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Contributors

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Whitehead, James, 1812-1885.

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CHILDREN'S DISEASES.

FIRST REPORT
OF THE
CLINICAL HOSPITAL
FOR
DISEASES OF CHILDREN,

STEVENSON SQUARE, MANCHESTER,

CONTAINING

AN ACCOUNT OF THE RESULTS OF THE FIRST 530 PATIENTS THERE TREATED.

BY A. SCHOEPF MEREI, M.D.,

EXT. L. R. C. PH. LONDON. LATE PROFESSOR AT THE UNIVERSITY, AND CHIEF PHYSICIAN TO
THE CHILDREN'S HOSPITAL, PESTH, ETC., ETC.

AND

J. WHITEHEAD, M.D.,

LECTURER ON OBSTETRIC MEDICINE AT THE ROYAL SCHOOL OF MEDICINE, MANCHESTER,
ETC., ETC., ETC.

MANCHESTER:
BRADSHAW AND BLACKLOCK, 47, BROWN STREET.

1856.



CHILDREN'S DISEASES.

FIRST REPORT.

CLINICAL HOSPITAL

DISEASES OF CHILDREN

BY J. A. HENNING, M.D.

NEW YORK: J. A. HENNING, M.D.

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R E P O R T .

ORGANISATION OF HOSPITALS AND CLINICAL SCHOOLS FOR
DISEASES OF CHILDREN IN GENERAL ; PURPOSES AND RE-
QUIREMENTS OF THIS INSTITUTION, IN PARTICULAR.

THE Institution, of which the first report is now presented to the public, was brought into active operation during the early part of the present year, after a plan prepared by ourselves, and approved by a number of friends, who, in the year 1853, met together, with the late Mr. Salis Schwabe as Chairman, for the purpose of entertaining the project, and of appointing a committee of management. The sudden and lamented loss of that great benefactor, however, deprived the scheme of its most efficient promoter, and further efforts, consequently, were for a time discontinued. Feeling, however, that to delay longer might be interpreted as an abandonment of a project which seemed to both of us capable of effecting much good, we commenced as above stated, and have succeeded, thus far unaided, in bringing it to a certain state of efficiency.

The objects of this Institution are the following—it being intended not more as a charity than AS A CLINICAL SCHOOL FOR THE DEPARTMENT OF MEDICAL SCIENCE to which it is devoted :—

To carry on scientific investigations into the causes, nature, and treatment of Diseases of Children ;

To inquire into the causes and character of the principal infantile diseases prevalent in Manchester, the progress of physical development in childhood, and the causes which hinder its due advancement ; the different modes adopted among the poorer classes, of nursing, feeding, and managing their children, with the development respectively on health and disease ;

To impart instruction to mothers and nurses, and to spread sound principles on the subject of nursing and managing children amongst the lower ranks ;

To afford to students and young practitioners opportunities of acquiring practical knowledge in this branch of medicine, and to deliver periodically, for this purpose, Clinical lectures, illustrated with appropriate cases.

The origin of children's hospitals is of recent date : thirty-two years ago one only—that of Paris, existed. This was at that time followed by others, first at St. Petersburg, then at Vienna, Pesth, Berlin, and numerous other cities on the continent. Sick children were formerly admitted promiscuously with other patients into Infirmarys, Foundling Institutions, and Lying-in Hospitals, as is now done in that of St. Mary of this city ; but the importance of separate establishments for this class of patients, in which suitable arrangements and undivided attention are exclusively directed to their particular requirements and the peculiarities of their ailments, is sufficiently obvious. There is no doubt that, apart from motives of charity and sympathy with the sufferings and helplessness of the children of the poor, one strong reason for the establishment of these institutions has been the conviction generally arrived at, that the excessive mortality of children is, to a great extent, owing to the obscurity of their diseases, and consequent difficulties experienced in their treatment. This conviction, recognising in every children's hospital the importance of a wide field for observation and study, has led to the establishment also of Clinical Schools for this branch of medicine.

The rapid spread of both kinds of establishments during the last ten years, in most instances promoted by philanthropic ladies, is a sufficient proof of the public acknowledgment of their beneficial effects. In the present day almost all towns of any importance on the continent are provided with hospitals of this description. Berlin has three of them, one supported by Government, two under the immediate patronage of the Queen ; of which one is devoted to the purposes of

clinical teaching. Vienna has within the last few years had four such establishments founded, containing several hundred beds, one of them being a Clinical School; the children's hospitals of Paris contain about 800 beds, with three Clinical Schools. A new era of scientific progress, in this long neglected, though vast and important, department of medicine, has sprung into being through the medium of such establishments.

The first children's hospital in this country was founded three years ago in London, under the special patronage of Her Majesty the Queen; and Manchester, by the exertion of men distinguished by their position and spirit of benevolence, has lately followed that example, in having provided a number of beds for sick children, in connection with the Children's Dispensary, already for some years in existence.

Whether we consider the extraordinary rate of mortality of children in Manchester, where more than 50 per cent. of them perish before they reach five years of age, or the preponderating proportion of its poor population, the desirability of this kind of institution becomes more striking here than in other places; and whilst this city exhibits such pressing demands, and so extensive a field for the study of the diseases of children, the presence here of a considerable number of medical students speaks the more strongly in favour of a Clinical School for this class of maladies.

The principle of children's hospitals being admitted, it obviously follows, that in a large city like this, such charitable purpose cannot be adequately answered by one establishment only; but that, owing to the urgency of diseases of childhood generally, and the delicate nature of their constitutions, they cannot with safety be carried, at a moment's notice, and especially during inclement seasons, to places far remote for the purpose of seeking advice; so that it becomes highly desirable for a population so widely spread as that of the outer districts of Manchester, that establishments of this kind should be erected in different quarters, in order to afford easy access, and that prompt assistance which most of the diseases of infancy require: the delay of a few hours, and in some cases of a single

hour, being sufficient to change all chance of recovery to certain fatality. This particular necessity has been fully recognised and acted upon in the cities above named.

The organisation of those existing children's hospitals of which we have any correct knowledge, is partly suitable, partly more or less defective, and their respective curative results are also variable. In some of them the mortality has been, formerly at least, very great. And, again, the organisation and management of Clinical Schools of this kind vary very much, and answer accordingly their purposes in different degrees of efficiency.

It would be beyond our present purpose to attempt an exposition of that organisation which, according to our own ideas, is best calculated to meet the exigencies of the delicate nature, and the dangers of this class of patients. This much however may be mentioned : that a children's hospital should be so arranged as to be capable of admitting into its beds children of all ages, and consequently their mothers or nurses also, should it seem desirable ; because, on the one hand, the most numerous, and at the same time the most dangerous diseases occur in the earliest years of childhood, not seldom even caused by poverty, or by disease and poverty combined, of the mother, thus rendering her incapable of imparting the required nutriment to her child ; on the other hand, in most cases the separation of the mother from her infant would be a decided disadvantage in the treatment of the latter. The same may be said of Clinical Hospitals, with the addition that the peculiar character of infantile diseases, their obscurity, and difficulty of treatment, are just the greatest in the speechless child, whose case, consequently, becomes a most important object for study and instruction.

The principle alluded to was first proposed and carried into effect by one of us in the Children's Hospital of Pesth, in 1839, and was followed by most satisfactory results. In the Paris Hospitals for children, wet nurses are constantly kept in readiness to suckle sick infants, who, by what reason soever, may have been deprived of the benefits of the mother's breast.

A Clinical School for Diseases of Children requires, therefore,

besides free admission for out-patients to consultation, a number of beds also, partly for children alone, partly for mothers and nurslings together; it requires, moreover, an apartment for prosecuting pathological enquiries, a lecture room, and accommodation for the necessary attendants. The number of beds need not be large; but as the efficient attainment of the objects proposed will require a great amount of labour on the part of the medical officers, the satisfactory realisation of these objects essentially depends upon a complete organisation of the service; and, however willingly we may devote ourselves to the task, we find that a regular and efficient assistant has already become a pressing necessity.

Our present report, although very limited as regards the number of patients comprised in it—and consequently far from enabling us to solve many questions of importance—will, we trust, serve to show our friends and the enlightened public the character and tendency of the Institution, and to win some approbation and support for the furtherance of its objects.

PRACTICAL INSTRUCTION.

First, with regard to practical instruction, so soon as patients began to apply for advice, an increasing number of students gathered around us, and up to this date (Nov. 5th) 20 have inscribed their names in the Students' Book; some of whom, during the last seven months, have uninterruptedly devoted themselves to the study of this class of diseases, having assisted at the same time in an efficient manner in recording the histories of diseases, and other particulars of interest.

Nor is the instruction of mothers neglected, as regards the principal particulars of nursing, feeding, and managing children; and we hope that of the many attentive listeners amongst them to our injunctions, some will not fail to spread amongst their neighbours sounder principles of Hygiène and of physical education of children. Besides the instructions they receive at each visit in this respect, one of us has undertaken to deliver from time to time to the mothers familiar lectures on the same subject.

NUMBER OF PATIENTS; SEX, AGE, AND OTHER PARTICULARS;
RESULTS OF TREATMENT; RELATIVE MORTALITY, ACCORDING
TO AGES.

Although this Institution was not announced in any public paper, the number of patients has rapidly increased, showing its usefulness for the populous districts near which it is located, comprising principally Ancoats, St. George's, and their surrounding vicinities. In the first quarter their number was only 19, in the third, ending with October, it amounted to 272.

Altogether the number of patients to this date, Nov. 26, is 605; besides some 30 of the nursing mothers variously afflicted.

Of the 530 Children there were, Males 274, Females 256. Of Illegitimate Children there were, to our knowledge, 8. The youngest patient was 10 days old; the oldest, 13 years.

Under 2 months.....	29	first 6							
From 2 to 4 months	18	months							
„ 4 „ 6 „	23	of life	70	under					
„ 6 „ 12 „	76	second		1 year	146				
„ 1 „ 2 years	105	6 mnths	76			first 2 yrs.	251		
„ 2 „ 3 „	65	second year	105					under	
„ 3 „ 4 „	53	from 2						6 years	423
„ 4 „ 5 „	32	to 4 yrs	118						
„ 5 „ 6 „	22	from 4							
„ 6 „ 13 „	107	to 6 yrs	54						
		from 2 to 6 years (4 yrs.)	172						
		from 6 to 13 (7 years)							107
									Total... 530

These children belong to labourers and workmen, representing almost all the different trades of this city, some book-keepers, warehousemen, and soldiers. The greatest number of patients are by far children of labourers, porters and packers, bricklayers, &c. Next come weavers, spinners, joiners, &c.

