

POVERTY AS A CAUSE OF ILL-HEALTH

By JAMES DEENY, M.D., M.Sc., D.P.H., M.R.C.P.I.

(*With Discussion.*)

(*Read on Friday, 31st May, 1940.*)

Anyone engaged in general medical practice soon appreciates the influence of environment on health. It also becomes clear that so long as social and industrial conditions are allowed to remain as they are, medicine is merely a routine matter of treating disease as it occurs. A better attempt should be made to deal with the real factors responsible for ill-health—the social and economic causes.

We must change our attitude to disease, as *P.E.P.* (Political and Economic Planning) says of the English health services: "In the past, medicine has been too much occupied with salvage work and not sufficiently with the great work of creating boldly and consciously, conditions in which a healthy population can flourish." I admit that progress has been made in the development of water supplies, sewage disposal and to a lesser extent housing, but in the promotion of good health, as opposed to the prevention or cure of disease, little or nothing has been achieved.

Although we know a good deal about the changes and processes which take place during sickness, we are still largely ignorant of the conditions under which disease is likely to develop. We are still more ignorant of the constructive measures necessary to promote and maintain good health. The best brains in our profession have concentrated on disease, and the idea of health as a positive thing has been neglected.

Many people who are not actually ill, especially those engaged in industry, live in a condition of sub-optimal health. There are few who have not some small defect, which is sufficient to prevent them enjoying really good health. For example, in the last report of the Peckham Health Centre—a new London enterprise—it was shown that on examination of several thousand of their members, 80 per cent. were found to suffer from at least one physical defect requiring treatment.

The first step in the promotion of good health is to find out the causes of ill health, not only the germinal infections and the breakdowns in the chemical processes of the body, but also man-made causes. Clear and accurate knowledge of malnutrition and other social and economic evils would soon show us how to eliminate them.

In Lurgan, Co. Armagh, where I practise, there is an excessive amount of sickness, and few people show really good health. By good health, I mean not merely the avoidance of disease, but the attainment and maintenance of physical and mental well-being. This ill-health is of an indeterminate nature and is not reflected in the vital statistics of the town. It is shown by poor physique, a diminished resistance to minor

diseases, and an inability to recover from illness in a reasonable time. To find out, if I could, the factors responsible, I decided to carry out a survey. It was to extend over three years, and was to include samples of men, women and children. I also intended to carry out a series of "family budget" estimations on a selected group of families. The first sample of adult male linen weavers was examined in the spring of 1938, and the results were published in the *British Medical Journal*. Last year in spring a number of women employed in the linen trade were examined, and it is with the results of this work that we are at present concerned. I intended to conclude the enterprise by examining a group of children this spring, but the war has prevented my completing the work. In fact, it is only now that the statistical analysis of the results of the female group has been finished. If it had not been for the interest and help of Miss Lynd and Dr. Geary it would probably never have been finished at all.

The sample was made up of 205 women, each the mother of a family; and normally employed in some branch of the linen trade. For years Lurgan has been a depressed area, and during the survey many of the women were unemployed. Men in the linen trade do not normally receive wages sufficient to maintain a family, so that—in addition to their housework—wives have to supplement their husbands' income by work in the factories. This work is laborious, tedious and fatiguing. With the recent addition of high-speed machinery in some of the factories, there is an added burden of nervous strain and anxiety. Women known to suffer from chronic disease or who were pregnant were not included in the sample. The investigation was in two parts: (1) Social or economic—in which questions were asked concerning occupation, family income, with some details of expenditure; (2) a medical examination.

Economic Circumstances of Families

The survey was carried out during March, April, May and June, 1939. Two hundred and five women were examined, whose ages ranged from 20 to 35 years, the average being 30 years. The families of these subjects numbered 1,084 persons. Reduced to adult male equivalents it was 797. The total income weekly of the 205 families was £594 0s. 8d., an average weekly income per adult male equivalent of 14/11. The detailed income of the families was as follows:—

171 persons worked and earned £417 3s. 1d.

105 persons were unemployed and received £120 10s. 0d.

9 persons received as Sickness Insurance Benefit £4 9s. 6d.

11 persons received as Old Age Pensions £6 10s. 0d.

9 persons received Widows' Pensions £8 2s. 7d.

1 blind person received 10/-.

4 women received Army, Navy or R.A.F. separation allowances of £7 10s. 0d.

20 persons had Great War Pensions of £17 4s. 6d.

13 people had other sources of income amounting to £12 1s. 0d.

In the statistical analysis of the figures the method adopted was to divide the women into groups according to their weekly income. This was found by dividing the family income by the number of adult male equivalents in the family. In this manner nine groups were obtained.

Details of Income Groups.

