Original Articles.

THE MATERNITY CONDITIONS OF WOMEN MILL-WORKERS IN INDIA.

By MARGARET I. BALFOUR, C.B.E., M.B., C.M.,

and

SHAKUNTALA K. TALPADE, M.B., B.S.

(An Enquiry carried out under the auspices of the Indian Research Fund Association, Haffkine Institute, Bombay.)

THERE is little real information in India about the maternity conditions of women mill-workers. It is generally believed they are bad and that special action is needed, but unless we get more definite knowledge of the effect of maternity on women workers there is danger that the remedies may prove wide of the mark and unsuited to the needs of the women.

Amelioration of the conditions of women mill-workers is not of importance for sentimental reasons only. One of the difficulties connected with labour in India is the shifting nature of the industrial population. Men come from their villages leaving their wives behind and as soon as they have saved a little money they are eager to go back to enjoy the amenities of home life. They are the more ready to strike because they have a village home to return to. When the worker brings his wife to the city and perhaps his children too, his work and its steady continuance becomes of much greater importance to him. If his wife also works in the mill, he has a larger stake in its prosperity. Hence thought and organization regarding the employment of women will do much, not only to improve their own work, but to render the employment of men more dependable and stable.

The special disability under which women suffer with regard to work is maternity. How is that affected by work? Is the mother adversely affected, and is the child adversely affected? And if so, can anything be done to remedy matters without shutting the woman off from a source of livelihood which is well within her powers at ordinary times?

Interest in this question was aroused in India after the first International Labour Conference held at Washington in 1919,(1) where Articles were passed in the Draft Convention, providing for the safeguarding of maternity among women workers. It was required that each expectant mother should have six weeks rest before and six weeks after confinement, and that she should be paid benefits sufficient for the full and healthy maintenance of herself and her child. At this Conference the special circumstances of India were recognized and it was not expected that she should adopt these articles at once. But she was asked to look carefully into the matter and find out what could be done to put the maternity conditions of women workers on a proper footing. The Government of India thereafter addressed Local Governments asking how far it would be possible to introduce maternity benefits or at least to carry out an enquiry as to the need of them. The replies from Local Governments were not encouraging. The situation was the same then as now. The Local Governments did not wish to undertake the expense, either of an industrial maternity scheme, or of an enquiry. The employers of labour were in the same position—while it was felt that the workers were at once too poorly paid and too ignorant regarding their own welfare to be willing to contribute the small sum necessary for an insurance scheme. In the year 1921 the Secretary to the Government of India in the Department of Industries and Labour, Mr. A. C. Chatterjee, called a meeting at Simla of various persons, representing chiefly medical and social organizations, to discuss the question and to ask for suggestions. As a result of that meeting an offer was made by the Countess of Dufferin's Fund to give the services of two medical women for an enquiry on the maternity conditions of women industrial workers in two different parts of India. This offer was accepted by the Government of India and by the two Local Governments concerned, Bengal and Bombay, and in the year 1921-22 enquiries were carried out in Bengal by Dr. Dagmar Curjel and in Bombay City by Dr. Florence Barnes.

These medical women were lent from the Women's Medical Service for one year only. The object was "to determine the influence which industrial work might exert on the Indian woman worker, especially during the child-bearing age and on the well-being of her child." The enquiry in Bengal included the jute, cotton, tea and coal industries, and in Bombay the cotton industry.

Both reports [(2) and (3)] give a great deal of valuable information as to the conditions under which women work in India and as to their domestic and social relations. They make it plain that childbirth is looked upon as something quite outside the province of the employers. Medical relief for ordinary ailments may be provided by means of mill doctors and mill dispensaries but no arrangements are made for childbirth. An expectant mother disappears when her time is near and reappears when she wishes. She may, or may not, be taken on again. The factory has no information to give regarding her confinement, her child, or the frequency of her pregnancies. Hence these medical women's reports could only give general information such as the facts that many women were confined in their own *chawls* by *dais*, while others returned to their village homes for the occasion. They had no time, nor had they any opportunity to follow the women through their

confinements and to note the immediate results to mother and child.

Following the issue of these reports and in consequence of them, welfare centres were started in certain mills in Bengal, while in Bombay a medical woman was appointed with the status of factory inspector with the special task of organizing welfare work among women. There are now crèches in connection with thirteen mills, while maternity benefits have been given for some years by two groups of mills in Bombay City.