They were generally brought to the Institution by their mothers, in some instances by their relatives, and a very small proportion by other persons, their neighbours.

The great majority of the mothers were English; about one-seventh of the whole, so far as we are able to judge, Irish; and about twelve foreigners. From these proportions we do not infer that the want of assistance among the Irish population of this town is truly represented, but rather that they more

frequently neglect the diseases of their children, or are more generally in some way prevented from bringing them for advice.

In most instances the mothers showed anxiety, tenderness, and carefulness for their little patients, and attended regularly at the appointed visits. In about 50 to 60 cases, however, we think we have observed carelessness and neglect, which partly may have been caused by unavoidable circumstances.

Of the 530 patients, we noted about 20 to 30 as being in a most lamentable state of destitution and neglect, especially so the illegitimate children, and those of some Irish parents.

Of the 530, to this date (Nov. 26th), there are ascertained

as cured	273
Have ceased attending, improved, and are probably cured	94
Treatment prematurely interrupted, therefore uncertain...	62
Considered to be under treatment	67
Dead	34
<hr/>	
Total.....	530

The deaths are in the following relation to ages :—

Under 6 months	of 70 patients, died 13
From 6 to 12 months	of 76 " " 7
From 1 to 2 years	of 105 " " 8
From 2 to 3 years	of 65 " " 4
From 3 to 4 years	of 53 " " 2
<hr/>	
	369 34

From the 4th year upwards to the 13th, of 161 patients, hitherto we happen to have no deaths to record.

The greatest number of patients, with the greatest proportion of deaths, falls, therefore, upon the first year of age, *i.e.*: out of 146 there are 20 deaths; whilst during the second there are only, out of 105, 8 deaths; and in the third, out of 65, there are 4 deaths; and so on, in proportion to the advancing age the frequency of diseases and their relative danger rapidly decrease, especially so after the third year: showing clearly for what ages Hospitals and Clinical Schools for diseases of children are especially important, whether regarded in a charitable point of view, or as serving the interests of science.

THE PHYSICAL DEVELOPMENT ; MANIFESTATIONS OF ITS
FAVOURABLE AND UNFAVOURABLE CONDITION.

Entertaining the conviction that a large number of the diseases of infants arise from a faulty condition of development, and that these diseases may, by proper hygienic measures, more generally than others, be prevented or improved, we are carrying on investigations with a view to ascertain, by an accumulation of facts, the manifestations and signs of the favourable and unfavourable developmental process of children in general, and the proportions in which they occur among the children of the working classes, with the nature and relative gravity of the causes of disordered development: only after a clear settlement of these points will it be possible to devise suitable means for their prevention and improvement.

In order to arrive at the results alluded to, we have established for every patient the same *scheme of investigation*, consisting in the filling with answers the following series of questions: as to age, size and habit of body, kind of complexion, dimensions and shape of the head and chest, state of the anterior fontanelle, period at which the first teeth appeared, actual number of teeth, period at which the last of the twenty teeth were cut, period of the commencement of walking, whether, at what age, and by what cause the progress of development has been checked, actual condition of development, whether and how long the child has had the milk of the breast alone, and whether that milk was abundant or scanty, or given conjointly with food, and what kind of food, the physical and sanitary characteristics of the mother, whether she could attend to her child fully, or was obliged to go out to work, period of weaning, kind of food after weaning, and some other points of interest, having relation to development, noted down just as they presented themselves.

We have not as yet at our command observations sufficiently numerous on all these points to enable us to draw conclusions so well founded in every particular as we wish them to be. We shall, therefore, give on this occasion only such

data on some of the points mentioned, as may be relied upon, and may serve as a basis for more extended and minute investigation.

Of the 530 children the development, judging according to the above scheme, was

good in	220
medium in...	145
bad in	165
<hr/>	
	530

The 145 cases of a medium development we shall not take into consideration in the exposure of further facts and conclusions, but only the two extremes, those namely of a *good* or *bad* development.

COURSE OF DENTITION; ITS SIGNIFICANCE.

On this process we were able to ascertain, partly by ocular observation, partly having gathered from the statements of the mothers, the following data:—

In children with GOOD development,

In 161, so far as the mothers could remember, or we ascertain, the first pair of teeth were cut:—

at 2 months in	3
„ 3 „	9
„ 4 „	10
„ 5 „	22
„ 6 „	42
„ 7 „	22
„ 8 „	20
„ 9 „	18
between 10 and 12 months	12
„ 12 „ 14 „	3
after 14 months	0
<hr/>	
	161

In children with BAD development,

In 119, partly seen at the time of the first teeth, partly according to mothers' statements, the first pair of teeth appeared:

at 2 months in	1
„ 3 „	6
„ 4 „	11
„ 5 „	12
„ 6 „	10
„ 7 „	8
„ 8 „	9
„ 9 „	20
from 10 to 12 „	26
after 12 „	16
<hr/>	
	119

Good development.

In 49 at the age of from 12 to 13 months, we have ascertained that

1	had	no	teeth
2	"	2	"
2	"	4	"
12	"	6	"
15	"	8	"
13	"	10	"
2	"	12	"
2	"	14	"

49

All these we have seen ourselves at the age in question.

Of 85 we have partly ascertained ourselves, partly according to statement of the mothers, at the age of 2 years :

1	had	12	teeth.
2	"	14	"
7	"	16	"
16	"	18	"
59	"	20	"

85

Bad development.

Of 45, all seen about the time by ourselves, at the age from 12 to 13 months :

9	of	them	had	no	teeth.
10	"	2	"		
13	"	4	"		
5	"	6	"		
6	"	8	"		
2	"	12	"		

45

Of 73, partly seen at the age from 2 to 3 years, partly according to their mothers' statement, at the age of 2 years

1	had	6	teeth.
8	"	8	"
9	"	10	"
15	"	12	"
9	"	14	"
16	"	16	"
5	"	18	"
10	"	20	"

73

From the preceding table it will be seen that — setting aside the children noted down in the books as being of a medium development—in the great majority of those with a *favourable* progress of development, namely, in 128 out of 161 children (79 per cent.), the first teeth appeared before the eighth month was past; in 38 of them at eight to nine months; in 12 after the ninth; in 3 after the twelfth; and in none after the fourteenth month; while in the great majority of children with an *unfavourable* development, namely in 71 out of 119 children (60 per cent.), the first teeth were cut at eight months and upwards; in 46 from nine to twelve months, and in 16 even after twelve months; and only in 48 (44 per cent.) before eight months.

From the same table it follows that the appearance of the first teeth at five, six, or seven months had relatively the best significance for the after progress of development; whilst, with

a few exceptions, the appearance of the first teeth after the ninth month gave unfavourable prospects for this process.

It was further noted that of those children who were brought at the age of from twelve to thirteen months, or a little beyond this age, so as to enable us to ascertain their general developmental condition at that time as well as the number of teeth up to twelve or thirteen months, out of 49 with signs of a *good* development, the majority, namely 32 (63 per cent.) had at that age eight teeth or more, 4 of them had twelve and fourteen each, and with the exception of 5 individuals, all of them six or more; on the contrary, in a considerable number of children with a *bad* condition of development at twelve months we found no teeth at all, namely in 9 out of 45 (20 per cent.), and among those of them who at twelve months had any teeth, only 2 had 12; 6 had 8, and the rest, namely 32 out of 45, had less than 6, or none at all.

From these data we infer, that at the age of twelve months a child should have 8 teeth or more, and that 6 teeth are almost the minimum number compatible with good development and favourable prospects at that age.

With regard to the complete irruption of the whole series of twenty teeth, we find that the great majority of children having a *good* development have entirely accomplished the first dentition at the age of *two* years, as among 85 cases of this category only 26 had less than twenty at that age, namely eighteen or less, and only one of them as few as twelve; whilst of 73 children with *bad* development at the age of *two* years, only 10 had all the 20 teeth, 5 of them 18, all the rest 16 and less, 8 of them even only 8, and one only 6 teeth.

We deemed it worthy attention to notice the relative frequency of what may be called *precocious dentition*, namely the irruption of the first teeth before the fifth month. We have no data on this point from other quarters. Amongst our own patients about 40 cut their first teeth at the age of two, three, or four months. This precocious dentition would appear, according to our records, to give little promise for the favourable progress of after development, inasmuch as among the 40

children of this kind 18 were afterwards badly developed ; and with regard to the progress of dentition itself, after that early appearance of the first pair of teeth there was generally a long interval of three, four, or five months, or even longer, before the next pair appeared ; and in many cases the early teeth decayed after a few months.

On the contrary, the precocious accomplishment of *all* the twenty teeth was almost constantly the attribute of an excellent state of development. We have seen a few children who, at the age of sixteen or eighteen months, had all their twenty teeth ; some of whom, at nine months, were able to walk freely, and were of exceedingly strong habit of body.

On disorders, real or imaginary, caused by the irruption of teeth, we shall not speak in this place.

OSSIFICATION OF THE SKULL ; CLOSURE OF THE FONTANELLE.

THE posterior fontanelle presents comparatively little interest ;—in the immense majority of children it is closed at birth, or soon after, and we have no notes of importance on this point to offer thus far.

The state of the *anterior fontanelle* on the contrary we found to serve as a valuable sign whereby to judge of the condition of development within a certain compass of age ; at all events, it shows the progress of Ossification of the Skull, and generally that of the whole osseous system.

It became a question as to the age at which the fontanelle has the largest dimensions ; whether it fluctuates in its measurements, during the rapid increase of the brain, in the early months of infancy ; whether an arrest, or even an increase in its measurements, did not sometimes take place at different ages in the same child ; and whether the progress, or the apparent arrest for a time, of ossification of the surrounding circle of bone be always in harmony and in proportion with the progressive ossification of the rest of the skeleton ; or if the reverse of this takes place ; *i. e.*, whether the anterior fontanelle may remain stationary, or even become enlarged in

its measurements, while the growth and ossification of the other parts of the body duly progress.

On these questions—certainly not uninteresting—data are accumulating. From such as we are already in possession of, it would appear that, as a physiological rule, the anterior fontanelle possessed the largest dimensions, not at birth, but at the age of from five to seven months, when its measurement, taken from side to side—not from one angle to another—was from a half inch to two inches: the antero-posterior line frequently exceeding the transverse a little; this rule has reference to children born at full term, and of *good* development. In some cases, however, it was found much larger than is here stated in the second year, measuring even as much as three inches; but in such children the developmental process was in a morbid condition, and rachitis in most of them more or less pronounced.

In some children the closure of the fontanelle progressed very rapidly, in others slowly, without coincident rates of progress in the general development. In one individual, from the age of six to that of ten months, the fontanelle became constricted from two inches at the former, to three quarters of an inch at the last-named age, during which period four teeth protruded.