Group	Income per week per equivalent adult	Number of women in group
1	Under 5/-	1
2	5/- to 10/-	34
3	10/- to 15/-	78
4	15/- to 20/-	43
5	20/- to 25/-	24
6	25/- to 30/-	17
7	30/- to 35/-	6
8	35/- to 40/-	1
9	40/- and over	1
	TOTAL ..	205

Since the numbers in groups 1, 7, 8 and 9 were too small for analysis, these groups were omitted in the subsequent consideration of results.

Having divided the sample into groups, we can see the relative proportions of the incomes derived from wages and unemployment benefit.

TABLE I.

Source of Income in Different Groups.

Source	Group 2		Group 3		Group 4		Group 5		Group 6		All Groups*	
	Amt. £	Per cent	Amt. £	Per cent.	Amt. £	Per cent.	Amt. £	Per cent.	Amt. £	Per cent.	Amt. £	Per cent.
Earnings	29·4	41	131·0	66	98·2	73	67·8	81	57·9	86	417·2	70
Unemployment Benefit	34·9	48	52·8	27	18·4	14	7·7	9	4·5	7	120·5	20
Other Income ...	7·7	11	14·7	7	17·0	13	8·5	10	4·6	7	56·3	10
TOTAL ...	72·0	100	198·5	100	133·6	100	84·0	100	67·0	100	594·0	100

* Including those not shown in previous columns.

This table shows plainly the relationship between poverty and unemployment. A much greater proportion of the income in the lower income groups is derived from unemployment benefit.

Details of some features of the average weekly expenditure are summarised.

TABLE II.

Certain Items of Expenditure. Average per Household per Week.

Item	Group 2	Group 3	Group 4	Group 5	Group 6	All Groups*
Rent	4.3	5.2	5.3	5.8	5.9	5.3
Instalments :—						
Furniture	1.2	1.5	1.8	1.9	2.2	1.7
Clothes	2.5	3.8	4.7	3.8	3.6	3.7
Wireless	0.1	0.4	0.3	0.5	0.6	0.4
Insurance	2.2	2.1	3.0	3.8	2.9	2.5
Meat	2.9	3.5	3.9	4.3	3.9	3.7
Milk	3.3	2.6	3.0	2.6	3.0	2.8
Eggs	1.8	2.0	2.5	2.5	2.6	2.2
Pocket money .. .	4.5	6.6	9.6	9.8	16.8	8.4
Total above .. .	22.8	27.7	34.1	35.0	41.5	30.7
Average income	42.3	50.9	62.1	70.0	78.9	57.9
Food (3 items)	8.0	8.1	9.4	9.4	9.5	8.7
Eq. adults	5.5	4.1	3.5	3.1	2.9	3.9
Food (3 items) per eq. adult	1.45	1.98	2.69	3.02	3.27	2.23

* Including those not shown in previous columns.

It will be observed that in all households combined expenditure on the nine items specified accounts for just over one-half of total income, and the proportion does not vary much between the different groups. If the total amounts spent by the 205 families each week on the three important foodstuffs—milk, meat and eggs—are divided by the number of persons in the families, it is found that the expenditure on meat is 8½d. per head and on milk 6¼d. (or a trifle more than a quart of milk per head per week). On eggs it is 5d. per head.

Women in Group 2 spend more money on milk than the other groups, as they have larger numbers of children. There is only a slight rise in money spent on meat, as income rises, but there is a definite rise in the amount on eggs. There is very little difference in such items as rent, clothes or insurance. The total amount of the income devoted to pocket money for husbands or other men of the family is £86 5s. 6d., which is one-seventh of the entire income, and seems a lot. It increases in amount in the better off groups. But it must be allowed that many of the men, particularly in the lower income groups, devote a part of this money to payment for such articles as children's footwear, or buy their own clothes.

Medical Examination

Height.—Was measured without shoes. The mean height of all the women in the sample was 5ft. 1¾in. The general mean height of European women is 5ft. 2½in. It is about one inch less for the artisan populations of towns. There is no significant difference in the height of the different income groups; the average ranged from 5ft. 1¼in. in Groups 3 and 5 to 5ft. 3in. in Group 4.

Weight.—The mean average weight of European females is 8st. 8lb. The average for the sample was 9st. 1½lbs. The women of the sample were heavier than normal. An average heavy weight does not always indicate well-nourished subjects. The respective averages for Groups 2

to 6 inclusive were 9st. 8lbs., 9st. 1lb., 9st. 1lb., 8st. 11½lbs., 9st. 4½lbs. Increased weight may be due to sedentary work, a higher fertility rate, the consumption of a diet rich in carbohydrates, or anæmia.