In the year 1925, having received a grant from the Indian Research Fund Association, Simla, for the investigation of the causes of maternity mortality in childbirth in India, we began work in Bombay and included the maternity conditions of mill-workers with those of other classes. Our intention in doing so was to supply what we felt was a lack in the earlier reports, and to collect evidence as to the actual effect of work on pregnancy as it occurs in women living under the conditions of the Bombay mill-workers. For this purpose it was necessary to keep records of the deliveries of a number of women workers, of a control series which was best found in women of the mill-working community living under the same social conditions but not employed in the mills, and a second series of controls, women of a rather better social position delivered in other hospitals in Bombay.

The facilities for such an investigation which did not exist before had been provided by the opening in 1923 by Sir Ness Wadia of a maternity home in the mill area, specially intended for mill-workers. In 1927 this home was moved to the fine new building of the Nowrasjee Wadia Hospital at Parel, built and partly endowed by Sir Ness Wadia and his brother Mr. C. N. Wadia. By the kind permission of Dr. M. V. Mehta, the Principal Medical Officer, we have been permitted to attend the hospital and note the conditions of the mill-workers confined there. The number of the mill-working class who attend hospital are even now small, as they still prefer delivery in their *chawls* or villages, and for this reason we have kept the enquiry open until May 1929, during which time we investigated 576 cases of labour among women of the mill-working class. Of these 282 were women actually working in the mills, and 294 were the wives of male mill-workers living under the same social conditions as the first, but not employed in the mill.

With the kind permission of the Millowners Association and of the managers concerned, we visited a number of mills and saw the conditions under which the women worked. We were accompanied by Dr. T. J. Cama, who, as already stated, holds a special post as Factory Inspector under the Government of Bombay and who showed us several of the mill crèches and of the dispensaries officered by medical women (4 in number). She also took us to see several of the most insanitary *chawls* available, for which we were duly grateful.

During the same period we have been watching the maternity conditions of women of other classes in the City, especially in the Cama and Allbless Hospital, to the successive Superintendents of which we are grateful for the facilities so kindly given. In many cases we watched the after progress of our patients by visiting them in their homes, either *chawls* or better class houses, and so gained much knowledge of the conditions under which the different communities live. We have also carried out some observations on the diet of the people.

Before entering on the special question of maternity conditions it may be well to make some remarks on the habits and ways of living of the women of the mill-working class.

(1) The *housing* is poor. The people live in *chawls* or large tenement houses, which are usually built with a long central passage from which rooms about 12 by 15 feet in area open on each side. The room may be occupied by one family, or, in order to save money on the rent, several families may share it. A case is described by Barnes(3) where 36 persons inhabited a room 12 by 15 feet. This is an extreme instance of overcrowding, but it is common to find 6 or 10 people inhabiting such a room, in which the women will also have their deliveries.

One of us personally investigated the homes of 20 women of the mill-working class and found that the average space at night per head was 240 cubic feet. A similar investigation was made of the homes of 70 women of the poorer non-industrial class and it was found that the cubic space at night worked out to 534 per head.

The rooms usually have a window opening on the street but the only other air space, the door, opens into the passage, not into the outer air. The one window may not open directly to the air, but into a verandah where the family cooking is done, so that the air which enters is contaminated with smoke. The window may be blocked by neighbouring buildings, so making the room close and dark. The housing question is improving and many new *chawls* are being built in the open areas to the north of the city. These are not yet fully occupied, but as they become more popular they should do good, especially if overcrowding within them can be prevented.

(2) *Sanitation* is water borne and there is a good drinking supply. In the newer *chawls* there is a tap in each passage and a room for bathing. Each *chawl* has a superintendent responsible to the owner for general order and cleanliness. In spite of this most *chawls* are dirty, the passages littered with rubbish and swarming with unwashed children. The rooms are often dirty and disorderly, but here and

there in the midst of disorderly neighbours a clean and tidy room is found.

(3) *Disease.*—Hookworm infection is rare owing to the water sanitation. Malaria is common, on account of carelessness in leaving water vessels and even cisterns uncovered and allowing pools to collect near the water taps. Dysentery and diarrhœa are common, especially in the autumn and winter. We did not hear much of gynæcological disease and the women doctors in the special dispensaries said they got few such cases.