It seems strange that some authors should have attributed so much importance to the expenditure of phosphate of lime for the formation of the teeth, as to see in this demand a frequent and sufficient cause of constitutional disorders at the corresponding period of childhood. What can the quantity of phosphate of lime contained in all the first twenty teeth amount to, in comparison with that consumed in the ossification of the skull alone—to say nothing of the rest of the skeleton—during the first two years of life, the period of dentition?

We will now adduce such data, relative to the closure of the fontanelle, as were derived from actual observation, in children at the age of from five months up to about three years. It may be first stated that those children, in whom this part of the skull was still open at the age of from eighteen months to two or three years, presented an unfavourable development to a considerable degree, with the process of dentition

much retarded, and the faculty of walking defective; frequently also anomalies were observed in the shape and relative size of the skull and chest, and many of these patients were rachitic. In only a few cases was there any considerable disproportion in these respects, namely:—in some of them the fontanelle was open at the age of eighteen months, such patients having sixteen teeth or more, and having been able to walk freely from the eleventh, twelfth, or thirteenth month, and *vice versa*; in a few the fontanelle was closed before the first tooth appeared.

In children under our own observation, having a *good development*, the state of the fontanelle was found as follows:—

At the age of from 5 to 7 mths., closed in 3, open in all the others.

„	8	„	„	2,	„	„
„	9	„	„	2,	„	„
„	10	„	„	2,	„	„
„	11	„	„	4,	„	11
„	12	„	„	11,	„	3
„	13	„	„	13,	„	3
„	14	„	„	13,	„	2
„	15	„	„	9,	„	0
„	15 to 18 all closed, with two exceptions.					

After the 18th month it was not open in one having a *good development*.

In children of *bad development* it was as follows:—

At the age of 7 months, closed 1 open in all the others.

„	„	11	„	„	1	„	„	„
„	„	12	„	„	3	„	„	14
„	„	13	„	„	1	„	„	12
„	„	14	„	„	5	„	„	11
„	„	15	„	„	4	„	„	12
16	months	to	3	years	13	„	„	14

In a few individuals we found it open at from 3 to 4 years; these were most unfavourably developed, or rachitic.

From these comparative figures it appears that in the great majority of children favourably developed the skull is entirely ossified at 13 months, and before ; and in the great majority of those badly developed, the anterior *fontanelle* is open at 13 months.

SKULL AND CHEST ; THEIR SHAPE AND DIMENSIONS,
ABSOLUTE AND RELATIVE, AT DIFFERENT AGES.

In all the children with a decidedly *good development*, the shape of the skull approached more or less an oval form, with gently curved outlines, the convexity across the summit regular, without any unusually salient frontal or lateral eminences.

Among the 165 with an *unfavourable development*, the majority presented no striking anomaly, and frequently even had a well shaped head. In the worst cases, however, the skull was flat at the summit, with salient frontal and parietal eminences ; so that in most of these the skull was *flat and angular*. This characteristic feature was very seldom noticed before the age of seven months—most frequently between twelve months and two years.

The shape of the chest, in children with a *good development*, presented itself slightly rounded in front, without any marked compression laterally, and the abdomen did not project much beyond the level of the lower ribs. True, in some children of from six to nine months, and still more frequently in younger ones, there was a slight compression, or rather a slight semicircular depression, perceptible at the lower part of the chest, laterally in front, although in other respects they seemed to possess a strongly marked development of the body generally. But it is necessary to remark, that in children of only a few months old, signs in proof of a strong developmental energy are not so clear and trustworthy as in those of a more advanced age.

In children with a bad development, the chest was frequently found to be compressed laterally, and by the unduly bloated and protruding abdomen the defectively ossified and yielding

false ribs were pushed upwards and outwards, giving to the part of the chest immediately above them that depressed appearance above mentioned. Besides the lateral compression, and the simicircular depression, in many of them there was the pigeon-breast deformity, frequently, but not always, in connection with other unequivocal signs of rickets.

It is scarcely possible, however, at this stage of our inquiries, to furnish on each of these points full statistical data : so that we shall limit ourselves on this occasion to a few statements respecting the absolute and relative dimensions of the skull, as representing that of the brain—and of the chest, as representing that of the lungs.

Having noted down the measurement of the horizontal circumference of the head, and that of the chest, in each of the 530 children, we find that there is much more variation in the absolute dimensions of the former than in those of the latter, in different individuals of the same ages ; but it is not yet ascertained satisfactorily what are the extreme limits as to size of those two great cavities, compatible with a favourable development.

Of far greater interest than the *absolute*, are the *relative dimensions* observed to exist between the skull and chest, and the change of this relation at the various stages of the developmental process.

The Clinical Hospital has nothing to do with newly born infants, and but few of these were brought under notice before the age of four weeks. We shall confine ourselves, therefore, in this report, to the statement of the relative measurements of the parts now under consideration, as they were found to exist in children from the age of six weeks upwards.

The measurement of the skull is taken around its largest horizontal circumference, running across the upper part of the forehead, and the most prominent point of the occiput. This measurement does not so exactly represent the volume of the brain, as when the skull is measured in all directions (according to Parchatte's method); but in the great majority of cases, doubtless, a skull having a large horizontal circumference is

found to be altogether large. At all events, with regard to the developmental condition the horizontal measurement is the most significant, inasmuch as an excessive horizontal circumference represents very generally an unfavourable shape of the skull (flat and angular); and a regular extent of circumference, a gently oval and convex (*i. e.*, favourable) shape.

The circumference of the chest is measured around its middle part, in a line which in front falls below the nipples from a quarter of an inch to one inch, or more, according to age. This measurement very generally, not constantly, represents the relative capacity as well as the good or bad shape of the chest alluded to; in fact, it crosses the lateral compression of the chest which represents this anomaly.

In the preceding table are given the particulars of the relative measurements of the skull and chest, at different ages.

Before drawing conclusions from this table as to growth, and changes in the relative dimensions, as age progresses, it is necessary to notice, that in the 530 children included therein the several ages and categories adduced are not so numerously represented as would be desirable for the purpose intended. Thus, for instance, in some of the categories the number of children with a *good development* was too small in comparison with those *badly developed*, so that the average measurements certainly have been unduly influenced by those of the latter; again, in one category (from two years ten months, to three years of age), children of small stature happened to be so predominant in number that their measurements fell below those of a younger category; not to mention some other deficiencies, rendering accurate conclusions at present impossible. These necessities, it is hoped, may be supplied in a future report. The following statements we consider to be correct, and of physiological interest.

Under the age of *twelve months* the circumference of the skull was almost constantly larger than that of the chest, but seldom by more than one inch.

In children from the age of *one to two* years the skull fre-

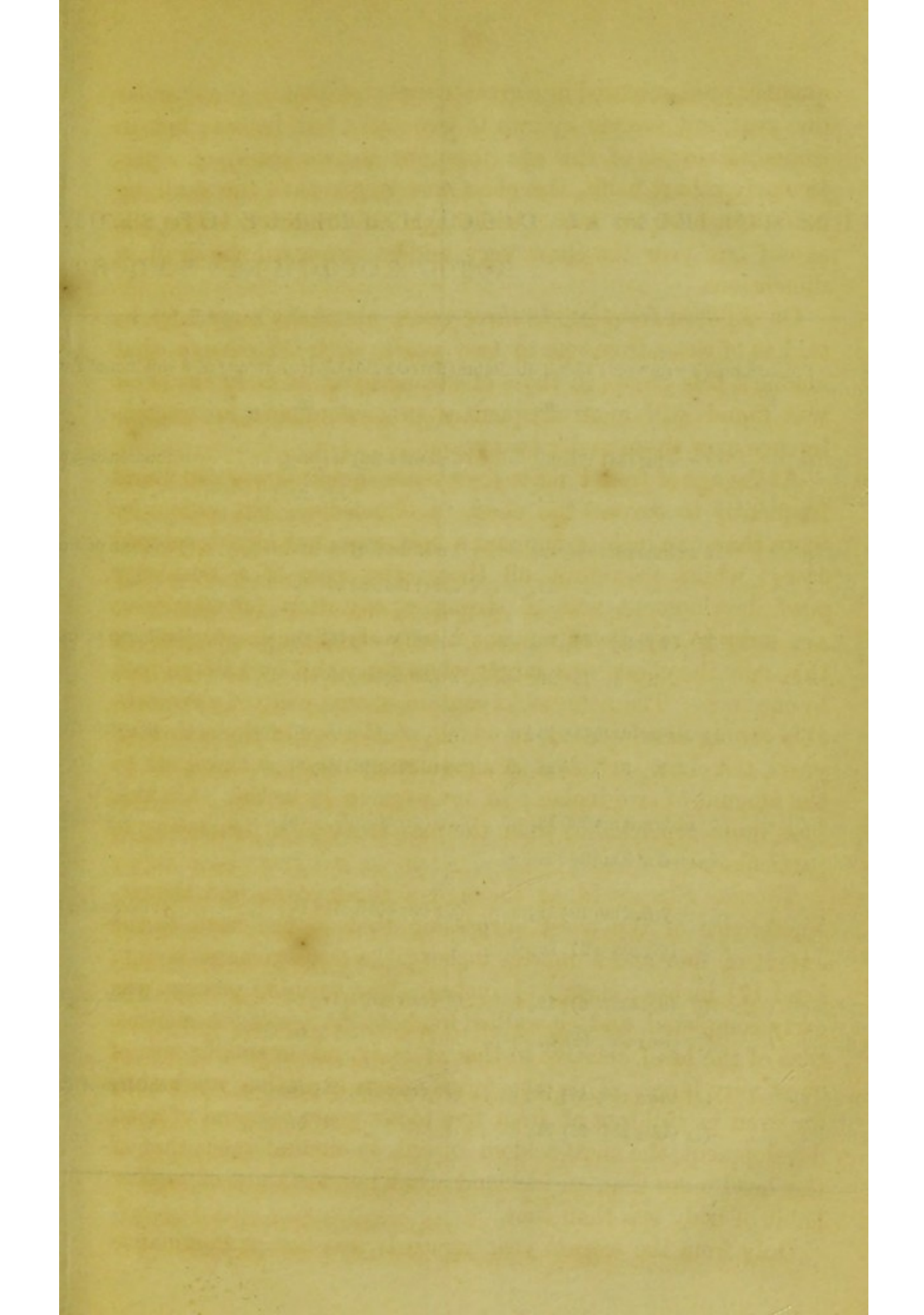
quently predominated in a greater measure than in those under one year, not seldom by two to two and a half inches; but in some individuals of this age (from one to two years), of a particularly robust habit, the chest was larger than the skull by half an inch or an inch; whilst, on the contrary, below the age of one year the chest very seldom surpassed the skull in dimensions.

