all authorities are agreed on the harm which may easily result both to the man and woman. It can never be advised.

The Condom or Rubber Sheath is widely used, and is a most efficient method. There are two kinds—a permanent washable variety of thicker rubber, and a type made of extremely thin rubber, which is intended to be used only once. The former is probably the safer, though it has the disadvantage of interfering more with the sexual sensations of the male; the latter are very easily damaged and perish. Sheaths should be kept in a cool place and treated with fine chalk; the permanent variety should be washed with soap and water after use, and dried. The greatest disadvantage of either is that the application seriously breaks into the ‘wooing process’ and the natural action of the sex reflex mechanism; this undesirable interference with spontaneous processes by artificial manipulations at a time of high emotional tension is no slight drawback. Several authorities claim that the mingling of the seminal discharge with the vaginal secretions, and subsequent absorption, is beneficial to the woman; of this there is no definite proof, but, if so, this is a disadvantage of the condom, which effectively prevents this occurring. It is claimed by some, again without definite evidence or experimental data, that successive sexual stimulation and satisfaction of sexual impulses without supervening pregnancy is deleterious, and likely to cause such troubles as cervicitis, etc. The condom, together with other methods, can therefore be criticized on these grounds.

Female Pessaries. These are of many kinds. Any of the type to be fitted inside the cervix are obviously too dangerous to be considered. The oldest types consist of sponges, or balls of bibulous paper, which latter have been used in some parts of the East for a
These are not so reliable, of course, as the more modern rubber types, and also suffer from the severe disadvantages inherent in all female pessaries.

There are two main kinds of rubber pessary—the occlusive, which is so moulded as to fit closely over the cervix, and the Dutch pessary, which, being broader, is designed to press against the sides of the upper vagina, covering the cervical canal. The occlusive seems to be the most efficient, though it is slightly more difficult to fit, and usually demands a first application by a doctor, in order to ascertain that the particular size beds down properly over the cervix. Neither type can be fitted satisfactorily until several weeks after marriage. For details regarding the use of these pessaries, I would recommend Michael Fielding’s small book on the subject. It is claimed that these pessaries can be fitted by any intelligent woman, but the statistics of birth control clinics show that there is a large percentage of failures in those cases which they have taken the trouble to follow up. I might add here that much of the work of birth control clinics does not inspire confidence, on account of their failure to observe their cases and follow up the women to whom they give advice. These failures are ascribed to the women, though instructed at the clinics, being unable to apply the pessaries properly, or to carelessness in so doing. It certainly appears to me that many failures are only to be expected, considering the nature of the manipulations called for on the part of the woman. To many women, too, they would be highly distasteful, and even impossible. When properly fitted, it appears that the modern pessary is reasonably efficient. At the same time, many recommend that a soluble medicated pessary should be used in addition. It is also recommended that the rubber pessary be lubricated with spermicidal ointment. Besides the disadvantage of the difficulty of proper insertion and fitting in the vagina, rubber pessaries are liable to set up inflammation, unless they are employed with scrupulous cleanliness and with due regard to the length of time which they are allowed to remain in position. They should be inserted some time before intercourse, and should not be removed until 16 hours after coitus has elapsed; in no case should they remain in position for more than 48 hours, and should not be fitted during menstruation. In the event of the latter occurring while they are applied, they should be removed at once. The advantage of this method of

\[1\] Dr. E. Gittins states that she often finds small masses of paper stuffed in the vagina of Indian patients, who usually say that ‘the dai put it there.’ Probably some of these have been inserted for contraceptive purposes. More information is needed.
Contraception

Conception control is that it does not involve any manipulations during the period of sexual excitement and activity.

The Soluble Pessary consists of a small mass of some spermicidal drug, made up with a fatty base, which will readily melt at body temperature. The most popular active principle, and possibly the most generally efficient, is quinine in about a strength of 1 in 8. A properly made up soluble pessary need be inserted well into the vagina only about five to ten minutes before coitus, and is reasonably, though not completely, efficient. The method demands a simple manipulation at the time of sexual excitement, though it is far simpler than the others which we have considered. The great disadvantage of the method is that drugs which are efficient spermicides are also very liable to be irritants of the vagina, especially if not removed by douching after intercourse. They cannot be safely advised for use by newly married women, on account of the greater sensitivity of the mucous membrane. Their cost is often rather high, though they can be made quite cheaply in any dispensary, or even by the wife herself, from some such simple formula as the following: quin. sulph. dr. 1, cocoa butter oz. 1, which is sufficient for ten pessaries.

Douching after Coitus is one of the oldest, but not most reliable, methods. The immediate rising for carrying out the distasteful task of douching the vagina is obviously undesirable and also unphysiological, at a time when quiet rest or sleep should be the normal end of the whole sex impulse and mechanism. Owing to the quite probable failure to remove every one of the millions of spermatozoa, it is obviously not a reliable method.

Absolute Continence. It appears that most authorities—medical, psychological, gynaecological and others—are agreed that it is neither wise nor practicable to attempt absolute continence as a method of conception control in the presence of the normal intimacies of married life. It is possible, though, that this may be successfully carried out by a few individuals here and there. The proximity to one another, the daily intimacy, and the varied expressions of endearment of normal married life, apart from sexual relations, all from time to time arouse sex impulses and passion in varying degrees. If these are to be continuously mortified and deprived of their physiological fruition, it will mean a very vast expenditure of mental and nervous energy to ensure their abortion and stultification; this cannot but be bad for the organism as a whole, and will mean that nervous energy, which might have had profitable outlets in the many activities of life, will be wasted in repressing desires which are not to be
fulfilled. If absolute continence is to be used as a method of conception control, then along with it should go the abolition of many ordinary aspects of married life—for instance, the parties should sleep in separate rooms, they should preserve only the character of those relations which normally exist between brother and sister, etc., and should forego those natural expressions of endearment and sexual love. This to the vast majority of married folk would create an intolerable position, which they would refuse to consider as a solution of the problem. Many cases of severe harm caused by the attempt to employ absolute continence on the part of normally sexed couples have been recorded, and I do not think that we can regard the plan as 'natural' in any sense of the term. Even if doctors themselves should feel that such a degree of continence is possible and practicable, they should surely be very wary in giving any such advice; and if such advice be given, it should be only after the most careful consideration of the aspirations and capabilities of the couple concerned, and with some knowledge of their powers. With such limitations, absolute continence may at times be used as a method of conception control for a limited period, and solve the problem of delaying the advent of further offspring for a time.

*Coitus Restricted to the Safe Period.* This has been popularly termed 'timing.' At the outset it must be realized that there is no absolutely 'safe' period, and therefore the latter term of 'timing,' though crude, is preferable. Seigel observed the occurrence of pregnancy with relation to coitus indulged in at varying periods after the onset of menstruation. In brief, he found that no case of pregnancy occurred when coitus had taken place between the 23rd and 28th day after the onset of menstruation, and that the likelihood of fertilization taking place was very much reduced when coitus occurred after the 18th day. His observations have since been mainly confirmed by Corby, who states that pregnancy does not occur following coitus on the 17th and subsequent days after the cessation of the menstrual flow, which in most women is about the 21st or 22nd day from the onset of menstruation.

However, though all are agreed that most women are far less fecund towards the end of each inter-menstrual period, most authorities maintain that there is no absolutely safe period. Many, in discussing contraception, seem to demand that any method, to be suitable for use, must provide a 100 per cent certainty of prevention of conception, and it seems to me that for this reason this method of 'timing' has not received the attention by many which it deserves. I have seen many such statements, that since there is no absolutely
safe period of temporary sterility, therefore we cannot consider 'timing' as a practicable method of conception control. This attitude seems to be extremely unsound. Admitting that some individuals demand an absolute method, there are yet very many more who, in trying to solve the problem of the too large family, are quite prepared to accept as reasonable and workable a method which considerably reduces the chance of pregnancy occurring, even if it does not give complete immunity. I believe that 'timing' is such a method; and, because I incline to think that it will help us to solve many of our problems, I have ventured to dilate somewhat upon it. It has the very great advantage that it is natural in so far that it does not demand the use of any artificial apparatus, which is so disagreeable to many. At the same time, it is somewhat unnatural, in that the so-called safe period falls at the time when most women find their sexual urge is at its lowest ebb, and therefore the method may not fulfil all our ideas of sex justice. At the same time, I believe that, if used with discretion and sympathy, especially on the part of the husband, it can be used with perfect satisfaction to both man and wife. Possibly the most serious drawback of the method is that it calls for periods of self-control of about three weeks' duration, which will be found to be a severe trial for many normally sexed couples. Against this we should remember that in the normal family conception control is called for only for limited periods, when it is desirable to delay the coming of another child for a time, and that many will be found ready to use the degree of self-denial required to operate the 'timing' method, for the period during which their family affairs demand it. Further, a disadvantage of other artificial methods of conception control is that they do not inherently call for the exercise of self-control and are therefore liable to abuse. 'Timing' does not admit of abuse in this respect, but, while allowing for some outlet to the sex urges, it calls for self-restraint for its operation. I would further submit that in many cases we do not really want absolute conception control. A far less exacting standard will meet the requirements of most reasonable men and women, who are yet anxious not to have a family which they cannot support. In the face of the demand of a couple for some method providing complete immunity against the occurrence of conception, I think that sound advice for a less exacting standpoint will often meet with their co-operation, and perhaps later on with their gratitude, for a method which has not only given them the satisfaction of some of their desires, but has also made some demand on their moral qualities of self-restraint and control. It seems to me that the whole question
of conception control has been overshadowed by the inordinate demand that the control should be absolute, and that we have failed to appreciate what may be accomplished by some reasonable co-operation with Nature, and an intelligent and sane application of the methods with which she can provide us. The all-or-nothing attitude is often to be deprecated, especially when dealing with her.

I would like to draw your attention to some recent research, especially by Dixon, of Cambridge, on the ovarian hormones, which may throw some light on the rationale of 'timing,' and which tends to support the clinical observations above referred to from a theoretical point of view. It is well known that the exact relation of ovulation and menstruation is not yet clearly known, and, on referring to several standard works, I find that, though there is strong evidence for presuming that menstruation is dependent on the ovarian cycle, there are some difficulties in accepting the dependence as absolute. However, recently three ovarian hormones have been isolated: cestrin produced in the ripe Graffian follicle, lutein in the ensuing corpus luteum, and an interstitial hormone on the degeneration of the corpus luteum of pregnancy. Briefly, cestrin brings on menstruation or the phenomena of heat in animals about the time when the follicle is ripening, i.e. a few days previous to the eruption of the ovum from the follicle; while lutein prevents ovulation and is inhibitory to contraction of the uterus.

This explanation of the action of cestrin means that menstruation will begin a few days before the discharge of the ovum from the ovary; let us suppose, then, that the ovum is released about four days after the flow begins. It then has to travel into the uterus, and, if unfertilized, its probable maximum life is about 14 days. This brings us up to 18 days after the beginning of menstruation, at which time it has been observed there is a very marked falling off in fecundity of most women. If the normal ovum dies after this date, the relatively safe period is thus explained. The cases in which fertilization occurs after the 18th day are probably cases in which, for one reason or another, the ovum is delayed in its discharge or is exceptionally long-lived. Asdell, of America, states that the time from ovulation to menstruation is relatively invariable, while that from menstruation to the succeeding ovulation is variable. This again suggests that menstruation is dependent on ovulation. While not admitting any period of complete sterility, he says that there is a very rapid fall in the fertility of women after the 16th day.
Some General Medical Considerations

It is not usually desirable that conception control should be employed before one or two children have been born. I say one, because in the presence of conception control used from the very beginning of married life, there is no criterion of the degree of fertility of the individual couple concerned. It is possible that, in the absence of conception control, pregnancy would not have occurred. Thus early conception control obscures the real state of affairs and valuable time is lost, to be followed by the deepest regrets on the part of those who find out too late that they have prevented the birth of children at a time when the natural chances of fertility were higher. Lady Barratt finds, on analysis of certain Scottish figures, that of wives aged between 15 and 19, 15.6 per cent were sterile; of wives aged between 20 and 24, only 1.5 per cent were sterile; while of wives aged between 25 and 29, as many as 22.5 per cent were sterile. These figures were for the year 1855, when conception control was not a large factor. We thus see that at certain ages, both of the very young wife and of those over 25, the chance of pregnancy occurring is considerably reduced. Later marriage reduces the birth-rate.