Arm Girth.—This measurement was thought to be of use in the selection of cases of malnutrition. In 1935 in a survey in Lancashire, it picked out with accuracy from amongst a group of mothers the under-nourished cases. In this instance it was not of any value, since it did not reveal any difference in the women of the different income groups. The general average was 10.7 inches.

Dynamometer Test.—This is a test of the strength of the muscles of the back. A handle communicating with a strong spring is pulled upwards. The strength of the pull is shown on a dial. It is supposed to be an accurate way of measuring the strength of the body. The average for all the 205 women was 158 lbs., which must be regarded as very low. There was no regular variation with size of average income, the average for Groups 2 to 6 in lbs. being respectively 156, 155, 160, 165, 157. In Groups 2 and 3 the strength of the women was not so great as in Groups 4 and 5. In Group 6 the averages were much the same as in 2 and 3.

Romberg Test.—This is a balancing test, the purpose of which is to test muscle and nerve co-ordination. It is impaired in certain forms of malnutrition. In the sample no significant changes occurred in the various income group. There were 19 positive reactions out of 205, or 9 per cent.

Haemoglobin.—(The pigment of the blood which is essential for the carrying of oxygen to the tissues and the removal of carbon dioxide). The haemoglobin content of the blood is directly dependent on the quality of diet. Lack of haemoglobin is a cause of anæmia. The results of this test are :—

		Grms.	Percentage of norm (16 grms.)
Group 2	..	11.2	70
„ 3	..	12.2	76
„ 4	..	12.3	77
„ 5	..	12.4	78
„ 6	..	12.1	76
All Groups		12.1	76

When 100 per cent. is 16 grammes of haemoglobin per litre, few normal women do actually come up to 100 per cent. ; but, even so, the results indicate a serious state of anæmia. In Group 2 the higher average weight and the low haemoglobin content shows that many of these women are suffering from a condition frequently seen where anæmia causes a marked deposition of fat in the subcutaneous tissues. It is again low in Group 6, but in this case without overweight. Here the cause is probably different, and may be due to the fact that harder work to earn the larger incomes or to maintain more elaborate homes affects the health of women in this group.

Serum Protein.—This was estimated by means of an Nephelometer. The percentages found was 7.7 in Group 2, 7.5 in Group 3, 8.1 in Group 4, 7.8 in Group 5, and 7.2 in Group 6. The general average of 7.7 per cent. was not appreciably different from the normal. There is no great difference between the groups. Group 2 is lower than the others, and so is Group 6. The protein in blood serum depends to a large extent on the protein in the diet. (By protein is meant the nitrogenous element of the diet: it is contained principally in meat, milk, eggs, fish, cheese, and certain vegetables.) It has been suggested that an estimation of the serum protein would reveal at an early stage a specific state of protein deficiency or pre-deficiency in persons whose diets had a comparatively satisfactory aggregate energy value. If, on the other hand, the dietary deficiency must be pronounced to the point of affecting the total calorie intake before it can influence the protein concentration of the blood serum, the method will not be of much value, owing to its lack of sensitivity. This test was also carried out to determine the relationship of serum protein to the blood calcium content; the level of the latter being affected by the level of the serum protein. Taken in conjunction with the figures spent on meat, milk and eggs, there does not seem to be any significance in the results.

Blood Calcium.—Deficiency in blood calcium is due to deficient intake of this element in the diet, particularly to lack of protective food stuffs, such as milk and cheese. There are, however, other influences, such as the level of phosphorus in the blood, Vitamin D in the diet, the acid base balance of the body, and the level of the serum protein. These factors are in this case of secondary importance, for if a diet contains sufficient calcium by plenty of protective foodstuffs, then the other conditions are usually satisfied. The method of estimation used was that of Kramer and Tisdall. The general average found was 10.7 grammes per cent., and the averages for Groups 2 to 6 were respectively 10.6, 10.4, 10.5, 10.6 and 10.9, the normal being 9–11 grammes per cent. Although the figures reveal a fairly high content in Group 2, it can be seen that there is a fairly steady rise in the groups as income rises. This is not very marked, and as the numbers analysed are small, the value of the results is not so great as it might have been with a larger sample. However, there seems to be little doubt that the amount of calcium in the blood of the women in the higher income groups is greater than in the lower, even though the amounts are still within normal limits.

The blood pressure of each woman was estimated and a specimen of the urine tested. Nothing of significance was found.