(4) *Wages.*—In 1923 the average monthly wage of men employed in Bombay cotton mills was Rs. 35-10-7 and of women Rs. 17-5-0.(4) The wages of course vary with the kind of work done. Many of the women when questioned gave their husband's wages as low as Rs. 20, Rs. 25, or Rs. 27 per month. Of 132 women questioned the husband's wage was below Rs. 40 p.m. in 75 cases and above Rs. 40 p.m. in 57 cases. The majority of the women workers were doing piece work: 151 were asked regarding their wages. In 38 cases the wages were under Rs. 20 p.m., in 107 cases between Rs. 20 and Rs. 30 p.m., and in 6 cases over Rs. 30. In 20 cases the wages of both husband and wife were asked and the joint average was Rs. 54 p.m. In the 20 cases mentioned in the next paragraph, 15 had an income under Rs. 50 p.m. and 5 had an income over Rs. 50 p.m.

(5) *Food.*—The results of an enquiry into the diets of the working classes, carried out by the Bombay Labour Office, was published in 1923.(5) This enquiry was not undertaken from the dietetic side but in order to find how much of the workman's budget is spent on food. It was taken on the extensive system, that is, the families were visited once and the amount of food-stuffs ordered in the month were ascertained. This left out certain important foods such as fresh fish and vegetables, which would have improved the diet shown. In order to get more details, one of us made a personal investigation of the food conditions by visiting a series of mill-working families daily for a period of 5 days in each case, taking note of every article of food consumed and reducing it to ounces per head, using Lusk's coefficients to determine the share of the mother where the food was prepared for a family. The grammes of protein, carbohydrate and fat and the calories were calculated and the vitamins approximately determined. We made a similar investigation among the women of the poorer non-industrial classes, as well as among women of the well-to-do classes. The numbers investigated were necessarily small (20 of the mill-working class, 70 of the poorer non-industrial class and 20 of the well-to-do class) but they showed some interesting contrasts.

The diet of the mill-workers consisted chiefly of *bajri* bread, rice, vegetables (potatoes, onions, pumpkin, *brinjal*), and some *dal* or gram with

TABLE I.

	Average daily intake per person. In grammes.					Calories. Daily intake per person.	Vitamins. Average daily intake in arbitrary units.			Red blood cells per c.mm. average count in millions.	White blood cells per c.mm. average count.	Cubic space (ft.) per person.	Husband's income. Percentage.		
	Total fat.	Protein animal.	Total protein.	Animal fat.	Carbohydrate.		A.	Corrected A.	B.	C.			Under Rs. 50.	Rs. 50 to 100.	Over Rs. 100.
Better class controls.															
Mean ..	69	26	120	55	343	2,730	95	89	132	136	4.88	4,890	2,845	..	100
20 cases. Standard deviation.	24	19	42	24	108	658	40	30	52	32	0.388	1,126	2,270	..	..
Hospital controls.															
Mean ..	54	17	46	18	308	1,860	31	27	83	47	4.06	3,837	534	51	35	14
70 cases. Standard deviation.	18	10	21	14	93	656	16	12	43	26	0.384	572	345	.	..	..
Mill-workers.															
Mean ..	50	8	26	2	404	2,121	21	21	92	30	3.75	3,769	240	75	25	0
20 cases. Standard deviation.	16	4	3	2	157	655	10	10	39	12	0.392	602	112	..	..	..

occasional small quantities of fish or mutton. Milk and *ghi* were almost never taken, eggs never, and very little vegetable oil. Fruit was never taken—this may be different at the time when mangoes are cheap.

In the non-industrial classes more rice was taken and less *bajri*. If wheat was taken it was in small quantity. Milk and *ghi* were often taken and fairly large quantities of vegetable oil. Fruit was sometimes included in the diet, and either meat or fish was taken most days by non-vegetarians. White bread was sometimes taken and especially by Christians. Vegetables sometimes included tomatoes or greens, though in small quantity.

Table I shows the average diet of the 20 mill-workers as compared with the average diet of 70 of the poor non-industrial class. Included in the table is the blood count, the cubic space per head and the family income. It will be seen that the mill-workers were better caloried and had a higher proportion of carbohydrate than the hospital controls. Their diet was extraordinarily deficient in fat, and especially in animal fat, also animal protein.

