ART. VII.—*Observations on the Mortality of Infants born in Workhouses.* By H. MINCHIN, M. B., F. R. C. S. I., Physician to the Hospital of the North Dublin Union; Lecturer on Anatomy, Steevens' Hospital School of Medicine, &c.

[Read at a Meeting of the Obstetric Society, December 3, 1859.]

WITHIN the last few years the pens of several able and experienced medical observers have been engaged upon the important subject of the prevalence of disease and mortality in the early periods of life; and the more the subject is inquired into, the more does the interest attaching to the inquiry appear to increase. But, notwithstanding that the general bearings of this question, as far as statistical data have been attainable for the purpose, have already obtained a considerable amount of attention, and have been placed in a strong light before the profession, it would appear that much remains to be done in the way of exploring the several social subdivisions into which a matter of this kind naturally resolves itself. "So serious," says Dr. West*, "are their diseases, that one child in five dies within a year after birth, and one in three before the completion of the fifth year." These figures have reference to the infant portion of the population at large throughout England, as deduced from the tables of the Registrar-General. We cannot, however, err very far in assuming that a similar rate of mortality prevails in our own part of the kingdom; but the uniformity of the proportion between the deaths of infants and the total number of births being liable to disturbance from a great variety of influences, this proportion, exhibiting probably a considerable fluctuation according to the habits, resources, means of subsistence, as well as the locality, occupation, climate, and a number of other social and sanitary contingencies affecting the several classes of persons among whom the births take place, there is no doubt that, by adopting a judicious division of labour, in investigating the causes of the comparative viability of infants in the different conditions of life, a valuable amount of statistical information would in a short time be accumulated, and much useful matter be brought together in reference to the important question—"Quare mors immatura vagatur^b?"

* Lectures on Diseases of Infancy and Childhood, page 1.

^b Lucret., v. 221.

The number of infants born in the 163 union workhouses of Ireland, during the year ending September 29, 1857, was 2369, and the number during the succeeding year, 2454. In reference to the mortality among this class, an unusual degree of interest began to be excited about the early part of last summer, and the popular feeling on the subject has been prevented subsiding altogether by the occasional appearance of a fresh article in some of the Journals on the "wholesale infanticide" which some newspaper writers have conceived to be in systematic operation throughout our land; the publication of the results of the Cork Union Inquiry appearing to have suggested the theme.

The question as to whether the infantile mortality which affects those born within the workhouses observes a higher ratio than that which obtains among *a similar class in the homes of the destitute*, is doubtless one which well deserves the attentive consideration alike of physicians and philanthropists; for if, upon due inquiry, the reply be in the affirmative, then indeed is some modification of infant management called for, and upon the medical officers of the above-named institutions would appear to devolve the moral responsibility of determining the defects, and suggesting the sanitary improvements. I am disposed, however, to believe that when all the peculiarities which characterize the condition of those children who have entered upon existence within the walls of the workhouse are fairly considered, their chance of survival will, perhaps, be found considerably greater than that of an equal number of children of like parentage outside the house. In the workhouse of the North Union, the infants born in the house constitute but a small proportion of the entire occupants of the nursery, the average ratio of births to admissions, during the last five years, being as 17·5 to 82·5 in every 100. In the present communication, however, I shall omit the consideration of the latter class, and limit my observations to a concise report of the results of 218 deliveries which took place in the Hospital of the North Dublin Union from 31st March, 1857 (the period at which I received charge of the Obstetric department), to the 30th September, 1859, with reference especially to the viability of the infants. An accurate registry is kept in the Hospital, in which are inserted the particulars of every labour that takes place, together with any circumstances worthy of observation in the subsequent history of the cases. I have been thus enabled to collect together some facts and figures, which, perhaps, may possess some interest

with reference to the question of the alleged excess of mortality among workhouse children.

During the period above specified, the number of obstetric cases admitted into hospital was 225; of these, 1 left the house undelivered; 6 were cases of hemorrhage in the earlier months, attended with abortion; and the remaining 218 were cases of delivery from the sixth month to the full term—3 of these being cases of twin birth; the number of infants born, therefore, was 221.

