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FIRST AID TO THE CHILD

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FIRST AID TO THE CHILD

A GUIDE TO THE FEEDING AND TREATMENT OF INFANTS IN HEALTH AND DISEASE

BY

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PREFATORY NOTE

THE object of this small work is twofold; it is intended to teach mothers and nurses how to maintain the health of infants and young children, and also to serve as a "First Aid" guide in the treatment of their diseases. For this purpose the book is divided into two sections, one dealing with infant feeding, which is the Alpha and Omega of good health in the little ones; and the other with those ailments to which children are most liable.

The various diseases dealt with in the second section are treated by the Author in the same way which has been found so useful in his work "First Aid to the Sick." The disease is first defined, then the causes and symptoms clearly stated, so as to guide the mother or nurse to a right conclusion as to what the

condition really is; and lastly, the treatment is given to effect a cure where possible, or at least to give relief until the services of a doctor can be obtained.

The Author desires to acknowledge his indebtedness to Dr Truby King, for many valuable suggestions on the subject of humanised milk, and infant feeding.

The desire is here expressed, that the public will find this work of more value as a preventive of sickness in infants and children, than as a cure for disease.

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FIRST AID TO THE CHILD

INTRODUCTION

"The greatest miracle I can conceive is this: that a little piece of pink, squalling humanity can contain the potential powers of a Raphael, a Mozart, a Beethoven, or a Shakespeare."—PORTER.

As the result of applied modern science the world is not only growing wiser and better, but life itself is presenting fresh aspects, making existence more attractive. In spite of these days of strenuous living and so-called over-civilisation, the general death-rate of Great Britain and Ireland has fallen considerably during the past quarter of a century; a circumstance undoubtedly due to a fuller understanding of the laws of hygiene and preventive medicine.

While the general mortality rate has been considerably reduced, strange to say, the death-rate of infants has not been appreciably affected. If the cause of this constant high infant mortality is due to over-civilisation, as some assert, then why does

not over-civilisation equally act upon the general mortality? Over-civilisation may be one cause, but it is quite a subordinate one. Over-civilisation may give us an heritage of neurotic children, rendering their rearing a question of greater care; but as is the case with adult longevity, modern science applied to the rearing of infants and young children should more than compensate for this.

Of the total deaths at all ages which occur in England (including Wales) nearly one quarter are of infants under one year old. Between the years 1895 and 1904, ten children in every sixty-six born in England died before completing the first year of life, and one half of these deaths took place before the infants were three months old.

Amongst the various causes of death in infants, those arising from diseases of the stomach and bowels head the list, *i.e.*, Gastritis, Enteritis, and Diarrhœa —essentially food diseases.

It is estimated that at least one half of these deaths can be avoided. They take place from preventable causes, and are therefore classed amongst preventable diseases. "If they are preventable diseases, why are they not prevented?"

In Australia and New Zealand the death-rate of infants and young children is much less than in England, Scotland, or Ireland, due in part to the absence of over-crowded cities, but mainly to the

higher standard of education amongst the working classes. This lower infant mortality cannot be said to be the result of climatic conditions, for the severe Australian summer is responsible for proportionately more deaths among infants than the severe English winter.

The mortality from war is deeply deplored, and the nation went into tears at the death toll from wounds and disease during the three years of the South African War. There is continually going on silently in our midst an annual preventable destruction greater than that which took place during the late war, and the British nation seems quite oblivious to this loss of life. Is it because this annual slaughter is taking place at our very doors, and we have become in consequence familiar with it, that we, as a nation, have become too callous to appreciate its full significance? Is it due, as has been said, to the British nation becoming more and more like the American nation, with whom the almighty dollar is considered in the commercial competitive struggle to be of more value than human life? Whatever the reason, it must be admitted that as a nation we are quite reconciled to the wholesale destruction of infant life in our midst. That this high infant mortality is not due appreciably to the inherent weakness or infirmity of the babies at birth is recognised, for it is well known that weak mothers often bear healthy children, the

child thriving in the womb at the expense of the mother.

The medical profession now fully realises that by far the majority of preventable deaths which occur in infants and young children are caused directly and indirectly by injudicious feeding, due to the culpable, and even criminal, ignorance and neglect of mothers. It is incumbent on the community, if not on the State itself, to do something which will materially reduce this shameful waste of infant life.

Of late years a much more extensive idea has been conceived in the minds of men regarding the duty of the State towards the preservation of the health and lives of its citizens. Fortunately the old crude idea that the functions and responsibilities of a government ended in the collection of taxes and the maintenance of law and order is dead. A new era has set in, in which human health and life is being considered a valuable factor in political economy, with the recognition of the fact that the strength and power of a nation depends not so much on its material wealth, as upon the vitality and numerical strength of its population.

We have a right to expect that every healthy child born should have a fair chance to live to the proverbial age of three score and ten, and it is incumbent on the State and municipalities to see that their duty is so carried out that filthy courts

and alleys and dirty, narrow streets with congested populations are done away with by legal enactment. There should be a limit set to the population in a given area of land, and ill-ventilated, badly-drained houses should be things unknown. No doubt much has been done in this direction in the past by both legislatures and municipalities, but not enough; the poor have a right to be protected from adverse conditions of want, filthy surroundings, and ignorance of the laws of health.

A nation is made up of an aggregation of units, and only in the proportion that those individual units are vigorous and healthy can the nation be said to be strong. To a nation as to an individual, there is more in life than mere material wealth.

A disregard of infant life is a symptom of national decadence. Rome decayed in the midst of material wealth, and a marked feature in the fall of that Empire was the utter neglect of infant life and the frequency of infanticide. The scroll of history clearly points out that empires and nations have died more by internal decay than by external forces.

National ascendency must always rest with the most virile and capable race, so the naval and commercial supremacy of Great Britain is doomed if her sons are stunted in body, dwarfed in mind, and are in consequence no longer able to compete in the battle of life against a more vigorous race with sea-power

aspirations, whose paternal government protects its citizens from the cradle to the grave.

The political economist sees in the human life lost in infancy through preventable causes, a potential source of wealth and strength greater in value to the nation than all the gold obtained from the mines of the Empire. Dreadnoughts alone will not win the battles of a nation, and gold can at most but supply the means by which these engines of war are built.

Imperial press conferences may do much to disseminate and cheapen news, and so bind more closely the great family ties within the Empire; Imperial defence conferences may do still more to knit the Empire against Great and Greater Britain's foes; Budgets may be brought forth by any government in power, to adjust the incidences of taxation from the shoulders of the poor to those better able to bear the increased burden. These methods, though admirable in their way, will never alone provide the fighters necessary to win the coming Armageddon; and whilst statesmen and legislatures are debating the problem of how to retain the supremacy of the sea, Death—the conqueror—is silently, yet surely, doing his work amongst the infants and little children, dispossessing the nation every month of a small army of potential men and women. Imperial insurance can never be complete without sufficient Imperial sons; for mercenaries will never fight as those who fight for

home and country. If Britannia's young sons and daughters are allowed to die in the future at the same ratio as at present, then she must cease to "rule the wave," and the trident pass to a race more worthy to carry the honour and bear its responsibilities.

An attempt has been made in these pages to explain the causes of this excessive infant mortality, which is, in reality, a very serious national peril. There is a consensus of opinion amongst authorities that the two main factors responsible for the high infant mortality are (1) the substitution of bottle-feeding for suckling, and (2) maternal ignorance.

(1) BOTTLE-FEEDING

Amongst the upper classes the main factor in robbing the baby of his natural right, to be suckled by his mother, is the latter's excessive love of pleasure and amusement. The idea that social functions are of greater importance than the care of offspring is born of a false civilisation.

The father often has the same misconception of his duty, and encourages the mother in being false to her noblest function.

Bottle-feeding instead of breast-feeding is largely on the increase. No doubt some mothers, for various reasons, are unable to feed their babies from the breast, but they are exceptions, with the majority

this is not so. Amongst the poor, the necessity of many mothers going out to work often prevents breast-feeding, a condition which may be excusable to the individual mother, but certainly not to the State.

Unless an effective alarm is sounded to check the prevalence of bottle-feeding, it must follow that the mammary glands not used for several generations will, in the ordinary course of evolution, cease to perform their proper function and become atrophied. As the social cry is "back to the land," so the maternal cry should be "back to the breast," if we are to save ourselves from becoming a nation of milkless mothers.

Nature intended that babies should be fed on the milk of the mother, and that calves (not babies) should be fed on the milk of the cow. The human breast milk is not only the perfect food for baby life, but between each mother and her child there exists a relationship and affinity, which makes mother's milk peculiarly suited to the digestive and physiological needs of her own child, so that even a wet-nurse is not an efficient substitute.

The child being bone and flesh of the mother, the foregoing special relationship will be reasonably evident. This important fact is borne out by common observation that babies fed from the breasts of their own mothers not only thrive better, but their mortality is less than hand-fed or bottle-fed babies.

A striking example of the truth of this, even in a time of extreme distress and poverty, may be quoted. During the Franco-Prussian War, when Paris was besieged, the general death-rate in that city increased 100 per cent., yet that of infants was actually reduced by 40 per cent., because mothers were compelled to suckle.

If the high death-rate of infants is the price for the advantages of our so-called high state of civilisation, then this slaughter of the innocents, with all its accompaniments of sorrow and grief to the parents, expense to the community, and loss of manhood to the nation, is too high a toll to pay.

(2) MATERNAL IGNORANCE

Every woman entering into matrimony should be prepared to face the responsibilities of motherhood. To this end she should understand the general laws governing her own health and that of her prospective offspring. Unfortunately, this subject is not included in the education of most young women, and, as a consequence of a faulty educational system, the nation suffers owing to the high infant mortality already mentioned. We hear much of kindergartens to train the intelligence of young children; much of model institutions to train young women to become efficient domestic helps; but the most urgent problem of how to teach the coming mothers of the nation the art

of motherhood, with its duties and responsibilities, has not yet been solved by our reformers or by the State.

The principle of infant life preservation is one of the most urgent and pressing questions for the nation to grapple with. If the public conscience was thoroughly awakened to the importance of this question, public opinion would hold up to scorn a mother who lost her infant from any disease resulting from bad or improper feeding—such as stomach or bowel disease.

The difficulties which face every medical practitioner and nurse, when trying to instil into many women the principles attached to the vocation of motherhood, are appalling. Rational feeding, scrupulous cleanliness, proper clothing, good ventilation, adequate supply of fresh air and sunlight, are all subjects which demand the attention of every mother for the sake of her offspring. It is a common experience to find that instructions given by the doctor regarding the care of the child, the preparation of the food, the cleaning of the feeding-bottle, etc., are deliberately ignored.

There unfortunately seems to be an idea amongst a certain class of mothers that such details are unnecessary and irksome.

Their faith is pinned to a bottle of physic, which is expected to perform the miraculous. To lazy,

indolent women the ease with which medicine is given no doubt appeals to their idea of the fitness of things. For a doctor to visit and take a vast amount of pains in explaining details necessary to the preparation of a sick baby's food, or to insist on measures of relief being applied which entail care and attention on the part of the mother, and then go away without prescribing the miraculous bottle of medicine, may mean the dispensing with his services. They have no idea that a doctor's chief function is to advise, and not necessarily to write a prescription.

Allusion has already been made to irrational feeding setting up inflammation of the stomach and bowels in children, but there are other diseased conditions, which have their primary cause in defective diet, such as scurvy and rickets.

While the choice of food and its regularity in administration may be all that is desired, yet there may be that want of care and scrupulous cleanliness with regard to the feeding-bottle, etc., which will cause the food to ferment and set up that common disease of the mouth—thrush.

Chafed skin is a common result of the want of regularity in bathing the child and drying him well afterwards; while general neglect causes lice, itch, etc.

Ignorance of the requisite amount and quality of clothing for a young child frequently results in attacks of bronchitis, inflammation of the lungs, and

even rheumatism. It is not an infrequent experience to see a child very warmly wrapped over the body, and yet the lower limbs naked and blue with cold.

Light, open-wove, woollen garments should be always worn next the skin of a child.

The close confinement of a child indoors in a stuffy, ill-ventilated room, into which little or no sunshine penetrates, always leads to want of appetite, depressed vitality, undue nervousness, and anæmia.

This book, and others of its character, are written expressly for mothers who need instruction most. Yet we recognise that those who need instruction in these matters most are the ones who seek it least. It is an unhappy experience to feel that one is writing on behalf of all mothers and their babies, yet knowing that those who most need knowledge in such things will probably not take the trouble to peruse these pages.

To a medical man it is always a healthy sign to observe parents reading and studying on behalf of their charges. It signifies a desire to exert themselves for the welfare of their children.

SECTION I

THE FEEDING OF INFANTS

CHAPTER I

The Mother's Forethought

1.—General.

Many mothers who are unable to suckle their infants could do so if they but exercised forethought during the time of pregnancy. Throughout the whole period of that important experience the prospective mother should take especial care of her health and habits. Anything approaching a sedentary life must be avoided, and a fair amount of exercise in the fresh air taken daily—a walk of at least two miles per day. She should sleep in a well-ventilated bedroom and have a daily bath in tepid water. Many women find a plunge bath too great a shock; for these a sponge bath would be better.

Special attention should be given to the state of the stomach and bowels, for authorities are now agreed that indigestion and constipation have a great deal to do

with both the quality and quantity of the mother's milk. Her food should be simple, yet nutritious, and the meals taken at regular intervals. A fair quantity of cow's milk is recommended, and if there is any objection to it in liquid form it may be taken in custard or puddings. All foods rich in fats, over-cooked, highly seasoned, or of an indigestible character, should be avoided.

Alcohol in any form does harm. Regularity of the bowels is absolutely essential, and this is best obtained by the free use of fresh fruits, porridge, plenty of fluids, and open air exercise. Strong aperients must be avoided during the whole period of pregnancy, but there can be no objection to the *occasional* use of the enema syringe to keep the lower bowel open.

All things which tend to excite the nervous system should be avoided, such as late nights, irregular sleep, worry, social gaiety and the like. The wearing of corsets is to be deprecated, especially after the third month of pregnancy, for abundance of room must be given in the abdominal cavity for the proper development of the growing child. The use of corsets is always more or less associated with constipation, as the pressure exercised on the bowels and other abdominal organs prevents their natural play, and so impedes their functional activity. More particularly is this the case during the period of pregnancy, and anything approaching tight-lacing then greatly pre-

judices the vitality, and even the life of the coming child. No tight bands should be worn around the waist; an under bodice with buttons to which the under garments can be attached is recommended, so that their weight hangs from the shoulders.

2.—THE CARE OF THE BREASTS

During pregnancy tight clothing over the breasts is to be avoided. There is a form of corset which presses the breasts upwards in order to lengthen the appearance of the waist. Even though such a garment does not impinge on the nipples, it has nevertheless a very direct effect upon the secreting parts of the breasts. It is bad enough to wear such abominations at any time, but during the state of pregnancy the practice is morally culpable, for a prospective mother so doing is simply paving the way to bottle-feed her baby.

For a few months before the expected confinement attention must be directed to the condition of the nipples. If the nipples tend to be short, depressed, or badly shaped, they should be gently rubbed between the fingers and drawn out. This toughens and develops them, and so prevents cracking during nursing.

CHAPTER II

The Mother's Milk

It is very desirable that whenever possible the mother should suckle her own baby; it is best for the physical well-being of both the mother and the child.

For the mother.—Before birth the child is nourished in the womb, and the abdominal organs become temporarily enlarged and congested for the purpose of supplying that nourishment.

After the birth of the child these organs become reduced to their normal size, as their enlargement is no longer required. Nature provides for this, and in the process of suckling the excessive blood supply is then diverted to the breasts, which enlarge and take on increased activity. The nursing mother then resumes her normal figure.

When suckling does not take place the abdominal organs (womb chiefly) do not so readily become reduced in size, as there is not the same diversion of the blood, and consequently they are left in a more or less flabby state of enlargement. When the woman resumes her ordinary active life, the womb, in such condition, is

liable to become displaced or twisted, and set up no end of future trouble and expense—Nature's penalty for disobedience of her laws.

For the child. — The mother's milk is the only perfect food; and there can be no food, however scientifically prepared, which can compare with it in composition and suitability to the requirements of the infant. The child brought up on the mother's breast has a greater chance to thrive, and is not so liable to suffer owing to fluctuations in the quality of food as a bottle-fed infant.

In composition, human milk contains elements in different proportions to that of cows, or any other kind of milk, and as a baby's food is materially distinct in other ways.

The mother's milk has the following advantages over every other food:—(1) purity, (2) freshness, (3) even temperature (blood heat), (4) freedom from germs, (5) readily digestible, (6) suitability for nutrition and growth, (7) less work, and more healthy for the mother, and (8) suckling establishes a greater mother love.

When to put the Baby to the Breast. — Towards the end of pregnancy the breasts begin to secrete preparatory to the advent of the child. During the first two or three days after the birth of the child the composition of the mother's milk differs from that which comes afterwards. It then contains a substance

called colostrum, which acts as a mild and natural purge to the baby. It is desirable that the baby should get this purge, for at the time of birth his bowels contain a dark greenish substance (meconium) which is got rid of by the colostrum. It is therefore advisable that the child be put to the breast as soon as the mother has attained sufficient rest after delivery. Six to eight hours after birth is considered a reasonable time, but it should not exceed twelve hours. As the breast secretion is small in amount until the third day, it is not advisable that the child be put to the breast oftener than every four hours during the first two days.

During this period two to four teaspoonfuls of a solution of sugar of milk in boiled water ($\frac{1}{2}$ oz. to a pint) may be given after each attempt at suckling.

If the breast milk is delayed longer than the third day a larger quantity of a stronger solution of the sugar of milk and water (1 oz. to a pint) will require to be given. Persistent efforts to establish breast-feeding should not be given up for eight to ten days.

The advantages derived from putting the baby to the breast so early after birth are that the process of suckling stimulates the breast to secrete and the womb to contract earlier than otherwise.

After the third day, when the milk has become established, the baby should be put to the breast at regular intervals of three hours. This is contrary to

the old teaching, in which it was advocated that the baby should be put to the breast at various intervals ranging from one and a half to two hours. It is found that if a mother has a normal supply of milk, an interval of three hours between the baby's meals is by no means too long a period. Babies so brought up from the third day do remarkably well, and some German authorities advocate an interval of even four hours after the first month, and report good results following.

A baby's stomach requires rest as well as every other organ of the body, and three hours is considered a fair interval, to give the stomach sufficient time to digest the food and prepare to receive an additional meal. The advantages of three hours' interval are also apparent to the mother; it disturbs her less, and she can regulate precisely the hours of feeding without becoming confused. Thus if day feeding begins at 6 o'clock, the meal hours of the child will be 6, 9, 12, 3, 6, 9, or 10. During the night it will be found necessary to give the baby the breast only once, say about 2 o'clock. Thus the infant will have seven meals in the twenty-four hours.

When the baby is four months old, every four hours will be sufficiently often to feed him. Should the baby be asleep at the hour for feeding, it is advisable that he be wakened, so as to ensure perfect regularity.

By strictly adhering to the above rules, the baby

will be able to perfectly digest and assimilate all the nutriment in the milk, and consequently there will be a very remote chance of vomiting or diarrhœa. It is a common experience for the baby to cry between the intervals of feeding. A foolish mother, under the impression that the cry is one of hunger, will give the breast. For the moment the child is quietened, because his attention is diverted from the source of the trouble. This is a very unwise proceeding, and one which is bound to bring retribution to the mother. The baby cannot be hungry if fed regularly at the hour specified and the mother has a sufficiency of milk. The cause of the cry must be something else. Investigation will usually elicit the presence of a pin pricking, an insect biting, the binder too tight, the clothing uncomfortable, the diaper wet, cold feet or the like. The cry due to colic is characteristic, and can be studied under that heading.

If there is a copious supply of milk the infant should be put alternately to each breast, to save over-congestion and so avoid "a gathered breast." If there is only a small quantity of milk, then the baby may have both breasts at each meal.

The infant should not be permitted to go to sleep during suckling, and should be allowed a period of from ten to twenty minutes at the breast, but no longer. The sucking powers of babies vary, and if a child sucks too rapidly and so tends to hasten his meal, this

can be avoided by the mother gently pinching the nipple between her fore-finger and thumb. Rapid sucking tends to upset the child's stomach.

MIXED FEEDING

When the state of the mother's health is such that she cannot stand the strain of wholly feeding the child, it is advisable that the breast milk be supplemented by an artificial food, preferably humanised milk. Mixed feeding may also be resorted to while the mother is temporarily run down, and breast feeding resumed as the only food after she has recovered. The best plan is to suckle twice a day — night and morning — and use the artificial food throughout the day.

Whenever mixed feeding is resorted to the same rules must be observed relative to hours and regularity of feeding.

WEANING

This is recommended to be done at the end of the eighth month. If the mother is delicate the baby may be weaned two to three months earlier. The process should be gradual. At first the breast may be given as a meal alternately with cow's milk, bread and milk sops, barley-jelly, oat-jelly, and the like. Later the breast may be kept for night feeding alone, and by degrees given up altogether.

It is a great mistake to continue suckling much

beyond nine months, for the milk then becomes poor in quality and loses its nutritive value, and the child requires a more mixed diet than milk. If pregnancy takes place before the eighth month (a rare occurrence), then the child must be weaned at once, as the breast milk becomes affected.

UNHEALTHY MOTHERS

Women suffering from any constitutional disease, such as consumption, cancer, gout, rheumatism, skin diseases, or insanity, should never suckle their infants, no matter how much milk they have in the breasts.

WET-NURSE

When it is impossible, or inadvisable, for a mother to suckle her infant, then the best substitute is a wet-nurse. For those who can afford to employ a wet-nurse the following particulars will act as a guide in their choice. She should be between the ages of twenty and thirty, in good health and of sound constitution, free from any constitutional disease such as consumption, scrofula, and skin eruptions. She should have teeth free from decay, a clean breath, a good digestion, and her lunar periods must be absent. A country woman is to be preferred to a city dweller. It is preferable if she has suckled one or at most two infants before. If her own child is about the same age as the one she is to nurse so

much the better, otherwise she should not be engaged before a fortnight after her confinement, nor later than five months afterwards.

It is advisable that both breasts of the wet-nurse be carefully examined. They should be firm and pear-shaped, not large and flabby. The nipples should have no cracks, and be sufficiently long to be grasped well by the child. On gentle pressure of the breasts rich milk should exude from them—not pale, watery fluid. Enquiry should be made as to the health of her own babe, which must be free from skin eruptions, sore mouth, etc. There is no objection to the wet-nurse suckling both babies, as the quantity of milk usually increases with the demand.