Children should be the normal fruit of married life, and this needs to be stressed to those about to marry, and the danger of the later inability to bear children can safely be emphasized. (This is scarcely necessary in India today! The advice is meant for those who are anxious to use contraceptives.) This is not necessarily due to the use of contraceptives, though this too is claimed by some, but also due to the deferring of the occasion of normal intercourse until the woman is naturally less fecund. Another point which is often lost sight of is that the expense of the child is felt some few years after its birth, and for this reason need not often weigh with the newly-married couple at the outset of their married life. If they are in a position to marry at all, then their economic condition should later be such as to support the expense incurred when it falls. Frequently the reasons for the use of conception control by newly-married people are selfish, in that they do not wish to be bothered with the care of a child. I have even heard of some who have enquired if it is correct form for a child to be born in less than two years after marriage! (Again not India!) I said, it is well that two children be born before contraceptives are resorted to, as we all know only too fully the frequent tragedy of the only child.

After the birth of the first two or three children, the question of conception control stands on a different footing, and I think most of us will have sympathy with those who feel that some little time
should elapse before further additions to the family, so as to enable them better to arrange to meet their increasing responsibilities. I am certain that any method advocated must depend on a really careful consideration of the aims, talents and personalities of the individuals, not excluding, of course, any medical conditions which may be present. There is no royal method which is suitable for any and every case. We may, for instance, be compelled to advise the use of a female pessary in such a case as when the man cannot be induced to use self-restraint or a rubber sheath; and, vice versa, we may recommend the use of the sheath in the case of a woman who for any reason cannot, or will not, use a pessary. Again, it will be our duty to see if more natural methods of abstinence for a period, or ‘timing,’ will not serve the purpose till the couple feel that the advent of another child is desirable. Further, we can admonish them to remember that their fecundity is probably decreasing, and will continue to do so.

I do not propose to deal with the various pathological and medical conditions which may render the use of contraceptives essential, but it is obvious that methods of absolute conception control may be required which would not be necessary for ordinary people.

Above all, I feel strongly that, from an entirely medical point of view, we must realise that the end results of conception control have not been seen. For this reason we must deplore the ill-considered efforts of those who wish to broadcast information on the subject to all and sundry. I feel that, with the exception of giving general advice on the undesirability of the too large and crippling family, and giving some hints on periods of reduced fertility, any advice on methods of conception control should be like treatment—given only after consideration of the individual case. For this reason I am certain that, in the long run, the whole matter can be handled only by doctors in touch with individuals. This makes it all the more important for our profession to understand the issues at large and prepare itself for its duties.

No consideration of this subject can be complete without some reference to the birth- and death-rates, both crude and differential. We have not time to attempt any adequate survey of this section of our subject, but it may be as well to deal briefly with one or two points. In most Western countries both the birth- and death-rates have fallen considerably of recent years, though with some exceptions, of which the most notable is France, there is still a higher crude birth-rate than death-rate, which means that there is at present a slight rate of increase of the population. In the case of England this is about one per cent.
Contraception

Table I. Birth- and Death-Rates, 1913 and 1920-24.

<table>
<thead>
<tr>
<th>Country</th>
<th>Births</th>
<th>Deaths</th>
</tr>
</thead>
<tbody>
<tr>
<td>Russia</td>
<td>44.7</td>
<td>22.4</td>
</tr>
<tr>
<td>England</td>
<td>24.0</td>
<td>13.8</td>
</tr>
<tr>
<td>France</td>
<td>27.5</td>
<td>15.0</td>
</tr>
<tr>
<td>Italy</td>
<td>31.7</td>
<td>18.7</td>
</tr>
<tr>
<td>U.S.A.</td>
<td>25.6</td>
<td>15.0</td>
</tr>
</tbody>
</table>

The populations of the chief European countries have doubled or trebled during the past century, as a result of the reduction of death-rate. This has been brought about mainly by the control of infectious epidemics and the lowering of infantile mortality.

Table II. Population

<table>
<thead>
<tr>
<th>Country</th>
<th>1800</th>
<th>1810</th>
</tr>
</thead>
<tbody>
<tr>
<td>Great Britain</td>
<td>..</td>
<td>16,000,000</td>
</tr>
<tr>
<td>France</td>
<td>..</td>
<td>27,000,000</td>
</tr>
<tr>
<td>Italy</td>
<td>..</td>
<td>17,000,000</td>
</tr>
<tr>
<td>Sweden</td>
<td>..</td>
<td>2,000,000</td>
</tr>
</tbody>
</table>

A decline in death-rate has taken place also in the decade 1914–24, except in Russia. However, in 1918–19, in practically every country for which we have any record, the death-rate equaled or exceeded the birth-rate, owing to the pandemic of influenza. Although racial and other conditions affect the birth-rate, it has been also influenced in Europe by the disastrous circumstances following the War, and in America by increased standard of living and of economic pretensions.

But we must remember that there is obviously a limit to the fall of the death-rate, which is already in most civilized countries approaching a point below which there is no immediate possibility of any great reduction. Further, it is to be expected that these death-rates will show a rise after the next decade or so, owing to the dying off from old age of many individuals who, through the agency

Average for 1922–23 for R.S.F.S.R.

† Figures for U.S.A. include only the States in the registration area.
of modern medicine and hygiene, have attained to an age which they would otherwise not have done. Thus, in the case of countries such as England and America, should the birth-rate not rise, it is possible that they will soon be faced with actually decreasing populations. The time of anxiety of the danger of an increasing population has now given rise to the reverse in certain Western countries. However, the differential birth-rates show that more children are being born amongst the lower classes, and this is made the excuse or the reason for the impetuous campaign of the birth control clinics, whose promoters claim that in advocating conception control amongst these classes they are working on true eugenic lines. But against this it can be noted that there was a similar marked difference in the differential birth-rate in Scotland in 1855, before conception control was anything like the potent factor which it is today. This shows that there are other factors at work, which are at present little understood, and into which we cannot possibly digress. Nearly every authority to which I have had the opportunity of referring, including some advocates of birth control, are not willing to admit that the lower social classes are necessarily any worse biological stocks for breeding purposes than those at the top of our social scale. If they produce poorer progeny, it is that the failure lies in their inability to rear properly rather than to procreate satisfactory offspring. Which, as Sir Arthur Newsholme emphasizes in his discussion of the subject, is a real reason for redoubled efforts at social reform, rather than to promulgate widely the methods of conception control. He, in presenting statistics regarding the proportion of the next generation produced by the most genteel sections of the present population, says that unduly pessimistic conclusions as to present differential birth-rate need to be modified.

It would be a fascinating occupation to try to forecast the trend of events in a country such as India, where we have at present a rising population, much of which is on the verge of starvation, and still afflicted with the plagues and decimating diseases which have been Nature's great population-restraining measures. The population of India was 294 millions in 1901, and 319 millions in 1926, which is an increase of 8 per cent. The increase in the Christian community was 27.6 per cent, but, of course, much of this was due to conversions and not to vital increase.

<table>
<thead>
<tr>
<th>CRUDE BIRTH-RATE OF:</th>
<th>INDIA</th>
<th>ENGLAND</th>
</tr>
</thead>
<tbody>
<tr>
<td>1916</td>
<td>37.13 per 1,000</td>
<td>20.1</td>
</tr>
<tr>
<td>1925</td>
<td>33.65 ,,</td>
<td>20.1</td>
</tr>
<tr>
<td>Decrease of 3.48 per 1,000.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Contraception

CRUDE DEATH-RATE OF:

<table>
<thead>
<tr>
<th>Year</th>
<th>India</th>
<th>England</th>
</tr>
</thead>
<tbody>
<tr>
<td>1916</td>
<td>29.1 per 1,000</td>
<td>13.4</td>
</tr>
<tr>
<td>1925</td>
<td>24.72 &quot; &quot;</td>
<td>11.0</td>
</tr>
</tbody>
</table>

Decrease of 4.38 per 1,000.
(Decrease in rural areas 4.5, in urban areas 3 per 1,000.)

RATE OF INCREASE OF POPULATION:

<table>
<thead>
<tr>
<th>Year</th>
<th>India</th>
<th>England</th>
</tr>
</thead>
<tbody>
<tr>
<td>1916</td>
<td>8 per 1,000</td>
<td>6.7</td>
</tr>
<tr>
<td>1925</td>
<td>8.9 &quot; &quot;</td>
<td>9.1</td>
</tr>
</tbody>
</table>

We see that, as in England, the death-rate has fallen (as has also the birth-rate), but not to such an extent. The actual Indian rates are much higher, but the difference, i.e. the rate of population increase, is much the same—just under one per cent.

Main drop in death-rate was in all communities, except the Christian, which showed a very slight rise, 0.25 per mille. But the previous Christian death-rate was very much less than others (about 18 per mille). Evidently recent hygienic improvements have affected the Christians less, owing to their previous higher standard.

Table IV

<table>
<thead>
<tr>
<th>Year</th>
<th>Death Rates</th>
<th>Cholera</th>
<th>Plague</th>
<th>Dysentery</th>
<th>Fevers</th>
</tr>
</thead>
<tbody>
<tr>
<td>1916</td>
<td>per mille</td>
<td>1.2</td>
<td>0.86</td>
<td>1.0</td>
<td>17</td>
</tr>
<tr>
<td>1925</td>
<td>&quot;</td>
<td>0.48</td>
<td>0.49</td>
<td>0.86</td>
<td>15</td>
</tr>
</tbody>
</table>

It is seen that a big advance in handling a big epidemic disease like cholera may have only a small effect on the whole death-rate, e.g. a fall of only 0.7 per 1,000 deaths.

We should have to weigh up the probable influence of an industrial revolution, with its harvest of increased material prosperity and probable increased birth-rate (cf. England); we should have to attempt to estimate the probable decrease in the death-rate due to the rapid advance of medicine and hygiene; we should have to try to prophesy the rate at which contraceptive measures will be taken up by a country, when it has not even the trouble of finding them out for itself: in short, we should soon be in a morass of appraisal of all kinds of tendencies and events, which we can but very dimly foresee. We must not allow our fancy to wander on. At the same time, I think that we can reckon that there will continue to be a steadily increasing population in India for a good many years to come, and that probably this will gradually be more and more restrained by an extended use of contraceptive measures after some time.

But it is not probably this side of the wide problem which will induce us to advise methods of conception control. I think it will be rather a consideration of individual family problems which will lead us to act, or otherwise. Probably few of us have not come across
married people in this land to whom, we have felt, some knowledge of how to restrict the size of their families would be a blessing from almost every point of view. I think this is specially so among the Christian community, where, due to the philanthropic activities of Missions, many children have been saved who would otherwise have died through disease. Again, the extensive and comprehensive schemes for education have inevitably brought some Christians to the belief that it is the duty of Missions to provide and care for any number of children which they themselves choose to produce; or, as many of the less-educated ones would put it, 'the children with whom God has blessed them.' As I have indicated previously, the lower age for marriage involves a higher birth-rate. Many of us, no doubt, have actually been consulted as to what is the duty of comparatively young and sexually potent parents, who have already produced perhaps six or eight children. What is our duty in such cases? We are brought down to the problem, as it is at our doors, without any necessity to try to solve it on neo-Malthusian lines from the point of view of the population of India or even the whole world. We cannot decide it without an ethical review of the practice of contraception, and, though I have already taken up a good deal of your time, I should like, in conclusion, to make a few points which have appealed to me in this connection.

Some Ethical Considerations Regarding Conception Control

One of the most serious objections to the use of contraception is that it enables man to dissociate the pleasure of the sex instinct from its biological end, thus opening the door to grave and demoralizing abuse. In other words, we may say that it is reasonable to expect people to restrain their sexual impulses from fear of the consequences. I think that this is partly true at least, though the moral value of such action is open to doubt. I certainly doubt if the size of many families before contraceptive methods were well known was often limited by the fear of pregnancy following intercourse. On the other hand, I do think, and there is evidence both from England and America which goes to show, that removal of the fear of consequences of sexual intimacy has led many unmarried people to do wrong. How far again the intrinsic moral state of these folks is worse than that of their predecessors, who were presumably restrained by fear, is again open to debate. However, fear is a valuable deterrent, and salutary at any rate, from the point of view of the community or the State. I think that most of us, were we able, would choose so to arrange that unmarried people should not be in the possession of information as to how to indulge their
sexual desires and yet evade the usual fruits. However, this is not for us to decide, for the powerful fact remains that knowledge of conception control has been discovered by man—for better or worse. It remains for us to use or abuse it. One way in which the State stands to gain by the knowledge and practice of conception control, by those who are not morally inclined, is that it reduces the number of illegitimate births, and some methods tend to reduce the incidence of venereal disease. Illegitimate births per 1,000 unmarried women in England fell, from 17 in 1871, to 5·9 in 1925, a 65 per cent reduction; while legitimate births per 1,000 married women fell from 293 to 143—52 per cent. The ethical challenge seems to be that we have got to learn and teach how and when to use the knowledge which we have gained, in this matter as in others.