The difference in the diets was probably due to the fact that the mill-workers, although the poorest community, were bound to have a good supply of calories or they could not have got through their work. Hence they bought the cheapest and most filling foods. They drew their vitamin A from *bajri* and *dal* of which they took a fair amount. Their vitamin B was from the same source and from the vegetables (which were not containers of vitamin A). Vitamin C was no doubt obtained to some extent from the vegetables, although these were cooked. There did not appear to be any source of vitamin D except the small bits of mutton rarely taken, but the women went out freely and no doubt sat in the sun and got a supply of vitamin D through the skin.

The vitamin A supply of the non-industrial class largely depended on milk and milk products, which, in Bombay at least, are doubtful containers. The mill-workers obtained their vitamin A supply from grain, which is a certain source.

Table I shows that when the vitamin A column was corrected to allow for the bad *ghi* the mill-workers had nearly as much vitamin A as the non-industrial class, while they had a slightly larger vitamin B intake.

These facts will be referred to later in connection with disease and mortality in childbirth.

(6) *Habits and work.*—Women of the industrial classes do not observe purdah. The women of Class B rise early as the men have to be at the mill by 7 a.m. They cook the food, then clean the cooking and eating vessels, do the family marketing and the family washing. Many carry their husband's dinner to the mill daily. Many take in boarders from among the single men working, and cook their food and carry it to the mill. They have, of course, no servants, so they are forced into the open air each day and have fairly active lives.

Women of Class A work in the mills from 8 a.m. to 5-30 p.m. (sometimes longer) with an hour's interval at midday for food. They have the advantage of a walk to and from the mill, and sometimes a second walk at midday if they come home for their food. They spend their days in the big factory rooms, which are on the whole, clean, light and airy, at least as compared with most of the *chawls*. The joint income earned by themselves and their husbands should make better living possible and in some cases, no doubt, it does so, but the tendency of the men to gamble and drink too often leaves the family with nothing but the mother's wages for support. It is generally agreed that the women themselves never drink.

The women are employed chiefly in the winding and reeling departments. This is not heavy work. It entails standing before a frame, watching the yarn wind and removing and replacing it when finished. The attention must remain fixed on the bobbin throughout, as broken threads unnoticed spoil the yarn when it comes to weaving.

In some cases there is a mother-in-law or other female relative living with the family, who does the home cooking and housekeeping. In other cases the woman herself has to do it. This entails getting up at 5 or 5-30 a.m. to kindle the fire and cook the midday meal. At the midday interval she may come home to serve the food to husband and children. When work is finished in the evening she does her marketing and goes home to cook the evening meal. After it is eaten she has to do the cleaning up and various odd jobs about the house. Some women said they got up at 5-30 a.m. and did not get to bed till 10-30 p.m. working all the time. If there is a young baby and no one to leave it with save perhaps a little sister or a neighbour, it can be imagined how this must add to the woman's tasks and anxieties, and one cannot wonder that, not realizing the danger, she is so liable to dose it with opium. Out of 83 mills in Bombay City only 13 have crèches attached.

(7) *Age and caste.*—Of the mothers of Class A, 11 per cent. were below 20 years, 62 per cent. between 20 and 30 years, and 25 per cent. over 30 years. Only 2 were 15 or younger, the youngest being 14.

Of the mothers of Class B, 20 per cent. were below 20 years, 59 per cent. between 20 and 30 years and 20 per cent. over 30 years. Four were 15 or younger, the youngest being 14. In fact there were fewer very young mothers in Class A.

The great majority were Hindus, in Class A, all, except for 3 Christians and 3 Mahomedans; and in Class B all, except 7

Christians and 12 Mahomedans. This does not probably show the real proportions of these communities among the industrial classes, for Mahomedan women have a great objection to attending hospitals staffed by men (as is the case in the Nowrasjee Wadia Hospital) and as a matter of fact they went in small numbers to the Cama Hospital (staffed by women) and were not included in these figures.

The effect of work on childbirth.

1. *The mother.*—This question may first be studied by comparing the maternity conditions of industrial and non-industrial women.

TABLE II.

Labour cases seen in Bombay hospitals.