Of children from *two* to *three* years, about the same may be said as of those from one to two years, with the remark, that amongst this group, in those of strong habit of body the chest was found still more frequently to predominate in circumference over those under two years.

At the age of from *three* to *four* years, the skull was still found frequently to surpass the chest in dimensions, but seldom by more than one inch or one and a half, even in badly developed cases; whilst in almost all those who were of a decidedly *good* development and of strong constitution (of which, we are sorry to say, there was not a very cheering proportion), at this age the chest was larger than the skull by half an inch to one inch. The note-books contain several cases of a remarkably strong development, in which, at the age of three to four years, the chest surpassed in measurement that of the skull to the amount of two inches; in one even to $4\frac{1}{4}$ inches. On this case, more remarkable than the rest, it may be interesting to particularise:—

Thomas Fitzgerald, at the age of three years, had the circumference of the chest surpassing that of the head to the extent of four and a quarter inches; the measurements being: head $17\frac{1}{2}$ inches; chest $21\frac{3}{4}$ inches. The teething process was early completed, and he walked freely at the age of ten months. Size of the head, relative to that of body, rather small; size of chest very large. This case forms a rare exception, no doubt; for even in children of from five to six years old, and of good development, the chest seldom exceeds in circumference that of the head more than an inch and a half; and in those of weaker habit of body less than that.

Only from the *seventh* year upwards was the predominance



Difference 1 in. Skull more than Chest.	{	Maximum (8 weeks old) 15 in., Minimum (6 weeks old) 13 in.	Average of 6 children of 16 to 12 weeks, with good development, 13½ in.; average of 5 children with bad development, 13¼ in.	M Cl en
" " "	" "	" " 14 in."	" " 12 in." " " 12½ in.	" "
Difference 1½ in. Skull more than Chest.	{	(8 months old) 17½ in., "(6 months old) 13½ in.	5 children of 16 to 8 months,	" " 15½ in.)
" " "	" "	" " 16½ in." " " 12¾ in.	" " " " " " " "	" " 14½ in.)
Difference 1½ in. Skull less than Chest.	{	(12 months old) 17¼ in., "(11 months old) 14 in.	6 children of 11 to 13 months,	" " 16½ in.) D
" " "	" "	" " 17 in.", "(12 months old) 14 in.	" " " " " " " "	" " 14½ in.)
Difference 1 in. Skull more than Chest.	{	(2 years old) 19½ in., "(21 months old) 16½ in.	7 children of 12 months to 2 years	" " 17½ in.")
" " "	" "	" " 19 in.", "(22 months old) 15 in.	" " " " " " " "	" " 15½ in.) D
Difference 1 in. Skull more than Chest.	{	(2 yrs. 10 months) 18½ in., "(3 years old) 17 in.	6 children of 2 years 8 months to 3 years	" " 18 in.") D
" " "	" "	" (2 yr. & 8 m) 18½ in., "(2 yrs. 8 months) 16 in.	" " " " " " " "	" " 17½ in.)
Difference 1½ in. Skull more than Chest.	{	(4 yrs. 3 months) 19½ in., "(4 years old) 16½ in.	7 children of 4 years to 4 years 6 months.	" " 18 in.) J
" " "	" "	" (4 yrs. 6 months) 20 in., "(4 yrs. 6 months) 16 in.	" " " " " " " "	" " 19½ in.) C
Difference 1½ in. Chest more than Skull.	{	(6 yrs. 3 months) 19½ in., "(6 years old) 17 in.	7 children of 6 years to 6 years 6 months.	" " 18½ in.) Y
" " "	" "	" (6 years old) 20 in., " " 18 in.	" " " " " " " "	" " 19 in.) n
Difference 2½ in. Chest more than Skull.	{	(9 years old) 19½ in., "(9 years old) 18 in.	5 children of 9 to 10 years	" " 18½ in.) I
" " "	" "	" (10 years old) 23 in., " " 20 in.	" " " " " " " "	" " 20 in.)
Difference 2½ in. Chest more than Skull.	{	(11 years old) 19½ in., "(11 years old) 18½ in.	6 children of 11 to 12 years	" " 18½ in.)
" " "	" "	" (12 years old) 23½ in., " " 21 in.	" " " " " " " "	" " 23 in., " " 21 in.)

In 15 from 6 to 12 weeks old.	{ Skull: average 13½ in. Chest: " 12½ in.	Maximum difference between Skull and chest in one individual, diseases of the brain excepted, Skull more than Chest	2 in.
In 15 from 6 to 8 months.	{ Skull: " 16½ in. Chest: " 14½ in.	ditto	ditto 2½ in.
In 15 from 11 to 13 months.	{ Skull: " 16½ in. Chest: " 15½ in.	ditto	ditto 2½ in.
In 15 from 21 months to 2 years.	{ Skull: " 17½ in. Chest: " 16½ in.	ditto	ditto 2 in.
In 15 from 2 yrs. 10 months to 3 years.	{ Skull: " 17½ in. Chest: " 17 in.	ditto	ditto 1½ in.
In 15 from 4 years to 4 yrs. 6 months.	{ Skull: " 18½ in. Chest: " 18 in.	one Skull more than Chest by 2 in. one Chest more than Skull by 2 in. one, not included in these 15, the chest is less than skull by	4½ in.
In 10 from 6 years to 6 yrs 6 months.	{ Skull: " 18½ in. Chest: " 18½ in.	Maximum difference in favour of Chest actively to Skull in the same individual	1½ in.
In 10 from 9 to 10 years.	{ Skull: " 18½ in. Chest: " 21½ in.	ditto	ditto 4½ in.
In 9 from 11 to 12 years.	{ Skull: " 18½ in. Chest: " 22½ in.	ditto	ditto 4½ in.

of the chest constant, and from this age yearly increasing, inclusive of badly-developed individuals.

The most rapid progress of development of both the skull and the chest is found during the first six months of life. In fact, it may be said that from the second to the sixth month, both augment in circumference, the skull by one to two inches, the chest by one to one and a half inches; whilst in the eight months next following there is, on an average, an increase of only about one inch for each, the skull frequently increasing in circumference more than the chest at this age; and then, again, during the whole of the second year, in general, only by about one inch; the skull frequently increasing more also during this period than the chest. During the third and fourth years the increase of the skull considerably slackens, nor does the chest rapidly advance in its dimensions before the fifth or sixth year. These statements, as regards the rate of increase of the skull and chest, both absolute and relative at different periods of childhood, have reference to the average measurements of the patients collectively, belonging to the ages mentioned. In *particular* cases it has been observed that a great variation in the evolution of these dimensions takes place, as will be seen in the following instances:—

W. N., ten weeks old, skull $14\frac{1}{2}$ inches, chest 14 inches, fontanelle $\frac{3}{4}$ inch. At seven and a half months, skull 16 inches, chest 14 inches, fontanelle closed. Here, in the space of five months, the skull increased $1\frac{1}{2}$ inches, the chest being stationary, and the ossification of the fontanelle rapidly advancing.

A. M. at the age of six months, had the *skull* 15 inches, *chest* $13\frac{1}{4}$ inches; at eight months old the skull was $15\frac{1}{2}$ inches, chest $14\frac{1}{2}$ inches. F. W. at the age of six months, had the *skull* 15 inches, chest $14\frac{1}{4}$ inches; at eight months the skull was 16 inches, chest $14\frac{1}{2}$ inches. It is here seen that in the first case the chest increased more rapidly than the skull; in the second the skull more rapidly than the chest. In the first-named case the child was taking cod-oil, and improved under its influence.

A. W. nine months old, skull 16 inches, chest 16 inches, no

teeth. Five months later, the skull measured $16\frac{1}{4}$ inches, chest 16 inches, four teeth. A. M., age eight months, skull $17\frac{1}{2}$ inches, chest $14\frac{3}{4}$, no teeth; seven and a half months later the skull measured 19 inches, chest $16\frac{3}{4}$, there were four teeth.

In the first of these there was a slow progress of growth of both skull and chest; in the second, a most rapid increase of the skull for his age, and still more so of the chest; and during the same period of seven and a half months, the dimensions of the fontanelle were diminished from two and a half to one and a half inches. This child exhibited at first signs of retarded development, and improved thus rapidly under the influence of cod-liver oil.

W. S. three years old, skull 20 inches, chest 17 inches, had never been able to walk. Four and a half months later, the skull was $19\frac{1}{2}$ inches, chest $17\frac{1}{4}$ inches, and he walked firmly. This child was greatly retarded in development, having hypertrophy of the brain. Under the use of cod-oil he rapidly improved, and we noticed with surprise, during the period of four and a half months, a reduction of half an inch in the circular measurement of the skull, with a better shape of its contour; the chest having increased a quarter of an inch, and the child's general health having become much better.

If we now look over the whole space of time, from the third month to the fourth year, we notice an increase in the horizontal measurement of the skull of about five inches, and during the following eight years of only about one inch; whilst, on the contrary, the chest during the latter period augments by about four and a half inches, and seems to go on at an increasing rate, the skull growing more and more slowly each year, scarcely gaining more than an inch or two during the whole space of time, from the fourth year up to the thirteenth.

The greatest predominance of the skull over the chest, as was already mentioned, was most frequently met with between twelve months and three years. This, however, is not to be considered altogether as a physiological occurrence, but as dependent upon the great relative frequency at this period of retarded and disordered development. In fact, whenever at

the age of from one to three years the skull was by more than one and a quarter inch, or at the outside one and a half inches larger than the chest, we had, with the exception of a few cases, every reason to regard such children as unfavourably developed. In decidedly nervous temperaments, however, a marked predominance of the skull is sometimes observed after the fifth or sixth year, with a good shape of the head, and otherwise a healthy constitution.

Impaired and disordered development, therefore, is very largely represented by an undue development of the brain—which is in a certain sense a consuming organ, as compared with the lungs—which contrastingly may be considered as productive organs.

A great majority of the patients who were actually badly developed when brought to us were from one to three years old, and most of these children were in a very diseased condition; after which period, in those who fortunately survived, the development so generally improved that, amongst those of the age of six years, there were only about 15 per cent. decidedly badly developed, and farther on a still smaller proportion.

THE FACULTY OF WALKING.