At the same time, it is quite right for us to consider how far the State should step in in the control of contraception—for instance, by making the sale of contraceptives illegal, except on a medical prescription, as in the case of poisons. At the moment, though, our problem is a more purely ethical one.

As regards the unmarried, I think that the true reply to our first objection is that, if and when we succeed in training our young children, boys and girls, to a right knowledge, backed up with a wise and righteous interpretation of sex knowledge, we shall be on the high road to combating the evils associated with the use of contraceptive measures. In the West much is being done to improve the standard of teaching about the racial instincts and their functions. However, I would like to emphasize here that knowledge in itself is not sufficient, but it must be complemented by the best interpretative and inspirational guidance, for which both parents and teachers have many opportunities.

It is often urged that contraception is 'unnatural.' I have great sympathy with Fielding in Parenthood—Design or Accident? on the subject, in which he whimsically remarks that the charge of being unnatural is a most devastating one, providing you are the first to get it home! But why is it unnatural? Surely much of our manipulation of Nature and her products is very unnatural from many points of view. When we realize that we have removed so many of the causes of the reduction in the size of a family by disease, and that prolonged sexual abstinence is often harmful, it is scarcely just to stigmatize some other method of population control as unnatural. It would almost be unnatural were we not to consider other ways of controlling those affairs which Nature used to deal with in her royal, sweeping manner.

There is the argument that sexual intercourse is only permissible
in the absence of any obstruction to, or reduced chance of, procreation. If we adopt this principle, then it logically follows that coitus during any period of reduced fertility, e.g., lactation, during the early part of pregnancy, certain inter-menstrual periods, is banned as wrong, because it is not expected to, or cannot, result in fertilization. It would, therefore, follow that the sex impulse should be gratified only a very few times in the life of an individual, when there is every reason to believe that procreation will result. Such a position cannot reasonably be maintained. Conversely, we can argue that, if it is right to use our knowledge of the reduced chance of fertilization occurring during the above-mentioned periods, then it is also right to use other methods, providing they are not harmful.

We should do well to remind ourselves that the biological end of an impulse or urge is not brought under review and judgment at the time of its operation. The impulse or instinct seeks its physiological satisfaction without regard to the end, which is in fact provided for in Nature's scheme. It is not, therefore, right to demand that the ultimate biological end of coitus should be consciously kept in view at the time of the satisfaction of the sex urge. This urge demands its satisfaction, apart from its biological end, and, unsatisfied, may work harm in the organism. I do not feel, therefore, that the dissociation of the two is necessarily unnatural, providing that it does not involve harm; this, of course, it is our present purpose to try to discover. We are in the process of only learning. Contraception has to be judged on its merits—physiologically, economically and ethically—and it does not seem to me that an a priori decision can soundly be made. True marriage is a spiritual as well as a physical union. But we have to remember that the former is much dependent on the latter, especially in normally sexed couples. Physical union is normally the real complement of the spiritual union. For this reason physical intercourse has a value in a higher sense than the purely physical one, even apart from procreation—that is, in deepening the spiritual union of man and wife. If we admit that procreation must in these days be limited to some extent, then we must remember and attempt to assess this higher value of sexual intercourse in vitalizing and strengthening the whole aspect of marriage.

There is one point with which I think all will be in agreement, and which we can regard as axiomatic—that any method of contraception must be accompanied by the exercise of some self-control and restraint. Because some individuals are lacking in these qualities, we cannot condemn the idea, but rather strengthen our efforts to build up moral fibre, which is essential to the proper solution of each individual's problems and difficulties in this, as in other matters.
Circumstances alter cases, and advice which can safely be given to some is not suitable for all. Even having arrived at some general position with regard to the advisability of the exercise of conception control amongst certain people, it does not follow that this advice should be given to all, or even given to a few of a backward community, where ethical standards have not developed far. This raises the question of how far any instruction should be given to individuals in the communities of this land, among which we severally work. No doubt, many different replies to this will be given, dependent on the experiences which we have had. Most of us will probably feel that the time is not ripe for advising even individually the use of artificial contraceptives amongst our several communities, and that preparation, in the form of gradual inculcation of knowledge on a variety of associated subjects, is first required. I think that few would be in favour yet of broadcasting information about artificial contraceptives in most communities in India today.

However, I think that much useful work can be done in taking opportunities of driving home that we too have a responsibility as regards the number of children which we bring into the world, and that they do not consist of unpremeditated acts of God. I think that some information on the duty of self-control, and the help which can be obtained from an attempt to apply the 'timing' method in the matter of conception control, will be of assistance to many.

This paper has already grown to such limits that it is threatening the amount of time which we must have for discussion. Some may feel that no attempt has been made to view this question from a definitely Christian standpoint. It is not that I do not think this is essential for us, but rather that I feel that the few brief and general ethical ideas which I attempted to put before you are in fact based on an approach which, I feel, is in accord with our Master's teaching. The most important part is that it must be a matter for each individual conscience to face. Obviously, true Christians, considering the matter on its spiritual as well as its physical plane, will differ as to the degree of contraception which it is right for them to employ.

**Summary**

The methods of contraception have been described, and the chief disadvantages and points of use about each have been briefly dealt with. It is pointed out that no entirely satisfactory method exists, that there is no definite evidence of any great harm following the discretionary use of some.

The relative method of conception control, 'timing,' has been more fully dealt with, on account of its not demanding the use of
artificial measures. It has been urged that this method will go far towards solving the problem of the limitation of the family. Certain theoretical considerations have been presented in its support.

Certain ethical considerations have been reviewed, and it is maintained that there is no a priori case against contraception on moral grounds.

Certain vital statistics have been dealt with which show that the present rate of increase of the population (India) is about one per cent, which is comparable with figures for England. As opposed to Western countries, there is, however, a prospect of very material further reduction of the death-rate. Children constitute the reason of married life, from a biological point of view, and it is urged that conception control should not be employed till at least one or two children have been born. This has the advantage of demonstrating the fertility of the couple concerned, before conception control is resorted to.

Various pathological conditions may demand the use of different methods, as also will different qualities and temperaments in the husband and wife. Each case should be considered individually before advice as to method is given. Broadcast instruction is condemned. This means that advice regarding conception control should be left finally in the hands of the family doctor.

The time is not ripe, in India at any rate, for wide encouragement of artificial conception control, but real help may now be given to many by encouraging them to realise their responsibilities in procreation, and informing them of the aid towards limitation of the size of the family which such a simple method as ‘timing’ may afford.

How Long Should Leprosy Treatment be Continued?

By ERNEST MUIR, M.D., F.R.C.S.,
Leprosy Research Worker, School of Tropical Medicine and Hygiene, Calcutta

Ten years’ experience of the treatment of leprosy has made the writer of this paper cautious in his presentation of the answer to this question. The treatment of leprosy is in a state of flux. Year by year improvements are being made, and what holds good for this year may not be true for the next year. Yet there are certain general principles which may be laid down for guidance.

1. It must be evident to all who have treated cases of leprosy that:

(1) Some cases get better much more quickly than others.
How Long Should Leprosy Treatment be Continued?

(2) The disease may linger on in the body long after all active signs have disappeared.

(3) In order to get the patient rid of active signs, and to keep him from developing these signs again, it is necessary that his general health should be maintained for an indefinite period.

2. This leads to a consideration of what are the 'active signs of leprosy.' These may be classified as follows:

   (1) A positive bacteriological finding. The skin, nasal mucosa and lymph nodes must all be examined. Repeated examination of the skin must be made. If the ears are found positive during treatment, they must be examined again till repeated smears are found negative. The clip-smear method is recommended as most reliable when few mycobacteria are present. Any other portion of the skin which has been found positive before should likewise be re-examined. The nasal septum, if positive to begin with, should from time to time be scraped, and smears made till negative.

   (2) No patient should be declared bacteriologically negative until he has had repeated maximum doses of potassium iodide administered (240 grains in an adult), without signs of reaction.

   (3) A raised or erythematous macule in leprosy is a sign of active disease.

   (4) The increase in size of a macule or of an anaesthetic area indicates active disease.

   (5) The diminution of such an area also shows active disease. Only the living can die, and the infection must still be alive as long as it continues to get less.

Active lesions must be distinguished from permanent lesions. Where fingers and toes have been lost we cannot expect them to grow on again; and, likewise, where nerve fibres have been destroyed we cannot expect them to be renewed. Permanent anaesthesia should, therefore, be expected, both in the sites of old macules and in the sites of acroteric (glove-stocking) lesions. The above five points will serve to distinguish active from permanent lesions.

Nerve trunk thickening or tenderness must also be counted as an active sign. Iodides will often light up tenderness in nerve trunks as well as swelling and congestion in the skin, lymph nodes and such organs as the testicles, long after bacteriological and clinical signs of activity have failed to be elicited by other means.

The iodide-sedimentation test is also a delicate criterion which, when carefully interpreted, is of distinct value.

3. The next point to consider is how long treatment should be continued after all active signs have disappeared. This will obviously vary with the case. If all active signs disappear within two
or three months, one or two months’ treatment may suffice. If an obvious predisposing cause is found and removed, its removal being followed by rapid disappearance of leprosy without the use of any special anti-leprosy remedies, then prolonged treatment is unnecessary, provided the predisposing cause is permanently removed. This is often the case with such a disease as syphilis. In an A1 case all signs of leprosy may disappear by the time a single course of one of the ordinary arsenical anti-syphilitic drugs has been administered. Likewise, a change in diet may cause healing of leprosy without any other remedy.

But in cases which have proved more refractory, and have taken years before active signs have been eliminated, there must be a correspondingly long period of post-active-sign treatment.

This is especially so where no predisposing cause has been discovered, or when the predisposing cause cannot be removed: as when a patient is forced to live in a malarious climate and continues to have attacks of malaria, or when he is suffering from post-dysenteric scars of the bowel.

We may, therefore, say that treatment should be continued for six to twenty-four months after we fail to find acid-fast bacilli or other evidence of their presence in the body.

Even after treatment has been stopped it is important to keep in touch with the patient. He should report to the doctor every three months for the first year, and then every six months for the next two years. His reporting to the doctor will have the effect of insuring that he continues to keep up his general health to a high standard, and that no recurrence has intervened.

If during these three post-treatment years the patient suffers from any debilitating disease or is subjected to other circumstances adverse to his health, the possibility of recurrence of leprosy must be kept in mind, and special means taken to prevent it and to restore him to good health again as soon as possible.

The question of testing by iodide administration of the young children of leprous parents, or children that have been subjected to infection, naturally arises in this connection. Experiments that have been carried out at Purulia lead us to consider it probable that most of such children are infected; and that with good food, with the absence of predisposing causes, and with good hygienic conditions they are unlikely to develop the disease, and will generally lose the infection before they reach the dangerous age of puberty. It is, therefore, unwise to light up latent disease in such children by giving iodide.
ON the 25th February, 1929, a motor-bus accident occurred at 10 p.m. on the road about a mile from the Sanatorium. I was called to the scene; found one man dead and thirteen others injured, the driver being one of the least affected. Of the thirteen, eight had large gaping scalp wounds; the rest had minor injuries. As another bus was passing during my inspection, it was utilized for transporting the injured to the Sanatorium operating room without delay. All the wounds were cleaned and sutured, and all healed in time by primary union. Each patient was also injected with anti-tetanic serum.

Venkatappa, aged 29, was one of the scalp wound cases. It also became apparent that he was completely paralysed from the neck down. Examination (X-ray not being available) threw suspicion on one of the cervical vertebrae, though no deformity was found.