	Community. 1925—1929.	Osteomalacia.		Eclampsia.		Anæmia.		Maternal Mortality.
		Number.	Rate per 1,000.	Number.	Rate per 1,000.	Number.	Rate per 1,000.	Rate per 1,000 births.
Non-industrial classes.	Hindu, 2,066 cases.	6	2.9	8	3.8	83	40.1	16 per 1,000 births.
	Mahomedan, 842 cases.	32	38	14	16.6	79	93.8	
	Christian, 801 cases.	nil	nil	3	3.7	39	48.6	
Industrial classes.	Mill-workers, 576 cases.	1	1.7	1	1.7	6	10.5	1.7 per 1,000 births.

The table shows that there is a marked difference between the maternity conditions of the two classes, the incidence of disease connected with pregnancy being much less in the industrial class. The maternal mortality is also much lower, only 1.7 per 1,000, which would be low for any country. It is possible that some deaths may have taken place after the patients left hospital, since they were discharged on the 8th or 10th day, but the same may be said about the women of the non-industrial class. The maternal mortality for the city of Bombay for the years 1926, 1927, and 1928, as reported by the Health Officer was 13.9, 9, and 9 per 1,000 births respectively. "Mill-workers" as shown in Table II includes both actual workers and non-workers (the wives of the male mill-workers) but there was no marked difference between the two classes so far as maternal disease or mortality was concerned.

The low maternal mortality among the mill-workers is of course due to the low incidence of the toxæmias and other diseases of pregnancy in this class. This immunity is probably directly associated with both the diet and the mode of life of these workers. The diet is well caloried but the calories come very largely from carbohydrate and not fat, the content of which in the diet is extremely low. It has been shown McCarrison(6), Ederer(7), Harris and Moore(8) that the higher the fat content of the diet the greater the need for vitamin B in the diet, especially if the "A" content is low. It would seem as if the low fat intake and the relatively high vitamin B content of the diet placed the mill-workers in a relatively better position as regards diet than the non-industrial workers, whose diet, though more varied, richer in fats and better supplied with animal products, is yet not sufficiently rich in the essential vitamins to permit of the proper utilization of these elements. The more active and open air life of the mill-workers must also be conducive to better health.

2. *The child.*—The infant birth weight is lower in the industrial than in the non-industrial class and the question arises why should this be so if the maternal conditions are better? The answer no doubt is that the mill-working class has a diet almost devoid of fat. During the last month or two of fœtal life the principal change in the fœtus is the deposition of fat under the skin. It is possible that the almost complete lack of fat in the mother's diet associated with a low vitamin content may be directly related to this failure to deposit fat in the fœtus.

In addition there is the effect of work. The numbers which we have investigated are not sufficiently large to enable us to give a definite pronouncement on this question, but so far as they go they tend to show that although the mother is not prejudicially affected by work, her child is smaller than those of the non-workers and her stillbirth rate is higher.

Our evidence is based on the following:—

1. A comparison of the infant birth weight and the stillbirth rate in

TABLE III.

Number of infants in different weight groups.

Group.	No. of cases.	3 TO 4 LBS.		4 TO 5 LBS.		5 TO 6 LBS.		6 TO 7 LBS.		7 TO 8 LBS.		8 TO 9 LBS.		9 TO 10 LBS.		Mean weight lbs.	Standard deviation.
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%		
A. Mill-workers	223	6	2.6	37	16.5	93	41.7	66	29.5	20	8.9	1	0.4	..	..	5.502	0.932
B. Wives ..	236	2	0.8	27	11.4	80	33.9	95	40.2	31	13.1	1	0.4	..	..	5.813	0.861
C. Non-industrial	518	7	1.3	32	6.1	140	27	198	38.2	122	23.5	13	2.5	4	0.7	6.095	0.982

9.3% of Class A, 13.5% of Class B and 27% of Class C were over 7 lbs. at birth.

TABLE IV.

Number of infants in different weight groups.