Of these 221 children, 183 were born living, and 38 were still-born, the proportion of the latter to the total being as 17·15 to 100, or 1 in every 6, very nearly; on comparing these numbers with the proportions stated in the reports of some of the principal lying-in charities of the kingdom, the ratio of still-births herein observed will doubtless appear very large. It should be stated, therefore, that, of the 38 children, 13 were prematurely born, and 8 of these 13 were putrid; while, of the remaining 25 who had arrived at full term, 13 were putrid. Thus it appears that 21, or more than one-half, were putrid, and 13, or more than one-third, were premature. Of the 38, the number of cranial presentations was 27; 5 presented with the nates; 2 with the feet; 1 with the arm; 2 were complicated with prolapse of the funis umbilicalis; and 1 presented the hand along with the head.

Of those labours which produced living infants, 169 were purely natural, according to the commonly received definition. The average duration was between seven and eight hours. 70 were primiparæ; 45 were second confinements; 19 were third; 13 were fourth; 8 were fifth; 4 were sixth; 2 were seventh; 3 were eighth; 3 were ninth; and 2 were tenth confinements. In each of the 70 primiparous cases, the average duration of labour was about ten hours.

Besides these 169, there were 10 cases in which labour was either tedious or complicated. To these are to be added 4 cases in which the nates or lower extremities presented; making a total of 183 children born alive.

Of these infants, 125 remained in the house for periods varying from a few days to fourteen months, and were ultimately taken out by their mothers, every one of them being in a good state of health; 18 remained in the house at the close of the period included in this report; and 40 died in the house.

The several periods at which death took place in the 40 infants are as hereunder stated:—

Within	1 month	16	died.
„	2 months	7	„
„	3 „	1	„
„	4 „	2	„
„	5 „	2	„
„	6 „	4	„
„	8 „	2	„
„	9 „	1	„
„	10 „	1	„
„	11 „	2	„
„	13 „	1	„
„	15 „	1	„

$$40 = 21.85 \text{ per } 100.$$

The fact that two-fifths of the entire number of deaths occurred within the first month after birth is worthy of notice, corresponding, as it does, pretty nearly with what is observed among the infants of the general population; many of these deaths take place within the first few days or hours, and are manifestly referable to a congenital delicacy of constitution, although, from the circumstance of their being frequently attended with convulsions, they are generally attributed to the latter cause, primarily or solely. It should be remembered that a large majority of those born in the house are the children of women who have been confessedly living irregular lives previously to their admission, and who have availed themselves of the shelter of the house in many instances not until after their labour has commenced. Most of these unfortunate women are but ill adapted to discharge the functions of a mother, while their infants are usually delicate, stunted, or diseased, and a large number of them die before the mother's convalescence from parturition is established. That this early mortality is not to be attributed to any supposed unwholesome condition of the obstetric wards of the hospital may be inferred from the fact that the house has been remarkably free from puerperal disease for many years, only two cases of peritoneal fever having occurred during the entire period comprised in this report. A very good criterion, moreover, by which one may judge of the favourable sanitary state of these wards, is the almost complete immunity from infantile ophthalmia which has been enjoyed therein, even during those seasons when the elder children in the house have been visited most severely by ophthalmic disease.

Subjoined is a tabular arrangement of the 40 cases that died within the period already specified. It will be seen that 23

were cases of *first* children, and that in 20 of these the mothers were unmarried; 7 were second children; 4 were third; 4 fourth; 1 fifth; and 1 sixth:—