The following morning, after suitable preparation, using rectal-ether anaesthesia, an incision was made from below the occiput to the seventh cervical spine. Dissection showed a depressed fracture of the fourth arch, with considerable splintering. Laminectomies of the third and fourth arches were performed, and the dura was then opened. This was only slightly compressed, but both upward and downward there was marked edema surrounding the cord. The dura was closed with silk sutures; the muscle planes with catgut; the skin with silk-worm gut. A plaster of paris fixation cast was applied.

About three days after operation the patient began to move the toes of the right foot. Thereafter slowly, until discharge, six weeks after the injury, movements returned in both legs and arms. Catheterization was necessary for about two weeks. His Kahn test proved to be plus four. Weekly injections of neo-salvarsan were given intravenously; liquor hydrargari and potassium iodide were given by mouth.

On discharge he was able to walk with help, the left leg still being very spastic. Four weeks later, when I saw him in the court room, he was walking much better.

Conclusion. Since there was no definite cord injury, this patient might have recovered without operation, especially with the help of anti-syphilitic treatment. Operation probably aided and hastened recovery and made it more certain. It was, therefore, justifiable.
The Journal of C.M.A.I.

PEDIATRICS OF ONE CENTURY AGO

GITTINGS, in the American Journal of Diseases of Children, writes about the practice of pediatrics one hundred years ago. Among the most common causes of death among children of those times were 'infantile decline,' 'teething,' and 'water on brain.' Cathartics were the most widely used of all remedies. They were used in large doses, and repeated at frequent intervals.

The following interesting case is reported in the literature of those times:

'Master B., of Bromley, aged one year, after two days of constipation, was attacked with violent vomiting, fever and abdominal distention, notwithstanding a purging of a watery nature unmixed with feculent matters. Four grains (0.26 gm.) of scammony and 2 grains (0.130 gm.) of mild mercuric chloride were given every four hours, with some infusion of senna and syrup of rhubarb. On the next day the vomiting and watery purging had nearly ceased, so the scammony and other drugs were repeated. On the third day no feces had appeared, so a cathartic clyster morning and evening was ordered, together with 1 grain (0.065 gm.) of mild mercuric chloride and 4 grains (0.26 gm.) of jalap, four times a day, in place of the former mixture. On the fourth day the results had been nil, except for a little mucus produced by the clysters, so a new combination was tried four times a day—4 grains (0.26 gm.) of scammony, 2 grains (0.13 gm.) of jalap, with a mixture of infusion of senna and tincture of jalap, and also the clysters.

'By the fifth day no feculent material had appeared, although all the medicines had been retained. The symptoms of pyrexia were somewhat augmented; the child felt great disinclination to be moved (which is fairly obvious), and the fulness of the belly was considerable. The dose for the day was 1 drachm (3.75 gm.) of aloes dissolved in 1 ounce (30 c.c.) of simple syrup, to be given in divided doses every two hours, together with the jalap and scammony powders. On the sixth day, all of the syrup having been taken and retained, our little hero had the first feculent motion since the commencement of his illness. The fulness of the abdomen was somewhat diminished, but fever persisted. The aloes and powders, therefore, were carefully continued. On the seventh day, after two copious evacuations, the fever began to fall, so for good measure ½ grain (0.0325 gm.) of mild mercuric chloride was given four times a day with an aperient mixture (specifications not furnished), and the child gradually became convalescent.'

In the treatment of croup, some practitioners of that period 'withdrew enough blood to induce syncope, usually from 6 to 8 ounces, and followed this by three or four leeches on the trachea and a full-sized blister on the chest.'

Bed-wetting was treated with cantharides internally to the point of slight strangury, cantharides locally in the uretha, and blisters or plasters of Burgundy pitch on the sacrum.
EDITORIAL COMMENT

'STUDENTS' OR 'PRACTITIONERS' OF MEDICINE

ONE of the most vital needs in scientific medicine today, as always, seems to be that of engendering and fostering a spirit of professional enthusiasm amongst its followers. From our educational colleagues we hear the same cry: 'How can those who are teaching in our mission schools and colleges be stimulated to take a real interest in their profession, and be encouraged to advance their knowledge in the psychology and practice of the modern principles of teaching?'

Only this morning, during the course of conversation, a military medical officer gave a rather glowing account of the activities of the clinical society to which he belonged in his last station, and in which the majority of the members were from the various services—military, civil and railway; while the so-called private practitioners were in a deplorably small minority. In the city with which we are best acquainted the situation seems to be reversed: scientific interest is fostered by a small group of general practitioners, while those in the services stand aloof. So that the question seems to go back to the personalities involved.

Colonel C. A. Gill, Director of Public Health in the Punjab, in his lecture on 'The Present Position of Medical Science in India,' delivered before the Punjab Branch of the British Medical Association, said much which has a bearing, directly or indirectly, on this whole subject, part of which is well worth reproducing here:

'There was no counterpart in India or in the East of the revival

1 Special article, Indian Medical Gazette, March, 1929.
of learning in Europe, and the re-birth of medical science in India may be said to have occurred almost within living memory. There was thus no preceding latent period during which the spirit of scientific inquiry manifested itself, despite all the terrors of the law and the priesthood.

'The dark ages in the East continued down to almost modern times. Throughout this long period the scientific spirit, so far as medicine is concerned, was dead, and the practice of medicine was, and still largely is, in the hands of vaids and hakims, who, we now see, may be regarded as the lineal descendants of a higher type of practitioner. They are in fact our medical brethren, who, cut off for centuries from observation and experiment, with no knowledge of anatomy and physiology—the sole avenue of approach to scientific medicine—whose botany is a drug list and whose remedies are worthless charms and incantations, have degenerated beyond all recognition. Alongside these men, thanks to the alumni of the medical colleges and schools established in India by the British Government, we now have a growing number of medical practitioners trained in the system of which Hippocrates and Sushruta were the founders. But these colleges and schools were originally established to serve the practical purpose of tending the sick, and at first, more especially, to provide for the needs of the civil and military servants of Government. But the practice of a system of medicine does not necessarily mean the acquirement of the scientific spirit upon which it is based. Drugs may come into fashion and disappear, methods of treatment may change, technic may improve, but something more than a knowledge of these things is required if medical science is not once more to degenerate into dead formalism and quackery. The curse of medicine, as of all sciences, has always been "the practical man," or the man who considers the immediate end of his art without regard to knowledge on which it is based. My reading of the situation is that we have at the present time many practitioners but few students of scientific medicine, and that, whilst there are some grounds for adopting an optimistic attitude, the future of medical science in India, and, in consequence, the well-being of the inhabitants of this great land, is not yet assured. Many of our practitioners have, in fact, so recently assumed the mantle of Hippocrates and Sushruta, and their contact with the scientific spirit in medical colleges is so brief, that there is a distinct danger of a lapse into quackery. In short, history may repeat itself; and what happened at the beginning of the Christian era may occur again in the twentieth century. It is for you, by precept and example, to falsify this pessimistic forecast.
Something must be said in regard to the *vaids* and *hakims*, those interesting relics, from the historical point of view, of a by-gone age; it is clearly impossible, even if it were practicable, out of regard for the solace, if not the skill, they bring to perhaps 90 per cent of the people of this land, to abolish them at once; they obviously must continue until such time as they can be replaced by more worthy and more efficient substitutes. It would, of course, be folly to bolster up any type of practitioner whose training is unscientific, and every available rupee should be devoted to the provision of medical relief by medical practitioners trained in the method of the one and indivisible medical science. Let us not waste our time and our energies in discussing the merits or demerits of *vaids* and *hakims*. There are, indeed, more quacks inside the medical profession than outside—and the former are much the more dangerous!—but if the *vaids* and *hakims* can safely be left to themselves, it is clear that the practitioners of scientific medicine cannot afford to be satisfied with the smattering of medical knowledge they learn as students; they must, in every way open to them, by reading, by contact with those possessing the scientific spirit, by joining scientific societies such as this, and by their every-day professional conduct and practices, show their superiority, and thus justify themselves in the eyes of the public. They must, in short, cultivate the scientific spirit and remain students of medicine all their lives. If medical science in India is to advance and not to undergo retrogression—and, to my mind, the decision is at the moment trembling in the balance—it is essential that close contact should be maintained with all that is best in medical science, and that, irrespective of all other considerations, the palm must go to those that deserve it. We must, however, above all, learn to depend on ourselves; and I cannot better conclude this lecture than by quoting to you the wise aphorism of Sushruta, so reminiscent of Hippocrates:

"There is no end to the science of medicine. Hence needfully and carefully devote thyself to it, considering it an honour to practise the art."

It seems a fair question to ask whether we, as medical missionaries, are doing our part in co-operating with those organizations, avowedly Christian or otherwise, whose object it is to develop better ‘students’ as well as better ‘practitioners’ of medicine.
Rural Teams of Women Workers

I

HAYE recently made a tour, visiting our graduates who are working in stations near the North-West Frontier, and I have been much impressed by the loneliness of several of them.

I believe that the members of the Christian Medical Association realise the special difficulties and temptations which surround women medical workers of various grades when they are stationed in lonely places.

I would suggest, for consideration, that the authorities might be urged to make it easier and safer for them, by establishing small colonies of women workers in larger and more central villages and small towns, instead of placing them alone.

I would suggest that, if it were possible, they might put a woman medical practitioner (S.A.S.), a health worker, two nurse dais, and a woman teacher for the elementary schools, with a bulanewali, to live together in one compound. They would then have companionship in the evenings; they would be able to go out together to their work, and when one was called out to a case the other would not be left alone.

I would also suggest that they be definitely put under the Christian care of the nearest missionaries or the missionary working in the district, and that these might be asked to do what they could to help them in their spiritual life, and to arrange occasional services for them in the village.

If this scheme is approved of, I shall be glad if it may be laid before the authorities, with the recommendation of the Christian Medical Association.

It is not a matter so much of multiplying workers as of concentrating them in the larger villages and arranging for them to live together; and, if it were felt important by Government, I believe it could be arranged.

EDITH M. BROWN.
The Student Christian Movement of India, Burma and Ceylon

119
doctors and nurses, who have come to India to engage in the work of healing, will doubtless bear me out that in their own lands the national student organisations under the aegis of the W.S.C.F. have exerted, and are exerting, a tremendous influence among the students of our age. I go further, and venture the assertion that a vast number of the doctors and nurses that have come to this country, in their own student days allied themselves with the National Student Movement in their own country, and, under God, through this very agency there was vouchsafed to them the ideal of giving up their own kith and kindred and of venturing forth, under the standard of Christ, to needy lands which called out to them for sympathy and succour.

India, the country to which they have come, also boasts of a National Student Movement, with its two sections. The Y.W.C.A. Student Department binds the women students of the land together under its aegis, while the Student Christian Association ministers to the men Christian students of the country. In this article an effort is made to place before the readers of the Christian Medical Association of India Journal a brief account of the organisation and the work of the Student Christian Association.

Let it be stated at the outset that by far the most powerful instruments in shaping the life and character of our students are the Christian colleges, which are scattered over the country. They do for our students a thousand times more than the Student Movement could do for them. Then again, the Young Men’s Christian Association, with its secretaries, literature, hostels and various other assets, is rendering yeoman service to our students, the value of which cannot be adequately estimated. It is in alliance with the Christian educational forces and the Young Men’s Christian Association that the Student Movement takes its stand to help the students of the country to know Christ, their Redeemer and Lord, and to strengthen their loyalty to His person and service. Our secretaries travel over the country to take to our associations the experiences of student groups which are separated from each other. We organize Christian students, pursuing their studies in various institutions, into Christian unions, with the supreme purpose of uniting with the local staffs in helping to build up Christian character.

These student groups, in many cases, have association rooms of their own, in which they gather together for corporate prayer and Bible study. They secure magazines and indoor games, which are enjoyed during leisure periods. They organise lectures on religious and others subjects, to which they invite their fellow-students of
other faiths. They very often start night schools and organise community games for poor children in their vicinity. Groups of them, in a number of places, deliver simple lectures in city mohullahs and villages, on hygiene and other subjects connected with social uplift.

Once a year, in each province of India, there is held what is known as the Students' Camp. These are the very backbone of the movement. Students and their professors, with some ex-students, get together for four or five days. They play, eat, sleep, work and worship together as a fellowship. Students of the various institutions of each province, who otherwise would have hardly any contacts, meet each other, and in a very intimate way are brought face to face with the deep realities of life. In addition to these camps, once in four years there takes place a students' conference, known as the Quadrennial Conference, which is attended by student representatives from all over India, Burma and Ceylon. Just this past year this conference took place at Poonamallee, near Madras, and was attended by about four hundred men and women students. The delegates who from the world over attended the W.S.C.F. meeting at Mysore, also came to this conference.