The degree of power of the locomotor innervation in the legs, which either is sufficient to enable children to walk freely at a certain age, or insufficient for this purpose—was found to be the most constant and the most trustworthy index of a favourable or unfavourable developmental condition. This faculty, however, in order to give a conclusive significance as to the state of development, requires careful consideration, in order that the want of power in the lower limbs may not be attributed to want of developmental energy, when it is the effect merely of temporary illness.

Of 164 children with a *good* development this faculty presented itself as follows :—

At the age of 9 months, began to walk,	9
„ 10 „ „	16
„ 11 „ „	29
„ 12 „ „	44
„ 13 „ „	26
„ 14 „ „	15
„ 15 „ „	16
„ 16 „ „	5
„ 18 „ „	3
„ 20 „ „	1
	<hr/>
	164

None later than at the 20th month.

Of 137 children with a <i>bad</i> development	
At the age of 9 months, began to walk,	0
„ 10 „ „	1
„ 11 „ „	2
„ 12 „ „	8
„ 13 „ „	4
„ 14 „ „	10
„ 15 „ „	14
„ 16 „ „	20
„ 17 „ „	22
Between 18 months and 3 years	48
After the 3rd year „	8
	<hr/>
	137

Of the last named 8, however, 7 were ricketty.

From these figures it will be seen that of 164 children with a *good development* 155 were able to walk freely before the 15th month was over, whilst of 137 *badly developed*, 98 commenced walking only after the 15th month ; of the 164 with *good development* only 4 began to walk at 18 months, or later, whilst of 137 *badly developed*, 56 began to walk at from 18 months to three years. Of the children with *good development* 9 walked as early as 9 months, 16 at 10, and 29 at 11

months, making together 54 before the 12th month, whilst of the *badly developed* ones, none walked at 9 months, only 1 at 10, and 2 at 11 months, these 3 having lost again the power of their legs afterwards. It appears, at the same time, from these figures, that the ability to walk before the 12th month gives very favourable prospects as to the further progress of development; because of 54 children who were able to walk before the 12th month the development was checked and disordered afterwards in only 3.

In conclusion, it may be said that the loss of the faculty of walking is always one of the first palpable signs of an ingruent check in the process of development.

SIGNS AND MANIFESTATIONS OF GOOD DEVELOPMENT.

To investigate the process of development in general—to determine with accuracy in individual cases its favourable or unfavourable progress, and to make out its relations to health and disease, is not an easy task, and always requires the consideration of many more points than those comprised in the figures given on preceding pages. We may, however, on this occasion make from these the following statements:—

Of 530 children, those who enjoyed *a strong constitution, a favourable state of development*, and exhibited promising prospects for its future progress, had, in the great majority,

At the age of eight months: at least two teeth; the fontanelle not wider than one inch, the circumference of the skull not exceeding that of the chest by more than one inch.

At thirteen months: eight teeth or more; the fontanelle ossified; the skull not exceeding the chest by more than one inch and a half; and being able to walk.

At two years: having all the twenty teeth; the skull not exceeding the chest by more than one inch.

At three years: the skull in circumference nearly equal to, or even surpassing, the chest.

At four years: the chest exceeding the skull in circumference.

At eight years: the chest exceeding the skull by at least two to three inches.

The face in appearance larger than the forehead, especially so during the first three years; the shape of the skull not angular, and that of the chest well rounded, without lateral compression.

A deviation from the general rule in one point or other of those just mentioned was frequently found in children with a good development, and therefore, without a bad signification; and among these deviations the most frequent was the retardation of the teething process—sometimes to a great extent; but in such cases (in children with good development) the closure of the fontanelle and the faculty of walking were duly advanced.

Children who at the age of thirteen months had less than six teeth, and at the same time the fontanelle open, and insufficient power to walk freely, upon a strict consideration of each physical feature and state of their functions, appeared to be feeble in development; and a great many of these experienced during the second year a still more considerable check or disorder in the power of development.

A proportion of those who were sufficiently early with their first two, six, or eight teeth (say at six months two, at twelve months eight), and whose fontanelle was ossified at twelve or thirteen months (as appears to be the rule from the accounts given), experienced a check of such kind afterwards; but only very few, comparatively speaking, of those who were early in the faculty of walking. The due power of the locomotor innervation appears, therefore, to be the most trustworthy manifestation of a strong developmental energy.

Furthermore, in the 530 cases there is not a single instance of a notable check in the development, or falling back, having taken place in a child after the second year whose dentition, closure of the fontanelle, and faculty of walking, were regular up to this age.

Now, with regard to morbid symptoms, and the diseases to which children presenting an unfavourable progress, check, or retardation of development, were prominently liable, we delay giving results to a future occasion, when clinical observations,

unitedly with chemical analysis—which latter Mr. James Robertson is kindly carrying on for this Institution—can be brought to bear. A few statements relating to this subject will be found in the general survey of diseases. This much, however, may be mentioned here: that hitherto we have been unable to ascertain the existence of a single noteworthy disease evidently arising from *local* difficulties of dentition, namely, from irritation of the gums; and the result of the treatment in all such cases strongly confirms this assumption. True, many of the children who had retarded dentition presented various forms of disorder, which, according to the general prejudice, might be attributed by the mothers to dental irritation—especially so diarrhoea; but the treatment (either constitutionally tonic, or directly calculated to check diarrhoea) proved that the retardation of the teeth was but the effect and signification of a deeper seated general disorder of the system. In some three or four cases we found the gums evidently in a state of irritation from the impending irruption of the teeth, but without causing notable reflex symptoms, or disorders requiring local treatment. In one case it was thought that lancing of the gums was indicated; but the operation afforded no relief. We are proceeding, however, to gather observations, in order to settle by facts the question of developmental, inclusive of dental, disorders.

RESULTS OF INVESTIGATIONS ON THE EFFECTS UPON DEVELOPMENT OF HYGIENIC AGENTS—OF THE MILK OF THE BREAST WHEN GIVEN ALONE, OR UNITEDLY WITH VARIOUS KINDS OF FOOD; AND ARTIFICIAL FEEDING.

In the present state of chemical knowledge, some of the principles and theories on food and assimilation may be regarded as firmly established, others scarcely so. At all events, medical practitioners would do well not to allow themselves to be overmuch influenced by any existing theories, but supply unbiassed the results of observation, whether in accordance with them or not; the chemical philosopher will, sooner or later, settle doubts and apparent contradictions.

Thus much, we may say, seems at present to be pretty well established : that for the nourishment of the body during infancy, in order to endue it with the requisite restorative as well as developmental nutrition and energy, a due proportion of nitrogenous elements—fatty matter, sugar, earthy phosphates, and chlorides, is absolutely necessary. The precise proportions of these several principles, as necessarily required at the different periods of childhood, are not thus far practically determined. Previous to the recent researches of Lehmann, the use of fatty substances was considered as serving the purpose principally of furnishing material for the respiratory process, the generation of animal heat, and fat. This distinguished philosopher, however, has shown the influence of fat in the production of primordial cells ; and if such be the case, fatty food must be more important for the growth of the body during infancy than at after periods of life. Besides, very much depends upon the physical properties of nutritious substances—chemically identical—in childhood ; and again, there is evidently a far greater variation in the power of the digestive and assimilative organs of children, than in those of grown individuals.

That the milk of the human breast is, chemically and physically considered, the food best adapted for infancy (a supposition *a priori* self-evident), is scientifically explained and practically substantiated. It contains all the above principles *in best proportions*.

But, it may well be demanded, to what period of infancy is the milk of the breast, without any other food, best adapted for the infant ? And what are the physical conditions of the mother or nurse, and those of the breast-milk, easily recognisable, and therefore best suited for practical guidance in the nursery ? Unfortunately, the majority of mothers, in the operative ranks, are unable to discharge satisfactorily the duties of nursing ; and by attempting to do so, with a scanty supply of breast-milk, they frequently disorder the digestive functions of their children ; the question of no little importance, therefore arises : what are the palpable physical conditions of such a nurse, and of her milk, in case of its scanty secretion, which make immediate weaning preferable to a course of mixed feeding with

the breast and other food? and what food may be most safely substituted for the breast-milk, at different ages, and under the various conditions of constitution and temperament in infancy?

From the most recent and trustworthy chemical investigations of Vernois and Bequerel, it appears that when the milk of the breast is abundant it is also good in its chemical qualities, and when scanty it is chemically defective. The truth of this statement is practically confirmed by the high authority of Bouchut and others; and the same may be said of the majority of our own cases; yet in some of them, where the breast-milk was scanty, rendering additional food necessary, digestive disorder did not arise therefrom. On this subject it is evident that further distinctive observations are wanting.

That the milk of some domestic mammalia is the most natural and suitable substitute for human milk admits of no doubt; and that among these the cow's milk, though not bearing the closest analogy to that of the human breast, is generally the most readily obtained, and therefore the most applicable. But it is obvious that milk undergoes considerable chemical changes by its exposure to the atmosphere, and that the effects produced by it when taken after such exposure are different from those which follow its reception by suction, while the vital warmth is still unyielded. Cows' milk, when given to infants in its ordinary state, very often occasions disordered digestion, and it is from experience of its disturbing effects that mothers have been led to mix it in various ways—all more or less substantial, and unsuitable—before giving it.

Among the class of patients frequenting the Clinical Hospital there seems to be a very general distrust and hesitation observable in reference to the employment of cows' milk merely, as a substitute for that of the breast, without any other kinds of food; and, as is found to be the case also in many continental countries, bread is among the lower ranks in great favour as an infantile food, even from the first week of life, in case the mother thinks her own milk insufficient. Boiled bread is given to the youngest infants, in many cases mixed with a proportion of cow's milk, in not a few others merely with water and sugar,

occasionally also arrowroot with water and sugar, with or without milk, and other kinds of food, especially from the sixth month upwards. The results, as shown in a table, are mostly unfavourable.

Only the smaller proportion of the mothers of our patients had such an abundance of milk as to let it suffice alone, without the aid of any other food, up to the 12th or 18th month. The development, however, of almost all the children so nursed progressed most favourably, as will be seen hereafter.

In the following table are represented the effects of the various modes of nursing and feeding upon the physical development of the children, arranged under a few principal categories, leaving the communication of more detailed and accurate observations for the present unnoticed.

I. Children who, from birth, or the age of two to three months, besides an abundance of breast-milk (as stated by their mothers), had received additional <i>food</i> , generally boiled bread with milk, or merely with water and sugar, or arrowroot.	of 105, development good in 55 medium in 29 bad in 21
II. Children who had the <i>milk of the breast alone</i> , up to the 6th, 7th, 8th, or 9th month, after which period they were partially weaned (about 20 per cent. of them), partially receiving for some months longer other <i>food</i> besides the breast.	of 45, 30 9 6
III. Children having had the <i>milk of the breast alone</i> , to 9 months or longer, some to 15, 18, or 24 months.	of 30, 23 4 3
IV. Children who had from the earliest infancy a moderate or small supply of <i>milk of the breast</i> , some for a few months only, others up to the 9th, 12th, 15th, or 18th month, or longer, with other food from birth.	of 129, 29 34 66
V. Children "hand fed," having had <i>no breast at all</i> .	of 10, 1 3 6

The insufficient supply of breast-milk was caused :—

In 32 mothers, by their going out to work.