Group.	No. of cases.	3 TO 4 LBS.		4 TO 5 LBS.		5 TO 6 LBS.		6 TO 7 LBS.		7 TO 8 LBS.		8 TO 9 LBS.		9 TO 10 LBS.		Mean weight lbs.	Standard deviation.
		No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%		
(*a*) Mill-workers prior to strike.	134	4	2.9	27	20.1	57	42.5	39	28.8	8	5.9	1	0.7	..	..	5.377	0.897
(*b*) Mill-workers during and after strike.	89	2	2.2	10	11.2	36	40.4	27	30.3	12	13.4	0	0	..	..	5.713	0.9125

6.7% of Class (*a*) and 13.4% of Class (*b*) were over 7 lbs. in weight.

A. Women mill-workers (223).
B. Wives of male mill-workers, not themselves working (236).
2. A comparison of the same facts in
(*a*) Women mill-workers delivered between October 1925 and April 1928 (134). During this period work was being carried on regularly in the mills except for occasional short strikes.
(*b*) Women mill-workers delivered between May 1928 and April 1929 (89). During this time there was a six months' general strike from April to November, when the women workers had an enforced rest.

Table III shows the numbers of infants in different weight groups of A, B and C. It will be seen that in nearly every weight group B takes a place between Classes A and C.

Table IV shows the same numbers with regard to (*a*) the mill-workers up to the commencement of the general strike and (*b*) the mill-workers after the commencement of the strike and for the 6 months following. It will be seen that (*b*) has a smaller percentage in the lower weight groups and a larger percentage in the higher weight groups.

Table V shows the differences and significances of differences of the mean weights of the infants in the groups studied. In each case the differences are significant.

class (hospital) remained round about 100 per 1,000 during this period, excepting the Mahomedan community where it was much higher.

An effort was made to check the condition of the fœtus further by comparing the proportion which the fœtal weight bore to the maternal weight. The maternal and infant weights were taken in a series of groups, Hindu, Mahomedan, Christian (all of the hospital class), also mill-workers and mill-workers' wives. In none of the groups was any significant difference found in the percentage of the fœtal to the maternal weight, with the single exception of the mill-workers. In this group the proportion which the child's weight bore to the mother's weight was significantly less than in the other groups. It is possible that this, as well as the absolute lowering of the child's weight, is associated with the lack of fat in the mother's diet which is of such a degree as is never seen in any class in Britain. (9)

To sum up we find that—

1. The infants of the industrial class have a significantly lower birth weight than those of the non-industrial class.

2. The infants of the workers have a lower birth weight than those of the non-workers in the industrial class, and this is emphasized by the fact that during the strike year when work for a large part of the year was not possible the infant birth weight of the worker class approximated to that of the non-workers.

TABLE V.

Differences and significances of differences of mean percentage weights of infants in groups studied.

		Standard group.	Group compared.	Difference of means.	Significance.
1.	a.	Non-industrial class ..	Industrial class	—0.439 *	6.3 †
	b.	„ „ ..	Wives of mill-workers ..	—0.282	4.0
2.	a.	Wives of mill-workers ..	All mill-workers ..	—0.311	3.75
	b.	„ „ ..	Mill-workers before strike ..	—0.436	4.44
3.		Mill-workers after strike ..	„ „ „ ..	—0.336	2.70

* Difference of the means.

† Difference of means divided by square root of the sum of the squares of the errors of the two means.

$$\frac{M_1 - M_2}{\sqrt{E_1^2 + E_2^2}}$$

If result 3 or more difference is taken as definitely significant: if between 2 and 3 as probably significant.

With reference to stillbirth it was found that Class A (mill-workers before the strike) had a stillbirth rate of 178 per 1,000 births, while that of Class B for the same period was only 86 per 1,000 births. During and following the strike the stillbirth rate of Class A fell to 98 per 1,000 while that of Class B rose slightly to 114 per 1,000. The stillbirth rate of the non-industrial

3. The stillbirth rate of the non-workers in the industrial class approximated to that of the non-industrial class. That of the workers was much higher, but during the strike year came down to the same or an even lower level than the others.

4. In the mill-worker group alone the infant birth weight was a significantly lower percentage

of the mother's weight than was the case in the group of Hindus taken as standard.

It appears probable that a part of the fœtal disability is due to the fat-deficient diet, also that work, at least under the conditions it is carried on in Bombay, is prejudicial to the fœtus. It is easy to understand that the fat deficiency may not be so serious if the mother has a comparatively easy life and plenty of time to rest, and it is also likely that the work might not affect the child prejudicially if the mother had a reserve of fat on which it could draw during the later months of pregnancy. It is possibly the combination of these two factors which reduces the infant weight and increases the tendency to stillbirth.