Subjective Tests

Up to this the examination has been entirely of an objective nature. In a clinical examination it is also necessary to apply tests of a subjective kind. It has become fashionable to despise all subjective tests and to regard them as of doubtful scientific value. They depend too much on the personal nature of the examiner, and on his ability to maintain the same standards unimpaired throughout the examination. In a clinical survey it is impossible to do without such tests. From experience in my previous survey I reduced them to a minimum in this. The following points were noted:—(1) Posture, (2) pallor, (3) dry skin, (4) muscular condition, (5) quantity and condition of the hair, (6) follicular hyperkeratosis, (7) pyogenic infections (such as pimples, boils, etc.), (8) signs of rickets (dating from childhood), (9) palpable cervical glands, (10) enlarged

thyroid (goitre), (11) quantity of subcutaneous fat, (12) coryza (cold in head), (13) chronic respiratory catarrh, (14) bronchitis, (15) phthisis, (16) T.B. glands in neck, (17) chronic conjunctivitis (inflamed eyes), (18) blepharitis (inflamed eyelids), (19) otitis media (discharging ears), (20) angular stomatitis (ulcers at the angles of the mouth), (21) condition of the tonsils, (22) condition of the teeth, (23) adenoids, (24) abnormalities of the heart and blood vessels, (25) constipation, (26) recent illness, (27) clinical malnutrition. Particulars for all tests except those numbered 12, 15-19 and 23 (in which the number of cases were found to be small) are summarised in the following table:—

TABLE III.

Details of the Results of Subjective Tests.

Test	Group 2	Group 3	Group 4	Group 5	Group 6	Total †
	Percentage					
Posture, poor and bad*	38	33	23	25	18	30
Pallor	59	39	42	29	53	43
Dry Skin	59	40	28	33	12	38
Muscular condition, poor and bad* ..	44	46	28	33	35	39
Hair :						
Quantity, poor and bad*	26	17	40	8	24	23
Quality, poor and bad*	47	18	16	13	18	22
Follic. hyperkeratosis	44	40	42	50	29	42
Pyogenic infections ..	47	49	35	46	24	43
Signs of rickets ..	41	39	42	25	29	39
Palp. cerv. glands ..	29	30	33	46	24	33
Enlarged thyroid ..	15	19	19	29	6	18
Subcutaneous fat :—						
Deficient	29	33	37	29	12	32
Norm I	47	40	37	58	65	44
Excessive	24	27	26	13	23	24
Chron. resp. catarrh ..	53	42	44	46	47	46
Bronchitis	18	14	9	8	Nil	13
Ang. stomatitis ..	24	14	5	8	18	13
Tonsils enlarged ..	26	21	30	25	24	23
Teeth :						
Number**	17.1	18.5	19.1	21.5	22.2	19.1
Caries**	6.6	5.6	6.4	2.7	4.4	5.5
Pyorrhoea	50	37	16	29	18	32
Card.-vasc. abnormalities	32	18	5	21	24	19
Constipation	24	26	26	8	29	23
Recent illness	15	21	19	25	6	19
Clinical malnutrition ..	71	64	51	50	35	58

* Cases were classified into four categories "good", "fair," "poor," and "bad."

† Including groups not shown in previous columns.

** Number.

In an appraisal of these figures it is necessary to understand the significance of the various conditions into which I have enquired. The effect of malnutrition on posture, pallor, muscular condition, and subcutaneous fat can at once be appreciated. The meaning of the other points is

not quite clear. Vitamin A, that is the vitamin contained along with Vitamin D in animal and fish fat or oil, has as one of its main functions the maintenance of the resistance of the mucous membranes and skin against infection. Lack of this vitamin lowers the resistance of these surfaces, so that boils, pimples, carbuncles and other forms of what are called "pyogenic" or pus-producing infections occur. Angular stomatitis, or ulceration at the corners of the mouth, is another symptom of this condition. Lack of Vitamin A lowers the resistance of the mucous membranes of the respiratory tract and predisposes to catarrh and bronchitis. As it plays a special part in protecting the eyes from infection, any signs of conjunctivitis or blepharitis were noted as evidence of its efficiency. Follicular hyperkeratosis (a thickening of the outer layer of the skin in some parts of the body), and dry skin are also caused by deficiency in this Vitamin. Signs of rickets in childhood were noted as an indication of the quality of the diet each woman received during childhood. It is also a sign of early calcium disorder, and is related to the condition of the teeth. Constipation is often associated with a deficiency of Vitamin B. An enlarged thyroid gland or goitre may be due to deficiency of iodine in the diet amongst other causes. Dental caries and pyrrhoea are due partly to infection and partly to deficiency of Vitamin C and calcium. Enlarged tonsils, adenoids, and otitis media are thought to be due in some way to dietary deficiencies or faults, although the actual causes are not yet clear.

A consideration of the figures will show that in certain of the conditions examined, no significant changes appeared as income varied. They can be eliminated from further consideration, and include follicular hyperkeratosis, pyogenic infections, signs of rickets in childhood, palpable cervical glands, subcutaneous fat, respiratory catarrh, diseased tonsils, constipation and history of recent illness.