- | | | |
|------|---|---|
| „ 22 | „ | by constitutional debility, illness, or advanced age. |
| „ 19 | „ | by destitution, and want of sufficient or suitable food. |
| „ 56 | „ | by an insufficient secretion of milk, without obvious reason. |

In analysing the relations between the several kinds of nourishment and corresponding degrees of development, as represented in the preceding table, we find that of the 105 cases in group No. 1, the mothers had “plenty of milk”—according to their statement—but they gave other food, partly from the impression that the child had not enough with this alone, partly imagining that additional food would strengthen it. This food, in most instances, consisted of boiled bread, with or without milk ; consequently nutritious and substantial, and given from the earliest infancy. The mothers of this category were able to attend to their children throughout the day, and as in none did there seem to be any striking deficiency of milk, and in most of them, after a strict examination, certainly a fair supply, it may be stated that No. 1 represents the *effects of milk of the breast abundantly secreted*, given unitedly *with farinaceous food from early infancy*. Of the children thus brought up, 52 per cent. had good development, and 20 per cent. were badly developed.

In class No. IV. we have children, who also, from early infancy up to the same period, varying from 9 to 18 months, in some cases to 2 years of age, had the breast-milk unitedly with the same kinds of food just named, as in No. I. ; but the mother's milk was insufficient for the child, partly because scantily secreted, partly because the mothers went out to work, and could nurse their children only twice or thrice a day. We have, therefore, in this class two categories, namely, children receiving *substantial food since birth*, unitedly *with a small amount of milk of the breast*, in some *abundantly secreted*, in others *scantily secreted*, consequently, according to the *analyses*, of the authorities quoted at page 31, partly milk of a good quality, partly of an inferior quality. Taking these children together,

only 22 per cent. of them had a good development, and 51 per cent. were badly developed. (See the contrast with No. I.)

On the contrary, among those of class No. III. who had the milk of the breast sufficiently secreted, without any other food, to 9 months and upwards, 77 per cent. were of good development, and 10 per cent. bad ; whilst those in No. V., who had had no breast from birth, or at least not longer than a few weeks, only 10 per cent. were favourably developed, and 60 per cent. unfavourably.

In order to show still more clearly the effects of wet-nursing alone, without the aid of any other food, up to a certain age, we have extracted from the Note-Books the *cases* of all the patients *marked as having an eminently good development and strong habit of body* ; and it appears that of these, 34 in number,

4	had the milk of the breast alone to the 18th month or upwards, some to 2 years.
7	" " " 15th " the 17th.
7	" " " 12th or 13th month.
7	" " " 9th, 10th, or 11th month.
3	" " " 6th or 8th month.
4	" " " 4th or 5th month.
1	had from birth an abundance of breast-food, and bread and milk.
1	" insufficient breast-food, with bread and milk.

Thus it appears that of those who presented the most favourable condition of development, more than 50 per cent. had the breast alone, without other food, to the 12th month and upwards, and only 6 per cent. other food, besides the breast, from birth.

In order, however, not to be misled in drawing conclusions, it may be observed, that these mothers all stated in the most distinct terms, that their milk was always abundant, and they seemed to us decidedly healthy subjects ; whilst, on the contrary, we have some cases recorded of mothers rather delicate, and feeling themselves more or less affected by suckling, who, however, gave the breast up to 15 or 18 months or longer,

without the aid of milk or any other food ; but in these cases generally the result of development was unfavourable. Further data on this important subject may be furnished hereafter.

SURVEY OF DISEASES.

The number of diseases which occurred in the 530 patients, is 785 ; in some subjects two or more distinct forms of disease occurred simultaneously, in others consecutively, at intervals.

Developmental Disorders—feeble, and retarded developmental process, including complications with anæmia, and slight degrees of rickets 59

Rachitism—decided forms 28

Constitutional Debility—including slight complications with anæmia, but no disorders of development 27

Fevers—

Severe catarrhal, and gastric	6	}	11
Typhoid (1 spotted)	2		
With jaundice	3		

Eruptive—scarlatina miliaris	2	}	9
„ rubeola	2		
„ varicella	2		
„ urticaria	3		

Anasarca—

Primary, acute	1
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Affections of the Brain—

Hydrocephalus, chronic	1	}	10
Hypertrophy of the brain	3		
Diagnosis uncertain	1		
Compression of the brain from precocious and over intense ossification	1		
Rheumatism of the head.....			

Diseases of the Eye—

Conjunctivitis	14	} 35
Inflammation of the lachrymal ducts	1	
Inflammations, ulcers, and cicatrices of the cornea ...	5	
Scrofulous ophthalmia	6	
Rheumatic ophthalmia.....	6	
Ophthalmia neonatorum	3	

Coryza—

Congenitalis	1
Syphilitica.....	2
Scrofulosa	1

Diseases of the Ear—

Otalgia	2
Otitis	1
Chronic otorrhœa	4

Diseases of the Mouth—

Scrofulous swelling of the lips.....	1
Stomatitis erythematosa	3
„ pseudo-membranosa (muguet)	2
„ aphthosa	3
„ ulcero-pseudomembranosa	8

Angina—

Pharyngitis, amygdalitis	5
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Diseases of the Respiratory Organs—

Laryngitis, simplex (pseudo-croup)	1	} 192
Croup	1	
Bronchitis, acute, and chronic	130	
„ capillary.....	12	
Broncho-pneumonia	10	
Pneumonia (lobar)	1	
Acute oedema of lungs	1	
Pleurodynia.....	2	
Pleurisy, exudation.....	5	
Pleuro-pneumonia	2	
Tubercles, complicated with broncho-pneumonia, more or less evident	4	
Pertussis (all cases, but two, with bronchitis or broncho-pneumonia)	23	

Diseases of the Heart—

Displacement (by exudation)	1
Palpitation, nervous	2
„ rheumatic	1
„ anæmic.....	1

Diseases of the Abdominal Organs—

Gastro-intestinal—disordered digestion (loss of appetite, sickness, costiveness, diarrhoea)	76	} 224
diarrhoea (mucous, serous, bilious)	85	
dysentery	18	
sporadic cholera	2	
enteritis	2	
rheumatism of the stomach	1	
habitual constipation, severe	3	
Hepatitis	1	
Chronic enlargement of the liver	4	
Cystitis, catarrhal, with dysuria	2	
Dysuria—spasmodica	1	}
dyspeptica	3	
from gravel.....	2	
Vaginal blennorrhagia	2	}
Mesenteric disease	4	
Prolapsus ani	18	}

Worms—

Seatworm	8
Ascaris-lumbricoides	2
Tænia solium	1

Syphilis—

Hereditaria	4
Acquisita	1

Atrophy—

High degrees, without reliable signs of glandular disease	13
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Anæmia—

High degrees.....	3
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Cyanosis—

Symptomata.....	1
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Cachexia

.....	1
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Nervous Disorders—

Habitual headache	3	} 16
Epilepsy.....	1	
Convulsion	8	
Spasms, severe abdominal	2	
Essential paralysis	2	

Rheumatism—

Of the eye, head, stomach, 11 (adduced severally above)... —

Diseases of Skin and Scalp—

SKIN—Erythema	5	} 45
Intertrigo	7	
Lichen	1	
Prurigo	5	
Scabies	2	
Pemphigus	2	
Zoster, herpetico-bullosus	1	
Eczema, impetigo	21	
Acne	1	
SCALP—Eczema	2	
Impetigo	11	} 25
Porrigo granulosa	2	
„ favosa.....	4	
Pityriasis.....	4	
Herpes tonsurans	2	

External and Surgical Diseases—

Inflammatory swelling of glands, of the neck, and submaxillary	2
Phlegmons, and acute abscesses	3
Sero-cystic tumor of the thyroid gland	1
Chr. dyscrasic (scroful.) local affections—abscesses	2
„ ulcerating glands...	1
„ ulcer of the elbow	1
„ „ sternum	1
„ „ leg	1
„ „ diseased hip-joint	1
„ „ vertebræ	1
<i>Lateral Spinal Curvature</i>	2
<i>Clump Foot</i>	2

Hernia—

Umbilical	2
Inguinal... ..	5
<i>Bruises, Cuts, etc.</i>	6

In 530 patients, sum total of diseases..... 785

Suckling Mothers' Diseases—

Bronchitis, diarrhoea, the numbers about	30
Anæmia lactantium	13

TABLE OF DISEASES WITH FATAL ISSUE.

Name of Principal Disease.	Coexistent or Supervening Complications.	No.	Respective Ages at Death
Retarded & Disordered Development ... }	Diarrhoea	6	{ 11 weeks, 3 months, 4 months, 11 months, 14 months, 29 months.
" " " ...	Mesenteric Atrophy ...	1	10 months.
" " " ...	{ Diarrhoea, Bronchitis } suspected Tubercles. }	1	2 years.
" " " ...	{ Mesenteric Atrophy, } Bronchitis, suspect- ed Tubercles of the } Brain... ..	1	3 years.
" " " ...	Capillary Bronchitis ...	1	10 months.
Mesenteric Atrophy ...	None	1	18 months.
Disordered Digestion ...	Diarrhoea	5	{ 2, 7, 8, and 10 weeks, 4 months.
" " " ...	" Cyanosis ...	1	18 months.
Catarrhal Diarrhoea ...	None	4	3, 7, 17, and 18 months.
" " aft. Measles	None	2	11 months, 3½ years.
" " " ...	Bronchitis	1	14 months.
Enteritis and Hepatitis...	None ... — ...	1	28 months.
Hooping Cough	Bronchitis	1	9 months.
" " " ...	Suspected Tubercles ...	1	8 months.
" " " ...	Broncho-pneumonia ...	1	3 years.
" " " ...	Muguet, Exhaustion ...	1	6 months.
Broncho-pneumonia ...	None	1	3 months.
Pneumonia	None	1	20 months.
Phlegmon	None	1	7 weeks.
Hereditary Syphilis ...	None	2	4 weeks, 11 months.
		34	

Average mortality, 6½ per cent.