We publish booklets and camp studies, prepared by friends of students, at a cost within the buying capacity of our students. At the same time, we publish a monthly magazine for our students, known as the Student Outlook. We have four secretaries on our staff, who travel all over the country, and help the students as members of the movement. We are now beginning to organise camps for schoolboys in the two upper classes, and have begun to regard this aspect of our work as most essential. European and Anglo-Indian students at the present time are engaging our particular attention, as we realise that, in the whole work of national reconstruction, a student organisation such as ours must take a lead in racial reconciliation.

It is also our goal to so work in co-operation with educational institutions as to acquaint them with competent men, interested in service for the youth of India, who could be approached to join the staffs of colleges and schools. We are even venturing to approach universities abroad with a view to their inviting senior members of our movement to serve on their faculties, in order to interpret India to nations abroad. One such invitation has come to us from the Beirut University.

It would at once be asked by the readers of this magazine: What is being attempted by the S.C.M. for the students in medical institutions? I want to make it clear that our work does include
institutions of technical learning, and that we have associations organised in medical institutions. Such institutions, as we all know, are not very many, and most of them are under Government control, with no religious instruction being imparted to the students. This reminds me of a number of arts and science colleges which are under State management, and in such institutions the Student Movement fulfils a real need. But to return to medical schools and colleges. I may illustrate our work by citing examples. The following occur to me as instances of our work in medical schools and colleges:

1. In the Medical College, at Madras, we have one of our strongest associations. Men and women students meet for regular devotional addresses, and also come together for Bible study. A number of them, at the time of writing, have gone to Tirupattur to work in the villages round about the N.M.S. Ashram. At the Poonamallee Conference, of all the colleges in Madras City, the Medical College association sent the largest delegation. One of their number at the time of the conference asked permission to invite for a group meeting, from among the students assembled, those who were interested in Christian medical work, and no less than forty students came to discuss the work of Medical Missions in India.

2. At Miraj we have an association in the Medical School. It is one of our most active associations. Only the other day a student who had completed his course at Miraj, on his way to a station on the Persian Gulf, wrote requesting that the Student Outlook be regularly sent to him, and added that the movement had meant a great deal to him. No wonder that as many as eleven students came to the Poonamallee Conference from Miraj, each raising no less that Rs. 60 as delegation fee.

3. The other day I was touring in Assam and visited Dibrugarh, situated within a hundred miles of the Chinese frontier, where I discovered a Government medical school. I learnt, to my surprise, that about 40 Christian students were in attendance at the school. They arranged for me to address them in one of their lecture theatres, and invited their fellow-students of other faiths to come. On the Sunday that I was at Dibrugarh they came to the house of the Bishop of Assam, and we organised an association and chalked out a religious and social programme.

Medical students in cities like Lucknow and Lahore are few, and they usually unite with the local associations in the neighbouring Christian colleges.

We have among medical students some of our strongest members, and we hope and pray that many of them may devote their lives definitely to Christian medical work.
The Student Christian Movement is an indigenous and self-governing institution, and raises its budget in the country. Our annual budget is about Rs. 15,000. This money is spent in supporting four secretaries, publishing literature, and carrying on widespread itineration.

I shall be glad to send a copy of the annual report of the Student Christian Movement for 1928 to any who may desire it. And, finally, needless to say, I shall be happy to hear from any who feel constrained to contribute towards its financial support, perhaps for the sake of the service which the movement is rendering to some who will later help to carry on the work of Medical Missions.

MEDITATION

O THOU great Companion of our souls, do Thou go with us today and comfort us by the sense of Thy presence in the hours of spiritual isolation. Give us a single eye for duty. Guide us by the voice within. May we take heed of all the judgments of men and gather patiently whatever truth they hold, but teach us still to test them by the words and the spirit of the One who alone is our Master. May we not be so wholly of one mind with the life that now is, that the world can fully approve us, but may we speak the higher truth and live the purer righteousness which Thou hast revealed to us. If men speak well of us, may we not be puffed up; if they slight us, may we not be cast down; remembering the words of our Master who bade us rejoice when men speak evil against us and tremble if all speak well, that so we may have evidence that we are still soldiers of God. . . . As we go out among men to do our work, touching the hands and lives of our fellows, make us, we pray Thee, friends of all the world. Save us from blighting the fresh flower of any heart by the flare of sudden anger or secret hate. May we not bruise the rightful self-respect of any by contempt or malice. Help us to cheer the suffering by our sympathy, to freshen the drooping by our hopefulness, and to strengthen in all the wholesome sense of worth and the joy of life. Save us from the deadly poison of class-pride. Grant that we may look all men in the face with the eyes of a brother. If anyone needs us, make us ready to yield our help ungrudgingly, unless higher duties claim us, and may we rejoice that we have it in us to be helpful to our fellowmen.  

1 From Walter Rauschenbusch's Prayers of the Social Awakening.
COMMENTS AND CORRESPONDENCE

ANæMIA OF PREGNANCY

To the Editor:

With reference to the case of anaemia of pregnancy reported by Dr. Evans in the March number of the C.M.A.I. Journal, it very closely resembles the cases seen by us in Bombay, although the R.B.C. count was not so low as is frequently the case with us.

Dr. Evans considers that liver was the cause of the recovery, but I think it is difficult to be certain of this, as the miscarriage took place the day the liver treatment was begun. Recovery may take place after delivery without any treatment. It is more satisfactory, for a test, when the liver treatment can be given before delivery; or commenced, when at least a fortnight has passed, after delivery, without improvement.

We have now used liver treatment, both in the form of cooked liver and liver extract, in a fairly large number of cases, and there is no doubt that the bone marrow responds well; but the existence of the pregnancy makes the case more difficult to treat than ordinary cases of pernicious anæmia.

You mention in your editorial the lack of literature on this subject. In addition to the papers you mention, one by myself was published in the Indian Medical Gazette, September, 1927.

Haffkine Institute,
Parel, Bombay.

M. I. Balfour.

INSTITUTION REPORTS

SANTAL MISSION UNITED FREE CHURCH OF SCOTLAND, BIHAR

A large proportion of this comprehensive report of the entire work of the Mission is naturally devoted to medical work in four of the stations.

Pachamba

William Dempster, M.A., M.B., Ch.B.

The number of out-patients registered during 1928 was over 8,000, a considerable increase over recent years. A marked drop in the number of in-patients is attributed, to a certain extent, to the fact that many of them avail themselves of lodgings in the neighbourhood.

Operation Statistics

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<th>Eye operations</th>
<th>General</th>
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<td>414</td>
<td>466</td>
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Financial help has been given by the staff of the East Indian Railway collieries at Giridih, one item being Rs. 960 raised as a result of a football game between an E.I.R. team and an eleven sent by Mohan Bagan, the famous Calcutta club. Half the gate-money was given to the mission hospital.
The Journal of C.M.A.I.

Pokhuria

Dr. Chrestien

For eight months this station had been without a doctor, placing an added burden on the non-medical missionaries, who continued to carry on medical work. In December, Dr. Chrestien was appointed to Pokhuria, and there has been a steady increase in the volume of the medical work.

Bamdah

Rev. J. M. Macphail, M.A., M.D.
Ronald M. MacPhail, M.B., Ch.B.

‘There was this year an unusually good rice harvest all over this side of India, with the result that the hospital was comparatively empty during the last two months of the year—usually one of our busiest times.’

Statistics

New out-patients ........... 5,241
In-patients .................. 2,208
Operations ................... 4,708
Eye operations ............... 3,990
General ...................... 508

The medical work of this station is well on the way to becoming self-supporting. The total income amounted to about Rs. 17,000, of which only a little over Rs. 1,700 was contributed from home.

Tirri

Rev. James Kitchin, L.R.C.P. & S. (Edin.).

During Dr. Kitchin’s absence on short furlough, the medical work of the station was carried on by Dr. Ronald Macphail.

Statistics

New patients ................. 5,918
Eye operations ............... 184
General ...................... 478

The Union Mission Tuberculosis Sanatorium, Arogyavaram

Medical Staff

C. Frimodt-Moller, M.B., Ch.B. Medical Superintendent
R. H. H. Goheen, B.A., M.D. Acting Medical Superintendent (1928–29)
P. V. Benjamin, M.B., B.S. D.V. Gnanamuthu, B.A., M.B., B.S.

Bacteriologist

Rev. R. M. Barton, M.A. (Oxon.)

Nursing Staff

Miss L. Stanes, Matron.
Miss A. Dickinson, Asst. Matron.

Assistants

Compounders, nurses, ward boys, etc. .............. 48
Assistant managers, teachers, etc. .................. 7
Servants—cooks, drivers, sweepers, etc. ............ 43

Co-operating Societies

American Arcot Mission
American Baptist Mission
Australian Presbyterian Mission
Church of England Zenana Mission
C.M.S. Church Council (Telugu Section)
Church of Sweden Mission
Danish Evangelical Lutheran Mission

The Lee Memorial Mission
London Mission
Methodist Episcopal Mission
S.P.G. Mission
United Free Church Mission
United Lutheran Church Mission
Wesleyan Mission
Results. Of the 284 discharged, 237 are suitable for a statistical study of the results.

Of these:
- 61 or 25.8 per cent were I stage cases
- 52 or 21.9 per cent were II stage cases
- 124 or 52.3 per cent were III stage cases

Weights. The average increase in all cases, including those who gained and those who lost, was 11.0 lb. The greatest increase in a single case was:
- Among the men: 55 lb.
- Among the women: 66 lb.

Artificial pneumothorax was tried in 57 of the 237 cases. In 17 out of the 57 it was not possible to collapse the lung, on account of adhesions. Of the 40 cases thus treated, 19 were discharged "arrested" or "improved.

Sanocrysin was given in 28 of the 237 cases.

Tuberculin was employed in 12 of the 237 cases.

LABORATORY

The number of specimens, under each class, examined were:
- Sputum specimens: 4,917
- Blood specimens: 3,255
- Feces specimens: 876
- Urine specimens: 8,795
- Pleural fluids: 37

Space does not permit of more than a most inadequate outline of the work of this excellent institution. We would enjoin each of our readers to secure a copy of the report, which is tastefully illustrated and every page of which is full of interesting and profitable reading.

KALIMPONG MEDICAL MISSION

MEDICAL STAFF

J. A. Macdonald Smith, M.B., Ch.B. (Edin.), F.R.C.S.E.
Miss Mary H. MacLachlan, M.A., M.B., Ch.B. (Glasgow).

SUB-ASSISTANT SURGEONS

Dr. Ongden  
Dr. Krishna Lal Pal  
Government Officers attached to the Hospital

NURSING STAFF

Miss N. S. Clark, M.A.  
Miss M. H. Tomory  
Mrs. Tomory, Housekeeper.

Total out-patient visits: 12,144
Individual out-patients: 6,883
Individual in-patients: 2,566
Daily average in-patients: 88
Branch dispensaries: 3
In Kalimpong medical conditions seem to preponderate over surgical; 1,181 patients were treated for malaria, 607 of them being indoor patients, with a mortality of 45.

In the new Leper Hospital, of which eight new wards have recently been completed, 25 patients were treated during the past year.

This interesting report is beautifully illustrated.

SOUTH TRAVANCORE MEDICAL MISSION, LONDON MISSIONARY SOCIETY, NEYYOOR, TRAVANCORE

MEDICAL MISSIONARIES
T. Howard Somervell, M.A., M.B., B.Ch., F.R.C.S. (Eng).
Ian M. Orr, M.B., C1LB.

NURSING SUPERINTENDENTS
Miss E. F. Mills. Miss E. A. Pedcock.