So many of these women suffer from one or other of the symptoms mentioned, that there must be factors associated with home or work conditions which are responsible.

Regarding the features which do show differences for the respective groups :—

Posture.—A greater number of women in the lowest income group showed postural defects. There was a steady rise in the number of those who had correct posture as the weekly income increased.

Pallor.—The number of women who were classed as "pale" was also proportionately greater in the lowest income group. Pallor was not taken to mean merely an anaemic condition; but it describes a peculiar darkening of the features with loss of coloration seen in malnutrition. It is difficult to describe; but anyone who has ever seen a case of real starvation, will know at once what I mean. All women classed as showing pallor were not starving, but in my opinion were suffering from a serious degree of dietary deficiency.

The Condition of the Hair.—There was not such a marked difference between the groups as regards the quantity of hair, although the poorer woman had less than the richer; but there was a difference in the quality. Women in Group 2 had 46 per cent. of their number with a poor or bad condition of the hair, while the highest in any of the other groups was only 20 per cent., and became less as the income increased. Hair in malnutrition tends to become lank and lifeless. It loses its lustre, the individual hairs seem thinner and growth is slower.

Enlarged Thyroid Gland or Goitre.—This is of especial interest. The women of the poorer groups suffer less from this complaint than those in the larger income groups, excepting Group 6. There is a rise in the number of those who suffer from goitre as the income rises. It is difficult to assess the exact significance of this finding as the numbers under consideration are small. It may be due to the greater strain and stress in securing the larger income and so have a nervous origin, or it may be associated with the fact that women in the lower income groups have had more children. Goitre in the poorest group was of a simple kind; in the group with the larger incomes it was often exophthalmic.

Bronchitis.—The members of the lower two Groups 2 and 3 suffered most from bronchitis. There was a fall in the number as the family income increased. Poverty lowers resistance, causing a more severe attack or a diminished capacity for recovery.

Angular Stomatitis.—This is more prevalent in Group 2 than in other groups. It was high in Group 3 and 6, but low in 4 and 5.

Teeth.—A most interesting feature concerning teeth was the rise in the average number per woman as income increased. It is significant that the majority of the women had lost almost half of their teeth, and of those remaining a substantial number were carious. There was not a great difference in the amount of caries present in the different groups although there was a slight improvement as income rose. Regarding pyorrhoea, there was a definite difference between 2 and 3 and the others. Three times as many women in Group 2 had pyorrhoea as in Group 4.

Cardiac Abnormalities were more prevalent in the poorest group, and fairly common in the richer groups, 5 and 6 could be due to the harder work necessary to earn a larger income, or perform the housework in a more elaborate home. The marked anaemia shown in the poorest group may have been a contributory cause.

At a later date it is hoped to analyse these figures statistically from another point of view, and determine the effect of the number of children on the health of the mothers. I also hope to introduce other material which is not now strictly relevant.

During the course of the survey I was struck by the common incidence of two types of women. The one stout, pale, poor and untidy, usually with a large family, cheerful in spite of many small ailments and taking things as they came. The other a smaller person, not any more healthy, but definitely more tidy and with a larger income. Usually with a small family of well-spoiled children, always anxious and worried. It is interesting to see how the figures for Groups 2 and 5 reflect these two types. There were, of course, all kinds of intermediates; but I think these two kinds of women are very common in all industrial populations.

It is extremely difficult to draw definite conclusions in work as this. As yet we have not sufficient experience to assess the true value of many of the findings.

If we take a close view of the figures we see at once that more than half of the subjects of the sample are in the lower two, income groups, and three-fourths of the women only get half the available income. I will not go into the question of dependents which would make the difference

more marked. It is apparent that unemployment is largely responsible and that the amount received as unemployment pay is insufficient to provide for their needs. Among the poorer women the amounts spent on milk, meat and eggs considered in association with the symptoms of vitamin deficiency displayed, makes it plain that their diets do not contain sufficient protective foodstuffs. This leads to an increased incidence of sickness. Deficiency of iron in the diet and the loss of blood at frequent confinements is probably responsible for the anaemia. The most serious clinical condition found was the marked anaemia of the poorer woman. The greater prevalence of many conditions definitely due to malnutrition in the poorer groups and their improvement with increased income shows plainly that malnutrition caused by poverty is the cause of their ill health.

In the group with higher incomes it is surprising to note that the level of health is still low. With better conditions one would expect a higher standard. There is an improvement in symptoms due to malnutrition ; but other features, not so noticeable amongst the poorer women, are to be found. These are almost certainly due to the work and worry necessary to attain a higher income, and at the same time cope with the extra household duties, of the more elaborate home.