The wet-nurse should be made to feel perfectly at home in her surroundings, and it need occasion no alarm if her milk falls off to some degree for a few days, as a result of her new environment, or in being separated from her own child. All things conducive to the nursing woman's health and comfort of mind are to be encouraged. Regular meals with a sufficiency of nitrogenous food and plenty of cow's milk should be supplied her, but highly-seasoned and rich dishes are to be denied. Over-feeding and causes of mental emotion are to be avoided. Alcohol in any form is bad, and the prevailing idea that porter, stout, or ale increases the milk supply is contrary to the opinion of the highest authorities on the subject.

CHAPTER III

Artificial Feeding

In order to thoroughly comprehend and appreciate the full significance and value of carefully preparing any kind of artificial food for an infant, the following remarks should be carefully read and well thought over.

Food essential for the growth and development of all young mammals must contain (1) Proteid materials, (2) Fats, (3) Carbohydrates, (4) Mineral Salts, and (5) Water. Milk not only contains all these constituents, but does so in the exact proportion necessary and suitable for the young of the animal from which the milk is obtained. But the milk of one species of animal is unsuited for the young of a different species of animal, for although all the ingredients mentioned above are contained in the milk of all mammals, yet they are present in very different proportions; the milk of the cow to suit the calf, that of the mare to suit the foal, and so on.

The digestive organs of the calf are stronger than, and of different construction to, those of a child, and

are capable of digesting food which is much too strong for a baby. As seen from Fig. 1, the calf has a four-chambered stomach, the whole capacity of which is very great compared to the small size of the baby's stomach, which can hold only one ounce (two table-spoonfuls) of fluid at birth without distention. The calf's stomach is fitted by nature to digest cow's milk,

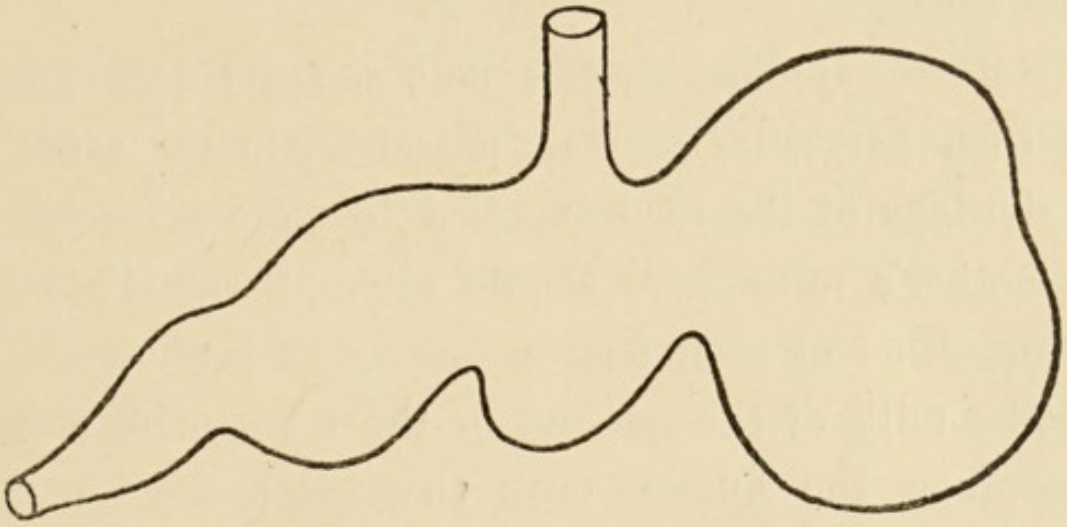


FIG 1.

but not so a baby's stomach. Cow's milk is admirably suited to the calf, in order to so develop its digestive powers that they may be fitted to deal with the natural food of its species—grass. If it were possible for a human being to subsist on the same food as a cow, we could understand the practice of feeding

babies on cow's milk. Even when the child seems to thrive on such milk, it is yet very probable that the foundation of future illness is laid owing to the strain imposed on the digestive and excretive organs (kidneys, etc.) in dealing with too strong and unsuitable a food. It is highly probable that many cases of kidney and liver disease of obscure origin are due to this cause.

Nature supplies what is best suited to the young of each particular animal; therefore, in the event of a shortage of the food supplied by nature for babies —mother's milk — we should attempt to imitate the composition of such food as nearly as possible.

The milk of the ass and of the mare more closely resembles the human milk than does that of the cow. There is less fat than in human milk, but the proportion of other ingredients is very similar. Goat's milk, on the other hand, contains too much fat.

The human milk is the perfect food of the child, and the whole difficulty of artificial feeding lies in the preparation of a food which will contain all the necessary ingredients in their proper proportions.

As in the majority of cases cow's milk is the basis of artificially prepared foods for infants, the following approximate table may be referred to in comparing the different compositions of human and cow's milk.

	Human Milk. Per cent.	Cow's Milk. Per cent.
(1) Proteids . .	1·5	3·5
(2) Fats (cream) .	4·	4·
(3) Carbohydrates (sugar)	6·5	4·5
(4) Mineral Salts .	0·2	0·7
(5) Water . . .	87·8	87·3
	100·	100·
Reaction—	Alkaline	—Acid
Microbes—	*Absent*	—*Always present*

1. The *Proteids* are the most important constituents of milk with which we have to deal. Human milk contains less than half the proportion of proteids found in cow's milk, and in a finer state of subdivision.

Moreover, in human milk about half of the proteid material will curdle (clot), but in cow's milk about four-fifths will curdle. In equal measured quantities of mother's milk and cow's milk, there will be by weight nearly four times as much curds obtained from cow's milk as compared with mother's milk. This is the reason why cow's milk is so well suited for making cheese, but so ill suited for infants' food when given unmodified. Under these circumstances it is easy to understand how difficult it is to successfully feed a baby on cow's milk.

As soon as the mother's milk is swallowed by the baby, the stomach ferment (rennin or rennet) acts upon it and forms curd. This curd is soft and mixed with the other constituents of the milk, and is thereby able to pass readily from the stomach into

the intestines of the child, where it is digested. Cow's milk, on the other hand, forming a tougher and much larger sized curd, is detained in the stomach for a longer period, and is unsuitable for digestion in the intestines. In a child the greater part of digestion

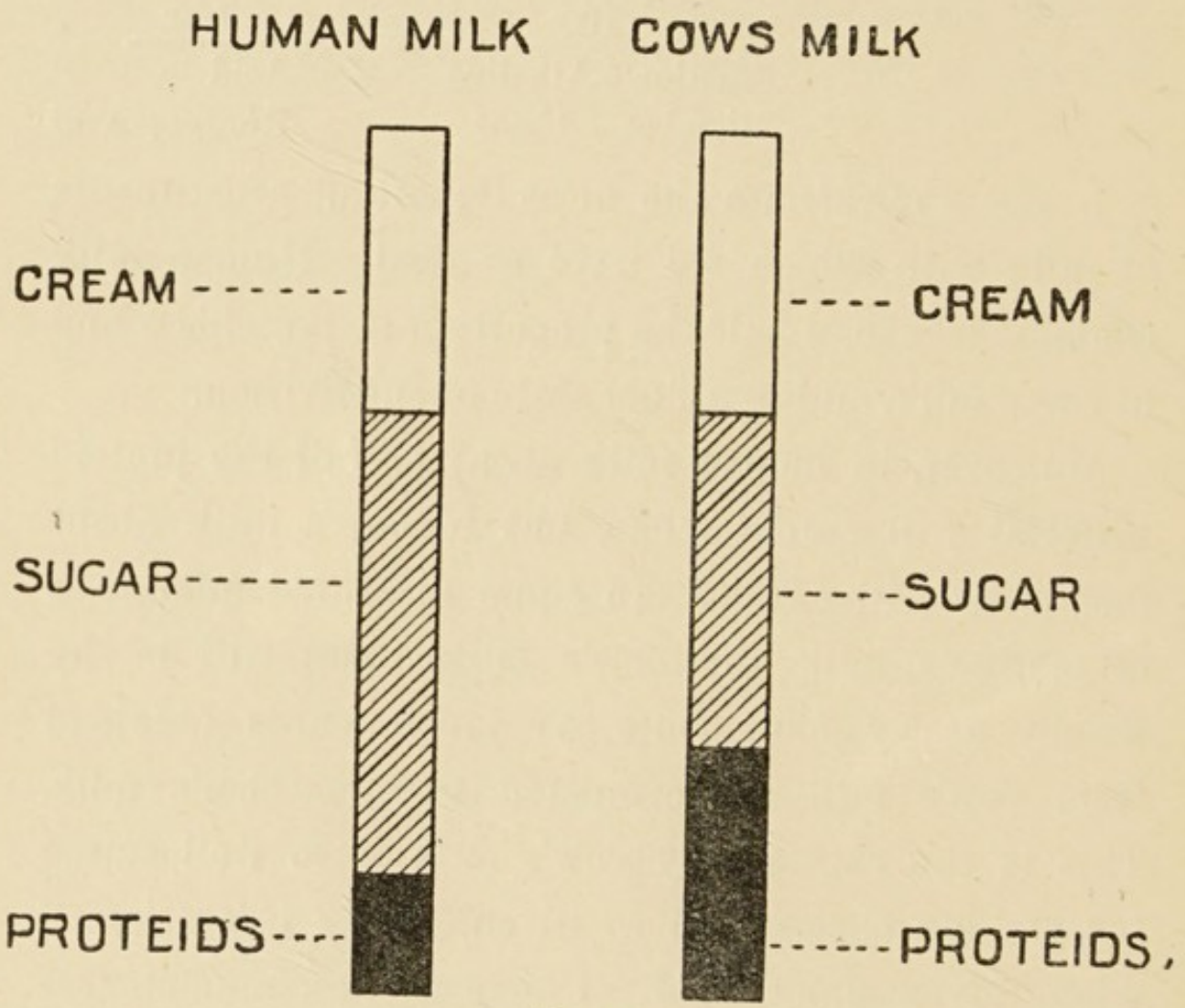


FIG. 2.

is performed by the intestines (bowels), and the above facts will make the reason more clear why indigestion and diarrhœa are so commonly associated together in infants and young children who are fed on cow's milk merely modified by the addition of water and sugar.

The proteid materials in food are of the greatest

importance in the diet of all, but especially in that of young and growing animals. They build up new tissues, repair old tissues and produce energy and heat. Nature has so arranged that the faster a baby animal grows the more proteid material is contained in its mother's milk. Thus a calf grows nearly three times as fast as an infant, and cow's milk contains nearly three times as much proteids as the human milk. (*See* Fig. 2.) When the body is denied sufficient proteids it wastes. Owing to the importance of the proteids as a constituent of babies' food, we desire to obtain them in any modified cow's milk, in the same proportion in which they occur in mother's milk; at the same time rendering them as readily digestible as possible. This is done by reducing the amount of proteid matter in cow's milk, and thus having less material to form tough, large sized curds.

2. *The Fats* (*Cream*). — Fat is present in the human and in the cow's milk in about the same proportion, but it is not identical in chemical composition. The fat of mother's milk is in a finer state of subdivision, and consequently is easier to digest.

In Jersey, Guernsey, and Alderney cows, however, the milk is too rich in fat, and the milk from these cows is consequently not so suitable for the infant feeding, as that from an ordinary herd of cows.

When cow's milk is poor in cream, it is also unsuitable for infant's food, as it then contains too little fat.

Fat is required in food for the growth of the bones and the production of body heat. When a child's food contains too little fat he will not thrive, and in most cases will develop the bone disease known as rickets.

This is the reason why infants brought up on farinaceous foods alone develop this disease, for these foods contain little or no fat.

3. *Carbohydrates* (*Sugar*). — A reference to the table will show that human milk is very rich in sugar compared with cow's milk. Hence the necessity for adding more sugar to cow's milk when used for babies' food. This sugar, however, is not the ordinary cane sugar used for domestic purposes. It is sugar which is extracted from cow's milk. It is obtainable from most chemists, and should always be used in the preparation of infants' food.

Carbohydrates are required for the production of heat and energy, of which they are the chief source.

4. *Mineral Salts.* — Although they are greatly in excess in cow's milk, yet for practical purposes this is of little consequence.

Mineral salts are necessary in the development of bone and teeth.

5. *Water.*—Both human and cow's milk consists of one part of solids to six parts of water by weight. It is important to remember this fact when we treat of diluted cow's milk as food for the baby.

The water keeps the food elements in a state of

solution and renders them digestible. The water is again serviceable in enabling the body to get rid of its waste products by the skin and kidneys.

Other Differences. — Mother's milk is slightly alkaline in reaction and is free from microbes; cow's milk is acid in reaction, and always contains a large number of microbes, even when fresh from the cow. If kept for any length of time cow's milk becomes sour by the action of these microbes, and is then unfit for use.

Mother's milk, having the correct proportion of fat (cream) in its composition, is not liable to induce constipation in the child. With cow's milk, on the contrary, the greatest care has to be taken in order to avoid constipation.

Cow's milk, in a modified form, is the food used in feeding the vast majority of artificially reared infants, not because it resembles the human milk more closely than that of other animals, but because it is easier to obtain.

The use of cow's milk as a substitute for the mother's milk has been in vogue for centuries, but it has always been used in a haphazard, modified form —usually diluted with plain water, barley water, or lime water, and cane sugar added.

This method of preparing infants' food has been blamed by authorities for a great amount of the sickness and resulting high mortality amongst hand-fed babies.

In using cow's milk for infant feeding, it is obvious that the nearer we can get its composition to resemble the human milk the more likely it is to agree with the baby. This is done by getting rid of most of the indigestible curd in cow's milk, diluting with water and adding cream and milk sugar; while the acidity is corrected by the addition of lime water, and the microbes are killed, or rendered harmless, by heating the milk to a certain temperature. It is then known as Humanised Milk, or Artificial Human Milk.

CHAPTER IV

Humanised Milk

Humanised milk is now prepared and sold by large dairying companies in various cities in England and America. For those living in remote country districts, and especially for use in hot climates, however, it is advisable that the mother or nurse be able to prepare it at home.

There are many recipes for the preparation of humanised milk, but after submitting a few to practical tests, the writer is of opinion that those recommended by Dr Truby King of Seacliff, N. Z., who has made a special study of the subject, are the best.

With Dr King's kind permission these recipes are embodied here, and the author acknowledges his indebtedness for the general instructions to be observed throughout the period of artificial feeding with humanised milk.

PREPARATION OF HUMANISED MILK

In the preparation of humanised milk the following articles are required :—

1. *A Milk Thermometer.*—This is of the utmost importance in order to accurately test the temperature of the milk during the process of preparation.
2. *A Pint Measure.*—This must be marked in ounces and half-ounces, and an enamelled one is to be preferred. If unobtainable so marked, it will be necessary to procure from a chemist a four-ounce glass measure.
3. *Sugar of Milk.*—This is extracted from cow's milk, but is identical with the sugar contained in mother's milk, and can be procured from any chemist.
4. *Rennet Tablets or Rennet Extract.*—This is used for the purpose of preparing whey.
5. *Lime Water.*—Obtainable from any chemist.

In order to make sufficient humanised milk to last for twenty-four hours, obtain daily a quart (40 ozs.) of good quality, perfectly fresh, cow's milk.

On receiving this daily supply, strain through several layers of fine muslin or cheese-cloth (previously washed and kept for this purpose) into a tall narrow jug. Cool the milk rapidly by standing the jug in very cold water, or in a running stream, for half an hour then cover the jug with a piece of muslin, in order to exclude dust, and keep it for eight hours in a cool chamber, preferably outside the house. A portable

safe made of perforated zinc, that can hang in a cool place out-of-doors, would do admirably for keeping the milk in. In hot weather six hours will be long enough to keep the milk in the cool chamber.

After the milk has stood for six or eight hours the upper fourth (10 ozs.) is very carefully ladled off. The ladle must be dipped in hot water immediately before use, in order to prevent the cream adhering to it. It consists of a mixture of milk and cream, and is called the "top-milk." This is ingredient No. 1 of our humanised milk.

Next, after the removal of the top-milk, we use the skim milk which is left over. Take 18 ozs. of this skim milk and heat it in the following manner:— Fill a saucepan three parts full of water and place a pad formed of cotton cloth, or a piece of towel in the bottom; place the jug containing the skim milk on this pad, and set the saucepan on the fire and heat until the milk reaches the temperature of 105 to 110 degrees Fahr. The temperature must be taken in the centre of the jug, so that the thermometer does not touch the sides.

Now remove the saucepan from the fire and stir one crushed rennet tablet, or one teaspoonful of the best rennet extract, into the milk, and allow it to stand for three minutes, when a firm mass (curd) will have formed. Break up this curd thoroughly with a fork and then return the saucepan to the

fire, heating until the fluid contents of the jug reach the temperature of 155 to 160 degrees, at which temperature it is kept for five minutes. The curd should now have sunk in a lump to the bottom of the jug and the whey is poured off. The curd is discarded. The whey amounts to about 12 ozs., and is ingredient No. 2 of our humanised milk.

To the whey is now added two tablespoonfuls of sugar of milk, three tablespoonfuls of lime water, 6½ ozs. of hot, previously boiled water, and lastly the top-milk.

The whole of these ingredients are now heated in the covered jug in the same manner as directed for heating the skim milk, to a temperature of 155 degrees, at which temperature it must remain for ten minutes. The humanised milk is now made.

Summarised we have the following:—

"Top-milk"	10 oz.
Whey	12 „
Lime Water	1½ „
Sugar of Milk	1 „
Boiled Water	6½ „
TOTAL . .	30 oz.

The sugar of milk being in solution makes practically no difference to the volume.

The jug containing the humanised milk is now loosely covered as before to exclude dust, and kept in ice-cold, running water or several changes of cold

water for half an hour, after which it should be placed in a cool, airy, out-door safe, and drawn from as required.

Humanised milk so prepared approximates in composition to mother's milk as closely as it is possible to obtain by any artificial means at our disposal in the home; it is practically identical in percentages to that in the table on page 27 under Human milk.

As already stated, there are many recipes for preparing humanised milk, but it should be definitely understood that the term *Humanised Milk* cannot apply to any preparation of cow's milk (1) which is subjected to a process of heating much above 160 degrees Fahr., or (2) in which the excess of curd, as compared with mother's milk, is not removed.

Prolonged heating above the temperature mentioned destroys certain healthy ferments, which are conducive to the baby's physical needs. The excess of curd in cow's milk not only adds to the child's food an unnecessary quantity of proteid matter, but also renders the milk indigestible.

Diluted cow's milk, to which cream and milk-sugar are added, cannot be termed humanised milk, notwithstanding what is often said and written to the contrary.

When used in the feeding-bottle the humanised milk should be brought to blood-heat (100 degrees) by immersing the bottle in warm water.

In cool weather the humanised milk will keep for more than twenty-four hours, but during hot weather it is advisable after twelve hours to re-heat for ten minutes any remaining portion to 155 degrees, and then cool rapidly.

When humanised milk is left standing the cream rises to the top. It is therefore necessary to stir the whole quantity when taking each feed from the day's supply, otherwise the proportion of fat will be unequally distributed in the feeds.

Humanised milk is very easy to prepare if these directions are accurately followed, but in order to ensure success the thermometer must be used to gauge the temperature; guesswork in this respect spells failure.

ERRORS COMMITTED IN MAKING HUMANISED MILK

1. In the making of whey it sometimes happens that a mother does not use the thermometer to ascertain that the skim milk has attained the right temperature (105 degrees Fahr.), but merely tests it with her hands. This guessing is ruinous to humanised milk, for if the skim milk is heated much above that temperature and the rennet then added, the higher temperature kills the rennet, and then no curdling can take place. As a rule the rennet gets the blame, not the careless nurse.

2. Occasionally complaints are made that curdling

occurs when the whey and "top-milk" are added together. This will not happen when the whey is heated to the correct temperature of 155 degrees before adding the other ingredients, for then all the rennet is killed and further curdling cannot occur.

3. When the skim milk is found not to curd at the temperature of 105 degrees Fahr. after good rennet has been added, there is every likelihood that some chemical preservative has been added to the milk before delivery, for the purpose of "making it keep."

INSTRUCTIONS FOR FEEDING FROM BIRTH

It is not advisable to begin giving the baby humanised milk until the third day after birth. During the first two days of life he should be treated as follows:—

The baby should be put to the breast six to eight hours after birth (not later than twelve hours) for the purpose of stimulating the secretion of milk. Afterwards an attempt at suckling is to be made every four hours.

If there is no milk in the breast it is advisable to give the baby two to four teaspoonfuls of a solution of sugar of milk ($\frac{1}{2}$ oz. to the pint of boiled water) after each attempt at suckling. This treatment is continued until the third day after birth, when, if there is still not sufficient breast milk, feeding with weak solution of humanised milk should be commenced.

DETAILS REGARDING STRENGTH OF FOOD

From Third to Seventh Day.—One part humanised milk to two parts 5 per cent. sugar of milk solution (1 oz. to the pint of boiled water).

First to Second Week.—Equal parts humanised milk and sugar solution.

Second to Third Week.—Two parts humanised milk to one of sugar solution.

Third to Fourth Week.—Three parts humanised milk to one of sugar solution.

Fourth Week to Ninth Month.—Humanised milk undiluted.

As the baby fed on humanised milk grows older he is able to take a larger quantity at a meal. (*See* Feeding Table).

As a breast-fed baby gets older, increased secretion of milk takes place in the mother's breasts, but while the quantity is greater the quality practically remains the same up to the later months of suckling.

Thus, in using humanised milk as the baby's sole food, during the early months of baby life, we imitate nature's method.

At the end of the fourth or fifth month, if the child's digestion be good, half an ounce of cow's milk may be added to the daily supply of humanised milk before heating.

From the fifth to sixth month, add to the day's supply 1 oz. of cow's milk.

From the sixth to seventh month, add to the day's supply 2 ozs. of cow's milk.

From the seventh to eighth month, add to the day's supply 3 ozs. of cow's milk.

From the eighth to ninth month, add to the day's supply 4 ozs. of cow's milk.

From the ninth to ten month, add to the day's supply 5 ozs. of cow's milk.

INFERIOR COW'S MILK

The proportion of fat varies considerably in cow's milk, according to the season of the year, the quality of the herd of cows, and the nature of their feed. In some towns the milk may be very poor in cream. When such is the case it is advisable to make the whey for the humanised milk from new milk, instead of using the skim milk from which the "top-milk" has been removed. "Whey made from new milk contains about a third of the fat of the milk; whey made from skim milk contains little fat; whey made from separated milk contains almost no fat."

QUANTITY OF FOOD FOR THE BABY

Having outlined the quality of food which should be given to the baby, it is now advisable to consider the quantity. The method usually adopted by many mothers is to put a fairly large amount of food in the baby's bottle and allow him to take his fill.

This haphazard way, as a rule, gives rise to a great deal of trouble. Almost invariably the child overfeeds, with the result that either vomiting of the whole, or part, of the food takes place, or else restlessness, flatulence, or diarrhœa, is set up.