It will be seen that of the 34 deaths, from various causes, 10 happened to children with bad development. Diarrhoea was present, either as the principal ailment or as a complication, in 20, *i. e.*, in about 60 per cent. In 24 of the 34 fatal cases, *i. e.*, in about 70 per cent., there was morbid localisation in the abdominal cavity. Bronchitis was present in five cases, but in none as the only cause of death. Hooping-cough (of which in the 530 there were 23 cases), was in four cases a severe complication, inducing exhaustion, but in none being the only cause of death. Tubercles in the lungs were more or less evident in 3 of the 34 cases—about $9\frac{3}{4}$ per cent. of the deaths. Acute parenchymatous and plastic inflammations (of which we had altogether about 22 under treatment), were the immediate cause of death in 4 patients.

CONSIDERATIONS RELATIVE TO THE DISEASES TREATED.

It is intended, in this first report, to limit our observations to a few general remarks on the diseases comprised in the preceding tables.

In the first place, 785 diseases having occurred in 530 individuals, a number of them having had two or more distinct affections at the same time or consecutively—the most frequent complication was that of bronchitis with diarrhoea, not seldom both having lasted and been neglected during many months or even years.

Next, we were struck by the excessive frequency of abdominal and of respiratory affections, the first named having been the object of treatment in 224, the second in 192, out of 530 individuals.

Again, amongst the 224 abdominal affections, 161 were partly cases of deranged digestion, in most instances combined with diarrhoea, partly cases of diarrhoea which appeared to have an atmospheric origin; and of 192 respiratory diseases we find that 130 were bronchitis: so that one-fourth of the patients were affected with diarrhoea, of either dietetic or atmospheric origin; and another fourth with bronchitis. In this calculation

the severer degrees of either kinds of diseases, namely capillary bronchitis and broncho-pneumonia on the one hand, and dysentery and cholera on the other, are not included. As to danger, however, diarrhoea incomparably surpasses bronchitis; because of the 34 deaths recorded 20 were directly or indirectly caused by diarrhoea, and none by bronchitis alone.

Of the 20 fatal cases of diarrhoea, not one was an acute or recent case, but all neglected during weeks or months before being brought to the institution.

The greatest number of bronchitic cases occurred in the months of March, April, and May (previous to March the number of our patients was too small to admit of any conclusions). Diarrhoea on the contrary was prevalent to excess during July and August. In fact in these months, during, and especially a week or two after that remarkable height of the thermometer peculiar to the past summer, nearly two thirds of our patients were affected with diarrhoea, a proof of its climatic origin and epidemical nature. At that time, in a great number of children who previously were relaxed in their bowels by unsuitable nourishment, chronic diarrhoea suddenly became aggravated by climatic influence, and in some cases was irremediable. Almost all such patients were under two years of age. Undoubtedly, diarrhoea, caused by unsuitable dietetic agencies, when neglected, appears as the most generally destructive disease of young children.

Next in frequency, as objects of treatment, come developmental disorders, *i. e.*, a general morbid condition of the system, characterised by a check, or slow and defective progress of developmental nutrition. This becomes especially apparent in the bony structures and muscles, and is connected with an imperfect condition of the blood, and functional disorders thereupon consequent. The 59 cases of this description adduced above, however, do not include the slighter degrees of impaired development, but only such cases as were severe enough to call for treatment; which in about 90 per cent. was more or less speedily successful, serious complications excepted.

The transition from this category of disordered development

to decided degrees of rickets, is so frequent and gradual, that it is scarcely possible to establish between them a clear line of demarcation. As a point of distinction for the cases comprised in the class of rickets we recognise the presence of enlargement of the wrists and ancles, and bending of the long bones.

Of such well characterised cases of rickets, there were 28.

In either class of developmental disorders, simple as well as rachitic, atrophy and anæmia were frequently, but not always clearly perceptible. Defective ossification, and defective nutrition of the muscular fibre, on the contrary, were constantly observed in both forms.

Is the blood equally faulty in simple as in rachitic developmental disorders—and if so, in what does this morbid condition of the blood consist?

Is the chemism of digestion and assimilation equally faulty in both—and in what manner?

To arrive at a solution of these questions, chemical investigation and clinical observation must work together.

That in all cases of impaired and retarded development, whether with rickets or without, the process of ossification is more or less checked, is evident and certain. But by what reason? and what becomes of the phosphate of lime so abundantly contained in milk and some other kinds of food?

The theory of super-acidification of the phosphate of lime, long since propounded, has lately been more strongly confirmed, and according to such chemical investigations of recent date as command respect it would appear, that it is by superabundantly produced oxalic acid, that the formation and consolidation of neutral phosphate of lime is prevented (Benecke), and its elimination through the urine rendered possible and effected.

We must observe in this place that however carefully and skilfully may have been practised the analyses of the urine (bearing on this question), which have been hitherto communicated, or at least of which we have any knowledge, they seem to us insufficient for stringent conclusions, because no exact clinical observations are given on the sanitary condition, kind of

food, digestive and secretive functions and foces of those children to whom they relate. We cannot see how, without these, any reliable conclusions can be drawn from the chemistry of the urine, on the point in question.

Mr. J. Robertson (pharmaceutical chemist) has examined hitherto, for the purposes of this Institution, different samples of urine of 58 children, some simply retarded and disordered in development, some rachitic. When these investigations shall have been prosecuted to a sufficient extent, the result will be published, unitedly with dietetic and clinical observations relative to the respective patients. At present this much may be stated, that, so far as the microscopical characters and chemical constituents of the urine of rachitic children are concerned, Mr. Robertson's present results are far from being in accordance with the above theory. In fact, in only 14 of the 58 cases has he met with an excess of the phosphates; and in only 7 of the 58 was there phosphate of lime in excess, in the other 7 the excessive phosphates consisted mainly of super-phosphate of soda. In the remaining 44 cases there was no excess of the phosphates, *i. e.*, not more than a half per cent. Again, only in 2 of the 58 cases (*i. e.*, in less than 4 per cent.), were oxalates present; in the others scarcely any trace of them, nor of course of free oxalic acid. In both of these subjects some days before that on which he found the oxalates, their urine afforded urate of ammonia in excess, and when the oxalates were present, the urate of ammonia had disappeared.

In all these cases, besides the disorders of the developmental processes, there was more or less functional disorder present, with great liability to disease, and but little power of reparation. Many such children suffered from diarrrhœa, bronchitis, and other diseases, and under such circumstances, on account of their constitutional disorder, a few baffled our therapeutical endeavours and succumbed. In the table of deaths it will be seen that defective development had a great influence in causing fatal issues in many instances.

As to structural disorders, as was already mentioned, a most constantly tangible defect of nutrition showed itself in the

bones ; the brain, on the contrary, advancing in growth, sometimes even to great excess in volume ; and the intellectual progress of many such children would seem to indicate a good structural condition of this organ. To decide fully this interesting question, however, further investigations and facts are wanted. According to the present stage of physio-chemistry, bone requires an abundance of phosphate of lime, and the brain a great amount of phosphorus. If now, in children with retarded development, and conspicuously retarded ossification, who, however, have a preponderating development of brain, an excessive amount of phosphates is eliminated by the urine—how is *that* cerebral development, which requires so much phosphorus, explicable ? The excess of oxalate of lime in the urine, as stated by some authors, would at all events admit of an easier explanation of the predominant development of the brain, as observed in many rachitic children. But these points are as yet not settled by facts accurate enough to exclude every doubt.

It seems not unreasonable to put here the question, as to whether a too intense progress of the developmental process is apt to become the source of disorder or disease ?

There is one case amongst the 530, and it is the only one which either of us ever saw, which seems to admit of an affirmative answer.

James Spellon, 3 years and 3 months old when brought to the institution, presented unequivocal signs of pressure of the brain ; he looked dull, the head hanging forward, mouth open, constant salivation. The circumference of the skull was 17 in.; chest 19 in.—great predominance of the chest ; skull, relative to the size of the body, of a small circumference, but much convex. On the top of the skull, in the place of the fontanelle, and part of the sagittal suture, the bone was completely solid, and elevated so as to form a ridge, to the height of half an inch. The mother said he was a fine strong child, and in perfect health up to his 8th month, then gradually the present disorder developed itself. This child had his first teeth at 6 months, and at 14 months had all the 20 ; he walked at 9

months, but lost afterwards the power of his legs. Two other children of this mother had their first teeth at 6 months, all 20 as she stated at 14 to 18 months, and freely walked at 9 months. The mother appeared to be a very strong woman ; she said she had such abundance of milk that she could have suckled two children at the same time ; she gave the breast alone to each of her children up to the 15th or 18th month. The explanation we give in this case is, that by a precocious solidification of the skull the growing brain was compressed ; the ridge at the top of the skull originated as we think from this circumstance, that the over-growing brain, in all other directions compressed, finding less resistance in the situation of the fontanelle and sagittal suture, protruded there, until also this part of the skull became disproportionately over-ossified and unyielding.

All the preceding statements on developmental disorders mainly refer to children under four years of age ; our data on disorders of the same nature at more advanced periods of childhood are not yet numerous enough for drawing conclusions.

In the next place may be noticed the strikingly small amount of severe fevers, and infantile epidemics. No genuine scarlet fever, nor smallpox or measles cases have come under notice during the year thus far, and only three patients, who not long previously had scarlatina with severe consequences,—albuminuria, partial dropsy, attacks of the brain of similar nature, and sore throat. These cases have been cured. We have had also some twenty pertinacious cases of chronic bronchitis, which were sequelæ of measles. Pertussis (to be mentioned presently) was the only infantile epidemic which came frequently under treatment.

The number of affections of the brain scarcely amounts to two per cent., without a single case of genuine inflammation of the brain.

We have had no bad cases of angina, and only one of genuine laryngeal croup, happily subdued by free administration of sulphate of copper, at its incipient stage of asphyxia.

Amongst 192 diseases of the larynx, bronchi, lungs, and

pleura, only seven were so severe as to require abstraction of blood, and only six died of the whole number. Comparatively speaking, the recovery from pleuritic exudation (five cases) was speedy and complete. In one case both sides of the chest were occupied with fluid up to about the upper third ; in the others only one side in each was affected. In those of the patients in whom there was reason to suppose the exudation to be thin fluid, the absorption was accomplished in from three to five weeks ; in two of them the complete absorption took from six to ten weeks, considerable collapse of the corresponding wall of the chest having taken place in one of them at about the sixth week, which, however, had almost entirely disappeared by the end of the tenth. The thick and plastic nature of the exudation in these two cases was prognosed by the greater intensity of fever and pain which existed at the time when it took place. No mercurial treatment was employed to promote absorption, and—setting aside the questions as to the efficiency or non-efficiency, reality or non-reality of absorbent remedies—there can be little doubt, that in cases of *plastic* exudation the free surface of the pleura, in order to produce this degree of inflammatory action, must necessarily have undergone such a change as to destroy for a length of time its absorbent property. Abstraction of blood in two of the cases in which it was employed did not prevent exudation, but we certainly believe that it prevented its becoming plastic and dense, and thus proved an invaluable agent in facilitating and hastening the recovery.