No. of Cases.	Mother's Age.	Married or Single.	No. of Confinement.	Sex of Infant.	Cause of Infant's Death.	Age.
1	30	S	3	m	Syphilis.	4 weeks.
2	24	S	2	f	Purpura.	3 "
3	20	S	1	f	Measles.	13 months.
4	28	M	5	f	Pemphigus.	4 "
5	30	S	2	f	Measles.	11 "
6	22	S	1	f	Bronchitis.	5 "
7	30	M	4	f	Tuberculosis.	11 "
8	38	M	6	f	Do.	15 "
9	38	M	3	m	Atrophy.	8 "
10	22	S	1	f	Syphilis.	2 "
11	26	S	1	m	Atrophy.	3 "
12	20	S	1	m	Syphilis.	2 "
13	24	M	1	m	Convulsion.	6 "
14	25	M	2	f	Do.	7 days.
15	25	S	1	m	Atrophy.	1 month.
16	30	M	2	m	Convulsion.	8 days.
17	24	S	2	f	Do.	12 "
18	20	S	1	m	Measles.	5 months.
19	23	M	1	m	Convulsion.	7 days.
20	25	S	1	m	Atrophy.	2 months.
21	18	S	1	m	Do.	4 weeks.
22	21	S	1	f	Convulsion.	1 month.
23	24	S	1	f	Cholera.	6 "
24	34	M	4	f	Hydrocephalus.	9 "
25	22	S	1	m	Syphilis.	2 "
26	20	S	1	m	Atrophy.	6 weeks.
27	25	S	1	m	Convulsion.	4 months.
28	30	M	3	m	Do.	10 "
29	25	M	4	f	Atrophy.	6 "
30	30	M	4	f	Cyanosis.	1 day.
31	27	M	2	m	Convulsion.	6 months.
32	18	S	1	f	Bronchitis.	1 "
33	20	S	1	f	Cancrum oris.	8 "
34	23	S	1	f	Convulsion.	6 weeks.
35	23	M	2	m	Syphilis.	5 "
36	22	M	1	m	Convulsion.	1 month.
37	40	S	1	m	Do.	2 days.
38	23	S	1	f	Do.	2 "
39	24	M	3	f	Do.	18 "
40	20	S	1	f	Do.	6 hours.

It may be necessary to make a few brief remarks upon some of the cases in the foregoing table. These will be referred to by the numbers in the first column.

CASE II.—A face presentation ; infant suffered from congestion ; took erysipelas on the fifteenth day, and purpura on the eighteenth.

CASE IV.—Mother far advanced in phthisis ; infant delicate from birth.

CASE V.—Delicate from birth ; had been suffering for some time from the irritation of teething, when measles supervened.

CASE VII.—Mother phthisical ; infant delicate from birth.

CASE VIII.—Delicate from birth ; mother died of phthisis.

CASE IX.—Very small and delicate from time of birth.

CASE XI.—Prematurely born.

CASE XII.—Mother had been under treatment for primary syphilis about two months before her confinement. The presentation was natural, but there was considerable delay in the first stage ; the labour lasted twenty-seven hours, and the infant was apparently healthy at birth. In about a month syphilitic symptoms made their appearance, first about the anus and scrotum. Died in the second month, the mother's milk having completely failed for more than a fortnight before the child's death.

CASE XIII.—Cachectic from birth ; mother had suffered from syphilis.

CASE XVI.—Mother a strong, healthy woman ; twin case ; the first was a footling presentation, a small and delicate child ; died on the eighth day ; the second a strong, sound female, presented naturally, and was born one hour after the first. There was but one placenta. Mother and infant remained in the house for thirteen months.

CASE XVII.—Mother very delicate ; second confinement. Labour lasted but six hours. The infant presented naturally, and was of small size ; it took convulsions on the second day, and was relieved by castor-oil and a warm bath. Convulsions recurred on the fifth day, and were again relieved. It died suddenly on the 12th day.

CASE XVIII.—Mother had syphilis ; infant born syphilitic, but recovered under treatment. Died afterwards of measles.

CASE XIX.—Mother healthy, primipara ; labour natural, and of six hours' duration ; infant appeared to be not more than of eight months' development ; it had a very large *spina bifida* over the sacrum.

CASE XXIII.—Very delicate from the period of birth ; mother labouring under chronic hepatitis.