The only reasonable method is to consider the capacity of the child's stomach, and then to give only the quantity of food which that organ will comfortably retain.

At birth the child's stomach is remarkably small, and is capable of only holding 1 oz. (2 tablespoonfuls); at three months, 4½ ozs.; at six months, 6 ozs.; at twelve months, 9 ozs. (Holt.)

Hence it is obvious that larger quantities of food than the stomach can readily retain, without dilution, must be harmful to the child.

Reference to the feeding table at the varying ages of the child will, therefore, be a good guide to the mother.

HEALTH AND WEIGHT

A perfectly healthy child should steadily gain in weight during the first year of life. When such is not the case he is overfed, underfed, or otherwise indiscreetly fed; or else the child is diseased. It is not necessary, nor yet is it advisable, that the baby be weighed frequently, for a slight variation in weight from day to day is quite compatible with

health. The baby, however, may be weighed once every month, when a substantial increase in weight should be observed. The weights of healthy babies, like the weight of healthy adults, vary, and those given in the accompanying table are average weights.

A baby may weigh much heavier than the average and be unhealthy; while he may be slightly lighter and be quite healthy.

The following feeding table is a guide as to average weights, hours of feeding, quantities of food at different ages, etc. Slight modifications in the quantity of food may be required to suit individual cases.

INFANT FEEDING TABLE

	Average weight at end of period.	Age of Baby.	Interval between meals per day.	Number of night feeds.	Quantity at each meal.	Number of ounces for 24 hours.
			Hours.		Ounces.	
1.	7 lbs.	1st day	4	1	½ - ¾	3-4½
2.		2nd day	4	2	¾ - 1	5-7
3.		3rd to 5th day	3	2	1¼ - 1½	10-12
4.		5th to 7th day	3	1	1½ - 2	12-14
5.	7½ lbs.	7th to 12th day	3	1	2 - 2½	14-17
6.	8½ lbs.	2 to 4 weeks	3	1	2½ - 3½	18-24
7.	12¼ lbs.	1 to 3 months	3	1	3½ - 5	24-30
8.	15 lbs.	3 to 5 months	3	0	5 - 6½	30-36
9.	18 lbs.	5 to 9 months	4	0	6½ - 8	36-40
10.	20½ lbs.	9 to 12 months	4	0	8 -10	40-50

The day feedings begin at 6 A.M. and end at 9 or

10 P.M. If a baby is premature, weak, or much below the average weight at birth, the intervals of feeding may be reduced to two or two and a half hours, according to the condition of the child; in such a case slightly smaller quantities must be given at each feed.

Under no circumstances must a baby be fed oftener than every two hours however weak he is.

OBJECTIONS RAISED AGAINST HUMANISED MILK

Some will say it is a tedious method, and not likely to be efficiently carried out by lazy and indifferent mothers.

Though it does entail a certain amount of care in its preparation, yet this must be said of all other known methods in modifying and preparing infants' food. The preparation of the day's supply only takes about twenty minutes. The little study given to fully understanding the principles laid down, and the time devoted to following out the details involved in the preparation of humanised milk, will well repay a mother who has the sincere regard of her baby at heart.

Any thought and time spent in preparing humanised milk will be amply rewarded in preventing sickness of the infant, consequent anxiety, and the saving of doctors' and chemists' bills.

CHAPTER V

Other Methods of Using Cow's Milk

1. Dilution with Water and Addition of Cream

The method hitherto adopted by the majority of mothers for the rearing of their artificially fed infants has been mere dilution of cow's milk with water, and the addition of an indefinite quantity of cane sugar.

As pointed out in our examination and comparison of the human and cow's milk, we found both these milks contained approximately the same proportion of water to the solid constituents, *i.e.*, about six parts water to one of solid. What then is the reason for adding more water to cow's milk when it already contains the same proportion of water as mother's milk? The reason is that by adding water, the proportion of curd-forming material (proteids), so very high in cow's milk, will be lessened.

It must, however, be obvious that mere dilution with water will also reduce the proportions of the other ingredients in the cow's milk, *i.e.*, the fat, sugar, and mineral salts.

This is the very reason why diluted cow's milk is unsuitable for infants' food. Dilute the cow's milk as we may, the tough curd principle which it contains is still present to some extent; and as it is retained in the child's stomach for a longer period than the curd of mother's milk, or that of humanised milk, the liability to digestive disturbance is materially increased.

Even though a sufficiency of milk sugar be added to diluted cow's milk to compensate for the small amount of sugar contained therein, yet the necessary fat element will still be far below its proper proportion when compared with breast milk.

To supplement the fat element and so make the mixture approximate more nearly to the standard of mother's milk, all that is necessary is to add some perfectly fresh, separated (not clotted) cream to the daily supply of food as indicated further on under "quantities used." The small addition of cream has the following advantages:—(1) It assists digestion of the babies' food; (2) it prevents the tendency to chronic constipation, which is so common in babies brought up on diluted cow's milk; (3) it aids in the growth of bone and the production of heat.

The proportion recommended to be given to a baby during its first two weeks of life is one part of cow's milk to two parts of water; for the next month, two parts of milk to three parts of water; then up to the

end of the third or fourth month equal parts milk and water; beyond that a gradual increase in strength, until at the eighth month two parts milk to one part of water are given. When cow's milk is diluted to such an extent as with three or four times its bulk of water, it makes a very undesirable mixture indeed; in reality, a child fed on such a mixture is being slowly starved.

Barley Water is often used instead of plain boiled water for diluting cow's milk, and although this may make it slightly more digestible, yet as barley water contains no nourishment for a baby, such a mixture cannot make the milk more nutritious. Barley water is a diluent, and as such suspends the curd in a loose mass, hence the reason of its use; barley water does not keep well, and should always be made fresh.

Lime Water is frequently added to cow's milk, and having the advantage of being a milk alkali, it tends to counteract the acidity of the milk. About one part of lime water is usually added to nine parts of milk (diluted). As it has a mild astringent effect on the bowels, the quantity of lime water may be increased during an attack of diarrhœa. For preparation of lime water see Appendix.

Bicarbonate of Soda (baking soda) may be used instead of lime water, especially when there is a tendency to constipation. A solution is made of 30 grains (half a teaspoonful) of bicarbonate of soda to

the pint of cold boiled water, and the same quantity of this solution used as in the case of lime water.

Sugar.—This should always be sugar of milk, and one tablespoonful to the pint of milk and water is about the correct quantity. When sugar of milk cannot be obtained, good white cane sugar may be substituted, but a smaller quantity must be used. Brown sugar must be avoided, as it causes indigestion and griping.

HOW TO PREPARE THE FOOD

The daily quantity of food should be prepared every morning; this is not only a saving of time, but it also ensures less variation in the mixture.

When the required quantity of milk is obtained, it is strained through several folds of cheese-cloth or fine muslin, the necessary quantity of water, cream, and sugar of milk added, and the mixture heated merely to the boiling point. It is then rapidly cooled by being placed in a clean jar, covered with two or three thicknesses of muslin, and is then stood in a dish of cold water or in a running stream.

Cold boiled water may be added to the required quantity of milk, and the milk not heated at all, under the following favourable conditions:—(1) In country districts where it is known that the dairy herd is absolutely healthy; (2) in cool weather; (3) when the child's digestion is good and the raw milk agrees

with him; (4) when used within twelve hours of milking.

Heating to boiling point should always be resorted to in (1) city supplies; (2) in infants with weak digestion; (3) in hot weather; (4) when doubt exists regarding the health of the cows; (5) in epidemics of diarrhœa, diphtheria, scarlet fever, and typhoid fever.

Skimmed or stale milk must never be used for a baby.

QUANTITIES USED

First Fortnight.—¼ pint fresh milk, ½ pint of water, one dessertspoonful of fresh separated cream, and a tablespoonful of milk sugar. Two to four tablespoonfuls of this mixture is put into a properly prepared feeding-bottle, and this is warmed to blood-heat by placing the bottle and contents into warm water. This amount is given every three hours during the day to a healthy baby; every two to two and a half hours to a premature or weakly infant, when in the latter case a less quantity than three tablespoonfuls will be sufficient. During the night (10 P.M. to 6 A.M.) two feeds only.

Two Weeks to Two Months.—½ pint milk, ¾ pint of water, two tablespoonfuls of fresh separated cream, and a tablespoonful of milk sugar. Give at each feed five to six tablespoonfuls every three hours daily. One feed only during night.

Third to Fourth Months.—¾ pint milk, ¾ pint of

water, three tablespoonfuls of fresh separated cream, and a tablespoonful of milk sugar. Eight to nine tablespoonfuls every four hours. One feed during night.

Fifth to sixth months.—1 to 1¼ pints milk, ¾ pint water, three tablespoonfuls of fresh separated cream, and a tablespoonful milk sugar. Ten to twelve tablespoonfuls every four hours. No feed during night.

Seventh to Ninth Months.—1½ pints milk, ¾ pint water three tablespoonfuls fresh separated cream, and a tablespoonful milk sugar. Twelve to fifteen tablespoonfuls every four hours. No feed during night.

The foregoing quantities of ingredients are not to be taken as the total daily amount, but only as the proportions in which they are to be mixed.

After the ninth month other foods may be gradually introduced, such as oat-jelly, rusks, stale bread, toast, bread and milk sops, etc.

As before mentioned barley water, lime water, or bicarbonate of soda, may be added to the above daily mixtures when necessary.

DILUTED COW'S MILK NOT RECOMMENDED

The mother or nurse is not to mistake the writer's intentions regarding diluted cow's milk. The reason for going so fully into details regarding its use is that we realise that objections will be raised by the majority of womankind to the introduction of any innovation in matters pertaining to the care and feed-

ing of babies, especially when such innovation involves a little extra care and attention, so in order to make the best of the circumstances we have described the most suitable method of using diluted cow's milk.

Until the average woman is aroused to her responsibility as a mother, a great many women will still take the line of least resistance, the path of ease, laziness, and slipshod methods, forgetful of the adage that "to take trouble is to save trouble."

Old habits, whether in the individual or the nation, are difficult to break, and prejudice dies hard.

2.—STERILISATION OF COW'S MILK

Sterilisation of milk has been designed to meet the objections that cow's milk is so liable to contain the germs of infectious diseases, especially those of tuberculosis, typhoid fever, and scarlet fever. It consists essentially in heating milk to the boiling point for over an hour to destroy germ life, hermetically sealing the vessel in which it is contained, and then submitting it to rapid cooling.

Sterilisation has the following objections:—(1) It requires a special apparatus, which is more or less expensive; (2) although germ life may be destroyed by sterilisation, yet alterations take place which reduce the value of the milk as a nutritive agent to the child; (3) the milk so treated is said to lose its scurvy-preventing power.

Milk hermetically sealed and thoroughly sterilised will keep fresh for many weeks. Therefore, for use on long journeys, or ocean voyages, sterilised milk is invaluable, but its continued use is not recommended.

Sterilisation of milk is a safe method to be employed during epidemics of diphtheria, scarlet fever, and typhoid fever.

3.—BOILING OF COW'S MILK

This is understood to mean the mere bringing of milk to the boiling point, and then rapidly cooling. While it cannot be said to entirely destroy all germ life, yet it does not affect the quality of the milk as a food to the same extent as sterilisation.

It is advisable not to use an open pan for boiling milk, as it is then apt to get burned and contaminated. If a porcelain-lined double saucepan is not available, the next best thing is to put the milk into a scrupulously clean jug, cover loosely with muslin, then place in an enamelled saucepan three parts full of cold water, place on open fire or hot stove, and let boil for a few minutes to bring the milk to boiling-point. It is advisable to place a small pad of cotton or linen cloth in the bottom of the pan in order to prevent breakage of the jug. The milk should be perfectly pure and fresh, not skimmed or separated. Sour milk, or milk even slightly tainted, cannot be rendered fit for infants' food, no matter how boiled.

4.—PASTEURISING COW'S MILK

This consists in heating the milk for twenty or thirty minutes to a temperature considerably below boiling-point (150 degrees - 160 degrees Fahr.). New milk contains healthy ferments, the destruction of which, as in sterilisation, lowers its food qualities.

Pasteur introduced this method, which bears his name, with the object of rendering inert the microbes of disease, while at the same time preserving the healthy ferments.

Unfortunately, it is found that the temperature which will render the microbes of disease inert will also destroy the beneficial ferments in milk.

Pasteurisation has also the following disadvantages: —(1) It gives to the milk a slightly disagreeable taste and smell, and makes it therefore less palatable; (2) a special apparatus is required.

Comparison of Sterilisation, Boiling, and Pasteurisation.—The middle method, *i.e.*, boiling the milk, is the most commendable, for although it slightly lessens the value of milk as a food, it does so to a far less extent than sterilisation. Boiling destroys most germ life of disease, and has the advantage over pasteurisation in not affecting the taste or smell of the food. The method is simple and inexpensive, as it requires no special apparatus.

THE AUTHOR'S HYGIENIC MILK JUG

The necessity of ensuring a pure milk supply uncontaminated by germs of disease, is engaging the attention of public health authorities in all countries, with the result that stringent measures are being enforced to

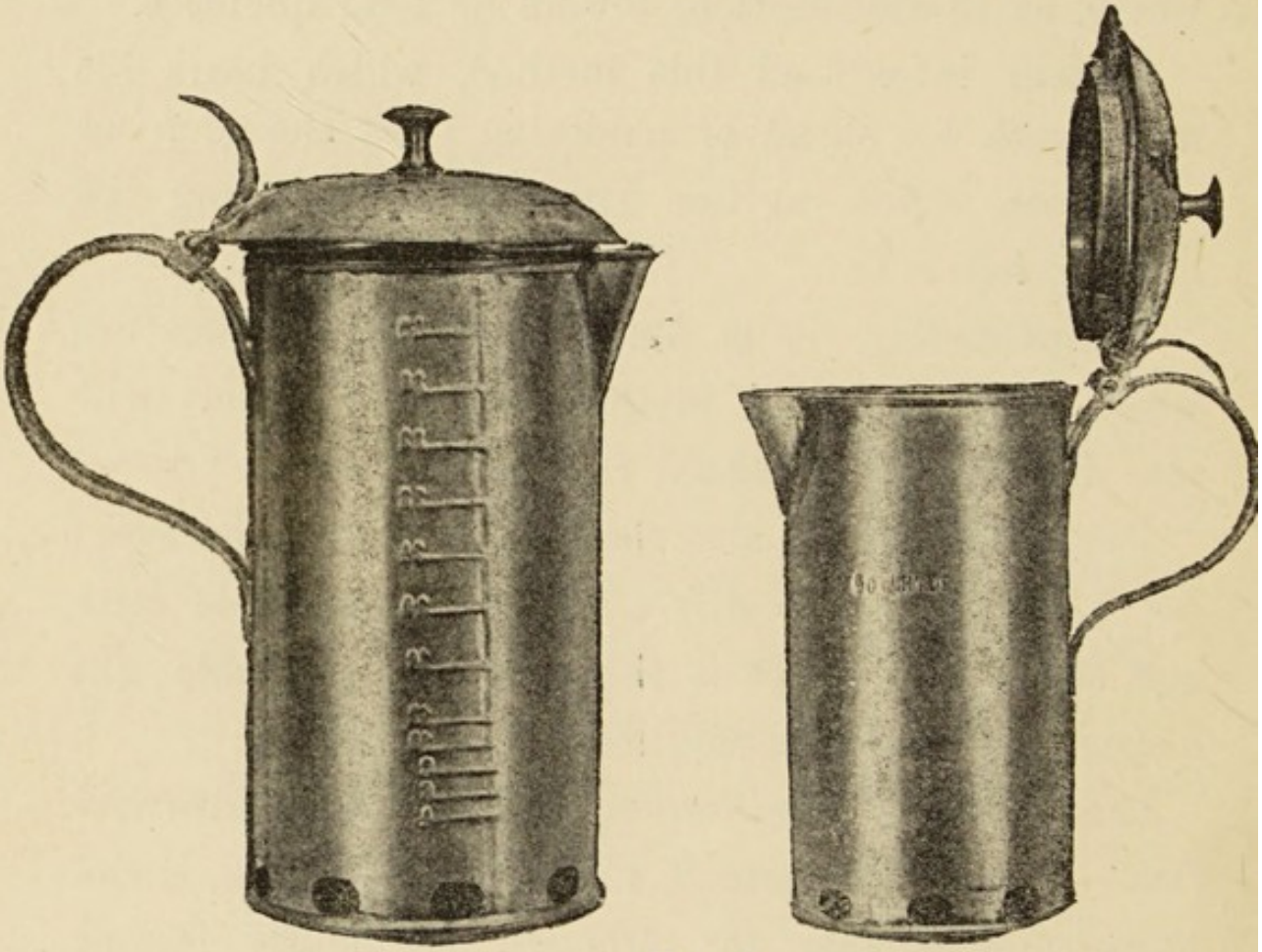


FIG. 3.

(*a*) Jug—lid closed. (*b*) Jug—lid open.

ensure that the consumer receives a milk of comparative purity.

The consensus of opinion among Medical Officers of Health of the highest reputation, as shown by their reports, is that contamination of milk with germs of such diseases as typhoid fever, diarrhœa, and dysentery

usually takes place in the consumer's home; thus counteracting the efforts made to ensure a pure supply and rendering them ineffective.

One authority, Dr M'Cleary, Medical Officer of Health, Battersea, London, says:—"In diarrhœa, the most fatal of the milk-borne diseases, contamination takes place chiefly in the home of the consumer."

The importance of these conclusions will be evident when it is stated that diarrhœa and allied diseases account for 25 per cent. of the infant mortality; in other words, 30,000 infants under one year of age die every year from diarrhœal diseases in England and Wales alone.

In order to supply the need of a utensil which will keep milk free from dust and flies, while at the same time permitting access of fresh air to the milk, the author has invented the Hygienic Milk Jug.

The upper part of the lid is perforated with small holes to allow ventilation and the escape of steam when the jug is being used either for pasteurising or boiling milk. The projecting rim of the lid prevents dust falling on these perforations, and also protects the junctions of lid and jug, and lip and jug. There is a false bottom to the jug the rim of which is pierced with larger holes for the purpose of allowing the free circulation of water, while the milk is being pasteurised or boiled. The body of the jug not being in direct contact with the saucepan, there is no risk of the milk being burnt.

Instructions for use.—The milk can be received direct from the source of supply into the jug, although in some cases it may be necessary to strain the milk. The lid is then closed and kept in position until the milk is wanted for use. If it is desired to pasteurise the milk, the jug is put into a pan of cold water reaching within one-third of the top of the jug, and placed on the fire, and the water allowed to boil for about ten minutes. If boiling the milk is required, the water in the saucepan is kept boiling for over half an hour. Throughout the whole operation it is unnecessary to remove the lid, and the jug can then be removed from the pan and kept in a cool place until wanted.

The Hygienic Milk Jug has the following advantages:—(1) Freedom from contamination by flies and dust; (2) free ventilation to milk; (3) can be used to pasteurise or boil milk without the need of passing the fluid from one vessel to another; (4) No risk of the milk being burnt or "boiling over"; (5) Less work—no other utensils required, thus avoiding the possibility of contamination from other food utensils.

5.—PEPTONISED MILK

Milk submitted to a process of artificial digestion before being given as a food is known as peptonised or predigested milk. Food so prepared relieves the stomach of a great deal of work, and is very suitable

for a delicate child, or one suffering from dyspepsia. A healthy child, however, should not be fed for any length of time on this preparation, as it interferes with the normal functions of digestion, which become improperly developed from lack of normal usage. A child fed on it for any length of time is also apt to get an attack of scurvy.

The subject of peptonised milk will be further discussed in the second portion of the book.

6.—CONDENSED MILK

Condensed milk is manufactured from cow's milk by a process of heating and evaporation, in order to remove a large portion of the water, usually about one-third.

To some brands cane sugar is added, so that we get the sweetened and unsweetened varieties. The former, having sugar as a preservative, keeps better.

Advantages of Condensed Milk are:—(1) It is readily procured and prepared; (2) its convenience when travelling, as in the case of a long sea voyage; (3) as an emergency when anything goes wrong with the supply of cow's milk; (4) it forms a looser curd than that of fresh cow's milk, and is usually to some degree sterile, and consequently more easily digested.

Disadvantages of Condensed Milk are:—(1) Defective composition. It contains too little fat. The sweetened variety contains too much cane sugar, and

in consequence is apt to set up fermentation during digestion. (2) Accuracy in diluting is found difficult, a teaspoonful being a very varying quantity. (3) Though babies fed on condensed milk become fat, yet they are pale and anæmic, and show little stamina in resisting attacks of disease. (4) Long, continuous feeding on this milk tends to produce rickets and scurvy.

When condensed milk must be used for any length of time, it is advisable to give the child a little orange or lemon juice twice a day between meals to counteract the tendency to scurvy.

The Nestle, Anglo - Swiss, Milkmaid, and Viking brands, are all good samples of condensed milk manufactured from whole cow's milk, the last mentioned being unsweetened. Each tin contains instructions for use, but when used for infant feeding the dilution recommended is an average teaspoonful to six or eight tablespoonfuls of water, according to the age of the child. It is well to begin with a weak solution, and gradually increase the strength.

It cannot be too earnestly impressed upon mothers to avoid the use of condensed milks which are prepared from skim milk, as they contain no cream, and are therefore useless for the development of the child's frame. There are several of this class of condensed milks in the market.

CHAPTER VI

Proprietary or Patent Foods

Proprietary foods vary greatly in composition, but for our purpose they may be conveniently divided into two large groups.

(1.) *Milk Foods.*—Those prepared from condensed cow's milk with certain additions or alterations. This group of foods is ready for use on the addition of water. They contain too little fat and proteid matter, and an excess of sugar. A few of them contain starch.

(2.) *Farinaceous Foods.*—Those prepared from cereals (wheat usually), and in which starch is present in one form or another. As a group they also contain too little fat and proteid matter, and an excess of sugar. They require the addition of milk before use.

When compared with the ideal standard of infants' food (human milk), all proprietary foods are put completely in the shade. In composition, adaptability to the needs of the infant, material necessary for the proper growth and development of the child, these foods are much inferior even to properly altered cow's

milk. An infant fed continuously on any one of them is likely to suffer from rickets and scurvy.

Frequently a child fed on one of the first group of proprietary foods (milk foods) becomes unduly fat. This is often mistaken for good health, and although such a child may be exhibited in a baby show, and, appearing to be strong and healthy, may win a prize, nevertheless such an infant lacks stamina, and easily succumbs to disease. The fat is developed from the excess of sugar, while the absence of sufficient proteid material in the proprietary food prevents the proper development of bone and muscle.

The farinaceous foods all contain starch in one form or another, and as starchy food should not be given to a child until after the sixth month of infant life, if these foods are used at all, they are only permissible after that age.