The women can therefore be divided into two classes. Those who do not overcome poverty and so suffer from malnutrition ; and those who do at the expense of their health.

In this simple investigation I have tried to determine the effect of one single, social influence—poverty—on the health of a group of working women. The results should cause misgivings, and may perhaps stimulate those responsible to make improvements.

DISCUSSION ON DR. DEENY'S PAPER.

DR. ROBERT J. ROWLETTE, proposing a vote of thanks, said that Dr. Deeny had brought an important subject before the meeting and had reported an interesting survey. Such a survey as this would form the basis of a great deal of the knowledge that they hoped to obtain in the future. It was to a considerable extent pioneer work. He would emphasize the first few paragraphs of the paper and ask the members to read them again. In the past they had paid little attention to the problem of the prevention of disease. It was useful that work like Dr. Deeny's should bring back their attention to the organism itself and show them where mistakes had been made. Dr. Deeny pointed out that "We are still ignorant of the constructive measures necessary to promote and maintain good health. . . . By good health, I mean not merely the avoidance of disease, but the attainment and maintenance of physical and mental well-being." Of course poverty and ill-health were associated. He recalled a survey made in Dublin a few years ago by Professor Fearon who studied a group of 50 expectant mothers, the wives of unemployed men. They were a much poorer class than the group dealt with by Dr. Deeny. The average income of Dr. Fearon's group was 25/1¼d. The difference in health showed a relation to the difference in income. Both of these investigators paid special attention to the condition of the blood. In Dr. Fearon's investigation all were anæmic with the exception of four whose husbands were on relief work. Practically the same relation to poverty and the condition of the blood was shown as Dr. Deeny had shown in his studies. In 1933 a Committee of the British Medical Association found that the expenditure on food necessary to maintain health was 5/10½d. a week, and for children 2/- to 3/-. Dr. Deeny found that the average was 3/0¼, which was much less than what was regarded as a minimum by the English investigators. The figures of Dr. Deeny and Dr. Fearon showed there was a large class of the population living below the minimum required. Another observation of Dr. Fearon was that only 6 per cent. of the women received enough protein for their needs. A study such as this suggested that a great deal more of such work was required. There had been very little work done in Ireland in investigating the incidence of disease and in finding out how certain diseases were associated with certain occupations. There was evidence accumulating to show that many industries were accompanied by occupational disease. It had been shown for instance that the sugar industry was often associated with skin disease. These matters should be studied, and it was the duty of some Government Department to have investigations made as to the incidence of such diseases so that proper steps should be taken to deal with them.

MR. O'BROLCHAIN, seconding the vote of thanks, said that one aspect of the paper that struck him as being particularly interesting was the reference to anæmia and malnutrition. In a country like this, where the best of food was produced, it was extraordinary that such a degree of malnutrition should exist. It would appear that their present diet was based primarily on the diet that their forefathers had to use in the famine times and that they had simply built on that basis. The question of education in diet was a very important problem, and one on which medical men themselves disagreed. The authorities did not give sufficient attention to the matter. They of the National Health Insurance Society had come across this question of anæmia and been mystified by it. It

was the second greatest cause of incapacity in the insured women of Ireland with an average time of $3\frac{1}{2}$ months. They had asked various doctors about this, and the general opinion seemed to be that when these people got ill, though they were not really bad they took a long time to recover. They were unable to resist disease once it took hold of them. It was the first time he had seen the reversal of these two subjects, poverty and ill-health in their relation as to cause and effect. For years the subject of ill-health had been before them. If they examined the Public Health Acts they would find that efforts had been constantly made to solve the question of poverty by solving the question of ill-health. The very important questions of dental decay and nutrition, etc., had not received the attention they deserved from the Public Health Authorities. Now the time had arrived for solving ill-health as a question in itself. It all turned on the question of social organization. As science advanced the advantage derived from science had not kept pace with science itself. The progress in social reorganization had not been as great as the progress in science. Until that reorganization had taken place conditions such as those described by Dr. Deeny would persist.