CASE XXIV.—Mother aged 34 ; fourth confinement. All her former children dead. In this case the breech presented, and the labour proceeded very well till it came to the extrac-

tion of the head; there was a delay of several minutes, owing to the large size of this part, and the infant was nearly lost; ultimately, however, we succeeded in inducing respiration, and the mother and child were discharged on the eighth day. This child enjoyed good health till the seventh month.

CASE XXVI.—Mother very delicate, and quite unable to suckle.

CASE XXIX.—Very badly nursed, and very unkindly treated by its mother.

CASE XXX.—Mother, aged 30; fourth confinement; labour short and easy. Infant appeared to be of about eight months' growth; very small and delicate. Respiration was very imperfect, and it died in fifteen hours.

CASE XXXII.—Very delicate from period of birth.

CASE XXXIII.—Badly nursed; mother very delicate; lacteal secretion scanty.

CASE XXXIV.—Mother aged 23, primipara. In this case there had been several smart gushes of hemorrhage before the patient came into hospital. On examination, the os was found thin and dilatable, membranes entire; edge of placenta attached to the border of the os. On rupturing the membranes, the cranium pressed against the edges of the opening, and stayed the hemorrhage. Labour then proceeded naturally, and in about eight hours the child was expelled. Uterine action then ceased. Placenta retained for twelve hours, notwithstanding the employment of friction, compression, &c. It was then extracted, and the cause of its retention ascertained to be a morbid adhesion. Hemorrhage again in about two hours after the completion of labour; checked by the usual means. Patient recovered without any unfavourable symptoms, save that the lacteal secretion never made its appearance. The infant, which was originally healthy, died probably from unskilful or injudicious feeding.

CASE XXXV.—Mother a delicate woman; second confinement; infant also delicate. About the eighth day a suspicious-looking eruption appeared on the mother; both nipples also became sore, and a circumscribed abscess formed in the left breast. The milk receded completely from both in the third week, and about the same time the infant began to exhibit symptoms of syphilis about the mouth and the anus; it died in a fortnight afterwards.

CASE XXXVI.—A premature child; the mother had suffered from syphilis.

CASE XXXVII.—A twin. The mother, a very delicate woman, aged 40, primipara. Both infants presented naturally

The first was of small size, and very delicate; it lived but forty-eight hours. The second was of good development, but putrid. But one placenta. There was no secretion of milk. This woman had all the appearance of syphilitic cachexia, complained of nocturnal pains in the bones, and her hair was falling out in large quantity. Although she would not confess to this cause of ill health, she improved rapidly upon bark with iodide of potassium.

CASE XXXVIII.—Congenital delicacy; unable to suck.

CASE XL. The mother of this child came into hospital three weeks before her confinement, labouring under anasarca, with albuminuria; improved very much under treatment; the renal secretion, when examined on the day before labour set in, was found to be free from all trace of albumen. In this case the labour was natural, and lasted eight hours. The infant was very small and delicate.

The cases of congenital malformation were but few: one of varus, a twin male, at present living and healthy, aged six months: one of double varus, a male, now ten months old, and quite healthy: one of spina bifida, of which I have already spoken. To these may be added one of inguinal hernia, which, as it presented an anomaly not often met, is entitled to a further description:—A young woman, who had been confined in the house about five weeks previously, requested me to examine the infant, which was a *female*, as she had perceived, on the previous evening, a small tumour in the pubic region of the child. On examination there was a visible prominence, just above the commissure of the labia, towards the right side; and beneath the skin could be felt a smooth, firm, elastic tumour, which increased in size during the efforts and cries of the patient, becoming then more prominent, and extending downward in the direction of the right labium. A distinct gurgling noise accompanied the reduction of the tumour, which was effected without difficulty. The point of the finger applied to the ring, could feel that this opening was much enlarged, the boundaries being very distinctly marked. The child's mother, being an intelligent young woman, stated that she perceived the tumour first on the day before she showed it to me; it is probable, however, that the condition of the parts was congenital. In other respects the child was quite healthy and well formed.