Occasional periods will arise when a baby will vomit humanised milk or cow's milk, and yet when put on one of the milk proprietary foods the irritation of the stomach subsides and the food is retained.

A superficial observer would at once conclude that the proprietary food must, therefore, be the best and most suitable to the child.

The explanation of this is, however, not difficult. It must be remembered, as before pointed out under peptonised milk, that digestibility of a food is no evidence of its nutritive value.

The cause of the trouble was either that the child's stomach was irritated by too large an amount of food given at a time, or too much cream was added to the mixture, and the food rendered too strong. There being less fat and proteid matter in the proprietary milk food, it is more easily digested, and hence is often retained in the stomach during an attack of slight indigestion when the humanised or cow's milk disagrees.

Under such circumstances Allenbury's No. 1 Food, or Horlick's Malted Milk, may be resorted to as a temporary expedient, to be dispensed with as soon as the child recovers. No proprietary food should be given to a child under six months of age, however, without the advice of a doctor.

It may be reasonably asked, why are so many young children reared on proprietary foods when so much is said against them? Do they not conform to the well-known commercial principle of demand and supply? What is the reason of their almost universal use? The principal reasons are the following:—(1) They are easily obtained and prepared; (2) they are easily digested (those containing unchanged starch excepted); (3) their excess of sugar makes them more attractive to the child and keeps him quiet; (4) they cause the child to become flabby and fat, a condition which is frequently mistaken for health; (5) they are well advertised, and misleading

statements are published by many of the proprietary food companies in pamphlets and handbooks wrapped round their wares.

The author has before him a specimen of such literature in the form of a booklet said to be written by a "nurse and a doctor" on the subject of "Bringing up Baby," wherein the most fallacious arguments are adduced to prove that young infants can take starchy food with impunity. While admitting that a baby cannot digest starchy food, the booklet goes on to say that "undigested starch acts only as a harmless *ballast* similar to the fibre of vegetable and other indigestible matter regularly given to older children and adults with their ordinary meals." By such so-called reasoning we are asked to conclude that it is an advantage rather than otherwise to include starch in the baby's food.

One would like to ask the writers of such a booklet the following pertinent questions:—(1) Is it not the wisest course to imitate nature in her methods? (2) Why is such an elaborate excuse offered in this booklet for the presence of this so-called "ballast" (starch) in baby's food?

As it is very unlikely that these questions will be answered by the writers of the booklet referred to, we may finally dismiss their case by answering the questions ourselves.

(1) Nature provides no starch in her food (milk) for

the young of any species of animal. Is it not therefore blind folly to try to improve upon nature's methods of working? Does it not seem more reasonable to imitate nature as closely as possible in her treatment of the young?

(2) The booklet says :—"The cost of producing such an infants' food, containing starch, is considerably lower than the cost of a completely soluble and starchless food." "Consequently, the price of the former makes it accessible and acceptable to the masses." We presume that the proprietors of this food wish to impress the philanthropic nature of their business upon the public. It is rather a peculiar form of philanthropy for the company to say, we can charge you a lower price because we have put starch in the food, although we know that the baby cannot digest the starch. It is quite true that such a food can be sold at a lower price than the one containing no starch, but it can also be manufactured at a lower price, therefore the company is the gainer. Companies exist for profits, not for philanthropy. This particular company is evidently fully aware of the fact that starch is unsuitable for the young baby, hence these excuses.

The writers of this booklet very conveniently ignore the fact that starch, if not digested, must remain in the stomach and intestines, and set up fermentation with consequent inflammation and diarrhœa. To quote

further from this wonderful booklet:—"To make up for the lack of proteids in food intended for infants, vegetable albumen (usually made by chemical treatment of gluten obtained in the manufacture of starch from cereals), or desiccated and chemically prepared skimmed milk, known in the trade under a number of different fancy names, is often used." "These substances are not easily digested by the tender and weak stomach of an infant or invalid, who might as well be fed on glue or cheese."

In other words, the writers proclaim to humanity all proprietary infants' foods on the market are of inferior quality, but lo and behold, we produce the only good and serviceable food to be found. In the commercial world we are accustomed to such self-advertisement, but when the subject so treated deals with an article to be used for baby's food, then it is time "a permanent governmental commission of scientists, willing and able to examine without prejudice the evidence given by the manufacturers of infants' foods," was appointed.

CHAPTER VII

The Feeding-Bottle

The feeding-bottle should be a plain glass flask with no angles or corners, and with a hole at each end so that the bottle can be easily cleaned. It should be large enough to hold a good-sized feed, about 6 to 8 ozs., and be graduated in ounces and half-ounces, prominently stamped in the glass.

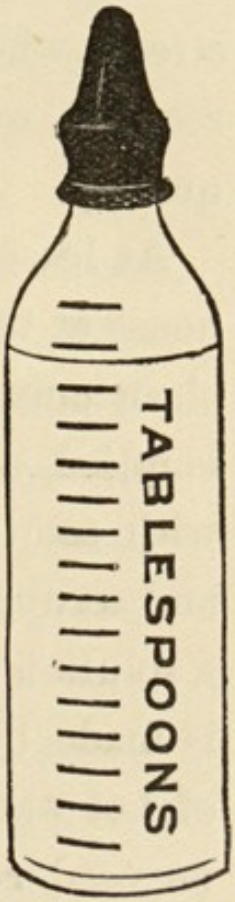


Fig. 4.
Good Pattern of Feeding-Bottle.
(By permission of Messrs S. Maw, Son & Sons.)

There must be no glass or rubber tube connected with the bottle. A length of rubber tubing connected with a feeding-bottle allows the child to feed himself, and this is taken advantage of by lazy or indifferent mothers and nurses. To the child, tubing is simply a death-trap in harbouring germs of all kinds, and the longer the tube the greater the danger. It is impossible to keep tubing clean, and the child cannot help sucking air. When there is no tubing attached to the bottle the mother must nurse the baby as in

suckling, and by so doing she is able to prevent unnecessary haste or undue delay.

The nipple or teat should be of plain rubber, conical in shape, with a large base, thus resembling as nearly as possible the nipple of the human breast. It must fit firmly over the neck of the bottle. Such a teat can be easily turned inside out for the purpose of cleaning. The teat hole should vary in size according to the sucking power of the child, but no hole should be so large that the fluid can run through in a small stream when the bottle is turned upside down. Teats require renewing frequently, as they perish very quickly.

At least two bottles and two teats should be in the house at the same time, so that there may be always a clean one ready for use. After each feed the bottle is emptied, and both bottle and teat thoroughly scoured with soap and hot water, the teat turned inside out and scrubbed with the nail-brush. It is then placed in a solution of boracic acid until wanted. This solution is made by dissolving 1 oz. of boracic acid in a pint of hot water and allowing to cool. The solution may be used repeatedly. The bottle is then placed in a pan of clean cold water and boiled. A pan with a false bottom is recommended for this purpose, as the glass must not come into direct contact with the pan, or it is liable to break. It is advisable to keep a pan for this purpose, so that the bottle can remain in it

until wanted for the next feed, and by keeping the pan covered germ contamination is avoided.

No nurse should put the baby's teat to her mouth before giving the baby a feed. The nurse should take the bottle from the child as soon as it is emptied, otherwise the baby will suck and swallow air. The bottle may be dispensed with at the end of twelve months, and the child fed with a spoon.

COMFORTERS

Dummy teats, or comforters, as they are called, are mentioned here only to be condemned. There is no sound reason for the use of this abomination.

The general idea amongst mothers is that a comforter, as its name implies, quietens the baby. The reverse is the case, for as soon as the child falls half asleep and the dummy slips out of his mouth, he cries until the fraud is replaced. Had the child never known a comforter there would have been no cry.

Its constant use prevents the dummy from being kept thoroughly clean, and it is frequently a source of infection. Amongst other things its incessant use is now blamed for producing imperfect teeth, and developing a high, narrow palate, nasal obstruction and post-nasal growths, causing mouth breathing.

The use of both comforter or tubing attached to the feeding-bottle is made illegal by French law.

CHAPTER VIII

Foods Suitable during Later Months of First Year

Every baby who is artificially fed should receive some fresh fruit juice daily after the fifth month. Orange juice is the best, but that of lemons, apples or grapes does very well. The juice should be freshly prepared and carefully strained before use. It should be diluted with two or three parts of cool, previously-boiled water, and a little sugar added if sour. A child of six months may be given half to one teaspoonful of fruit juice once or twice daily between meals. After the sixth month an additional teaspoonful of fruit juice should be given for each added month of age. The use of fresh fruit juice purifies the blood, prevents the development of scurvy, and counteracts any tendency to constipation.

After the sixth month of baby life, the saliva begins to flow freely, the gums become congested and teething soon follows. These are the natural indications that the functions of digestion are developing, and that the child is now able to digest a small quantity of starchy food.

This period is often delayed in quite healthy children, but until the above-mentioned indications are present, it is inadvisable to give any other food than milk.

When weaning from the bottle takes place, it is well to remember that milk should still form the main food for the child for many months to come, and that other foods are given as an addition to the milk, not with the object of displacing it. For instance, the child may be started on its changed rule of diet by having for the midday meal a little farinaceous food made up with milk, milk and bread sops, oatmeal or barley gruel, rice and milk, the yolk or white of an egg beaten up in milk.

From the age of twelve to eighteen months he may be given a little milk pudding, well boiled porridge with milk, beef-tea, chicken and mutton broths, unsweetened biscuits, rusks, stale bread or crisp toast with a little butter, cocoa, and plenty of milk.

After eighteen months the number of meals may be reduced to four per day, and the dietary less restricted. The child may now have a little chicken, rabbit, fish, bacon, or even beef or mutton at the midday meal. As the power of chewing is still limited, these articles of food must be cut up very finely. A soft, uniformly cooked egg is a wholesome food at this stage, but it should not be boiled. Put the egg in boiling water and at once withdraw the pot containing it from the fire, and in five minutes the egg is uniformly pulpy.

A small quantity of potato with meat gravy, or vegetables that have been put through a sieve or very finely and lightly mashed, may now be added to the food.

Stewed or preserved fruit, such as apples, prunes, etc., can be given, but the skin and pips of all fruits must be avoided.

During the whole period of introducing the solid elements of diet, that is, from seven months to two years of age, the child should have an abundant supply of milk. A pint and a half to two pints per day is considered a fair amount. The milk must be taken at meal-times and not between meals. The meals should be given at stated hours, and the time rigidly adhered to. Neither liquid nor solid food should be permitted between those hours, but when a child becomes thirsty, cold boiled water may be given.

When once an infant is taught the faulty habit of eating between meals, it is a very difficult matter to break him from it. Unlike an older child, or adult, a baby cannot be reasoned with, and therefore frets and cries if denied what he has been taught to expect. The cry of a child for food, or anything else for that matter, bears no relation to his needs.

Young children, and also children of an older growth, are not good judges of what is best for them.

Further, regularity in feeding engenders regularity

in other habits, and is therefore a great saving of the mother's time.

FOODS UNSUITABLE FOR YOUNG CHILDREN

New bread, thickly cut toasted bread, hard boiled eggs, highly seasoned soups; potted meat, pork, veal, duck, goose, sausages, liver, kidney, tinned meat, salt meat, tinned fish, salt fish, shell fish, salmon, herrings, radishes, celery, cucumbers, onions, mushrooms, pickles; plum pudding, pastry, rich cakes, sweetmeats, rich sauces, nuts, cheese; tea, coffee, and alcohol.

The above list will cause many wise people to smile, for, "who would be so foolish as to think of giving many of the articles mentioned to young children?"

Nevertheless, the fact remains, that every doctor will endorse the statement that it is quite a common occurrence for the articles enumerated above to be stuffed into the stomachs of unoffending young children.

It is usual for the children of the working classes to take their food with their parents. The result is often disastrous, for parents, otherwise thoughtful for the welfare of their little ones, are frequently disposed to allow the children to partake of anything on the table, whether suitable or not. The child becomes accustomed to this treatment and feels aggrieved and hurt on being denied anything.

When such a tendency is not resisted by the parents from the beginning, the children consider themselves harshly treated whenever an attempt is made to deny them. Particularly is this so in the case of an only child, who with his limited understanding concludes that his parents are selfish.

In nothing, perhaps, is manifested such ignorance of nature's laws as in the care and training of infants and young children. Many mothers grudge time spent in preparing food for infants and young children; they seem to prefer a food that merely requires boiling water poured over it. They do not realise the awful fact that so many infants and young children die from stomach and bowel diseases, the result of improper food.

We pay great attention to the production and rearing of all prize and pet animals, but as a nation we hopelessly neglect the proper care and development of our own offspring.

Many parents, not from lack of affection, will adopt any haphazard way of rearing their own young, while in the upbringing of lower animals they will apply system and method.

An ignorant dog fancier will carefully guard his pups from eating meat, but will permit his own young child meat or "anything else that is going."

Many a farmer will not work his young horses until their frames are fully developed, but he will overwork

his own child long before the latter has reached that stage.

The maturing of good stock means money; the maturing of healthy sons and daughters to fit them for the stern battle of life surely means more than money.

SECTION II

DISEASES OF INFANTS AND CHILDREN

Introductory Remarks

TEMPERATURE

In the adult it is usual to take the temperature in the mouth or armpit; in the child it is more convenient, for ordinary purposes, to place the mercury end of the thermometer in the groin for five minutes, with the thigh bent close to the belly to keep it in place. When a more correct registration of the temperature is required, it is advisable to insert it about an inch into the rectum (bowel), where it is held for three minutes. When used in the rectum the mercury end of the thermometer should be oiled before insertion, and the instrument carefully cleaned after use with an antiseptic solution.

A thermometer should never be inserted into a child's mouth, as he is likely to cry, or bite the instrument.

The normal temperature of the newly-born infant

(99.8 degrees Fahr.) is slightly higher than that of an adult (98.4 degrees Fahr.). The temperature soon falls, however, to that of the adult, and during the first two months of baby life it has a tendency to fall slightly below normal; this is most marked in premature babies.

The temperature of young children is apt to rise suddenly from very slight causes, due no doubt to their highly emotional nature compared with that of adults. When, therefore, a child's temperature rises high from fright or any trivial cause, there is no occasion for anxiety, as it will soon fall again. A continuous high temperature, however, usually indicates a serious condition.

The Pulse is very fast in a young child from the age of two to six months, the average rate being about 128 beats per minute. It is best counted by feeling over the heart while the child is lying quiet, or is asleep, for excitement or physical exertion greatly increases the pulse-rate. Any condition causing a rise in temperature always produces an increase in the pulse-rate.

Breathing.—At birth a child breathes very rapidly, varying from 35 to 45 respirations per minute. As he grows older the breathing gradually becomes slower and deeper, so that when six months old the respirations average from about 25 to 35 per minute.

The best time to count the respirations is while

the child is lying quietly, or is asleep, for then the rise and fall of the belly and chest can be easily observed. Inspiration and expiration is counted as one respiration.

Lung disease (pneumonia, bronchitis, pleurisy), heart disease, and abdominal distention (flatulence), rapidly increase the number of respirations per minute.

CHAPTER I

Premature and Weak Babies

Babies born before the end of the seventh month of womb life usually die immediately after birth. The longer a child is kept in the womb after the seventh month, the stronger will he be, and the greater his chance of being reared. Thus a seven and a half months' baby will be stronger than one of seven months, and an eighth month child stronger still, and increasing in strength up to the full term.

The average weight of a seven months' baby is about 3 to 3½ lbs.; that of an eight months' baby 4½ to 5 lbs.; while a full-time child weighs 7 lbs. or more.

The premature baby's body is very thin and fragile, and his skin very red and tender. His cry is very feeble, and his breathing very faint. He has scarcely any power to suck or swallow, and his digestive organs are imperfectly developed.

Death occurs in premature babies owing to their weak vitality, inability to suck and digest food, and to the fact that, instead of having been kept in the womb for the full period at the even temperature of

blood-heat, they are born badly equipped to face a cold and variable atmosphere.

In the treatment of premature and weak babies, it is therefore all-important to exercise especial care in (1) the selection and administration of suitable food, (2) protection from cold.

FOOD

The mother's milk is incomparably the best food. If the baby is too weak to suck, the breast must be pumped and the child fed with the milk from a teaspoon. When, however, the baby can neither suck nor take the spoon, it will be necessary for the medical attendant to resort to "forced" feeding. This is done by passing a special feeding-tube down the gullet, through which the food is conveyed to the stomach.

In feeding a premature baby two things must never be forgotten, viz. (1) quantity of food, and (2) frequency of feeding.

(1) The quantity must always be less than that given to a full-time child.

To a seven months' baby it is not safe to give at first more than a dessert-spoonful of food at each meal. As he becomes older the quantity is gradually increased.

(2) A seven months' baby should be fed regularly every two hours during the day, and every three hours during the night. The frequency of feeding a

premature baby compensates to a great extent for the very small quantity of food taken.

An eight months' baby may receive a full tablespoonful of food at each meal. He should be fed every two and a half hours during the day, and every three and a half to four hours during the night.

As in the case of a full-time child, a premature baby should seldom be fed during the first two days of his existence.

The feeding capacity of a premature baby is best calculated by its weight and vitality, rather than by the length of time he has been in the womb.

In the absence of breast food, weak humanised milk is by far the safest nourishment for a premature baby. Begin with the weakest solution recommended under Humanised Milk, for which see p. 40.

PROTECTION FROM COLD AIR

In maternity hospitals an apparatus called a "couveuse" is employed for this purpose. This is a sort of incubator, or warm chamber, in which the baby is placed for one to two weeks, being taken out at regular intervals for feeding purposes only. Provision is made for proper ventilation, and the air is warmed by means of hot-water bottles. A thermometer in the chamber indicates the temperature of the air, which is kept between 77 degrees and 78·8 degrees Fahr. (Budin). By means of a glass cover

the child can be observed and the thermometer be read.

Since the introduction of the "couveuse," the mortality of premature infants in maternity hospitals has been greatly reduced.

In the absence of any special chamber a premature child may have his body covered in cotton wool, be well wrapped in soft woollen shawls, or flannel, and placed in a cot.

Hot-water bottles wrapped in flannel should be placed in the cot, one on each side of the child, and one at his feet; but they are not to come in contact with the child—a clear space of at least one inch is advisable.

The cot should be kept in a warm room and be protected from draught. The temperature of the room for the first week or ten days must be kept at the point already indicated (77 degrees to 78·8 degrees). For this purpose a thermometer is hung on the wall above the baby's cot.

CHAPTER II

Infantile Diseases soon after Birth

THE UMBILICAL CORD

A HEALTHY cord stump begins to contract and become dry after twenty-four hours from birth; later its colour changes from white to a dirty brown, and becomes still more dry and mummified. As a rule it falls off between the fifth and seventh days; when later, it is because of its extra thickness or ill-health of the child. While hanging loosely the stump should never be forcibly removed.

Nature's drying process of the stump should be encouraged by dusting the part with an antiseptic powder, such as boracic acid. No oil or ointment should be applied to the stump.

If there is a discharge from the stump, or the surrounding skin looks red and inflamed, the doctor's attention should be drawn to it at once.

PRIMARY BLEEDING FROM THE CORD

This may occur within twenty-four hours of the child's birth; the thicker and softer the cord, the more

liable is this to occur, particularly so when a fine hard ligature, such as linen thread, is used in tying the cord, as it tends to cut through the soft cord structure.

The best ligature is several threads of worsted, or knitting wool, twisted together.

Treatment.—The nurse should at once apply a fresh ligature tightly round the stump, slightly nearer to the child than the first one.

LATE OR SECONDARY BLEEDING FROM THE CORD

This may take place from the fifth to the fourteenth day after birth, and consists in a steady oozing of blood at the junction of the stump and the body of the child, or where the stump has separated.

The condition is always a serious one, for if the oozing be not stopped the child will bleed to death within from twenty-four to forty-eight hours, for all babies stand the loss of blood badly.

Cause.—It is usually due to ulceration of the stump as a result of septic infection. (*See* Infective Jaundice.)

Treatment.—As this form of bleeding is always difficult to stop, a doctor must be procured immediately. In the meantime, the nurse should apply firm pressure with a pad of lint or cotton wool, the pressure being sustained by means of her fingers, and not by a band round the child's belly. The doctor on arrival will adopt more extreme measures.

DISFIGUREMENT OF HEAD AT BIRTH

In a severe or prolonged labour, during its passage through the pelvis, the child's head is unduly pressed on all sides with the exception of the presenting part. The result of this is that a temporary elongation of the head takes place from front to back, while the presenting part, where no pressure has been, becomes swollen.

The baby's head, as a rule, soon returns to its natural shape, and the swelling disappears within a few days without any treatment. So there is no cause for anxiety on the part of the mother, nor yet need the nurse try to mould the head with her hands. If the swelling persists longer than a week, the doctor's attention should be drawn to it.

Cases in which other parts than the head of the child are born first present the same kind of swelling, which is of no great consequence.

TEMPORARY PARALYSIS OF THE FACE

After a very severe and prolonged labour, the mother or nurse may be alarmed on observing one side of the child's face being drawn upwards.

This is due to excessive pressure on the facial nerve during the passage of the head through a narrow pelvis.

There is no need for anxiety, for after a few days the disfigurement will disappear without any treatment being adopted.

JAUNDICE

Jaundice occurs in the newly-born infant in several forms, but the two following are the most common.

(1) *Simple or Natural Jaundice.*—When simple jaundice occurs in infants it is soon after birth.

The skin of a newly-born child is more or less of a red hue all over the body. This redness gradually fades in healthy infants, giving place to a paler condition of the skin. Sometimes, however, as the redness begins to lessen, a yellow tinge takes its place, which gradually becomes deeper in colour. The whites of the eyes also become yellow in colour. These symptoms occur from the first to the third day, and under skilful treatment should disappear within a week.

No alarm should be felt in ordinary mild cases, though medical advice is required.

It is supposed to be due to an unusually large amount of bile being secreted at birth, and failing expulsion by the bowels, is partly absorbed into the blood circulation.

Unlike the jaundice of older children or adults, this form of jaundice in babies never gives rise to itching of the skin, discoloured urine, or altered motions, and the child is never feverish.

Treatment.—In very mild cases a simple laxative, as a rule, is all that is necessary, such as a quarter of a teaspoonful of glycerine in a little water, or half a teaspoonful of fluid magnesia. It is advisable that the

bowels be kept well open, and such medicine may therefore be repeated.

In the more severe forms it is advisable to obtain the services of a medical man.

(2) *Infective or Septic Jaundice.*—This condition is much more serious than simple jaundice.

Cause.—It arises from a septic condition of the navel, and is a result of putrefactive germs getting access to the cord before it falls off, and before the navel is healed. These germs reach the liver and set up inflammation there. (Refer to Umbilical Cord.)