STAFF
Business Manager . . . . . 1  Pathologist . . . . . 1
Medical Evangelists . . . . . 20  Evangelists . . . . . 2
Nurses . . . . . . . 17  Compounders . . . . . 21
Warders . . . . . . . 15  Servants . . . . . 37
Office Assistants . . . . . 4  Bible-woman . . . . . 1
European Nursing Home Superintendent . . . . . 1
Leper Home Manager . . . . . 1

STATISTICS
Hospitals . . . . . . . 14  Major operations . . . 1,825
Beds . . . . . . . 322  Minor operations . . . 8,238
Dispensaries . . . . . 3  Leper Asylum inmates . . . 67
New patients . . . . . 1,594,821  Orphan children . . . 6

FINANCES
From British and Australian supporters . . . . . Rs. 9,090
" Indian supporters . . . . . 8,125
" Patients, as offerings, fees, etc. . . . . . 22,541
" Sale of medicines . . . . . 34,791
" London Missionary Society . . . . . 4,305
" Travancore Government . . . . . 1,915

Total Rs. 77,567

This entirely too brief report is full of interesting facts and data. The following extracts give some inkling of the volume and types of work carried out by this institution, said to be the largest of its kind in the world:

'The present year is the ninetieth in the history of the South Travancore Medical Mission, and the work done by our hospitals continues to increase, in spite of the fact that there are so many hospitals and dispensaries run by the Travancore Government.'

The district in which the hospitals are situated was visited by a severe and widespread epidemic of cholera during January and February. And, in addition to the heavy routine work at the various centres, many of the medical workers spent arduous days and nights in the villages, administering medicines and intravenous infusions.

A Nursing Home for Europeans has been added to the plant.

Towards the end of 1927 one of the branch hospitals collapsed in a storm. Within a year's time it had been rebuilt on a larger
scale than before, eight hundred rupees of the funds needed being collected from the people of the locality.

'A large number of maternity cases were cared for in the villages around, and in this way the influence of the Mission has been brought into many homes.'

Those of us who see hardly a single case of duodenal ulcer during a whole year in certain parts of India, read with interest the statement that 'Duodenal ulcer remains the commonest of all surgical diseases here [Travancore], and it is only our limited number of beds that limits the number of patients we can deal with to some 230 a year. Of the etiology of the condition it seems probable that it is a deficiency disease, partly due to tapioca diet (the staple food of Central and North Travancore, at any rate as far as the poorer classes are concerned); partly due to very hot curries imperfectly provided with vitamins, which the people of this district eat. Nearly all our cases of duodenal ulcer—some 700 out of our last 800 cases—come from a small area of Travancore within thirty miles of Quilon, where fish is the chief vitamin-bearing article of diet. . . .

While recognising the superiority in many cases of the Billroth II operation, the number of cases we have to deal with makes it imperative that the shorter operation of gastro-enterostomy should be done in the majority of cases.'

Then, too, it comes as a surprise to those of us who hardly see a single case of appendicitis, acute or chronic, from one year's end to another, to see that 242 patients were operated upon for chronic appendicitis, and only 3 for acute appendicitis.

THE CHURCH MISSIONARY SOCIETY HOSPITAL,
SRINAGAR, KASHMIR

MEDICAL STAFF
ERNEST F. NEVE, M.D., C.M., F.R.C.S. (Edin.)
C. VOSPER, M.R.C.S., L.R.C.P. (Lond.)
D. E. BARTON, M.B., B.S. (Lond.)
DINA NATH, M.P.L., S.A.S.

NURSING STAFF
MISS MCCORMICK, Superintendent. MISS V. SALMON
MISS DE HERIZ SMITH
Medical Assistants ... 6
General Assistants ... 22
Servants ... 30

STATISTICS
New out-patients ... 23,583 In-patients ... 2,118
Total attendances ... 48,299 Major operations ... 1,081
Laboratory examinations 2,115 Minor operations ... 5,588

The following financial statement not only gives us some idea of such an institution’s variegated sources of support, but may also be an inspiration to many:

CHIEF SOURCES OF FINANCIAL SUPPORT

<table>
<thead>
<tr>
<th>No.</th>
<th>Receipts</th>
<th>Rs.</th>
<th>A.</th>
<th>P.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>By balance with Messrs. Lloyds Bank, Ltd., Srinagar</td>
<td>4,146</td>
<td>15</td>
<td>1</td>
</tr>
<tr>
<td>2.</td>
<td>By balance with Honorary Treasurer</td>
<td>0</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td>3.</td>
<td>Donations, subscriptions and offertories</td>
<td>10,314</td>
<td>8</td>
<td>1</td>
</tr>
<tr>
<td>4.</td>
<td>Fees</td>
<td>12,380</td>
<td>15</td>
<td>3</td>
</tr>
</tbody>
</table>
We note with regret that the State has seen fit to transfer the Leper Hospital, which was founded, and for 36 years superintended, by the Drs. Neve, to the Director of Medical Services. It is a sign of the times. But to do so without a word of acknowledgment or appreciation of the efforts of those who had built up the work is naught but a sign of ill-breeding.

The report mentions the increasing prevalence of tuberculosis in Kashmir, stating that so-called surgical tuberculosis—of lymph nodes, bones and joints\(^1\)—has always been common, such patients occupying as many as a quarter of the beds in the wards. Pulmonary tuberculosis, on the other hand, was almost unknown in Kashmir as recently as 1890. During the last two decades it has increased by leaps and bounds. This is chiefly due to increased facilities for travel associated with motor cars and lorries. Indeed, Kashmir has become a summer resort for consumptives in all stages of the disease.

Of eye operations, the large number of cases of entropion and trichiasis point to the great prevalence of trachoma; while, unlike the Punjab and Sind, there is not very much cataract in Kashmir. The large number of bone operations is always remarkable.

Internal malignant disease is comparatively rare; while the kangri-burn cancer is still frequent.

**ASSOCIATION NOTES**

In April Dr. Goheen, of the Union Mission Tuberculosis Sanatorium, Arogyavaram, was invited by the Anti-Tuberculosis Association of Bengal to assist in their campaign by giving a series of lectures to doctors. 'The Early Diagnosis of Pulmonary Tuberculosis,' 'The Place of Surgery in the Management of Pulmonary Tuberculosis,' 'Sanatorium Treatment,' were the three lectures given. In addition, Dr. Goheen was asked to address the Corpora-

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\(^1\) The writer of the report attributes all these to the bovine bacillus. It is probable that tuberculosis is much commoner amongst the cattle of Kashmir than in those of the United Provinces, where we have much lymph node and abdominal involvement amongst the human population, but are convinced that it is largely of human bacillus origin.—**EDITOR**.

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### The Journal of C.M.A.I.

<table>
<thead>
<tr>
<th>No.</th>
<th>Receipts</th>
<th>Rs. A. P</th>
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</thead>
<tbody>
<tr>
<td>5.</td>
<td>Sale of drugs, instruments, etc.</td>
<td>...</td>
</tr>
<tr>
<td>6.</td>
<td>Sale of dairy produce</td>
<td>...</td>
</tr>
<tr>
<td>7.</td>
<td>Sale of religious books</td>
<td>...</td>
</tr>
<tr>
<td>8.</td>
<td>State grants</td>
<td>...</td>
</tr>
<tr>
<td>9.</td>
<td>Interest on invested funds</td>
<td>...</td>
</tr>
<tr>
<td>10.</td>
<td>House and paywards' rent</td>
<td>...</td>
</tr>
<tr>
<td>11.</td>
<td>Refund, establishment</td>
<td>...</td>
</tr>
<tr>
<td>12.</td>
<td>Refund, diet</td>
<td>...</td>
</tr>
<tr>
<td>13.</td>
<td>Refund, fuel and lighting</td>
<td>...</td>
</tr>
<tr>
<td>14.</td>
<td>Refund, fire insurance (from St. Luke's Church)</td>
<td>...</td>
</tr>
<tr>
<td>15.</td>
<td>Refund, Samaritan Fund (from Poor Fund)</td>
<td>...</td>
</tr>
<tr>
<td>16.</td>
<td>Repayment of outstanding loans</td>
<td>...</td>
</tr>
<tr>
<td>17.</td>
<td>Remittance, per Honorary Treasurer in England</td>
<td>...</td>
</tr>
<tr>
<td>18.</td>
<td>Transferred from invested funds</td>
<td>...</td>
</tr>
<tr>
<td>19.</td>
<td>Miscellaneous</td>
<td>...</td>
</tr>
</tbody>
</table>

Total Rs. 59,296 5 8

Invested funds Rs. 55,052 2 11
tion of Calcutta. We rejoice that a member of our Association was chosen to participate so fully in the campaign, and feel sure that he was instrumental in stirring up both doctors and laymen to more active efforts in the fight against the Koch bacillus.

The following are a few of those who are going, or have gone, home on furlough this summer: Dr. Margaret Mackellar, United Church of Canada Mission, Neemuch, C.I.; her address in America will be: 207 West 7th Street, Traverse City, Mich., United States of America; Dr. Mabel S. Hayes, American Presbyterian Mission, Allahabad, c/o The Board of Foreign Missions of the Presbyterian Church, 156 Fifth Avenue, New York City; Dr. R. H. H. Goheen, Arogyavaram; Dr. E. W. Wilder, Madura; Dr. Robert Gittins, Itarsi.

**EXTRACTS FROM CURRENT LITERATURE**

**LEPROSY**

In the *Indian Medical Gazette* of February, 1929, pages 92–95, is an article, ‘The Campaign against Leprosy,’ by Dr. E. Muir. In the first part of the article the writer mentions the many ways in which the leprosy outlook has changed in recent years, how leprosy has now come within the range of the physician, and many patients, instead of concealing the disease, now come willingly for treatment; how special training of doctors is being done, and how the prevalence of leprosy is being investigated and propaganda work carried on with a view to prevention.

The second part of the article gives some account of the survey work being done by the British Empire Leprosy Relief Association in various parts of India, and interesting extracts are quoted from the report of the survey of the Akot taluk of the Akola district of Behar.

The third section describes the work done by Dr. Ghosh, under the Bengal Branch of the B.E.L.R.A., in training doctors, establishing dispensaries, and in surveying the prevalence of leprosy in Bengal. Reports are given of short courses offered in medical schools, of propaganda by lectures, and a cinema film; of survey work done, and of clinics initiated.

The writer does not mention what is perhaps the greatest difficulty of this work, namely, the following-up of the work of the survey party, and the efficient maintenance of the treatment centres after the survey is finished.

The *Indian Medical Gazette* of January, 1929, contains an article on nerve abscess in leprosy, describing nineteen cases, fourteen in the ulnar nerve, one in the radial nerve, three in the internal cutaneous nerve of the forearm, and one in the median nerve. (Since the article was published the writer has seen one case of nerve abscess in the great auricular nerve.) Some of the abscesses were single and some multiple, some were confined within the nerve sheath and some had burst out into the surrounding tissues. The causation of nerve abscess is briefly discussed, and incision of the nerve sheath and evacuation of the abscess is advocated.

*John Lowe.*
STUDIES IN THE TREATMENT OF FILARIASIS
By R. N. Chopra, M.A., M.D. (Cantab.), Lieutenant-Colonel, I.M.S., Prof. of Pharmacology; and S. Sundar Rao, Darbhanga Research Scholar, Calcutta School of Tropical Medicine and Hygiene, in the Indian Medical Gazette, March, 1929.

'Filarial infection is very prevalent in India, the endemic area is not only along the sea-coast, but extends for some hundreds of miles inland. Although a complete survey has not yet been carried out for the whole of India, the work done by one of the authors (S.S.R.) shows that in 27 districts of Bengal the population is affected to the extent of 0.7 to 11.4 per cent; in Behar, Orissa, and Chota Nagpur the figures are much higher, going up to 27 per cent. Most of the sea-coast districts of Madras and Malabar are heavily infected, and every year a large portion of the population of these areas is incapacitated as a result of this infection.'

After a reference to the indigenous methods of treatment of filarial diseases, the authors state that the modern treatment is largely surgical. Their opinion is that the medicinal treatment as generally practised has not been very successful, and has been mostly symptomatic during the acute inflammatory attack, directed chiefly against secondary infections. The chronic filarial lymphangitis cases progress slowly, the microfilariae remaining confined to the lymphatics and only about 5 per cent showing the larvae in the blood. The need of an effective filaricidal drug is evident, to prevent both the continuance of the infection and complications. While giving proper credit to the notable efforts to find such a drug, the authors feel that, after all, little work has been systematically undertaken in this country to find it.