There is some evidence pointing to the fact that the infants of workers who have to do their housework and the infants of mothers who go on working until nearly full time, suffer more than the others in respect to the disabilities given above, but this is not sufficiently substantiated to dwell upon.

An endeavour was made to contrast infant and child mortality in the industrial and non-industrial classes by asking each woman the number of her past confinements and the number of her surviving children: 500 consecutive women delivered in the Cama Hospital were so questioned and their replies were compared with those received from the 571 women of the industrial class, delivered in the Nowrasjee Wadia Hospital: 62 per cent. of the non-industrial children survived as compared with 43 per cent. of the industrial children.

How can the conditions of women mill-workers be remedied in order to produce better conditions for the child?

In considering this question we should try and dissociate our minds as far as possible from the conclusions already reached in Europe on this question. Conditions in Europe and India are very different. Women workers in India have special difficulties to contend with which should not be forgotten in endeavours made to ameliorate their circumstances. (1) There is greater poverty and a diet lacking in nutritive power. Hence the people have little reserve of strength. Many of the women workers begin to feel exhausted before pregnancy is far advanced, and give up work on this account, at the 5th, 6th or 7th month. If the maternity benefit is given on condition that the woman remains at work until the end of the 8th month, many will continue working when physically unable and the result will be worse than before. (2) The principles of maternity and child welfare are not understood among the people. Fathers do not realize their responsibility to the unborn child, nor, perhaps, does the mother herself. Hence if two months' salary were given to her, it would too often be used for the benefit of the family and especially of the husband. Even in England this is sometimes the case. How much more likely to be so in India, where the mother not only occupies a lower position in the household, but has not the knowledge which would enable her to spend a maternity benefit wisely?

The following are suggestions as to how employers could mitigate the conditions of expectant mothers:—

(1) By providing light work during the later months of pregnancy, which the woman could do without standing.

(2) By providing one free meal a day or milk from a good source to expectant mothers during the last two months.

(3) By having a simple maternity home attached to the mill premises. Each mill should have a crèche for receiving young children while their mothers are at work. Even now crèches are attached to 13 of the Bombay mills. It would cost little to have one or two airy rooms attached to the crèche and either keep a midwife to attend to the women or allow their own *dai* to come and attend them. As compared with confinement in the *chawls* they would have space, fresh air, good food and rest from home duties; as compared with hospital, it would at least be adequate for normal labour and would probably be taken better advantage of than the hospitals, where comparatively few mill-workers go for delivery.

(4) As regards maternity benefits these would be probably best given in kind, as indicated above—free meals, accommodation for confinement, food during the period of confinement, and a money present when returning home, sufficient to allow the mother a month's rest after delivery.

But if a maternity benefit of two or three months' wages is to be given, let it not be dependent on the women remaining at work until the end of the 8th month and returning one month after delivery. If she has worked in the mill a full year, why should the benefit not be given her at any time of her pregnancy when she wishes to leave off work and without securing any promise for the resumption of work? It would thus be in the nature of a bonus for work done. Half would be given when she left off work and half when the child was born. If she is required to remain until the end of the 8th month, harm will ensue in many cases, while the condition that she must resume work a month after delivery will assuredly mean neglect of the baby unless she has a female relation at home to take charge of it or unless there is a mill crèche.

The benefit, in whatever shape, should be strictly dependent on the mother having a full examination by a woman doctor, not only in order that her pregnancy may be certified, but in order that any danger or abnormality may be seen and provided for. This would also allow of propaganda being carried on and instruction given in the proper use of the benefit.

A Bill has recently been passed by the Bombay Legislature requiring that maternity benefits should be paid to all women mill-workers at confinement, the benefit to consist of two months' wages, that is leave on full pay for a month before and a month after confinement. While welcoming the action, one cannot help regretting the form in which the benefit is given for the reasons already declared. The woman is handed a cash benefit and no effort is made to tell her why, or to ensure that her own health or the child's will be safeguarded. It is not impossible, even yet, to amend the proposals of the bill.