Symptoms.—These begin on the second or third day after birth, when the cord wound is seen to have an unhealthy look and discharges pus. The skin surrounding the part is red and swollen. The whites of the eyes are yellow, and the surface of the body is tinted a deeper yellow than in the case of simple jaundice. The urine is bile stained, which stain is visible on the diapers.

Speedily the child becomes sleepless and irritable, and these symptoms are followed by vomiting and diarrhœa with green stools. There is always present a rise of temperature (102 degrees to 104 degrees Fahr.), and a fatal issue is very common.

Treatment.—The stump of the cord and surrounding parts must be kept thoroughly clean with antiseptic washes.

In all cases a doctor should be called in as early as

possible, for when the infection is severe, death may take place within a few days.

INFLAMMATION OF THE EYES

If a woman is suffering from a gonorrhœal discharge from the front passage before the birth of the child, in all probability the infant's eyes will become infected. This infection is always a serious condition, and when neglected, invariably ends in partial or complete blindness.

Symptoms.—From two to three days after birth the eyelids become inflamed and swollen. The child's eyes are tightly shut, and on forcibly separating the lids a profuse discharge of yellow matter (purulent pus) flows freely.

There is a slight catarrhal condition of the eyes common to babies, which is caused by dust or some other irritant. This condition is of little account, and need not be mistaken for the more severe inflammation described above. In the latter, the inflammation consists of slight redness only, and there is no profuse discharge.

Treatment.—As soon as the lids are found to be inflamed and swollen, the case may be at once suspected as being due to gonorrhœal infection. A medical man should see the child at once.

If attended to early, and proper instructions carefully carried out, the eyes always recover, but it

generally takes a few weeks to establish a perfect cure.

Whenever a woman is advanced in pregnancy, and has an infectious discharge from the front passage, it is her duty, for the sake of the child, to tell her medical attendant the condition she is suffering from. The woman may then be cured before the child is born, or measures may be adopted to save the infant from developing this severe inflammation of the eyes.

As the condition is a highly contagious affection, the nurse must take every precaution that her own eyes and those of the mother are safely guarded against it. This is done by the exercise of scrupulous care in seeing that all cloths, towels, etc., which are used for the baby are kept for that purpose alone.

In the simple form of inflammation of the baby's eyes, all that is necessary to be done is to bathe the eyes thrice daily with a solution of boracic acid 12 grains to the ounce of water.

RETENTION OF URINE

If the child does not pass water within twelve hours of being born, the nurse must examine the opening of the bladder, and see if there is any mechanical obstruction. It is not uncommon to find the urinary opening blocked by a small plug of that white and greasy substance (*vernix caseosa*) with which the newly-born babe is covered at birth. When such is the case,

the substance must be removed and the parts cleaned.

If the child still fails to pass water, then a warm fomentation should be applied to the lower part of the abdomen, or the infant be given a warm bath.

DIFFICULTY OF SUCKING

When a baby is unable to suck properly the cause may be one of the following: — Tongue-tie, hare-lip, cleft-palate, paralysis of the face, or physical weakness.

Tongue-tie.—Lift up the point of the tongue and ascertain if "the bridle" is short and keeps the tongue from free movement. If so get a doctor to cut "the bridle." Although requiring professional attendance, this little operation need occasion the mother no anxiety.

Hare-lip, if present, will be readily observed. It is wise to consult a surgeon as soon as possible for this defect, as a better result is obtained when an operation is performed at an early age.

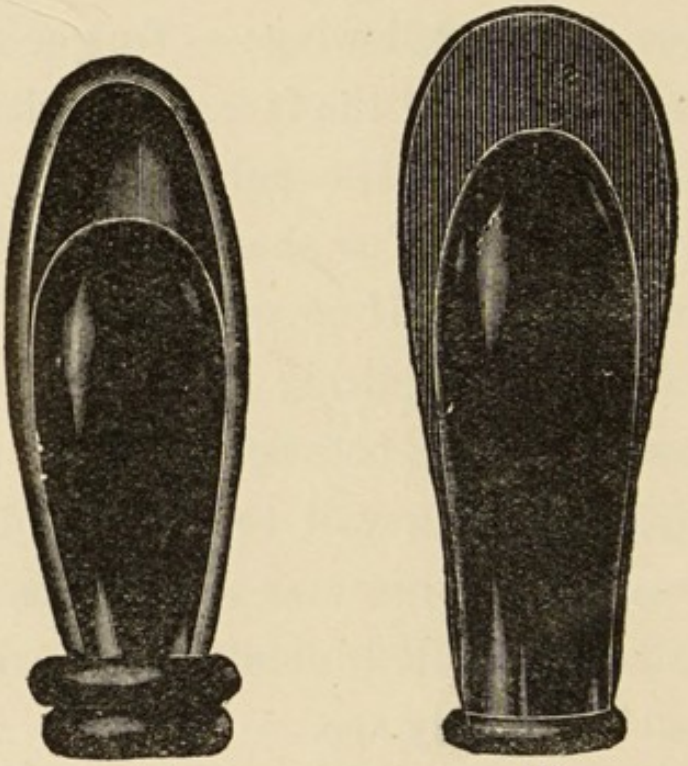
Cleft-palate. — This condition may be present with or without hare-lip. When the latter, there is not the same necessity for a very early operation, as in the case of hare-lip.

To enable a child with cleft-palate to suck, an ingenious contrivance is made by S. Maw, Son & Sons, of London. It consists of an ordinary feeding-bottle teat with a flap attached to the upper part. It is of use only for bottle-feeding. If some such device as

this is not used, then the child must be fed with a spoon, and held in the upright position whilst feeding.

Paralysis of the Face, as before mentioned, will pass off in a few days, when the child will be able to suck.

Physical Weakness. — Sucking demands a certain amount of muscular effort. Many premature and weak babies are too feeble to make this necessary effort.



(*a*) (*b*)

FIG. 5.—NIPPLE WITH FALSE PALATE.
(By permission of Messrs S. Maw, Son & Sons).

They must then be spoon-fed until they become strong enough to suck.

Besides the above-mentioned conditions, a child will refuse to suck if the process causes any pain.

Thus cracked lips, sore tongue, or injured palate may keep the baby from sucking until these conditions are healed.

CHAPTER III

Diseases of the Digestive System

THIRST

Babies as well as adults occasionally suffer from thirst. During hot weather, or when the child is feverish, thirst in the baby is to be anticipated. Hence, when the infant is observed making wistful cries and looking in the direction of a feeding-bottle or cup, and opens and shuts his parched mouth, the mother is apt to conclude that the child wants food, when in reality he is begging for a drink of water. Thirst in babies is very often mistaken for hunger.

In such cases, cold water which has been previously boiled should be given, in one to two teaspoonful doses, every fifteen to thirty minutes, the frequency of the dose depending on the child's age and the severity of the thirst.

DIMINISHED APPETITE

When a baby shows signs of not being well, it is advisable that his stomach should be kept free from

indigestion. To this end, it is best to reduce the quantity of food, and even make it a little less strong, but then the food should be given oftener. Thus if a sick baby has been getting a meal every three hours, it may be judiciously given in the above altered form every two hours.

In whatever manner the food is given, perfect regularity must be insisted upon, and only plain water given between meals.

INCREASED APPETITE

Many a young child, like many "adult children," shows a tendency to overfeed. A child is the worst judge of the quantity of food he requires, and most children are allowed to eat too much. An increased desire for food may, therefore, be merely greed.

It is a very common experience to find babies who vomit soon after taking food, and soon after vomiting show signs of hunger. The mother, in such cases, is apt to conclude that the food is not agreeing with the child, when in reality the baby is vomiting because of getting too large a quantity—the little stomach is overloaded. If the vomit consists of unchanged milk, it may be fairly concluded that this is so, and the mother should materially reduce the quantity of food and study the results upon the child.

In all probability the vomiting will cease, and the child, being able to digest and absorb the smaller

quantity, will thrive. (*See* Feeding Table for stomach capacity of food, p. 43.)

VOMITING

When an infant vomits there is no preceding nausea, as in the case of adults.

Vomiting takes place in many healthy children, which is simply a regurgitation of unaltered food. This occurs soon after feeding, when a little of the food comes up gently, with no discomfort to the infant. When not associated with pressure on the stomach, or the child being unduly moved about, such vomiting may be considered as a result of over-distention of the stomach by too large a quantity of food.

When the vomiting is due to acute indigestion, or other affection of the stomach, it occurs some time after the food has been swallowed. The vomited matter is then ejected with some force, and the milk is curdled. In this case the vomiting is attended with some discomfort.

To Prevent Vomiting.—The mother or nurse should ask herself the following questions, and then consult the feeding table on page 43.

(1) Is too large a quantity of food being given at each meal? (2) Is the food sufficiently diluted? (3) Does the infant suck too greedily, and therefore take too little time over his meal?

Vomiting is nature's method of getting rid of a

surfeit of food, and it is well that it is so; otherwise indigestion, diarrhœa, or other trouble might follow. It is better, however, for the mother to reduce the quantity of the food according to circumstances, and also to see that the child does not hurry with his meals. A baby should take not less than ten or fifteen minutes to complete each feed.

In the case of a breast-fed baby, if there is a tendency to rapid sucking, the nipple can be gently squeezed between the forefinger and thumb, so as to prevent the fluid from flowing too quickly.

In bottle-fed babies, rapid feeding is mostly due to the opening in the teat being too large; a new teat should then be obtained. The hole in the teat should allow the food to escape in drops when the bottle is inverted, but not to run in a stream.

HICCOUGH

Hiccough or hiccup consists in a spasmodic contraction of the diaphragm, the muscle which separates the chest from the abdomen. It is of frequent occurrence in babies up to three months old. It takes place, as a rule, after food, and is absent when the stomach is empty. Hiccough is of very little consequence as a symptom of disease.

Treatment.—When it exists in a distressing degree, a pinch of bicarbonate of soda in a little warm water will often cause it to disappear. Failing relief, an

anti-acid purge, such as a dose of fluid magnesia, should be tried.

MARASMUS (ATROPHY)

By the term Marasmus is meant a wasting of flesh without any apparent disease. It consists essentially in chronic starvation of all the tissues of the body.

Causes.—(1) Starvation (intentional or unintentional). (2) Impaired digestion, brought on by the child being fed on unsuitable food, or by food given irregularly. (3) As the result of diarrhœa. (4) Unfavourable surroundings, such as absence of sunlight and fresh air, damp foul atmosphere and dirt. (5) Premature birth.

Symptoms.—The child becomes pale, and rapidly loses weight. The face is old-looking and wrinkled. The round, chubby appearance of health gives place to sharp, thin outlines. The muscles become shrunken and flabby. The skin hangs so loosely, it gives the impression of being meant to cover a much larger frame. It is rough and dry, and on pinching the skin, it will be found lacking its ordinary elasticity, and the creases formed by the pinching will remain. Eruptions are common, especially about the seat and privates. Thrush is often present. The hands and feet are cold and often bluish in colour. The child's temperature is usually below normal. The bowels are irregular, constipation or diarrhœa being present.

The child cries peevishly, lies listlessly, and sleeps badly.

In the absence of treatment the child becomes weaker and weaker, and dies from sheer starvation, attack of diarrhœa, or vomiting.

Marasmus occurs almost exclusively amongst hand-fed babies.

Treatment.—As the lack of nourishment is the cause of Marasmus, so nourishment correctly given is its cure. On strict enquiry a definite reason for the wasting can generally be found.

The child must be given the most nourishing diet he is able to digest, and if this be done at correct intervals, if the child is not too far gone, he will make a rapid recovery. To guide the mother to this end reference must be made to the article on "Feeding of Infants."

In this connection, however, the mother must exercise her common-sense, and not be bound down to hard and fast rules of feeding, which are applicable to infants in health; for instance, a child of three months, suffering from Marasmus, may have only the weight and constitution of a baby of one month old. In such a case the little patient should get the food suitable to a baby of one month old, and as he becomes stronger the food may be prepared in a more concentrated form, and given at slightly longer intervals, until at length, when complete recovery

takes place, the food suitable for the normal healthy child of that age may be given. As a rule, babies suffering from Marasmus do best on food which is nearest in composition to the mother's milk. Therefore humanised milk is the preparation which is to be most recommended. Many cases do well, for a time, on peptonised milk (*see* Appendix).

Whichever food is chosen for the child, it must be given regularly, and in proper quantities. In a moderately severe case the little sufferer is ravenous, attempts to drink too rapidly, and to take too much at a time. This must be watched and checked.

In a severe form it will be found that the child has not the strength to suck. The teaspoon must then be resorted to, and the food must be given in very small quantities and at shorter intervals. Sometimes when a baby is not thriving on a milk diet, the mother gives it broth of various kinds. This should never be done, for broths have a tendency to become sour on a baby's stomach, and so cause diarrhœa, flatulence, vomiting, and griping.

In very severe cases of Marasmus, in very young infants, it is advisable to wrap the little patient in cotton wool and flannel, and place two or three hot-water bottles in the cot, to ensure the child being kept warm.

For harshness of the skin, olive oil should always be gently rubbed all over the surface. If the limbs be

rubbed with the oil from below upwards, the circulation, which is always deficient in such cases, will be improved. Any breaking out of the skin surface, about the privates or elsewhere, may be smeared with zinc ointment.

If vomiting, diarrhœa, or any other complication be present, they must be treated according to the instructions laid down for each disease.

ACUTE INDIGESTION

Acute indigestion in infants is of very common occurrence, and if early recognised is easily treated.

Causes.—(1) Overfeeding is by far the most common cause. The food is given too frequently or too strong, or the child is allowed to drink a larger quantity than he can digest. (2) The child is permitted to suck too rapidly. (3) Solid food is given at too early an age (*see* article on Feeding). It is not uncommon for ignorant mothers to give bread, meat, potatoes, fruits, etc., to infants, even of only a few months old. (4) Milk, which has become sour or tainted by being kept or given in a dirty bottle, is a frequent cause. (5) Feeding on cold food, instead of food at blood-heat.

Symptoms.—At first there is discomfort, flatulence and distention of the stomach. The infant becomes mopish and languid, and the tongue is found to be coated a dirty white colour. As a rule the child's

stomach takes the easiest method of relieving itself of the irritating contents by vomiting.

The vomited matter usually consists of curdled food mixed with a quantity of clear, sour liquid. Soon after the vomiting the child looks and feels better. When vomiting occurs, the bowels, as a rule, are constipated. In the absence of vomiting, colic and diarrhœa are usually present. In the early stage the motions are of the usual colour and consistence, but later they become loose and watery, with a greenish tinge. The child wastes in proportion to the vomiting and diarrhœa, and his temperature usually rises slightly. Later the vomited matter and the motions contain mucus, and as a result are of a slimy nature.

Treatment.—If an indigestible meal has been given recently, and no vomiting takes place, but other symptoms show themselves, such as colic, flatulence, or distention of the stomach, it is wise to at once administer an emetic of salt and water, for which see Appendix. If diarrhœa has not set in, half a small teaspoonful of syrup of rhubarb, or two teaspoonfuls of salad oil, should be given to a child of nine months of age, so as to get rid of any irritating matter in the bowels. The stomach should then get a rest of from four to six hours, and care exercised that the subsequent meals are small and of an easily digested nature.

If the case is more severe, or has lasted some time,

it is advisable to stop all milk food for twelve to twenty-four hours, and give only a small quantity of barley-water or plain sterilised (boiled) water every hour, to every pint of which may be added a table-spoonful of milk sugar. Under this treatment the irritation of the stomach will subside.

If diarrhœa has set in, a powder containing two grains each of carbonate of bismuth and bicarbonate of soda may be given every two to three hours to a child of the above age, and lime water substituted for plain sterilised water.

As relapses are common after an attack of acute indigestion, the diet must be carefully regulated for some time after recovery. It is never advisable to give the full strength of the food as soon as the disease has disappeared. It is wise to begin with about half the strength for the age of the baby, and gradually work up to the full strength, taking a week in the process. (*See* Feeding Table, above.)

GASTRIC CATARRH (GASTRITIS)

This condition consists in an inflammation of the lining membrane of the stomach, causing the secretion of an increased quantity of mucus, and a decreased amount of gastric juice.

Causes.—As a rule it is the result of repeated attacks of acute indigestion which have been neglected.

The primary causes of the disease are therefore the

same as those mentioned under Acute Indigestion, for which *see* p. 98.

Symptoms.—Persistent vomiting is always present and is usually the most marked feature. The child may be constipated or purged, but in either case the little sufferer wastes and becomes flabby. If the case lasts longer than a few days, the colour of the lips changes from a bright red to a very pale pink, showing that anæmia (poverty of blood) has set in. The child is also feverish, the mouth is dry, and often the lips are cracked, and the tongue is covered with a thick, dirty, white coating. When diarrhœa is present the motions are always slimy, contain undigested food, have a very disagreeable odour, and frequently are bile-stained (greenish).

Treatment.—The principle of treatment must be "to rest the stomach and regulate the diet." As the child is reduced in condition, it would be unwise to starve him for any length of time, as recommended in the case of acute indigestion. We must therefore do the next best thing, which is to slightly lengthen the intervals between the meals. If the child is being brought up on milk, the milk should be peptonised. (*See* Appendix.) If the child is over five months old, a temporary change from a pure milk diet to one containing some farinaceous food often does good, such as Allen and Hanbury's No. 1 Food, Horlick's Malted Milk, or Mellin's Food.

Very young infants suffering from Gastritis should be fed on white of egg and water heated to blood-heat (100 degrees Fahr.). If the child is anæmic, raw meat juice must be given in addition to this. (For preparation *see* Appendix.)

Washing out the stomach daily, by means of a suitable stomach tube, is the best way of treating this disease, but it is obvious that this procedure must be carried out by a medical man.

Locally. — Warm fomentations, or linseed meal poultices applied over the belly, always do good if frequently changed.

Medicines.—If constipation exists, give to a child from four to six months old a teaspoonful of fluid magnesia every three or four hours until the bowels move.

As gastric catarrh is never other than a serious condition, the services of a doctor should always be procured.

CHAPTER IV

Diseases of the Intestines

constipation (costiveness)

A healthy infant should have the following number of movements of his bowels daily:—During the first week of life, two to three; during the next three weeks, one to two; after he is a month old, at least one. If a baby has less than that number of motions he is constipated.

Causes.—(1) In breast-fed babies the condition usually arises from a constipated state of the mother. (2) In bottle-fed babies it is, as a rule, due to too much proteid material in the milk, and too little cream. (3) Boiling the milk makes it binding. (4) Failure on the mother's part to educate the child to regular habits in emptying the bowels. (5) Absence of fresh air and sunshine during the day, and sufficient ventilation at night. (6) Free perspiration, which occurs during hot weather, makes the motions dry and hard.

Symptoms.—If constipation be marked in degree

it will produce a furred tongue, loss of appetite, flatulence, colicky pains, restlessness, and sleeplessness.

Treatment.—(1) If the condition exists in a breast-fed baby, treatment of the mother's constipation (which is usually present) must be insisted upon. The mother should carefully select her diet, eat oatmeal porridge, plenty of fruit, etc. She should, as far as possible, avoid taking drugs to relieve her constipation.[1]

(2) In the case of bottle-fed babies, an increased supply of cream may be added to the humanised milk, and the lime water left out for a time. Barley-water, or oatmeal water, may also be added to the milk, instead of plain boiled water; or instead of using an ounce and a half of lime water to the day's supply of food, use instead half an ounce each of lime water and fluid magnesia. This latter method is the best during the first two or three weeks of infant life, for at this period an excess of cream is not so easily digested.

(3) As a factor in the prevention of constipation, the early training of a baby in the regular use of his bowels, at stated periods of the day, is all-important. If a healthy baby at two months old be placed on the chamber regularly at the same hour each day he

[1] For treatment of constipation of the mother without drugs *see* article on Constipation in "First Aid to the Sick," by the same author.

will soon acquire the habit of having a motion at that time. The chamber is placed between the nurse's knees, the baby held and supported thereon with his back to the nurse. This is performed after the morning meal, and again after the evening meal.

This method of early training causes a little trouble at first, but it is well repaid; for it induces cleanly habits in the child, and his diapers can soon be discarded altogether, for the bladder will be emptied each time the infant is put on the chamber.

At first it may be necessary to use some local excitant, such as a soap-stick, to make the bowels act, but this can soon be dispensed with. A piece of white soap the thickness of an ordinary lead pencil, and about one and a half inches in length, is made, pointed at one end, smeared with vaseline, and pushed into the bowel. This soap-stick is left in until it comes down with the stool.

(4) Massage of the abdomen is very efficacious, but it is necessary for the mother or nurse to receive a lesson from the family physician, or from a professional *masseur*.

(5) To prevent the motions from being dry and hard through perspiration in hot weather, the baby should be given small drinks of previously boiled cool water several times daily.

Drugs.—(6) These should not be given to babies if possible. In stubborn cases, however, it may be found

necessary to resort to some drug, but care must be exercised that the child is not made a victim to the drug habit. The following are the best drugs for infants and young children :—Add to the baby's feed two or three times daily as much phosphate of soda as will lie on a threepenny-piece, or a teaspoonful of fluid magnesia night and morning. These drugs are mild in their effect, and both are tasteless. They may be given to breast-fed babies in a little water. A teaspoonful of olive oil given once or twice daily is a safe aperient for young infants.

In children over a year old it may at times be found necessary to give something stronger. Then the choice may rest with elixir cascara, or a mixture of fluid extract of cascara and glycerine, equal parts, of which five to ten drops may be given night and morning.

Enemas.—The occasional use (once or twice weekly) of the enema syringe is better than drugs. Two to four tablespoonfuls of warm, soapy water will usually be sufficient. The best instrument to use in giving this enema to a young child is a ball syringe with a nozzle. A glycerine enema is also to be recommended, for particulars of which see Appendix.

DIARRHŒA

As diarrhœa in its various forms is responsible for more deaths among infants and young children than

any other disease, it is advisable that mothers should be fully aware of the causes, early symptoms, and treatment of the condition. The condition varies from mere relaxation of the bowels without inflammation, to violent purging, altered secretions, and discharge of blood (dysenteric diarrhœa).

The Healthy Motion of a young child should be bright yellow in colour, and of the consistency of moderately stiff porridge. The colour and consistence is often justly likened to mustard as prepared for the table. It should have a faint characteristic odour, not offensive. The number of stools passed in the twenty-four hours should be from one to three, but the consistence and colour is of more importance than the number.

If there is any marked departure from the foregoing natural condition of the child's motions, it is obvious there must be a cause. A wise mother will always endeavour to find the cause and remedy the trouble.

Undigested food in the bowels causes acid fermentation and imparts to the motions a disagreeable smell.

Abnormal secretions (excess of mucus, bile, and blood) gives them an altered consistence and colour. Both undigested food and abnormal secretions, by acting as irritants, cause the bowels to move more frequently than in health.