The greatest difficulty in making a study of this kind readily presents itself, and that is the question of what criteria to use in observing the effect of the drug under consideration. Clinical symptoms are irregular and varied even in cases receiving no treatment, and many patients show little or no symptoms when the adult worms are active and the microfilariae are circulating in the blood even in large numbers. In some studies the number of embryos in the blood has been used as a basis. The authors state, as a result of their investigations, that without any treatment the microfilariae in the blood show tremendous variations in numbers. They kept the patients being treated under observation for prolonged periods. The controls consisted of untreated persons with microfilariae in the blood who were kept under similar conditions; the microfilariae in their blood were estimated in the same way as in those under treatment. Their purpose in these studies is thus stated: 'As no information is available about the entry of drugs into the lymphatic channels, we decided to try the effect of various remedies given intravenously, or orally, to see if they penetrate there and produce any effects. We thought it might be possible that during the course of these trials we might hit on a drug which would penetrate to the worms in the lymphatics and destroy them. With this object in view, a number of drugs which are reputed to have a well-marked parasiticidal effect in the body were tested. Many of our patients were apparently healthy individuals, with no clinical signs or symptoms of filarisis, but who
had microfilaria in their peripheral blood. We thought that any drug producing baneful effects on the adult filaria would adversely affect their embryo-producing power. The efficacy of the drug in these cases was, therefore, judged by the effect it produced on the number of microfilariae in the peripheral blood. Their number per cubic millimetre of the blood was carefully counted before the treatment was started, and counts were made at regular intervals during the course of treatment and afterwards. By the decrease in the microfilarial count after injections, or by their total disappearance, it was to be inferred that the drug had some effect either on the adult worm or on the embryos. Where there was no decrease it was to be concluded that the drug had no effect.'

Bisene, antimosan, stibosan, neo-stibosan, novostiburea, antimony sulphate compound, Bayer 205, mercuriochrome, plasmochin, emetine and tryparsamide were used, each in a small group of cases, and none produced any demonstrable effect on the number of microfilariae in the peripheral circulation. Of these, however, tryparsamide produced disappearance of chyluria and decreased the frequency of the attacks of lymphangitis.

MABELL S. HAYES.

BERBERINE SULPHATE IN ORIENTAL SORE

Eighteen lesions (12 patients) of cutaneous leishmaniasis treated with injections of berberine sulphate are reported by Lakshmi Devi from Lahore. The margin of the ulcer is infiltrated with 0.5 to 1.5 c.c. of a 2 per cent solution of the acid sulphate. Six of the lesions healed completely with one injection; five healed completely with 2 injections; five healed completely with 3 injections; one patient disappeared; one patient only failed to show any improvement, and in this case the original diagnosis was doubtful.

MABELL S. HAYES.

A REPORT OF THE STUDY OF 25,048 SCHOOL CHILDREN FOR TUBERCULOSIS
By P. P. McCaIN, M.D., Sanatorium, N.C., in the Southern Medical Journal, April, 1929.

McCain has rendered a great service, especially to those engaged in school medical work, by making a very careful study of a large group of school children for tuberculosis. The three chief methods which he employed in going into the problem were: (1) tuberculin tests (both the von Pirquet and intracutaneous methods being adopted), (2) clinical study, and (3) X-ray study of the lungs.

The intracutaneous method was used routinely, 0.1 c.c. of a 1 to 1000 dilution of Koch's old tuberculin being given to each child. The tests were read usually within forty-eight hours. Only the positive reactors were subjected to further study.

The positive reactors were then examined both by the clinician and radiologist; a general physical examination, followed by the taking of both postero-anterior and oblique X-ray pictures of the chest.
McCain and his co-workers thus examined 25,048 children during a period of two years, including children of all types, rich and poor, white and coloured. They found that 22.59 per cent of the children tested showed a positive tuberculin reaction, 7.62 per cent of whom were diagnosed as having 'demonstrable tuberculosis.' Of the latter, 388 were classified as tracheo-bronchial, 23 as pulmonary (parenchymal); four as tracheo-bronchial and pulmonary; fourteen as extra-pulmonary; and two as tracheo-bronchial and extra-pulmonary.

Thus the tracheo-bronchial, or the 'juvenile or hilum tuberculosis,' was found by McCain to be the commonest type of infection among children. This condition is characterised by a primary focus located at the periphery of the lung, and involvement of the pulmonary and tracheo-bronchial lymph nodes draining the primary focus, which, according to McCain, is usually found in the lower part of the lung, and more often on the right side. The lesion in these lymph nodes, in this form of the disease, is more extensive than the primary focus in the lung.

The parenchymal or pulmonary type of tuberculosis (the usual adult type) represents 'a secondary infection occurring in a previously infected individual.' In this form of the disease the bacilli are not drained and carried off by the lymph stream, but are localised in the inflammatory foci. Consequently, the pulmonary and tracheo-bronchial lymph nodes are not involved in this form of tuberculosis. McCain bases his diagnosis on (1) a positive tuberculin test; (2) symptoms; (3) X-ray findings; (4) general physical and laboratory examinations for the elimination of other causative factors.

On the tuberculin test the writer comments as follows: that in the cases of children suffering from, or during convalescence from, 'measles, whooping cough or some other acute disease,' the test is sometimes negative owing to a 'suppression of tissue allergy'; when it is necessary to repeat the test afterwards before tubercle can be definitely ruled out. 'A positive tuberculin test only indicates tuberculous infection, the presence of live tubercle bacilli somewhere in the body,' the child may or may not have the actual disease. A negative test thus becomes a piece of very valuable information.

McCain also believes that 'the degree of reaction to either form of tuberculin test is of some value, the stronger reactions being more suggestive of clinical disease.' Opie and McPhredan hold a similar view: 'The probability of grave tuberculous infection increases with the severity of the tuberculin reaction.'

X-ray, according to McCain, becomes a very valuable aid to diagnosis in cases of juvenile tuberculosis where definite symptoms, physical and laboratory findings are negative; in fact, X-ray is the only means of definitely demonstrating the tracheo-bronchial form of the disease. But as the heart, large blood vessels, the sternum and the spine frequently hide the glandular lesions, both oblique and antero-posterior films should be obtained.

Another stumbling-block in the way of reading the films correctly is that the size of the hilum shadow 'depends almost entirely upon whether or not the exposure is made during diastole or systole.'
It is again probable that 'only calcium-bearing lymph node lesions, and hence lesions of some age, will cast shadows on the films.' The X-ray, therefore, may fail to demonstrate the disease in its earliest stages.

Therefore a correct diagnosis of the clinical juvenile form of the disease depends upon the 'correlation of all the information which can be obtained,' and not upon some one test alone.

The importance of early diagnosis of the juvenile, tracheobronchial type of tuberculosis cannot be emphasised too much. This type is not only non-contagious, but it is curable. Study of these infected children will lead the clinician to the source of infection, and, if further exposure to infection be prevented and proper treatment instituted, McCain affirms that practically all children having tracheobronchial tuberculosis will have the disease either arrested or entirely cured. If such cases are not recognised early, or do not receive proper treatment, they—the majority of them—will later develop into parenchymal or apical lesions of the adult type. This is not an extension of the primary hilum-infection, but the result of repeated infection from without, gradually overcoming the partial immunity acquired by the previous infection.

BHAVANATH JHA.

INDIAN DIETARIES IN THE UNITED PROVINCES

By NILENT DHAN BANERJI, in the Indian Medical Gazette, April, 1929.

The writer investigated the dietaries actually in use in the United Provinces with a view to ascertaining (1) their average nutritive values, (2) value received for the money spent on the different articles of diet, (3) the suitability of the diets for the classes who consume them, (4) the changes advisable in the various classes. The vitamin aspect of the various dietaries is not raised. He gives the following as four average diets:

A. Average Vegetarian Diet

Morning.
Sugar, \( \frac{1}{2} \) chatak.
Milk, 1 chatak.
Atta, \( \frac{3}{4} \) chataks.
Tea, \( \frac{1}{4} \) chatak in the 24 hours.
Butter, \( \frac{3}{4} \) chatak in the 24 hours.

Midday.
Wheat atta, rice, 2\( \frac{1}{2} \) to 3 chataks.
Pulses, 1 to 2 chataks.
Vegetables, 3 to 4 chataks.
Ghee, 1 to \( \frac{1}{2} \) chatak.

Afternoon.
Sugar, \( \frac{1}{2} \) chatak.
Milk, 2 to 3 chataks.
Sugar, \( \frac{1}{4} \) chatak.

Dinner.
Nearly the same as the midday meal, except that milk is consumed in larger quantities, i.e. about 8 chataks.

B. Average Mixed Diet

Morning.
Atta is less than in the previous diet, i.e. \( \frac{1}{4} \) to \( \frac{3}{4} \) chatak.
Eggs, 1 or 2.
Other articles as in Diet A.

Afternoon.
Pulses only, \( \frac{3}{4} \) chatak.
Other articles as in Diet A.

As in Diet A.
Midday.
Fish or meat is added, 1 to 2 chataks.

Dinner.
Nearly the same as the midday meal, but extra milk is consumed, up to 8 chataks.

C. Average Agricultural Vegetarian Diet

Morning.
Gur, ½ to 1 chatak.

Midday.
Atta (bajra and jwar), 4 chataks.
Pulses, 1 chatak.

Dinner.
Vegetables, 1 chatak.

C. Average Agricultural Mixed Diet

Morning.
Same as C.

Midday.
Pulses, ½ chatak.

Dinner.
Same as C.

A. This class is consuming a useless excess of carbo-hydrates at the expense of proteins. The seemingly high protein content is due to the presence of pulses (legumes) in the diet. These, however, have a low digestibility, the dal granule being the most difficult to break down. The presence of such indigestible vegetable protein residue increases the bulk of the faeces; and with it there is a great loss of protein from lack of absorption. Increasing the proportion of digestible proteins by the addition of dairy products—milk, cheese, daal (curd), mawa—is one of the methods of improving the diet, with respect to its low assimilable protein content. At the same time, the carbo-hydrates, in the form of atta (wheat flour), should be cut down.

B. The same protein lack is manifested in the average mixed diet.

C. The chief drawback in this diet is that again the variety of protein consumed is of a very low grade, from the point of view of digestibility. The total quantity is small and the amount of fat is entirely inadequate.

D is somewhat better. A very large proportion of the cultivators take only the bejor and jwar flour (sorgams), which are very much inferior to wheat in their nutritive composition.

D. N. Forman.

COLLOIDAL LEAD, COMBINED WITH X-RAYS AND RADIUM, IN THE TREATMENT OF CANCER

The technic employed by these workers was briefly as follows: They inject from 100 to 120 mg. of the colloidal lead phosphate intravenously at weekly intervals until three injections have been given. On or about the fifth day after the administration of the first dose, irradiation is commenced. After patients have received from 300 to 350 mg, they are not given any more lead for a period of
from four to six weeks. Practically no general reactions are induced, except for an occasional chill. Lead seems to increase the sensitiveness to irradiation.

Thirty-one cases were carefully observed by the authors. Twelve of these were cited in an earlier paper; all had died. Of the 19 additional patients, eleven had died and eight were living; four of these were rapidly failing. Four were in good condition, but in these the disease was still present and palpable, although apparently arrested. They conclude with the statement: 'When the expense of the treatment is weighed against the possible ultimate good effects to the patient, it seems that lead therapy as used by us is not the solution of the cancer problem.'

Dr. Leila Carlton Knox, in the same journal, presents a preliminary report on a series of forty patients, with neoplasms varying in type from epithelioma of the tonsil to sarcoma of the femur, treated with combined colloidal lead and X-ray therapy, as advocated by Blair Bell in 1925.

Despite the heavy dosage employed—never less than 150 mg. and never more than 660 mg.—there were no deaths in the series that could be attributed to lead. Anemia, however, developed fairly regularly, following the administration of the larger doses. A lead line was observed in more than half the cases. Involvement of the central nervous system was extremely rare.

Four of the forty were, at the time of writing, wholly free from physical signs of their original disease, while several others had been benefited temporarily. And the writer concludes that, in a few persons with inoperable and advanced neoplasms, arrest of the disease may be obtained by the combined administration of lead and X-rays.

As Dr. G. E. Phahler, the well-known röntgenologist of Philadelphia, brought out in the discussion: 'We must be extremely cautious in interpreting results when röntgen therapy is combined with lead injections, because occasionally there are striking results with irradiation alone.'

**LIVER EXTRACT IN THE TOXEMIA OF PREGNANCY**

By Harold A. Miller, M.D., and D. Ben Martinez, M.D., in the *A.M.A. Journal*, February 23rd, 1929.