She left the house in a few days afterwards, and in about fifteen months she returned for the purpose of having something done for the child, the tumour having become much larger. The child at that time being strong, and able to walk

about, a truss was applied, and the case was lost sight of shortly afterwards.

The only case of this kind, of which I have been able to find a record, is one related by M. Billard*. It was the case of a female infant, seventeen days old, in whom a rounded tumour existed in the left inguinal region; the tumour was about the size of a hazel-nut, somewhat hard to the touch, *incapable of reduction* within the abdomen by the taxis, but neither diminishing by pressure, nor increasing during the cries of the infant. M. Billard, although at first disposed to believe this to be a congenital inguinal hernia, was cautious enough to decline giving a positive opinion to that effect, alleging that "*the sex of the child forbade the supposition.*" However, in less than four weeks afterwards, the child died of pneumonia; and on dissection the tumour was found to consist of the left ovarium, which had descended through the canal and inguinal ring; these parts having been much longer than in ordinary cases of females.

The very favourable sanitary condition of the obstetric wards, as evinced by the absence of any tendency to zymotic disease therein, has been already alluded to. During the entire period there were but two cases of serious illness among the mothers, and both were cases of peritoneal fever.

In the first case, the patient, aged 27, primipara, unmarried, had been in delicate health for a long time before admission, having had syphilis more than once. The fœtus was putrescent, and the placenta, which was morbidly adherent, required the introduction of the hand for its removal. Peritoneal symptoms set in on the fourth day, and were treated unsuccessfully. In the next case, which occurred seventeen months afterwards, the patient was thirty-six years of age, unmarried; second confinement. The labour was easy and natural, of about four hours' duration. The fœtus, a male of about eight months, was putrid. In her former confinement, about seven years previously, the child was still-born, but at full term. Symptoms of peritonitis were observed on the third day. The treatment in the beginning consisted in leeches, followed by bran stupes, with calomel, James' powder, and ipecacuanha, internally; also, mercurial inunction. On the fifth day, the system being fully under the influence of the mercury, this was omitted, and half-grain doses of opium every third hour were given instead. There was a marked improvement in all the symptoms on the sixth day, from

* *Maladies des Enfants*, p. 456.

which period the convalescence, although slow, proceeded satisfactorily. The strength was supported throughout by arrow-root, beef-tea, and wine; and she left her bed on the nineteenth day. In less than a fortnight afterwards she had a severe attack of asthenic pneumonia, for which she was treated successfully, with large doses of sulphate of quinia. She left the house quite well.

ABSTRACT.

Number of obstetric cases admitted in two years and a half = 225.

Abortions in early months,	6	} = 225.
Left the house undelivered,	1	
Deliveries at or near full term,	218	

215 gave birth to single children, . . .	215	
3 ,, twins,	6	
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218 women.		221 children.

	Males.	Females.	
Children born alive, . . .	103	+ 80 =	183
„ still-born, . . .	24	+ 14 =	38
			} = 221.

Proportion of still-born to total = 17·15 to 100.

Of the 38 still-born, 25 were at full term; 13 premature.

Of the 25 mature, 13 were putrid (52 per 100).

Of the 13 premature, 8 were putrid (61·54 per 100).

Of the 183 infants born alive:

The number that left the house was, . .	125 =	68·32	per 100.
„ died,	40 =	21·85	„
„ remained Oct. 1, 1859, . . .	18 =	9·83	„
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	183 = 100·00		

Left the house, 70 males, 55 females; = 56·0 to 44·0.

Died, . . . 19 males, 21 females; = 47·5 to 52·5.

Remaining, . . 14 males, 4 females; = 77·77 to 22·23.

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103 males,	80 females.

Of the 224 women delivered, 1 died; = 0·446 per 100.

The deaths of the 40 infants were due to the following causes, viz.:—

Convulsions, including some cases of congenital asthenia, 15; atrophy, 7; syphilis, 5; measles, 3; bronchitis, 2; tuberculosis, 2; pemphigus, 1; purpura, 1; cancerum oris, 1; hydrocephalus, 1; cholera, 1; cyanosis, 1. Total, 40.