Causes of Diarrhœa.—(1) Improper food; (2) overfeeding; (3) rapid feeding; (4) feeding-bottles and

their attachments not kept thoroughly clean; (5) milk turning sour in very hot weather; (6) chill from exposure to cold; (7) in cases of breast-fed infants the mother may be in bad health; she may be taking aperient medicines; or suckling whilst pregnant.

Infants and young children are most liable to diarrhœa whilst teething, owing to the nervous system being upset; or during the summer and autumn, as a result of atmospheric conditions.

Symptoms.—The disease often begins with an attack of vomiting, followed by relaxation of the bowels. Sometimes sickness is absent altogether. At first the motions are merely loose and frequent, still possessing their bright yellow colour. Later they become watery, slimy, and assume a green chopped spinach-like appearance and contain white particles, which consist of undigested milk. These stools have an unpleasant smell. The child is griped and cries with pain, the belly is usually found distended with gas. The face is pale and anxious, and the child is dull and languid. Before each motion the little sufferer becomes restless and bends his thighs forward on the belly. If the condition lasts more than two or three days, the child becomes rapidly thin and exhausted, and the hands and feet are cold and clammy. There is generally a slight feverishness present, but when the condition occurs during teething, the temperature frequently

rises very high, the thirst is great, and the child has no desire for food.

Treatment.—If there be only a slight looseness of the bowels (without any alteration in the consistence or colour of the motions), such as frequently occurs during teething, all that need be done is to give less cream and add an extra quantity of lime water to the milk; or give two to three teaspoonfuls of lime water to the baby immediately after he has taken the breast. If, however, the motions are six or more during the twenty-four hours, and the consistence becomes altered as described, further treatment must be resorted to at once.

If the diarrhœa be due to improper food, or improper feeding, which is the cause in the majority of cases, a teaspoonful of castor oil, or a teaspoonful of syrup of rhubarb, should be given at once, for the purpose of getting rid of any undigested food such as curds, which are likely to be in the bowels. After the purge has acted, the following prescription should be made up by a chemist, and may be given to a child of six months old:—Powdered aromatic chalk, 30 grains; carbonate of bismuth, 40 grains; catechu tincture, 2 drachms; mucilage tragacanth and water up to 3 ozs. A teaspoonful every three hours.

If the diarrhœa does not cease after using the above measures, it is advisable to wash out the lower bowel with an enema of plain warm water.

If the diarrhœa be due to a chill, and there be no undigested food in the motions, it will not be necessary to give any purge.

If the diarrhœa occurs during teething, the feverishness will be reduced by giving the child a tepid bath.

Externally.—Apply a warm linseed poultice to the child's belly, and cover it well with flannel. Change the poultice every two hours. The old-fashioned remedy of applying a bag of hot salt to the belly has the objection that it is far too heavy for a child to bear.

Stopping all Food.—Authorities are now agreed that all food should be stopped for a period of from twelve to twenty-four hours as soon as an attack of diarrhœa sets in. During this time a little warm sterilised (boiled) water, or a little warm milk sugar solution (one ounce of sugar to a pint of water), may be given at the usual meal hours. After twenty-four hours the child should be kept on barley-water and raw meat juice, or white of egg and water, for a further two to four days, depending on the severity of the case. (*See* Appendix for preparation and quantities used.)

To this treatment many mothers will raise the objection that the baby will starve. It may, however, be pointed out that during diarrhœa the digestive processes of the child are practically at a standstill, and that therefore more food added to the digestive

tract can only do harm. For a few days milk is especially harmful, for it is a congenial medium in which to breed microbes, and so encourage further fermentative processes.

Frequently all that is necessary to treat an attack of diarrhœa successfully is to stop the milk food at once, clear the bowels out by means of a dose of castor oil, give only warm water at the regular meal hours for twenty-four hours, and white of egg and water for two days afterwards. During this period the child will lose less in condition and weight than if milk had been given throughout, with the additional advantage that the diarrhœa has ceased.

Sceptical mothers, if you love your child, please try this treatment.

Great care should be exercised when returning to milk food after an attack of diarrhœa. It is never advisable to give the full strength as soon as the symptoms of the disease have disappeared. It is best to begin with about half the strength for the age of the baby, and gradually work up to the full strength, taking a week in the process. This precaution will guard against a relapse, and prevent the condition from passing on to chronic diarrhœa.

A sucking infant suffering from diarrhœa should be taken off the breast for twelve hours, and during that time be given drinks of warm water only.

He should not be weaned at such a time, for the

mother's milk is far less likely to disagree with the child than any artificial food. In the meantime, any irregularity of the mother, caused by food or purgatives, should be attended to.

When diarrhœa occurs in an older child all solid food should be at once withdrawn, but boiled milk, diluted with water, may be given at reasonable intervals. If the diarrhœa be severe, and especially if accompanied with vomiting, then even milk must be stopped, and only broths given (such as chicken or mutton), free from vegetables. A full dose of castor oil is the best purge.

Prevention of Diarrhœa. — The feeding-bottle must have no tube, and should be kept scrupulously clean, in order to prevent any fermentative process being started. Milk for infants' food must be protected from contamination, and be kept as cool as possible, especially in warm weather, to prevent the multiplying of microbes.

In cases of diarrhœa, the nurse should disinfect her hands immediately after attending to the stools, or handling the child's soiled diapers.

Infants kept in a close, stuffy atmosphere, and heavily wrapped up in the house, are very liable to an attack of diarrhœa from a chill when taken out-of-doors. This tendency can be avoided by keeping the child in a well-ventilated room, clothing him moderately when in the house, and taking him out often in the fresh air and sunshine.

A child should be bathed carefully and quickly, in a place free from draughts, and be dressed without dawdling.

INFANTILE DYSENTERY (INFLAMMATORY DIARRHŒA)

Dysentery differs from diarrhœa in that there is always inflammation of the lower part of the bowel. Fortunately it is not so common a disease as diarrhœa, but it is much more serious.

Causes.—(1) It may arise from a simple diarrhœa which has been neglected; (2) cold from insufficient clothing and exposure; (3) defective sewerage, when it usually occurs in epidemic form.

Symptoms.—When dysentery comes from neglected diarrhœa, the symptoms of the latter increase in severity. At first there may only be an increase in the number of stools, as many as thirty motions passing in twenty-four hours, but the motions soon present an altered appearance and consistence. When, however, the case starts primarily as one of dysentery, it sets in with violent vomiting. The evacuations are soon very slimy from excess of mucus, emit a very disagreeable odour, and become streaked with blood. In very severe cases there may be more blood than motion. Frequently, the motions, instead of being bloody, are very dark in colour, and are often mixed with what appears to be fine shreds of the

lining of the bowel. The motions are expelled with force, and are accompanied by pain.

The bladder sympathises with the inflamed bowel, the child frequently passing urine the colour of porter, with great pain. The skin of the fundament becomes inflamed, and has a tendency to break.

The child is always drowsy and irritable. There is always a high temperature, quick and feeble pulse, hot, dry skin, extreme thirst, dirty, furred tongue, complete loss of appetite, and great prostration.

The constitutional symptoms are so severe in this disease that an apparently healthy child may, in thirty hours, be quite transformed in appearance, his features assuming an old, careworn, pinched look, with eyes sunken and limbs shrivelled.

Treatment.—A physician should always be sent for when the merest speck of blood appears in the stools. In the meantime, the child must be treated on the lines mapped out under diarrhœa. All milk food must be instantly stopped; plain, sterilised, cold water given in tablespoonful doses every quarter of an hour; the diet restricted to barley-water and raw meat juice. Thin hot linseed or bran poultices should always be applied early over the belly, and be frequently renewed.

At the beginning of an attack two teaspoonfuls of castor oil should be given to a child of six to eight months old. An enema of plain water at blood-heat always does good. As there is usually a tendency to

collapse, when exhaustion is marked, five drops of the best brandy in a teaspoonful of cold water may be given every half hour.

When dysentery sets in suddenly, relief is obtained for the child by placing him in a warm bath, to which poppy heads may be added. If, however, the dysentery has lasted a few days, the child will be too weak for a warm bath. Then he may have a hot pack. Wring out a blanket in hot water, place him therein, cover over with a dry blanket, and keep the little patient in this pack for half an hour. Care must be taken that the pack is not made too hot, for fear of injuring the child's skin. Afterwards the child must be thoroughly dried, covered well with warm, dry clothing, and placed in his bed.

INTESTINAL WORMS

The worms most frequently found in children are the thread-worms, so called from their resemblance to small pieces of fine white cotton thread. They are from one-third to half an inch in length, commonly found in large numbers in badly-fed children, and live in the large bowel—usually the lowest part of it. They often pass out of the anus (mouth of bowel) and find their way into the genital organs, causing great discomfort, setting up discharges and skin eruptions.

Symptoms.—There are no symptoms which can be considered truly characteristic of any worms, except to

see them. As a rule, however, they set up a train of symptoms which may lead a parent to suspect their presence. These are, disturbed sleep, with grinding of the teeth; occasional feverishness and thirst; coated tongue and foul breath; increased or depraved appetite; and the child's condition physically is not in keeping with the amount of nourishment taken. The child is usually irritable and peevish. Water may be passed with difficulty; or there may be inability to control the bladder, setting up incontinence of urine.

Diarrhœa may be set up with slimy motions and straining, and the bowel may fall down outside of the seat. There is usually irritability at, and around, the seat, due to the movements of the worms. The child scratches the part, if able to get at it, and by means of the fingers conveys the eggs to the mouth and reinfects himself.

Treatment.—The worms must be dislodged from the bowel by the enema syringe. A teaspoonful of common salt and a teaspoonful of baking soda added to a pint of warm water acts very well. If this does not have the desired effect, a dessertspoonful of turpentine to a pint of soapy water may be tried.

Internally, certain purgatives help to expel them. The combination of calomel and santonin, given at night, is the best, followed by an enema in the morning. The doses are, for a child two years old, calomel ¾ of a grain, santonin 2 grains; for a child four years,

calomel 1½ grains, santonin 3 grains; for a child six years old, calomel 2 grains, santonin 4 grains. The child's fingers must be kept clean and the nails cut short, to prevent re-infection. After the bowels have acted, a fairly large enema of soapy water is given for the purpose of cleaning out the bowel. Then an enema of common salt and water (half a small teaspoonful of salt to 6 ozs. of water) is given slowly. The child should be instructed not to strain, in order to keep this quantity of fluid in the bowel as long as possible.

This treatment is to be repeated every other day until the worms are expelled.

For the symptoms and treatment of round worms and tape-worms, *see* "First Aid to the Sick," by the same author.

APPENDICITIS

The term Appendicitis is applied to an acute or chronic inflammation of that part of the intestines known as the *vermiform* appendix. The disease is sometimes met with in children, especially boys, but is very rare in infants under two years of age; young adults are much more liable to suffer from it.

Cause. — (1) It was formerly thought that the inflammation was caused by pips and other fruit seeds finding their way into the appendix, but it is extremely probable that the apparent pips, etc., were in reality solidified fæcal matter. (2) Foreign bodies, such as

particles of undigested food, especially when containing fibre, becoming lodged in the appendix pocket. (3) Fermentative processes. (4) Injury, such as a blow or strain. (5) Chill.

Digestive disturbances, particularly chronic constipation, are frequently predisposing causes.

Symptoms.—In children the symptoms are usually of an acute character, the disease being ushered in with pains all over the belly, but more especially felt about two inches above the centre of the right groin (right lower part of abdomen). In this region the pain is accompanied with great tenderness, so that the child resents any pressure over the part. Vomiting, diarrhœa, or constipation are often present. High temperature, rapid pulse, and a foul tongue are present in every case. As the case advances (within two or three days) a swelling may be observed over the appendix area mentioned above. Continued localised pain in the lower part of the belly should always make a mother or nurse suspect this disease.

Treatment.—The bowels should be at once emptied by an enema of soapy water, to which has been added one or two tablespoonfuls of salad oil. This should be repeated every few hours whether bowel matter comes away or not. The patient must remain in bed and move about as little as possible, as all movements are dangerous. He should be made to lie on his left side while the enema is being given.

Caution.—Medicine of any kind is not to be given in by the mouth unless ordered by the doctor. The food should be restricted to liquids—milk (preferably peptonised), beef-tea, and broths. A very small quantity only to be given, merely enough to sustain life. If vomiting takes place all nourishment must be withheld; and if the child is old enough, ice should be given him to suck. The application of hot linseed poultices thinly spread is very soothing.

Owing to the very serious nature of this disease, no time must be lost in securing the services of a medical man.

CHAPTER V

Diseases of the Mouth, Throat, and Nose

STOMATITIS

Inflammation of the Mouth

Inflammation of the mouth occurs almost entirely in children. There are three chief varieties of the condition :—

(1) *Simple Catarrhal Stomatitis.*—In this variety there is redness, swelling, tenderness, and increased secretion of the lining membrane of the mouth. The sense of taste is diminished, and the child refuses food. There is always bad digestion and ill-health associated with the condition.

Cause.—It is most frequently set up by derangements resulting both from first and second teething.

(2) *Ulcerative Stomatitis.*—This consists of small yellowish patches of inflammation on the gums, lips, or tongue. These patches peel off and leave small ulcers in their place, which are angry-looking and bleed easily. Pain is complained of, while food is being taken. The breath is foul, and the tongue swollen and furred.

The glands of the neck are nearly always enlarged with this condition, and as a result the child takes "cold" readily. The general health always suffers. Occasionally the condition breaks out in a mild epidemic form in schools.

Cause.—Overcrowding, with insanitary surroundings and bad feeding. Bad teeth are frequently the exciting cause. The condition is probably contagious.

(3) *Thrush.*—Though like the preceding conditions, with which it is often confused, thrush is a distinct disease, produced by a fungus growth. The lining of the mouth and tongue becomes covered with white, milk-like patches, which merge more or less into one another, until, in extreme cases, the whole surface of the mouth may have the appearance of being coated with white paint.

There is always a certain amount of catarrhal stomatitis present, with increased salivation, and foul breath from decaying matter. The mouth is hot and painful, and an excess of saliva causes dribbling. Loss of appetite and slight feverish symptoms are present. In infants, diarrhœa is associated with the condition, with acid green stools, the latter causing inflammation and eczema around the seat.

Cause.—It is essentially a disease of feeble, ill-fed, and neglected children. Frequently it follows recovery from scarlet fever, measles, and other febrile diseases.

Treatment of the three foregoing complaints is on

the same principle. The general health of the child must be carefully attended to. The food should be simple and suitable for a child, chiefly milk. The meals should be regular, and eating between meals prevented. All meat and coarse foods should be withheld. The bowels should be regulated daily.

A very small pinch of bicarbonate of soda may be added to the milk; this will act favourably on the stomach, which is often at fault. For the bowels, a fourth of a small teaspoonful of the compound rhubarb powder may be given to a child of four years old every second day. The mouth should be frequently washed out with a solution of borax, two teaspoonfuls, bicarbonate of soda, one teaspoonful, in half a pint of warm water, the child being directed not to swallow any of the solution. Glycerine-and-borax are very good for painting on the inflamed parts. Borax-and-honey, though widely used for this purpose, is not good, as the honey causes acid fermentation.

Tonics will be required, extract of malt being probably the best. The child should be encouraged to keep as much in the open air as possible, during suitable weather, if there are no feverish symptoms. Open air is nature's best tonic.

Prevention of Thrush.—As thrush is nearly always found in bottle-fed babies, special care should be exercised in the preparation of the milk to see that it is always cleanly prepared and freshly given, so as

to avoid the slightest chance of fermentation. The bottles and teats should be subjected to the cleansing process mentioned above.

On the first appearance of the milk-like patches on the lining membrane of the mouth or tongue, it is advisable to clean these parts with a clean soft cloth dipped in an alkaline wash after each feed. One ounce of borax in half a pint of boiled water is a good wash for this purpose.

MUMPS (PAROTITIS)

This is an inflammation of one of the largest salivary glands (Parotid). The gland is situated at the side of the face in front of the ear.

Cause.—Like measles and whooping cough, mumps is usually present in all communities in some degree, but is occasionally manifested in an epidemic form. It is a contagious disease, and is most common amongst children. Like other diseases peculiar to childhood, mumps rarely attacks an individual more than once.

Symptoms.—The gland swells, and becomes very painful, hot, and tender. On account of the gland being mainly covered with bony tissue, the swelling of the gland is restricted. This explains the reason of the pain, which is extremely severe. The movements of the jaw are also difficult and painful, and on this account the child is inclined to abstain from

eating, so as to avoid extra pain. There are always some feverish symptoms with the condition.

The inflammation lasts about two weeks, and then gradually subsides, while the pain and tenderness likewise disappear. There is never any tendency for the gland to "suppurate"—that is, form an abscess—in mumps. Sometimes the parotid gland on the other side becomes inflamed, as the first one attacked returns to its natural condition.

Treatment.—The child must be kept indoors. As a rule, there is no necessity to go to bed. A mild aperient should be given at the beginning of the attack. Hot linseed or bran poultices applied continuously to the part relieve the pain and hasten recovery. As the part is an exposed area, these applications will require to be renewed frequently. During the attack, the patient should be fed on foods which require no mastication, such as milk, milk and bread sops, eggs, liquid custard, beef-tea, and broths. Afterwards, the child will require tonic treatment.

TONSILITIS

Inflammation of the tonsils is very common in children, the members of some families being very prone to the condition.

Cause.—Living in a low-lying, damp place predisposes to the condition. Exposure to cold or damp usually starts the inflammation.

Children who have any obstruction in the air passages of the nose almost invariably have chronically enlarged tonsils through repeated attacks of inflammation of these glands. This is due to the child being unable to breathe through the nose (the natural channel for breathing), hence he must keep his mouth continually open in order to breathe at all. The cold air plays directly into the throat, and thus sets up inflammation. Children who suffer from rheumatism are also specially liable to tonsilitis.

There are two forms of the condition recognised: (1) Catarrhal Tonsilitis; (2) Quinsy.

(1) *Catarrhal Tonsilitis.*—This consists in a superficial inflammation of the tonsils and surrounding parts, described as "sore" or "relaxed" throat. There is soreness or pain in the throat, discomfort in swallowing, accompanied by slight febrile symptoms. The voice is usually altered in tone, being of a nasal quality. This form usually lasts but a few days.

(2) *Quinsy.*—Should the inflammation be deep, and involve the whole gland, instead of being superficial, as in the catarrhal form, the tonsil will become enlarged and congested throughout. All the surrounding parts will be also much inflamed, and the discomfort will be proportionately severe.

After a few days the tonsil undergoes one of two changes:—(1) The inflammation will either gradually subside and leave the tonsil slightly larger than

before, and the patient will recover at once; or (2) pus will form in the body of the tonsil, causing abscess formation.

An abscess in the tonsil is ushered in with chilliness or a slight rigour, followed by a decided rise in temperature, and other signs of a febrile condition. The discomfort increases. The pain becomes more acute, and is of a throbbing nature, due to the enlarged organ pressing on the large vessels in the neck. Swallowing becomes very difficult and painful, and the jaws are partially locked, giving rise to difficulty in eating. In taking fluids, part is apt to return through the nose. The secretion of saliva is increased, and dribbles from the mouth. The nasal character of the voice increases, and hearing is often impaired.

On examination externally, a larger tender swelling is easily made out between the jaw and the neck. The lymphatic glands in the neck are always more or less enlarged also. This condition may last from a few days to as long as ten or twelve days, depending on the line of treatment adopted. Throughout this period the child is greatly depressed, and the appetite is lost and the bowels constipated.

As a rule, an abscess forms in only one tonsil, but should both be similarly affected, all the symptoms enumerated will be exaggerated, and the patient will breathe with difficulty.

Treatment.—If the case is attended to early, *i.e.*, in the catarrhal stage, the treatment should be directed to the prevention of quinsy. To this end the following is the best.

An aperient should be given as early as possible—preferably a dose of Epsom Salts, a teaspoonful in warm water to a child of four years of age. For the first few days half a drop of tincture of aconite every hour to a child of twelve years; a child of four years, a quarter of a drop. The division of the drop can easily be regulated by the addition of water; better still, get the chemist to prepare the doses according to the age of the child.

Ice-cold applications should be applied externally, and renewed as they become warm. In older children a gargle may be used with advantage every four hours. In the absence of any other, a very weak solution of Condy's Fluid may be used, or one made up consisting of borax, glycerine, and tincture of myrrh, a teaspoonful of each added to half a pint of water. If the patient is too young to gargle, then the enlarged tonsils should be painted with a camel's hair brush dipped in glycerine of tannin. Gargling should not be attempted in children under seven years of age.

These measures often cut short an attack of tonsilitis, and prevent the development of abscess formation Should it be found, however, that the patient becomes more feverish, with increasing discomfort in the throat,

the treatment must at once change. As there is then every likelihood of an abscess forming, the ice and cold applications must be discontinued.

The throat should then be steamed, as in the case of acute bronchitis. Hot fomentations or hot poultices must be applied externally, and as the part is an exposed surface, they must be frequently renewed. To keep the poultice in its place, a warm, dry flannel should cover it, and extend under the lower jaw and over the head; and it should be so fixed that while the head moves, the poultice is a fixture over the inflamed area.

Food should always be given in liquid form, on account of the difficulty in swallowing. Small quantities at a time, and about every two or three hours, will be found best. Sometimes difficulty is found in getting the patient to take enough nourishment, on account of the pain experienced. Fortunately, the condition lasts but a short time, and the appetite very quickly returns.

After a few days either the swelling will subside, or an abscess will develop.

Should the latter take place, it is always best for a surgeon to lance the abscess and let out the pus at as early a stage as possible, when recovery, as a rule, quickly takes place. If the lancing is deferred, the abscess will eventually burst, but the patient's suffering is prolonged in the meantime. Further,

if the abscess is allowed to burst, the tonsil is always more or less rugged afterwards, and is frequently a source of future trouble.

A gargle of weak Condy's Fluid may be used for a few days afterwards. The patient will probably require some tonic; Parrish's Chemical Food can be recommended.

CHRONIC ENLARGED TONSILS

After repeated attacks of tonsilitis, the tonsils are left enlarged and useless as glands. They are even worse than useless, for they fill up a space in the throat, and by their mechanical presence obstruct normal breathing. As gargles and paints have little or no effect in reducing their size, it is always best that they should be removed by a surgeon. This operation is attended by practically no risk.

After enlarged tonsils are removed, the general health of the patient always improves. The absence of tonsils, as glands of the body, is not missed, for even when healthy they perform a very small function as organs.

THE NOSE

When the fact is grasped that the nose has four important functions to perform, viz., smelling, breathing, hearing, and voice production, it will be comprehended how important a structure it is. The diseases

of the nose are mostly of an obstructive character, such as growths at the back of the nose (post nasal).