MR. THOMAS JOHNSON, supporting the vote of thanks, said he was not able to appreciate the full value of the references on the medical side of the paper. But the immense amount of material in the paper excited his interest and prompted him to ask a number of questions. First of all, he was interested to know the economic condition of these 205 mothers in the town of Lurgan, a depressed area, at a time presumably when there was a good deal of unemployment. From the information he had regarding working-class families in Dublin, Lurgan appeared comparatively prosperous. It was true that in the linen trade men did not normally receive enough wages to maintain a family, and it was not much better now than it was 25 or 30 years ago. Unfortunately the women, the wives of the men in the trade, have to continue the work they carried on in their girlhood and young womanhood. Though the family income was given they did not know what the income per head was, and that made it impossible to draw any conclusion as to whether it was poverty that caused the variations in the figures of ill-health. As regards the expenditure on food, the table only dealt with milk, meat and eggs. If people received plenty of proteins in other forms one would like to know what the total expenditure on food would be. They had always assumed that the population of this country, and particularly of the country and smaller towns, was not a meat-eating population, and that in the larger towns the meat consumption was greater than in the semi-rural areas. A comparison of the figures shows that this is a fallacy or else the price of meat was lower in the North than in Éire. Dealing with the items of instalments on furniture, clothing and wireless, Mr. Johnson said he took it that these only referred to the families who paid for these things by instalments, and they must not be misled into thinking that these were the total payments for these items. Did the item for insurance include all insurances or only life insurance?

DR. DEENY: Life insurance only.

MR. JOHNSON, referring to pocket money and the high proportion it appeared to bear to income, said that that item covered a good many things that might be called miscellaneous. Pocket-money might mean anything in a family, and was too general a term from which to draw any conclusions. There was a book written by Dr. McGonigle, of Stockton-on-

Tees, dealing with the problem of poverty and its relation to health, and some of his figures tallied fairly well with the figures in the Lurgan example.

MISS AMY LISNEY, joining in the vote of thanks, said she had not intended speaking in that distinguished room, but could sympathise with Dr. Deeny as she herself was dealing with working-class people, and would like to-night to state the case of the workingman's wife, she and her fellows making up a large part of the population in every country, and for years people have not bothered about her. Her husband has his club, the children their schools, but the workingman's wife was left in her house alone. Local Authorities, as in Lancaster, have tried to supply houses which would give her added interest in life. With a clean house and decent furniture she could start off as an individual with more amenities than she ever had before. Poverty was not altogether her fault. It was brought about by lots of things like bad housing, and was a condition local authorities must now study. It was not either the lack of necessary housing. She had known houses side by side where the incomes were the same, £2 10s. a week. In one case the house was untidy, children ill, and husband irregular in his work. Next door they seemed to have more and the house was clean and tidy. That shows one must educate this huge class of women and teach them how to manage.

MR. J. C. M. EASON said he did not know anything about this subject medically, but he thought Miss Lisney's point was the one that required to be brought in. He did not think Dr. Deeny would suggest that good health could be maintained with large incomes. It was true that comparative riches had not been of assistance to people in other walks of life in maintaining good health. It appeared to him that the man in the street was not treating his body in a proper manner, and required to be instructed on it. Was it not true that the whole trend of people's habits at the present time was directly opposed to all the recommendations that doctors had made for the promotion of good health? People now treated their leisure as an end in itself, which was an entirely wrong attitude to take; it is a means to enable work to be done better. They see one family always well dressed and getting on well, and another family the exact opposite. These were not financial problems at all, but were human, moral and physical factors. With reference to the last paragraph of the paper he would like to ask who were responsible for making improvements.

DR. GEARY said Dr. Deeny's paper was a very creditable piece of work. Some idea of the labour which it entailed might be derived from the fact that Dr. Deeny obtained particulars under upwards of 60 separate headings for 205 women. As Dr. Deeny suggested, his material was suitable for further analysis. For instance, it would be possible to examine two or more specific factors and attempt to find relations between them. He knew nothing whatever about the medical aspect of these things, but taking the first two mentioned, posture and pallor, they could see if they were correlated. One has to recognize from the Table on page 83 that the general picture of the condition of health of those families is pretty devastating. Thirty per cent. of these women have a posture poor and bad; 43 per cent. have pallor, and 38 per cent. bad skin, and so on. These were dreadful results. Health is directly related to economic condition and accordingly the economic condition of Dr. Deeny's families must be viewed in the correct perspective, and with that in mind he had taken out a few figures.

They would notice that the general average family income was 58/-, and in the highest group, 79/-. Professor Duncan had made an estimate of the total income of this country as £155 million odd. That worked out at 92/- per family. That was much greater than the average of the group with highest income with which Dr. Deeny dealt, so that he was dealing with very poor people. Expenditure on meat, milk and eggs (as shown on Table II) ranged from 8/- in the poorest group to 9/6 in Group 6. The number of equivalent adults in the family groups was different. It was 5.5 in Group 1 and 2.9 in Group 6. Expenditure on the three items of food ranged from 1.45 to 3.27 shillings. Though Dr. Deeny said some of the money returned as "pocket-money" was spent on clothes, he thought the amount looked fairly reasonable as money spent on amusement, recreation, etc. Expenditure in Éire on the four items drink, betting, tobacco and the cinema was in the neighbourhood of £21 million out of a national income of £155 millions, or about 14 per cent., compared with 15 per cent. in the paper.