The ten cases which are adduced under the name of “broncho-pneumonia,” were capillary bronchitis, characterised by extensive and dense subcrepitant rales, and limited dulness, probably caused by *lobular* condensation ; but it is worthy of notice, that amongst 192 cases of respiratory inflammations there was only one well characterised as *lobar* hepatisation, with extensive dulness and bronchial respiration. Of hooping cough there were 23 cases, almost all having had a long and tedious course ; 19 of them being combined with chronic bronchitis, 2 with broncho-pneumonia. Consequently there was very

little to be seen of pertussis, as a pure neurosis—so considered by the high authority of Rilliet and Barthez.

Of tuberculosis of the lungs we saw very little; only in 4 cases we considered tuberculous deposits or the existence of caverns as certain—twice after measles, out of about twenty severe and long-lasting bronchitides consequent upon this eruptive fever.

Nor did inflammation present itself more severely and extensively in the abdomen than in the chest; as amongst 224 cases of abdominal affections there were only two with marked symptoms of enteritis, and 18 cases of colitis (dysentery), amongst which, however, 15 were of a moderate sub-inflammatory character. All the rest were diarrhoea, which, not being of dyspeptic origin, were, as well as the cases of bronchitis, of a generally mild catarrhal character.

Worms, although frequently inculcated by the mothers as the cause of disease, we could detect the presence of in only 11 cases.

The number of cases of hereditary syphilis is also small, namely 4, which makes about three quarters per cent. The one case of acquired syphilis most evidently originated from infection of *secondary* form.

Nor are the nervous disorders numerous, there being altogether only 16 cases; none very severe, except one case of epilepsy, in a boy 13 years old, who was the first patient of the Institution. The affection had existed from his seventh year of life, and had continued its severe attacks periodically every week or ten days, sometimes oftener, during a space of six years. It was cured effectually, after three months' treatment, by cod-liver oil.

Amongst the 45 cases of diseases of the skin and scalp, there were about ten severe cases, *i. e.*, one scabies, two prurigo, and the rest impetigo and porrigo of the scalp, all successfully treated, most of them constitutionally as well as locally; in the local treatment the ungu. hydr. nitrico oxidi was essentially serviceable in some of the more refractory cases.

It would exceed the purpose of this Report to enter into *details* on pathology and therapeutics; and although the 530 patients embrace many cases uncommonly interesting and

instructive, we rather choose to wait for a further accumulation of material before venturing to expose the results of inquiries and drawing conclusions on those points.

MOTHERS AND FOSTER-NURSES—THEIR SANITARY CONDITION
AS AFFECTING THE SUPPLY OF BREAST-MILK.

Many of the nursing mothers were in a deranged state of health, and their milk therefore was diminished in quantity, and more or less injurious to their nurslings.

To increase the quantity of the milk of the breast was often an object of consideration; and according to a variety of causes, ascertained or surmised, various plans were adopted.

In those of the mothers having a scanty secretion of milk, and who at the same time were strong and of full habit of body, and in good health, having also appropriate nourishment, no increase of their milk could be effected by any remedial means.

In many who were delicate and unhealthy it was possible to improve their state materially.

In remedial respects the most interesting were those mothers whose condition, attended with scantiness of milk, fell under the designation of "*anæmia lactantium*," thus characterised: general languor, giddiness in the morning, appetite indifferent, tongue clean, costiveness, certain painful sensations in the chest, increasing under the act of suckling.

In a number of such cases, caused by poverty and insufficiency of food, no medicinal remedy could have effected an improvement; we endeavoured, therefore, to recommend such modifications in their diet as seemed practicable in their reduced circumstances, and likely to improve their physical tone, and thus to increase the secretion of milk.

Some others, although in better circumstances, by over-suckling their children, or by over-exertion, or other special causes, impaired their constitutional strength and functions, and thus induced an anæmic condition. In 13 such cases iron was administered; and in the majority of these instances, along with increased strength, the flow of milk augmented.

Our attention and efforts will further be directed to the important subject of nursing and feeding children, to the defects and errors prevalent in this respect, and the possible means of amendment.

CONCLUSIONS RELATING TO LOCAL INFLUENCES UPON THE DEVELOPMENT AND HEALTH OF CHILDREN.

Although we do not deem the space of time over which our report extends, nor the number of patients included in it, sufficient to characterise satisfactorily the hygienic and morbid influences upon children in this district, yet we cannot forego a few considerations which seem to be so far well founded.

We have before us some twenty-five reports of children's hospitals, from the pens of distinguished authorities ; Dr. Weiss, of St. Petersburg ; Drs. Mauthner and Hügel, of Vienna ; Dr. Stiebel, of Frankfort ; Dr. Hanner, of Munich ; Dr. Abelin, of Stockholm, and others. If we consider the diseases which occurred in the 530 patients contained in the present report, in relation to the three great causes of disease, and compare them with those of the places alluded to, we find—

1st, with regard to diseases of climatic and atmospheric origin—there was, with the exception of hooping cough, no infantile epidemic prevalent. This, however, in some years may happen in any climate or country ; other primary fevers, of which the severity is probably everywhere best represented by the proportional prevalence of typhus, were exceedingly few and mild. True, this class of diseases also occur in very variable degrees and frequency, according to the changeable epidemical character of years and seasons ; yet it seems remarkable, that whilst of the 530 patients only 2, *i.e.*, about $\frac{1}{3}$ per cent., had fever of typhoid type, and this in a mild form, in other places, throughout a series of years, we find no instance of the kind, Stockholm, as it would seem, excepted. At Vienna, Munich, Frankfort, and St. Petersburg, typhus — and consequently a proportional number of gastric fevers—form a constant, and indeed a very considerable item in the children's hospitals, as well as dis-

pensaries, varying from $3\frac{1}{2}$ to 9 per cent. Not much less favourable is the proportion, comparatively speaking, of acute and plastic inflammations of the head, chest, and abdomen, of which we had about 4 per cent. On the contrary, the proportion of mucous (catarrhal) sub-inflammations of the bronchi and intestines in our numbers is exceedingly large, and this is the more significant, as the sanitary feature of the present year, so far as it goes, is acknowledged by every practitioner as a most favourable one.

In fact, for our present purpose, which does not require a minute meteorological exposure, it is enough to say that during this year we have had no striking atmospheric vicissitude whatever, with the exception of the sudden inset of intense heat, about the end of July and beginning of August, with a thermometric reading of 80° to 83° in the shade, and 90° to 96° in the sun, during 2 or 3 weeks; an elevation so extraordinary for this country, that the like had not been observed for many years. We may add, that the four weeks preceding that intense heat, were as usual for the summer months, and the fall of the thermometer after that broiling period, was not at all sudden, nor accompanied by unusual vicissitudes.

Now, during the period in question, and for a while after, as was mentioned at page 41, the intestinal mucous tract was considerably more frequently affected than the bronchial, sometimes combined with biliary derangement; but whilst of diarrhœa we find in some of the reports mentioned nearly although not quite as large a proportion as in ours, the frequency here of bronchitis far surpasses all proportions noticeable in them. There were of this affection 130 out of 530 patients, *i. e.*, about 25 per cent., whereas in the continental reports, the rate varies from 4 to 9 per cent., catarrhal fevers included. But here it may be well to observe, that, as the term "catarrhal fevers," especially conspicuous in the St. Petersburg and Vienna reports, means bronchial catarrh (bronchitis) with well marked fever, we have the less reason to use this term, because amongst the 130 cases, scarcely 12 per cent. were decidedly acute, *i. e.*, febrile bronchitis; it must not be overlooked also that there were no fatal results from this affection, which, on the contrary, we find to be

different as to catarrhal fever in these reports. Nevertheless, a considerable proportion of the children of the poor die here of bronchitis, occasioned by its being neglected, and by its merging into a more aggravated form (broncho-pneumonia), owing to atmospheric exposure; far more of them die, however, of diarrhœa, for which a sufficient explanation is furnished in the more profoundly deranging and exhausting influence of intestinal, as compared with bronchial and catarrhal affections.

2ndly, of diseases originating in chronic dyscrasy—a faulty condition of the blood—partly hereditary, partly acquired, amongst which in childhood stand paramount in importance, scrofulous, tuberculous, and syphilitic affections—our report thus far points to a very favourable condition of childhood in this city. If we take tuberculosis, as the most destructive of this class, a rate of about $\frac{3}{4}$ per cent., which is the estimate in this report, is less than we find it to be in any of those from other places, not to speak of the high rates of from 3 to 8 per cent. which are met with in some of the St. Petersburg, Vienna, and Munich reports.

3rdly, diseases arising from hygienic and dietetic causes—such as developmental disorders, rachitism (so far at least as these are essentially promoted and aggravated by faulty hygiene and diet—to say nothing of the predisposing influence of climate and hereditary agency), disorders of the digestive and assimilative functions, inclusive of dyspeptic diarrhœa, atrophy, and mesenteric disease—of these no doubt the proportion is very great. In other reports, with the exception of rickets, of which in St. Petersburg, Vienna, Berlin, Pesth, Munich, Frankfort, &c., the proportions vary from 2 to 5 per cent., in our report being $4\frac{3}{4}$ per cent., we do not find simply impaired and disordered development noticed, nor in many of them the ordinary digestive and assimilative disorders in such way comprised in categories as to admit of a comparison. Therefore elsewhere they may be more frequent or less than in this district, but that they are here excessively common is certain; and the frequency of this class of diseases demands the more urgently careful consideration, inasmuch as, to the greatest extent, they

arise from ignorance, prejudice, and errors, on the part of the parents, in nursing and managing children, and consequently from causes which are within the possibility of control.

On this subject we are not as yet prepared to propose instructions, nor is it easy to project means generally applicable for improvement in this department of hygiene; this much however, as an essential principle, every mother should be convinced of: that milk alone is decidedly the best food, at least during the whole of the first year of infancy, and that every other kind of food in addition, or as a substitute for milk, is calculated to produce an unfavourable condition of the system. This truth once generally established, a great point would be gained; as there would be less tendency to substitute for, or mix prematurely with milk, other kinds of food; and efforts would be made to overcome occasional difficulties in its use, by endeavouring, in various practicable ways, to improve its digestive qualities and render it more suitable.