POST-NASAL GROWTHS

These are small, soft, gland-like growths, which grow from the top of the space behind the nose cavity proper. As they hang down like little curtains, they form a mechanical block to the nasal cavity, so that the child is prevented from breathing air through the nose.

They are most frequently found in children between the ages of five and fifteen, and are more common in boys than girls.

Cause.—Repeated colds in the head; diseases affecting the upper respirating passages, such as measles, scarlet fever, whooping cough, diphtheria, and influenza. It is said by some authorities they are due to the use of dummies and teats. They are usually met with in cold, damp, changeable climates. They show a disposition to occur in certain families, which is probably due to the locality dwelt in.

Symptoms.—The subjects of these growths manifest a characteristic appearance. The mouth is open, and the lower lip protrudes. The nose is usually flat, with the bridge badly formed, and the opening small. The cheek bones are badly developed. The child generally has a vacant expression and a stupid look. The term "Frog face" is aptly applied to the appear-

ance of the face in many instances, which is due to breathing almost exclusively by the mouth instead of through the nose.

On account of the child not being able to take into his lungs a sufficiency of air, the chest does not become fully developed, and the little patient acquires a pigeon-shaped, narrow chest. The general health is always bad, and anæmia is usually present. The child readily takes "cold," and as a result is scarcely ever free from a dry, barking cough, and the lymphatic glands in the neck become chronically enlarged. During sleep he usually snores; and the mouth being open the tongue becomes dry, and the child often wakes and cries for a drink.

Speech is always affected, and there is absence of nasal resonance. If asked to say "ninety-nine," he will invariably reply "didety-dide."

Hearing is only rarely affected. Then it is due to the blocking of the tube which runs from the back of the nose to the middle of the ear. The sense of smell is usually diminished, and sometimes entirely lost. Intellectually, the child is dull, and unable to concentrate his attention on his school lessons.

Treatment.—If left alone, they usually disappear about the fifteenth year of life. Long ere that time, however, mischief is done to the child's health, and to his mental and physical development. Hence it is

advisable that a surgeon should remove the growths as early as possible.

NOSE BLEEDING

Cause.—It may be due to local causes, such as chronic congestion of the lining membrane of the nose, or nasal growths; or to causes affecting the general health, such as poverty of blood (anæmia), or too much blood, as in plethoric or full-blooded people. It also occurs in whooping cough and scurvy. Children often induce it by picking the nose.

Treatment.—If due to local causes, these causes should be removed. If due to general causes, such as anæmia, they will have to be treated.

During an attack the patient should be placed on a chair with the face raised, ice-cold water applied to the forehead and nape of the neck, the hands raised above head, and the feet immersed in hot water. This will direct the blood mainly to the trunk and lower limbs. Internally, half a teaspoonful of witch hazel (tincture of hamamelis) in water, may be given every two or three hours to a child of twelve years.

Plugging the nostril may be necessary. For this purpose, a pledget of cotton wool soaked in one part adrenalin to three parts water is the best.

CHAPTER VI

Diseases of the Chest

BRONCHITIS

The windpipe, which is continuous with the mouth and nose, forks about half-way down the chest into a right and left large bronchial tube. These supply air to the right and left lungs respectively. They divide and subdivide, until they spread all through the lungs like the branches and twigs of a tree. We have therefore the larger bronchial tubes near the centre of the lungs, and the smaller ones as they spread towards the surface of the lungs. When inflammation of the lining membrane of these air-tubes takes place we have bronchitis. It is the most common of all chest affections, and may be acute or chronic.

ACUTE BRONCHITIS (ACUTE BRONCHIAL CATARRH)

This is very common in infants and young children.

Cause. — "Catching a cold"; although it may accompany influenza, scarlet fever, whooping cough,

etc. Acute bronchitis is a common accompaniment of teething, and children who have post-nasal growths are especially liable to attacks of the disease.

ACUTE BRONCHITIS IN CHILDREN OVER TWO YEARS

Symptoms.—These are much the same as in adults. The disease is usually ushered in with chilliness and a feeling of general discomfort. A mild case, however, may begin just like an ordinary "cold" in the head, and travel downwards towards the chest. There is a sensation of tightness about the chest, and usually soreness beneath the breast bone, while respiration increases in frequency and is of a suffocating nature. The pulse is more rapid than usual, and there is a rise of temperature. A cough is always present; at first it is short, dry, and irritating, but at a later stage clear phlegm is brought up with the cough, and the phlegm gradually becomes thick in consistency and yellowish in colour. If the ear of the attendant be now placed against the back of the patient's chest, wheezing sounds will be heard, caused by the gurgling of the phlegm in the act of breathing. This gurgling is produced by the phlegm and breath moving through the air-tubes already narrowed by inflammation. Sometimes this wheezing noise is loud enough to be heard at a short distance from the patient.

Should the smaller bronchial tubes be chiefly involved (capillary bronchitis), all the above-mentioned

symptoms will be exaggerated, the patient will appear very ill, and the case is always serious.

Treatment.—Rest in bed in a room which is well ventilated, has a fireplace, and is kept at an even temperature of from 68 degrees to 70 degrees Fahr. If the case is seen early, a good hot bath given to the patient just prior to being put to bed will often cut short the attack. The patient should be well rubbed over with a rough towel after leaving the bath, for the purpose of opening the pores and stimulating the skin. As a substitute for the complete bath, a mustard foot-bath may be given, though this is not so good. (For foot-bath *see* Appendix.)

After being put to bed, the patient should have a brisk aperient, such as a large dose of liquorice powder in warm water.

It is always important to cause the skin to perspire freely, and for that purpose hot drinks of pure water, frequently given, are serviceable. Should the patient tire of hot water, linseed tea may be drunk occasionally instead, and this tea has the further advantage that it soothes any raw feeling which may be present in the chest. (For preparation *see* Appendix.)

An occasional dose of equal parts of glycerine and water is very good for relieving the cough, if swallowed slowly. Half a teaspoonful of this mixture may be given to a child of twelve years. It may also be taken with warm milk or with lime juice. Other warm

drinks, such as barley-water and thin gruel, may be taken by way of variety.

Many physicians recommend that a bronchitis-kettle be kept boiling over the fire, so that the air the patient breathes may be moist warm. It is found that moist-warm air has a very soothing effect on the lining membrane of the air passages, and thereby eases the cough. There is also this further advantage with the bronchitis-kettle, that the patient is kept perspiring freely. An ordinary kettle can be transformed into a bronchitis-kettle by attaching a funnel several feet long to the spout. This may be done by folding hard brown paper into a long tube, and fixing it to the kettle spout, so that little or no steam may escape at the junction.

Great advantage is obtained by adding to the water in the kettle half a teaspoonful of eucalyptus oil to the quart of water; or a teaspoonful of Friar's Balsam to the pint of water; or half a teaspoonful of creosote to the pint of water. The patient then is enabled to inhale medicated vapour, usually with the best of results.

As a bronchitis-kettle is not always at hand, a very simple and effective substitute is to place a jug containing a pint of boiling water near the bed, and pour into it a teaspoonful of Friar's Balsam, or half a teaspoonful of turpentine. The patient then inhales the medicated moist air while breathing. As the

steam soon disappears from the open vessel, a fresh jugful of boiling water should be ready for renewal at short intervals.

Medicine.—If the skin be hot and dry—a common symptom in the early stages of bronchitis—fifteen to twenty drops of sweet spirits of nitre, in a little water, should be given to a child twelve years of age, and half the dose to a child of four.

In the early stages of the disease ipecacuanha wine is a good and safe medicine for children. The dose is five to eight drops to a child of four years and upwards, to be repeated every two hours.

During the later stages the above wine should be dispensed with, and syrup of squills used instead, as this drug is more stimulating. The dose is ten to fifteen drops to a child of four years every two hours.

Diet.—As bronchitis is very weakening, the diet should be highly nutritious and easily digested. In infancy, and up to the age of four years, it should be restricted to milk and raw beef juice. After that age, beef-tea, mutton or chicken broth, vegetable soup, or milk and egg custard, may be added to the diet. In feeding the patient, care should be taken that the stomach is never overloaded; for if indigestion be present, the cough will be more troublesome.

Local Applications.—As the seat of the inflammation (bronchial tubes) extends throughout the whole chest cavity, whatever is applied externally should cover

the whole chest surface (back, front, and sides), as low as the last ribs and as high as over the shoulders. If the attack is a mild one, the chest may be well rubbed over with warm olive oil, after which it should be completely covered with cotton wool, or new flannel.

Should, however, the attack be of a severe character, more extreme measures should be adopted. Continued application of moist heat is then desirable. This can be best obtained by hot poultices, made of crushed linseed, flour and mustard (three parts of flour to one of mustard) or bran. If bran be used, it is advisable to mix a little salad oil with it, which helps to retain the heat for a longer period. The jacket poultice is one of the best in acute bronchitis; it ensures that the whole surface of the chest is properly covered by the application. Whichever poultice is used, it should be changed every two to three hours.

Hot fomentations are also very serviceable. No turpentine must be used for young children, for their skins being very tender, a burn or a blister is apt to follow, and burns are always more serious in children than in adults.

For the methods of preparation of all these local applications, refer to Appendix, where the subject is fully explained.

As a preventative against acute bronchitis in older children a cold shower bath every morning, and the wearing of only one flannel under-garment—a thin

one in summer, and a thick one in winter—is to be recommended.

If the patient be delicate, a good substitute for the cold shower is to sponge the body first with tepid water and then with cold, drying well with a rough towel.

ACUTE BRONCHITIS IN INFANTS AND CHILDREN UNDER TWO YEARS OF AGE

In such young subjects acute bronchitis is always a more serious condition than in older children, for the following reasons:—(1) Their bronchial tubes being smaller, there is more difficulty in breathing. (2) There is more danger of the inflammation extending to the lung substance, giving rise to broncho - pneumonia. (3) Babies and very young children have not the same energy as older children to empty the chest of phlegm.

Though the cough may be constant and severe, yet infants and young children "bring up" no phlegm. It is coughed up to the throat or mouth and then swallowed. When the phlegm is very sticky, its presence in the throat frequently produces vomiting from local irritation; this vomiting usually gives relief, for the air passages are cleared thereby, and breathing is consequently rendered easier.

When the small bronchial tubes are inflamed (capillary bronchitis) the young child's distress in breathing is

always great, and the respirations may rise to as high as 60 to 80 per minute, when the nostrils will be dilated during each inspiration. Then the temperature will be correspondingly high, 102 degrees to 104 degrees, and the little sufferer is consequently in a dangerous condition. The other symptoms are similar to those in older children.

It may be mentioned, that as long as the child is able to cry loudly he is in no great danger.

Very fat, emaciated, or weakly young children rarely recover from a severe attack of acute bronchitis.

Treatment.—While the little patient should be kept in the one room, at an equable temperature of 68 degrees to 70 degrees Fahr., yet it is advisable that his position in the bed be changed from time to time to ease his body. A young infant may, with advantage, be nursed in the arms occasionally, provided he is kept in the same part of the room and away from draughts.

When the breathing is very rapid, an infant is unable to hold his breath long enough to enable him to suck either breast or bottle. Under these circumstances it will be necessary to spoon-feed him.

As in the case of older children, the bronchitis-kettle is also used for infants and young children, but its use in the latter case should be for a limited time—fifteen to twenty minutes at a time, and eight to twelve times in the twenty-four hours.

Medicine.—Ipecacuanha wine in the early stage of the

disease, three to five drops to a child of one year, given every two hours. Syrup of squills during the latter period of the affection, in doses of five to eight drops to a child of the above-mentioned age. A baby of six months old may be given half these doses, while one younger than six months had better receive no medicine unless prescribed by a medical attendant.

As infants and very young children always swallow the phlegm, it is advisable to get rid of it by the bowels. A frequent dose of olive oil is probably the best for this purpose. Sometimes the bronchial tubes become almost full of phlegm in young children, and as they have not acquired the habit of coughing it up, it may be advisable to tickle the throat with a feather to make the child sick, or give an emetic. Half a teaspoonful of ipecacuanha wine to a child of two years may then be given every ten minutes till vomiting takes place. If on the third dose the child is not sick, then the salt and water emetic must be employed. (*See* Appendix.) No emetic is to be given if there is great prostration and the pulse is feeble.

NOTE OF WARNING

A great many of the patent and proprietary medicines advertised for bronchitis and other chest affections contain opium. These should be avoided for opium dries up the secretions of the body.

Opium is put into these mixtures for the purpose of

suppressing the cough; but this, instead of being an advantage, is a positive danger. In most cases the cough should be encouraged, for by the effort of coughing the phlegm is brought up, and the inflammation is in consequence more likely to subside. Artificial suppression of the cough in bronchitis is false relief. The use of opium has the further disadvantage of causing disorder of the stomach and bowels, and hence the patient is unable to digest the amount of nourishment necessary to sustain the body, and to enable it to fight against a severe and prolonged attack.

While this note of warning applies to all classes of patients, it does so especially to infants and young children. Infants and young children are most susceptible to opium, a single drop of laudanum (tincture of opium) being sufficient to kill a baby.

It is an open secret in the medical profession that numbers of babies are actually killed each year by mixtures containing this drug, got up in the form of bronchitis cures, cough mixtures, soothing syrups, teething powders, etc., and used indiscriminately by foolish mothers.

Local Applications.—Poultices made with mustard should not be used for infants and young children, unless under medical supervision, on account of the danger of breaking their tender skin. With such little patients continuous poulticing is likewise to be avoided, because of the weight of the material used

and the exposure of the patient whilst the poultices are being applied.

The best method is to make a jacket poultice of linseed meal and keep it on the patient for two hours. By that time there will be a red blush all over the chest. Then smear the chest over with olive oil, and apply what is known as the "oil-silk jacket." This jacket consists of three layers, the inner of soft, porous muslin or butter cloth, the middle of cotton wool about half an inch in thickness, the outer of oil-silk. The jacket may be made in two pieces, each piece being cut fourteen inches long by twelve inches wide for a child of one year old. A space is cut out for the arms to pass through, and it is slightly hollowed out at the neck; the two pieces are stitched together along one side, while the other side and shoulder is lapped over and secured by safety-pins. Such a jacket will last for over two weeks.

The oil-silk jacket is removed about four times a day, and a fresh linseed poultice applied for two hours, the whole chest being smeared with olive oil as before stated, care being taken in the meantime that the child is not unduly exposed. By this means the skin is kept warm, moist, and gently reddened.

In very mild cases of acute bronchitis, all that may be required is to oil the chest, cover with an oil-silk jacket, and keep the little patient in one room at an equal temperature for a few days.

After recovery from an attack of acute bronchitis every care should be taken to enable the child to become well and strong in order to avoid a recurrence of the disorder, or the condition passing into the chronic form. Change of air, tonics, cod-liver oil, and malt extracts are all means to this end.

CHRONIC BRONCHITIS

This consists of a slow inflammation of the lining membrane of the bronchial tubes, and is always more difficult to cure than the acute form. The condition is common in children suffering from rickets, and those who are poorly nourished.

Cause.—It is usually the result of an acute attack of bronchitis which has never been thoroughly cured, or it may be chronic from the outset.

Symptoms.—Very similar to those in the acute form, but milder. There is no rise of temperature, and the pulse-rate — except immediately after coughing — is not faster. The cough is violent, and in most cases the phlegm is difficult to "get up." The cough is worse in the morning, due to the accumulation of phlegm during sleep. Shortness of breath is always more or less present in proportion to the severity of the case, and the general health always suffers. At first an attack may only occur during the winter months, and disappear with warmer weather. Later, it may be persistent in all seasons.

Treatment.—The general health must be carefully attended to, the child being allowed to live as much as possible in the fresh air and sunlight, during suitable weather. Syrup of squills may be used for "cutting" the phlegm; the dose for a child of four is fifteen to twenty drops every three or four hours. Syrup of tar is recommended to be taken thrice daily after food, and the dose is the same as that of squills.

In chronic bronchitis, the patient should have his chest rubbed over with olive oil, or equal parts of olive oil and eucalyptus oil. Those who have a tendency to chronic bronchitis should always wear woollen garments next the skin.

When chronic bronchitis recurs each winter, it may be advisable in order to get rid of the malady to take the child to a warmer and drier climate.

A long-standing chronic bronchitis leads eventually to heart disease.

In advanced childhood (from twelve to fifteen years) chronic bronchitis and asthma are frequently associated together—Bronchitic-Asthma.

ASTHMA

This distressing malady sometimes occurs in infancy and early childhood, but in such young subjects it is always associated with bronchitis, and is, therefore, called bronchitic - asthma. Uncomplicated asthma rarely takes place until late in childhood, and the

predisposition is then usually inherited from parents. It is often accompanied by other nervous conditions in the individual.

In children, asthma is often associated with dyspepsia, enlarged tonsils, post-nasal growths, and diseases of the nose, and when these conditions are treated the asthma is either relieved or cured.

The disease is more common in those who live in the country than amongst city-dwellers, which is probably due to the greater inhalation of fine vegetable dust—"pollen asthma," "hay fever," etc.

Symptoms.—In advanced childhood the symptoms of asthma are similar to those in adults. An attack usually comes on suddenly, and without warning. It consists in great difficulty in breathing, in which the patient gasps or pants rapidly, and complains of a smothering sensation with a feeling of constriction round the chest. Often the patient is unable to speak, and his efforts at breathing are laborious, and accompanied by a wheezing noise. He is usually unable to remain lying down in bed, and is found sitting up with his head thrown back, apparently in dire distress. His countenance is flushed, or may be unduly pale; the face is covered with perspiration; and the hands and feet are cold. There is no increase of body temperature, and no cough, unless there be some bronchial affection added. After the attack is over small pellets of mucus are usually brought up.

Sometimes the attack comes on during the night without any apparent cause. At other times it is preceded by languor, mental depression, unduly high spirits, flatulent dyspepsia, and the passing of a large quantity of urine.

If unrelieved, the attack may last as long as four to six hours. The patient then usually falls into a sound sleep from exhaustion, and may awake quite free from his asthma. He may then enjoy good health for a period of days or weeks, then another attack may come on.

The foregoing description applies to cases of the worst form; there are many others of much less severity.

Treatment.—A small cup of strong black coffee (without milk) during an attack does good, but it must be given on an empty stomach.

The patient's hands should be placed in hot water, and hot water bottles applied to the feet. Citrate of caffein is found to be good treatment during an attack, and also to prevent one coming on. The dose is 1 to 1½ grains to a child of twelve, which may be repeated in two hours if necessary. If an attack is expected during the night, the above dose may be taken as a precautionary measure one hour before bedtime. If the stomach is full, it is advisable to give an emetic. For young children the salt and water emetic (*see* Appendix) is most suitable. For a

child of twelve years of age, 20 grains of ipecacuanha powder is the best emetic. Relief usually follows vomiting. The bowels should always be freely moved by a smart purge before a threatened attack. This will modify its severity or even ward it off. A large dose of liquorice powder will do for this purpose.

Powders are also used as sources of relief by being burned and the fumes inhaled. A good powder consists of one teaspoonful of nitrate of potash, one teaspoonful of ground stramomium (leaf or stalk), and one teaspoonful powdered lobelia leaves well mixed together. Turn a saucer upside down and put a teaspoonful of this mixture upon it. Apply a match and inhale the fumes. This powder is of no use if there is any bronchitis present, and in such cases it is best not to use it.

Preventive Measures.—If the asthma only occurs during the spring and early summer, it is suggestive of pollen irritation. Then attention to the condition of the nose and throat is advisable.

If the case is one that is associated with bronchitis a change to a warmer and drier climate should be considered. A case of bronchitic-asthma will not get better until the catarrhal condition of the bronchial tubes is cured.

In regard to simple asthma, however, changes of climate are always of doubtful benefit. When a climate is found which agrees with the patient he

should be left there for a few years for the purpose of effecting a permanent cure. An inland high, dry, and fairly warm climate is the best, which must be free from river fogs.

Asthmatic subjects should take mild exercise in the open air, and sponge the whole body each morning with cold water, followed by friction with a rough towel. They should always sleep in a well-ventilated, warm room.

Care must be exercised that no indigestible food is indulged in, and especially should late suppers be avoided. The condition of the bowels must be attended to, so that no constipation exists.

An asthmatic child should always be examined by a medical man, in order to ascertain if any throat or nose trouble exists. When such is found, it should be at once removed.

PLEURISY

Pleurisy is an inflammation of the membrane covering the lung—the pleura. The pleurae are two large, fine, membranous closed sacs or bags—one for each lung. Each pleural membrane is so arranged that the inner layer of the bag covers the lung, while the outer layer lines the chest wall. In health these two layers of membrane glide the one over the other during each inspiration.

"Dry" pleurisy consists in inflammation and

consequent roughening of these gliding surfaces, hence the pain in breathing.

"Wet" pleurisy is always preceded by "dry" pleurisy, and consists of a collection of fluid between the pleural layers.

Pleurisy is regarded by the public generally as a disease of very little consequence. This is a false view, for while "in few maladies is early attention better rewarded, in few is neglect more surely punished." Pleurisy, especially of the "wet" variety, is not uncommonly followed by tuberculosis (consumption).

Cause.—Usually due to a "chill." It occurs as an accompaniment or complication of other conditions, especially inflammation of the lung (pneumonia), acute rheumatism, scarlet fever, etc.

"DRY" PLEURISY

This condition is very rare in infants and young children. In older children, from ten years and upwards, the condition is more common, and the symptoms are then much the same as those in adults.

Symptoms.—The patient first complains of a distinct localised pain in breathing—"stitch" in the chest. This pain may be anywhere over the chest (front, back, or side), and the area is usually small. The pain is short, sharp, and sudden, and most marked

when a deep inspiration is taken. Hence the patient, in order to avoid pain, breathes shallow and quick. The temperature of the body rises slightly, but the skin is dry. The pulse becomes quicker. A very slight cough is always present, but it is a dry cough, no phlegm being brought up. As the exertion in coughing increases the pain, the patient endeavours to suppress the cough. If the pleurisy is at the lower part of the chest, especially over the front or sides, the pain will be more severe, on account of the chest movements being greater there.

The only disease which may be confounded with pleurisy is a neuralgia between the ribs. Neuralgia, however, produces no general symptoms, and the pain, though perhaps equally severe, is not so marked during the end of a deep inspiration. If in doubt, the treatment outlined in pleurisy should be followed.

"WET" PLEURISY

In "wet" pleurisy there is an exudation of the more fluid elements of the blood taking place in the inflamed area, as a result of the local irritation, such fluid elements flowing into the pleural bag. Hence, the surfaces of the pleura being separated, the pain, which existed whilst the pleurisy was a dry one, disappears. The fluid is at first clear liquid, but within a few days it changes into thick matter (pus).