The benefit now provided by legislation is Rs. 21 per head. There are about 30,000 women mill-workers in Bombay, of whom it is estimated about 10 per cent. bear children annually. Thus the amount to be given by the mill industry towards the benefit (if all women eligible came forward, which is unlikely) would be about Rs. 60,000 annually. A proportion of this sum would be sufficient to finance a large enquiry on the lines given above and to obtain ample evidence as to the best method of giving maternity benefits in India. Surely such an enquiry would be a wise preliminary of any widespread scheme for maternity benefits.

In the course of our investigation we were impressed by the fact that improvement in the conditions of the male workers would in itself assist the maternity troubles of the women. The lack of proper nourishment in pregnancy and the need for continuing work when physically unable is often due to the habits of the men who spend their own wages on drink or gambling, so that the wife practically supports the household. The provision of cinemas or other amusements for Sundays and holidays, the starting of welfare organizations, propaganda to inculcate a sense of responsibility towards the wives and children would all be means to this end. Work of this kind is already being carried out by the Y. M. C. A. in Bombay, but our point is that it should be done by the employer for the benefit of the worker. Grain shops in the mills would ensure the workers getting a good return for their money, and schools for the workers' children would be specially useful as inculcating on impressionable minds a sense of greater responsibility both in regard to work and social relations.

In concluding, we wish to express our thanks to Dr. Lucy Wills for much help and advice, especially with regard to tables and to the facts about diet obtained in the course of a larger enquiry which she is carrying out.

REFERENCES.

(1) *Draft Conventions and Recommendations adopted by the International Labour Conference, Washington* (1919). (International Labour Office.)

(2) Curjel, D. F. (1923). *Women's Labour in Bengal Industries: Bulletins of Indian Industries and Labour.*

(3) Barnes, F. D. (1923). Maternity Conditions of Women Industrial Workers. *Bombay Labour Gazette*

(4) *Report on an enquiry into the wages and hours of labour in the cotton mill industry.* Labour Office, Bombay, 1925.

(5) *Report of an enquiry into Working Class Budgets in Bombay.* Labour Office, Bombay, 1923.

(6) McCarrison, R. (1930). *Indian Journ. Med. Research,* Vol. 18, p. 667.

(7) Ederer, S. (1925). *Biochem. Ztschr.,* Vol. 158, p. 197.

(8) Harris, L. T. and Moore, T. *Biochem. Journ.,* Vol. 22, p. 1461.

(9) *Medical Research Council, Child Life Investigation. The effect of Maternity Social Conditions and Nutrition upon Birth Weight and Birth Length,* 1924.

A CLINICAL STUDY OF POST-KALA-AZAR DERMAL LEISHMANIASIS.

By L. EVERARD NAPIER, M.R.C.S. (Eng.), L.R.C.P. (Lond.),

Kala-azar Research Worker (Indian Tea Association Endowment),

and

C. R. DAS GUPTA, M.B.,

Assistant, Kala-azar Ancillary Enquiry under Indian Research Fund Association.

(From the Calcutta School of Tropical Medicine and Hygiene.)

EIGHT years ago Brahmachari (1922) reported a case, a man with nodular skin lesions all over the body in which leishmania had been demonstrated. This patient gave a history of having had kala-azar and of having been cured by a course of injections of sodium antimony tartrate. During the next year or two a few more single cases of a similar type were encountered and reported, one by the senior writer (Knowles, Napier and Das Gupta, 1923). From the latter half of the year 1925 onwards an increasing number of patients suffering from this condition have attended at the School of Tropical Medicine and Hygiene for diagnosis and treatment. Colonel Acton and the senior writer (Acton and Napier, 1927) published a paper describing three distinct clinical types and discussing the pathology of this condition; in this report they analysed 44 cases. Since the publication of this paper Brahmachari (1928) has described yet another clinical type.

Our reason for writing this paper is threefold. During the last two and a half years we have seen, and have made and collected notes on, some 150 more patients suffering from this condition; these 150 cases include some previously undescribed clinical types; and, finally, we have realized the necessity of publishing further notes on this comparatively common condition with which the general practitioner in Bengal does not appear to be very familiar, if the diagnoses made before patients attend this institution are fair samples. Our previous paper was published in the *Indian Journal of Medical Research* and was probably not seen by a very large percentage of the readers of this *Gazette*. We propose to make this a purely clinical study.