DR. H. KENNEDY said the fundamental conditions for health were environment and food. In animals there had been an enormous improvement because of the change in environment and food. There was not only the question of the money income, but the method of spending it, the willingness or knowledge of how to spend the money so as to get the best value out of it. For instance, there was no difficulty in life in the poorer population getting the cheapest proteins in the form of skim milk. In pre-war days at any rate you could buy skim milk at threepence a pound, and that was a very cheap protein. Then in these industrial places they could have the vitamins supplied in the cheapest form—the cabbage and potato. He thought the fault was that they had departed from the food of the famine days. White bread and tea was now the major food not only of the industrial areas but often in the heart of the country itself where there was real food in plenty. If they referred to the League of Nations' publications on the question of nutrition, they would find that the remarks upon low standards of nutrition were based not only upon the conditions of the very poor, but on the complete ignorance of the subject which permeated the whole family. At present there was nothing more essential than to inculcate in children growing up the importance of nutrition. The ignorance on the subject was colossal, and it was as common amongst the well-to-do people as amongst the poorer classes. One recommendation was that the consumption of sugar be reduced and the consumption of the potato increased. In the rural districts the food habits of the people had deteriorated during the last forty years.

THE PRESIDENT said he had great pleasure in tendering to Dr. Deeny the very cordial vote of thanks that had been proposed by Dr. Rowlette and seconded by Mr. O'Brolchain and supported by the other members. As evidence of the general interest taken in this very human investigation he was pleased to note that both professional and laymen had taken part in the discussion on the paper. The paper itself he regarded as a conscientious attempt to throw light on a very difficult subject, and it was a privilege for Dr. Deeny to allow the records of our Society to share with the *British Medical Journal* in printing the results of his research in the direction of malnutrition. The President was pleased to note that Dr. Deeny had thrown out a suggestion which led them to hope that they would have another paper elaborating this subject from him some time in the future. Having put the vote of thanks to the meeting, he

concluded by conveying it to Dr. Deeny with his own personal congratulations.

DR. DEENY, replying to the vote of thanks, said he was staggered by all the kind things that had been said of him. The survey was merely an attempt to find what were the main detrimental factors affecting these people, and had been prompted by the constant heartbreak of observing their wretched condition. In association with the survey he had visited Belgium, where he had seen factories and workers' homes, and was impressed by the contrast. In one town where they did the same work as was done in Lurgan, and where the wages and the price of commodities were much the same, beneficial organisation and education had effected an amazing contrast. There, 55 per cent. of the weavers owned their own houses, and they were good houses. To compare that fact alone with conditions in this country shows that something is wrong. The people of the sample were not the poorest in Lurgan by any means, in fact, they could be regarded as industrial aristocrats. Of the effects of environment on people's lives and health they knew really nothing. The outlook of many educated people in the matter was best expressed by the remark of a well-known Dublin poet who described this kind of work as "an unwarrantable intrusion into the private lives of the poor." With regard to the payment of instalments, in any industrial district it was terrible to see the hordes of collectors who descended on the homes of the poor on pay-day. Owing to the instalment system many people were paying away far more than they could afford on luxuries.

If it had been possible to continue the work, he had intended to do a series of family budget estimations. They were difficult to do properly, and there were many pitfalls to be avoided. In a survey such as this, the account-book method, in which housewives entered their purchases, was best. He favoured the investigation of a small number of households, say, between thirty and forty, and the books should be kept for at least one month.

Dealing with the life of the woman factory-worker, Doctor Deeny said that it was impossible for women to work in factories and at the same time mind their homes and rear children. He described the lives of such women, and gave details of the hardships they suffer. Some of the ill-effects of the trade processes of the linen industry were mentioned, and the influence of "working-out" on the successful running of the home discussed. He stressed the necessity for education in home-crafts, but pointed out that unless the women themselves realised the necessity for such education, any efforts in that direction were likely to fail. In the improvement in the level of domestic efficiency in industrial areas, people with Miss Lisney's training had great opportunities. They bridged the gap between the women in their homes and educational institutions; their efforts often met with great success.

He had been asked how he had ascertained the amount of the family income devoted to pocket-money. He had merely asked each woman how much money her husband or sons took from their wages to spend upon themselves. Where the answer was qualified by such statements as "He bought the children's boots or his cigarettes," he made a note of it.

This survey work should be done elsewhere in Ireland. Many more people might interest themselves, as there were countless human problems to be investigated. We were still a bit uncertain of our methods of investigation and it was only by further trial and error that a satisfactory technique could be elaborated.