The results of prophylactic and curative liver extract treatment are presented by Miller and Martinez in 255 pre-eclamptic patients, four of whom developed convulsions; and 43 patients with eclampsia, three of whom died—a mortality of 6.9 per cent. Working on the basis that the liver probably has a certain neutralizing function in eclampsia which may be conserved by the addition of liver substance, they used heparmone in the treatment of pre-eclamptic and eclamptic cases. In mild pre-eclamptic cases—B.P. not higher than 150 mm., little albumin, mild symptoms—10 c.c. were given, by the intramuscular route, once a week. In moderate cases—B.P. 150 to 175, moderate amount of albumin, moderate symptoms—10 c.c. were given two or three times weekly. In severe cases, which are admittedly more 'nephritic' than 'hepatic'—B.P. above 175, large
amount of albumin, symptoms pronounced—10 c.c. were given two or three times a day. Four of these developed eclampsia, one of whom died. The authors admit that the group is too small to permit a conclusive evaluation of the method.

In the same Journal, H. J. Stander, of Baltimore, presents the following table of published statistics, from various clinics, bearing on the gross maternal mortality in eclampsia.

It is of interest for purposes of comparison.

<table>
<thead>
<tr>
<th>Author</th>
<th>Clinic</th>
<th>No. of Cases</th>
<th>Treatment</th>
<th>Mortality per cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stoeckel</td>
<td>Leipzig</td>
<td>119</td>
<td>Radical</td>
<td>8.4</td>
</tr>
<tr>
<td>Leidenius</td>
<td>Helsingfors</td>
<td>250</td>
<td>Radical</td>
<td>14.2</td>
</tr>
<tr>
<td>Davis and Harrar</td>
<td>New York</td>
<td>370</td>
<td>Radical</td>
<td>20.0</td>
</tr>
<tr>
<td>Lying-In</td>
<td></td>
<td>149</td>
<td>Conservative (venesection)</td>
<td>15.0</td>
</tr>
<tr>
<td>Miller and King</td>
<td>New Orleans</td>
<td>138</td>
<td>Radical</td>
<td>47.8</td>
</tr>
<tr>
<td></td>
<td>Charity Hospital</td>
<td>25</td>
<td>Conservative (modified Stroganoff)</td>
<td>15.8</td>
</tr>
<tr>
<td>Williams</td>
<td>John Hopkins Hospital</td>
<td>110</td>
<td>Radical</td>
<td>18.8</td>
</tr>
<tr>
<td></td>
<td></td>
<td>198</td>
<td>Conservative (modified Stroganoff)</td>
<td>13.6</td>
</tr>
<tr>
<td>Zweifel</td>
<td>Leipzig</td>
<td>394</td>
<td>Radical</td>
<td>18.5</td>
</tr>
<tr>
<td></td>
<td></td>
<td>317</td>
<td>Conservative (venesection)</td>
<td>8.5</td>
</tr>
<tr>
<td>Powitzer</td>
<td>Berlin</td>
<td>245</td>
<td>Mixed</td>
<td>18.0</td>
</tr>
<tr>
<td>Engelmann</td>
<td>Dortmund</td>
<td>222</td>
<td>Mixed</td>
<td>18.4</td>
</tr>
<tr>
<td>Hochenshütler</td>
<td>Vienna</td>
<td>275</td>
<td>Mixed (quartz light)</td>
<td>18.1</td>
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<tr>
<td>Forssner</td>
<td>Stockholm</td>
<td>102</td>
<td>Conservative (Stroganoff)</td>
<td>10.8</td>
</tr>
<tr>
<td>Lazard, Irwin and Los Angeles</td>
<td></td>
<td>138</td>
<td>Conservative (magnesium sulphate)</td>
<td>13.0</td>
</tr>
<tr>
<td>Vruwink</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dorsett and Dieckmann St. Louis</td>
<td></td>
<td>94</td>
<td>Conservative (magnesium sulphate)</td>
<td>11.7</td>
</tr>
</tbody>
</table>

**LATER DEVELOPMENT OF BREAST-FED AND ARTIFICIALLY-FED INFANTS**


The results of tests and measurements made on 383 children, ranging in age from 7 to 13 years, and grouped according to the length of the period of exclusive breast feeding, are reported by Hoefer and Hardy. Their conclusions are as follows:

A. Children who were artificially fed were, on the whole, inferior, physically and mentally, to the breast-fed.

1. Except for height, they ranked the lowest in all the physical traits measured. In this one exception they were the only group not showing any acceleration.

2. From the standpoint of nutritional indexes, they were the poorest nourished group.

3. On the average, they were the most susceptible to diseases of childhood.

4. In learning to talk and to walk, they were the slowest of all the groups.

5. In mental development the artificially-fed ranked next to the lowest, the lowest being those breast-fed from ten to twenty months.

6. Of the children with superior intelligence, the smallest percentage was found in the artificially-fed group.
7. Of the artificially-fed children, not a child was classified as being exceptionally bright.

8. In considering the two types of artificial foods most commonly used by these children, modified cows’ milk appeared to be a more satisfactory aid to later development than unsweetened evaporated milk.

B. Children who were breast-fed from four to nine months were definitely superior, physically and mentally, to all the other groups.

C. Children who were fed exclusively on breast milk longer than nine months, although apparently developing physically at a fairly normal rate, were mentally the poorest of all the groups. As the length of the nursing period increased beyond nine months, there was a progressive decrease in the intelligence ratings.

D. N. Forman.

THE BIRTH-RATE, INFANT AND CHILD MORTALITY IN THE FAMILIES OF CHINESE PREACHERS


A resolution passed at a recent meeting of the Medical Committee of the North India American Presbyterian Mission, to the effect that arrangements should be made whereby every Christian worker employed by the Mission, and his family, shall be physically examined each year by one of the Mission doctors, gave added interest to the study made by our Chinese colleagues. Their findings, based on 363 replies to a questionnaire sent to 2,000 Chinese preachers in 19 different provinces, were as follows:

1. The average age of the preachers was 43.3 years. The number of young recruits has been markedly diminished, naturally, during the past few years.

2. The average period of service was 15 years.

3. The birth-rate was 57.6 per family, highest on record in China and in America.

4. Infant and child mortality rate under five years of age was 30.9 per cent, including miscarriages. The causes of death are tabulated.

5. In this small series, mission hospitals seemed to have played no important rôle in reducing the infant and child mortality in the families of the locality in which the hospital was situated.

The writers suggest that mission hospitals pay more medical attention, especially on the preventive side, to the families of preachers, and institute periodic health examinations and instructions in hygiene for both adults and children.

They also express the hope that before long proper methods of conception control may be found and introduced.

D. N. Forman.
By G. J. Gnanadikam, Swedish Mission Hospital, Tirupattur, Ramnad District, in the Indian Medical Gazette, April, 1929.

Dr. Gnanadikam has prepared a statistical table of the cases attending the hospital during a period of ten months (January 1st to October 31st, 1928), which gives one an idea of the incidence of ophthalmic pathology, at least in the section of South India where the writer is located.

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No. Name of the Disease One or both eyes affected Blindness Partial Complete

1. Trachoma Single 17 10
2. Gonorrhoeal ophthalmia Double 22 5
3. Keratomalacia Single 12 2
4. Keratitis Double 26 15
5. Smallpox Single 17 14
6. Staphyloma Double 18 10
7. Corneal ulcer Single 5 2
8. Corneal scars (after ulcer) Double 23 21
9. Corneal scars (after injury) Single 14 12
10. Injury of the eye Single 8 20
11. Iritis, irido-cyclitis, etc. Double 96 57
12. Glaucoma Single 19 10
13. Inoperable hypermature cataract Single 60 25
14. Couching Double 12 17
15. Failed operation (from other hospitals) Single 60 25
16. Sympathetic ophthalmia Double 6 2
17. Optic atrophy Single 35 14
18. Retro-bulbar neuritis Double 35 23
19. Retinitis pigmentosa Single 11 16
20. Other fundus diseases Double 75 128
21. Microcornea and other congenital affections Single 46 93
22. Panophthalmitis Double 17 2
23. Phthisis bulbi Single 5 5
24. Tumours Double 31 14

Total number of eyes affected 2,044
Total number of eyes treated during the period of ten months 10,196

Note.—'Partially blind' means, sight from detection of hand movements to moving about with difficulty. Even patients who can read only big characters are not taken in.

D. N. Forman.
THE TREATMENT OF LOBAR PNEUMONIA WITH CONCENTRATED ANTIPNEUMOCOCCUS SERUM


[Extract]

1. Refined antipneumococcus serum is a purified and concentrated derivative of ordinary antipneumococcus horse serum. It is usually prepared in a polyvalent form, containing immune bodies against pneumococcus types I, II, and III. Its potency against type I and type II is quite high. Its potency against type III is insignificant.

2. Concentrated serum, when injected intravenously into monkeys infected with lethal doses of pneumococcus type I, promptly sterilizes the blood and causes a rapid resolution of the pneumonic exudate.

3. When concentrated serum is injected intravenously into patients in the early stages of pneumococcus type I pneumonia, a striking clinical effect is usually obtained. The bacteria disappear from the blood and the temperature falls rapidly to normal. Even in late cases, good results are often obtained. In type II pneumonia the clinical results are not so impressive, though here again in patients treated early, favourable results are often noted. In type III pneumonia no clinical effect has been observed. In type IV pneumonia the beneficial effect of serum is questionable.

4. In 441 cases of lobar pneumonia treated with refined polyvalent serum, the death-rate was 30 per cent. In a control series of 444 cases, the death-rate was 39.2 per cent. In respect to the death-rate, the refined serum produced its most striking effect in pneumococcus type I pneumonia. In a series of 153 treated type I cases the death-rate was 20.9 per cent, while a control series of 147 untreated type I cases showed a death-rate of 32.6 per cent. A definite, but less marked, effect on the death-rate was observed in cases of pneumococcus type II pneumonia that were treated with concentrated serum. The serum had no favourable effect on the death-rate in pneumococcus type III pneumonia. In type IV pneumonia the death-rate was lower in the treated than in the untreated series, but factors other than serum may have been responsible for this difference.

E. M. DODD.

NOTICES

THE TRAINING OF HEALTH VISITORS

We wish to call attention again to the Health Visitors' Course for medical graduates, offered at the Health Centre attached to the Memorial Hospital, Ludhiana. The session will probably open in October. Fees, Rs. 35 a month for those taking Indian food, and Rs. 50 a month for those taking English food.

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Reprints of Rev. William Paton’s statement and appeal, relative to the Miraj Medical School, which appeared in the May issue of the Journal, are available from the Editor.

DR. J. M. MACPHAIL

The sad news has just come—as the Journal goes to press—of the sudden death of Dr. J. M. Macphail, of Bimdah, one of the founders and for many years the editor of the Journal of the Medical Missionary Association of India. Our heart-felt sympathies are extended at this time especially to Mrs. Macphail and Dr. R. M. Macphail, members of this Association, in their bereavement.
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<th>Description</th>
<th>Price</th>
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<td>Top (as used and recommended by author)</td>
<td>4 4 0</td>
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<tr>
<td>If With Spring Top</td>
<td>3 17 6</td>
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</tbody>
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WE RARELY RECEIVE A REPORT OF BREAKAGE OCCURRING IN TRANSIT.

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MEDICAL MISSIONARIES WHO DO NOT RECEIVE OUR PRICE LISTS REGULARLY ARE INVITED TO COMMUNICATE WITH US.
LIVER EXTRACT

In Pernicious Anaemia

The LIVER EXTRACT offered by Parke, Davis & Co., for use in the treatment of pernicious anaemia, is prepared by a method that has been shown to produce an exceedingly active product. It is supplied in vials each containing the extract from 100 grammes (approximately 3½ ounces) of fresh liver, the contents of three or more vials being taken daily.

The P., D. & Co. Liver Extract is a palatable preparation with a pleasant salty taste, and it may be taken sprinkled over potatoes, meat or bread. Its miscibility with water, milk, soup, orange or lemon juice and other liquid foods also suggests other acceptable modes of administration.

Before offering Liver Extract to the Medical Profession in the East, its keeping qualities were thoroughly tested by storing it under varying conditions for a considerable period. Prescribers can, therefore, rest assured that the Extract will reach their patients possessing its full therapeutic value.

Supplied in packages of 24 vials. Further details will be furnished on request.

PARK, DAVIS & CO.,
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