If in the early stages of an attack of pleurisy the

pain disappears, the patient feels very much better, and he is able to breathe more freely, we may consider that the battle is fairly won, and that the pleurisy has not gone beyond the dry stage.

Should, however, the pain gradually disappear, coupled with the fact that the patient's breathing becomes faster, and he complains of feeling cold and shivers although the body is quite hot, then the so-called "dry" pleurisy has changed into "wet" pleurisy —matter has formed between the layers of the pleura. In such circumstances always send for a doctor at once, as it may be found necessary for him to take the matter away in order to save the patient.

Treatment.—Always put the patient to bed on the earliest appearance of symptoms. Apply a poultice of two parts of flour and one part of mustard over the affected area, and keep this on for twenty to thirty minutes. In very young children this poultice should be left on for a proportionately shorter time—fifteen to twenty minutes. If it is a mild attack and taken in time, such treatment will frequently cause the pain to disappear at once. If the pain still persists, however, after the above treatment, then it is advisable to keep up the redness of the skin over the affected part, by the continued application of linseed or bran poultices. Here, then, it will be evident that the first application of mustard

and flour should fall short of burning the skin, otherwise it will be impossible for the patient to bear subsequent poulticing.

Cloths wrung out in ice-cold water are sometimes used in pleurisy, but should the patient have any rheumatic tendency, they should be avoided, as the case will probably be made worse.

In all cases of pleurisy always see that the feet are kept warm, by means of hot bottles covered with flannel.

As mentioned in acute bronchitis, early attention should be given to the emptying of the bowels, and plenty of fluid nourishment given every three or four hours. After the attack has worn off, great care should be exercised that the patient takes no liberty with himself until thoroughly strong again, otherwise he will probably get a second attack, and a chronic pleurisy follows. In going out of the house for the first time a mild, sunny day should be chosen, and the patient should be well clothed with flannel garments next the skin, and an extra layer of the same material over the affected part. If the case tends to become chronic, the liniment of iodine should be painted over the surface two days in succession, and then once every second day.

PNEUMONIA (ACUTE INFLAMMATION OF THE LUNGS)

In this disease the air-cells of the lungs are inflamed,

and as the affection always impedes the patient's breathing in proportion to the extent of the disease, even a slight attack of pneumonia must be considered a dangerous condition. Pneumonia is responsible for more deaths in infants and young children than any other single disease.

Owing to the ramifications of the bronchial tubes throughout the lungs, one would expect to get a certain amount of bronchitis with this condition. Such is the case, especially in infants and very young children, and the disease is then called broncho-pneumonia.

If the surface of the lung is involved we also get inflammation of the lung covering (pleura) added to the condition—pleuro-pneumonia.

BRONCHO-PNEUMONIA

Broncho-pneumonia is by far the most common form of inflammation of the lungs in infants and young children under two years of age. As a rule both lungs are equally affected throughout the disease. The condition is most common amongst the poorer classes where hygienic conditions of life are neglected—lack of fresh air, sunlight, etc.

Cause.—The disease may arise from a "chill," but it more frequently supervenes on influenza, scarlet fever, measles, whooping-cough, and diphtheria.

Symptoms.—In many cases the disease is preceded by a slight bronchitis, which extends to the air-cells.

In such cases the symptoms of bronchitis are first in evidence. More often the disease sets in suddenly, with a rise of temperature from 101 degrees or 102 degrees in a mild case, to 104 degrees or 105 degrees in one of greater severity, sometimes with several fluctuations, in the twenty-four hours. The breathing is always seriously affected, the respirations increasing from normal up to 60, 80, or even more per minute.

When the breathing is very rapid the nostrils dilate with each inspiration, there is a manifest indrawing of the lower sides of the chest, and the patient's distress is very evident. This frequency in breathing is due partly to the high temperature and partly to the inflamed condition of the lungs. The pulse is also increased in rapidity, but not quite so greatly in proportion to the frequency of breathing. At first the pulse-beats are strong, later they become very weak. A cough is always present, and is sometimes severe, persistent, and often causes vomiting. The phlegm is swallowed by infants and young children.

As the case becomes worse the following additional symptoms develop:—The skin is hot and usually dry; the cheeks are flushed; prostration is marked, with its accompaniment of headache, sleeplessness, and mild delirium. The tongue is coated and dry, the thirst is great. The appetite is lost, and the bowels are constipated. Rarely is there pain in the chest, although the distress in breathing is so great.

In mild cases recovery is the rule, the disease lasting on an average five to seven days. In severe cases, and especially when the subjects are not vigorous, death takes place in from three to five days. Strong children who are able to withstand a severe illness pass through the dangerous period in from four to five days, and gradually improve and recover.

These periods of days mentioned are only approximate, for there are scarcely two cases of broncho-pneumonia alike. Very much depends upon (1) the strength and constitution of the child affected; (2) the amount of lung substance involved; (3) whether or not the condition is complicated with some other disease; (4) the age of the child—the younger the more serious; (5) whether or not treated early by a physician; (6) whether or not well nursed.

Treatment.—Owing to the inflamed condition of the lungs their power of absorbing oxygen from the air is impaired in proportion to the extent of the inflammation; it is therefore most important that there should be an abundant supply of fresh air. The largest and most airy room in the house should be converted into a bedroom for the time being. A fireplace is essential, in order that the air may be kept at a temperature of 65 degrees to 70 degrees day and night. The bed should be placed in such a position that the patient may get the benefit of the fresh air from the windows without being in a draught.

As constipation is the rule throughout the disease, it is important that the bowels be not only opened early, but that the patient gets the use of them daily. A dose of liquorice powder or fluid magnesia will do very well for this purpose. Special care should be taken in feeding the child so that no indigestion may take place. When the breathing is very rapid a very young child is unable to hold his breath long enough to enable him to suck either breast or bottle. Under such circumstances it will be necessary to spoon-feed him.

As stated in acute bronchitis, infants should be frequently nursed in the arms. While an abundant supply of fresh air is essential, draughts must be avoided. This is easily accomplished by the judicious use of movable screens. Older children must be put to bed immediately on the first appearance of the symptoms of acute illness, but they should be allowed to move in bed when tired of lying in one position, and permitted to sit up in bed occasionally to enable them to "bring up" the phlegm.

Local Applications.—Cold applications must never be used to the chest unless ordered by the physician attending the case. In mild cases, and when the temperature is not very high—say not above 102 degrees—warm linseed or bran poultices are the best local applications for older children.

Poultices have to be applied continually for several

days, and the addition of salad oil will enable them to retain their heat longer. They should be changed every two to three hours, a fresh poultice being already prepared before the old one is removed. Old poultices re-heated are never so good, and this is no time for cheese-paring economy. (For the preparation of poultices *see* Appendix.) When the temperature is very high no poultices should be used; then the child's body should be lightly covered, and tepid sponging resorted to in order to reduce the temperature.

In the case of infants, the alternate use of linseed poultices and the oil-silk jacket, as described under acute bronchitis, is the best and safest local treatment.

If, however, the temperature rises above 102 degrees, the oil-silk jacket is too heating for a baby, a lighter covering must be substituted, and no poultices used. Sponging of the whole body with plain tepid water, or two parts water and one part best quality malt vinegar, is the best method of giving the infant comfort and reducing the general temperature. In sponging, only a part of the body should be exposed at a time—an arm, a leg, etc.—and no dawdling is to be permitted, so as to avoid all undue exposure of the child. The sponging may be performed every four hours, and the whole process should not occupy more than ten minutes. The child should never be thickly clad; cotton counterpanes, overcoats, mackintoshes, and all other heavy clothes must be kept off the child's bed.

The tendency is to keep a child too warmly covered up. When a high temperature is present, the bed-clothes over a child should be very light indeed, for if the hands and feet are kept warm, no ill effects will follow.

In delirium and very high temperature of older children, ice-cold cloths are of the greatest service when applied to the head and upper part of the spine (back of the neck). If ice is obtainable, it is better to use an ice-cap to the head and an ice-bag to the spine. These are extreme measures, and are only to be used to meet extreme cases. As a result of the use of ice the temperature will soon fall 1 to 2 degrees, when it is advisable to remove these local applications. In summer, when ice-cold water is difficult to obtain, then two parts of water and one of good vinegar may be used, or a dessertspoonful of liquid ammonia added to a pint of water. These will keep the cloths cool for a longer period than water alone, and also have a more refreshing effect upon the patient.

Medicine.—In all cases of pneumonia a physician should be constantly in attendance, and he will do what he considers best in regard to drugs. If, however, the services of a doctor are impossible on account of extreme distance from a populous centre, then what has been said regarding drugs under acute bronchitis holds good in broncho-pneumonia, always remembering that the last-mentioned disease is always more

serious, and also that it is better to use no drugs in infants and very young children, than to overdose them. For a child of six years of age, one drop of the tincture of aconite may be given every three hours, for three doses only, with the object of reducing a high temperature. Emetics must be withheld from all infants, while in young children they should only be given to strong patients, and when the disease is not far advanced. The best emetic is salt and water, for which *see* Appendix. What has already been said under acute bronchitis regarding soothing syrups and other proprietary medicines applies with even greater force in pneumonia. They must on no account be given.

Alcohol.—This should be especially avoided during the earlier stages of the disease. Alcohol as a drug is very often of service in stimulating the heart to tide over the worst period of the disease, especially when collapse is threatened. With infants and young children, however, care has to be exercised in its use. As a rule, when alcohol is used for infants and young children, it is given in too large a quantity, and also not sufficiently diluted. For a child one year old, half an ounce (a tablespoonful) of the best brandy or whisky can be given in the twenty-four hours; if necessary, it may be gradually increased to double this quantity, but never more. For a child four years of age twice the above amount. The alcohol should always be

diluted with at least eight times its quantity of water. A good plan is to put a tablespoonful of brandy into eight tablespoonfuls of previously boiled water, and place this mixture in a bottle and keep it well corked. Two teaspoonfuls of this mixture may be given to a child of one year old every two hours. The mixture will then last over twenty-four hours.

The Nurse.—A mother cannot nurse her own child single-handed, and do justice to her charge. It is necessary that at least two capable women be employed in all cases of pneumonia, one doing duty while the other rests. To have the services of a trustworthy, intelligent, capable nurse may make all the difference between life and death to the child.

Convalescence.—When a child has recovered from an attack of pneumonia, care should be taken to render his convalescence complete; to this end he should be sent to a suitable place for change of air, and be given tonics. Otherwise he may contract other serious chest trouble.

LOBAR-PNEUMONIA

This disease differs from the one treated in the preceding pages, in the inflammation being confined to the lung substance itself, since there is no accompanying bronchitis.

The lowest part (base) of one lung is the most common seat of the trouble, although it may involve the whole of one lung, or part of both.

Lobar-pneumonia is much more common between the ages of two and ten years, although it may appear before and after these ages.

Cause. — It is now recognised that this form of pneumonia is due to a microbe, and the disease frequently supervenes on influenza, scarlet fever, measles, typhoid fever, etc.

Symptoms.—The onset is always sudden, there being very few indications of the nature of the malady before it has completely set in. At first the child may complain of feeling ill, has a headache, his appetite is lost, and vomiting may take place. Within a few hours he usually complains of pain in the part of the chest affected — front, side, or back — though occasionally there is no pain present. The temperature rapidly rises to 103 degrees or 104 degrees, and the breathing increases proportionally — 40 to 60 respirations per minute. The pulse rate is also increased in speed, but not quite so great in proportion to the frequency of breathing. A cough is always present early, and is of a short, hacking nature, accompanied with the discharge of a white, sticky phlegm. The child is restless, his skin is dry and hot, and thirst is marked.

On the second day of the disease the patient is slightly worse, the temperature is still high, and the breathing still rapid, etc. The cough is still present, but in older children the character of the phlegm has changed; it is rusty coloured (blood-stained).

On the third day the patient, though still very ill, is not so restless. With slight daily variations of temperature and other symptoms, the case goes on without any very marked change, until the sixth or seventh day. Then, usually after a long and peaceful sleep, the patient wakens greatly refreshed and improved. His temperature has fallen, perhaps from 104 degrees to normal, while his breathing and pulse rate have also become reduced. He soon recovers his appetite, regains strength, and is rapidly on the way to convalescence.

The foregoing is a brief outline of a typical case of lobar-pneumonia, although in some cases the symptoms are obscure and complicated.

Lobar-pneumonia is essentially a localised lung inflammation, as distinct from broncho-pneumonia, and the mortality in children from the affection is small when compared with that in broncho-pneumonia.

Treatment. — What has been said with regard to general treatment under broncho-pneumonia applies equally here.

As there is no bronchitis present, the temperature of the room may be kept lower with advantage—60 degrees Fahr.

Local Applications.—It requires a doctor to exactly localise the inflamed patch, for although there may be slight pain present over a certain area of the chest wall, yet this is not usually a true guide as to the site of the disease. In children over ten years of age

it is best to first apply one poultice of equal parts mustard and flour; keep this on for ten or twelve minutes, when the skin will show a red blush. This blush is now kept up by the application of warm linseed poultices, renewed every two hours.

When the temperature is very high, it is inadvisable to use poultices in cases of infants and young children. For delirium, the ice-cap and ice-bag are best, as described under broncho-pneumonia. The whole body should be frequently sponged in every case of pneumonia.

The mouth and tongue should be cleaned often. A good simple plan is to get the little patient to rinse his mouth with a solution of a teaspoonful of baking soda in a teacupful of cold water. If he is not able to do this, then the nurse may take a part of a lemon or orange and clean the mouth frequently with it. This also relieves the thirst far better than giving the child frequent drinks of cold water, which are apt to cause indigestion.

Diet.—The main article of diet should be equal parts of milk and water, adding to each pint of such mixture a quarter of a teaspoonful of baking soda. As the appetite is always bad, the food should be limited in quantity and not given too often. To a child of twelve years of age food need not be given oftener than every three hours. An occasional drink of previously boiled water may be given between meals.

With regard to alcohol, convalescence, etc., refer to broncho-pneumonia.

PLEURO-PNEUMONIA

This consists of a lobar-pneumonia occurring at the surface of the lung, to which is added a pleurisy or inflammation of the lung covering (pleura). The two diseases usually arise at the same time.

We then get all the symptoms of pneumonia, with those of pleurisy added, and hence the case is always more serious than pneumonia alone. As in the case of pleurisy, we get severe pain on inspiration, which is a guide to us, in this instance, at least, where to apply our local applications.

The general treatment and management of such a case is practically the same as in pleurisy and pneumonia.

CHAPTER VII

Diseases due to Infection

INFLUENZA

This acute infectious malady attacks infants and children of all ages, and is quite distinct from an ordinary "cold."

Cause.—Influenza is due to a germ which enters the system by the air passages, and is readily transmitted from one subject to another by means of the breath.

General Symptoms.—The onset is usually sudden, with pains in the back and limbs, headache, rise of temperature (102 degrees to 104 degrees Fahr.), rapid pulse, and usually marked languor and prostration. Even in mild cases there is always some degree of prostration which marks influenza off as distinct from an ordinary cold, and this prostration frequently remains for weeks after all the other symptoms have disappeared. The symptoms in each case vary greatly, according to whether the respiratory, gastro-intestinal (stomach and bowels), or the nervous system is chiefly attacked.

(1) When the respiratory system is the chief seat of the trouble the symptoms are frontal headache, inflamed eyes, sore throat, and often varying degrees of bronchitis, and even broncho - pneumonia. (*See* abov.e) There is always a cough and a purulent discharge from the nose. Temporary loss of smell, taste, and hearing may issue.

When bronchitis or pneumonia develops in children after an attack of influenza, the condition becomes very serious, and the younger the child the greater the danger.

(2) When the stomach and intestines are the parts mainly attacked, vomiting, colicky pains, and diarrhœa set in early. The vomiting may last for one or two days and be uncontrollable, while the diarrhœa may continue for nearly a week, and may be suggestive of typhoid fever. When diarrhœa is present, prostration is always a marked feature.

(3) When the nervous system is mainly involved, there is stupor, sunken eyeballs sensitive to light, delirium, and even convulsions. The temperature is always high in these cases, and inflammation of the brain and its membranes is not uncommon.

When influenza is complicated with bronchitis, pneumonia, diarrhœa, etc., the services of a doctor must be obtained, but before his arrival the articles on these conditions may be read with advantage.

Treatment.—The patient must be carefully nursed

and protected from draughts, in order to safeguard him from any chest complication. A mild aperient should be given early, and care taken that the stomach is never overtaxed, while at the same time sufficient nourishment is given to sustain the child's strength. A suitable diet is that given above under bronchitis. If the temperature is very high, the child should be sponged every four hours with a cooling lotion, formed of vinegar one part, water two parts.

Medicine.—No medicine for influenza should be given to a child under four years of age unless ordered by a doctor. Quinine is the best and safest drug for older children; half a grain every four hours may be given to a child of four years of age, and one grain to a child of twelve. Quinine is best given to children in glycerine or syrup, in order to disguise its bitter taste, and it is advisable to get a chemist to prepare the mixture. If cough is a marked symptom, small doses of ipecacuanha wine and syrup of squills may be given, as indicated above under treatment of bronchitis. Extreme prostration demands stimulation, when small doses of very diluted brandy or whisky may be given as described under treatment of pneumonia.

Convalescence.—A child having suffered from influenza should not be permitted to go out of the house until he has thoroughly recovered. Tonics, such as cod-liver oil and malt extract, may then be

given, with easily digested nourishment, such as chicken broth, custards, etc. Beef juice is of great value in hastening the recovery of young children (*see* Appendix).

DIPHTHERIA

This disease is characterised by an acute inflammation of the throat and surrounding parts, and is due to the action of a special bacillus (germ). Although essentially a local disease, yet the poison absorbed into the system from the seat of inflammation is sufficient to produce constitutional disturbance of a very serious character.

Cause.—It is supposed to arise originally from defective drainage, which affords a suitable condition for the germ to develop. There is no doubt that diphtheria is far more prevalent where defective drainage systems exist than elsewhere.

From infected persons the germ is carried by the discharges from the mouth and nose. Hence, doctors and nurses, as a class, are more often victims to the malady than any other adults.

Certain conditions predispose to the development of diphtheria. It is most common in children from the ages of five to fifteen, and more fatal from two to six. Any unhealthy condition of the throat and mouth, such as enlarged tonsils, post-nasal growths, etc., makes the individual prone to an attack.

Symptoms.—These vary with the severity of the attack. As a general rule the onset is gradual and marked by "soreness" in the throat, difficulty in swallowing, loss of appetite, and depression. Sometimes the symptoms are more abrupt, being ushered in by a rigour (shivering). The temperature soon rises, often as high as 103 degrees and 104 degrees; the pain in the throat increases; the glands at the angle of the jaw become enlarged, the neck stiff, and the breath foul. As the disease progresses, all the above symptoms become more marked. The breathing is rendered difficult, and is accompanied by a hissing noise, due to the formation of a new membrane in the throat, resulting from the inflammation. In most cases, the severity abates after the fourth or fifth day, and gradually the symptoms mentioned disappear. By the tenth day the patient may be convalescent.

The part directly affected in diphtheria is the mucous membrane covering the tonsils and soft palate. These become red and swollen, while greyish-white patches gradually appear on them. These patches of new membrane extend by degrees, until a large area of the throat is covered. Or, if the case be a very severe one, the throat, back of the nose, and the windpipe, may be entirely covered. In the latter case it is obvious that breathing is a matter of the greatest difficulty, especially if the tonsils were previously

enlarged, or the sufferer is a young child with a very small throat. When this false membrane is newly formed, it is firmly attached, and if forcibly removed, leaves a bleeding surface. Later, it changes its colour to a dirty yellow, similar in shade to chamois leather. After the fifth or sixth day this membrane separates (sloughs off), and in favourable cases the throat gradually regains its normal appearance.

For many weeks afterwards the glands in the neck remain enlarged, and paralysis occasionally develops in certain groups of muscles—post-diphtheritic paralysis: such as the eye, resulting in squint; the palate, rendering the voice of a nasal quality, and causing difficulty in swallowing; the legs, producing lameness. Fortunately, if treated early and correctly, these cases of paralysis completely recover.

Treatment (*locally*). — Very hot moist applications should be put on the outside of the throat, either in the form of hot moist cloths or poultices of linseed. For the same reason, it is advisable to use the bronchitis-kettle as described under acute bronchitis, for the purpose of keeping the throat under the influence of hot moist air. Further, this should be medicated by a teaspoonful of pine oil, or Friar's Balsam, or half a teaspoonful of oil of eucalyptus or turpentine to each pint of water in the kettle.

It is highly important that the mouth and throat be kept thoroughly clean. In older patients this can

be done fairly well by gargles and mouth washes. For this purpose a gargle of Condy's Fluid, or chlorate of potash, will do. In young children, however, the best way is to tie a pledget of cotton wool round a blunt wooden skewer. This is saturated in a solution of peroxide of hydrogen two parts, glycerine one part, and the throat and mouth thoroughly swabbed, and the stick immediately burnt. The swabbing should be begun at the back of the throat, and then forwards and outwards, repeating the process three or four times daily.

Internally. — As diphtheria is a disease in which the mortality is very high, a doctor must be called into the case as early as possible, and the necessary drugs will be ordered by him. On the earliest indication of the disorder, however, a dose of opening medicine should be given, and for that purpose the compound liquorice powder does very well. In all serious cases the medical profession now resort to the use of antitoxin, a substance which prevents the full development of the diphtheric germ in the system. This method of treatment has been highly successful by considerably reducing the number of fatal cases.

Food must be of a fluid nature—milk, milk and bread, beaten-up eggs, broths, beef-tea, and the like. Young children who are refractory may require feeding forcibly.

Preventive Measures.—In order to prevent the disease

from spreading to others, the patient should be isolated. If there are children in the house, extreme care must be taken to prevent them gaining access to the sick-room. Kissing or fondling of the patient must be forbidden. Nurses, or others, swabbing out the throat should protect themselves during the operation. The following will do for this purpose:—A piece of strong brown paper, about the size and shape of the hand, is taken, and to each end is attached a tape. Place over the mouth and nose, and tie the tapes at the back of the head. After use, paper and tape should be burned.

All carpets, curtains, pictures, and superfluous furniture should be removed from the sick-room. A large sheet should be kept wet with a solution of carbolic acid one part, water thirty parts, and hung outside the door of the sick-room. All domestic pets should be kept outside, and the bedroom rendered free from flies, for all these carry infection.

All books, toys, etc., used in the room must be afterwards burned. The clothes worn by the patient, and all bedding, will have to be steamed and disinfected. The room occupied will have to be scrubbed and cleaned with an antiseptic solution, and the walls whitewashed. If papered, removal of the paper from the walls will be necessary, and the paper must be burned.

WHOOPING-COUGH

Whooping-cough is an infectious disease, which

frequently occurs in an epidemic form. There is always some catarrh of the air passages, accompanied by an increase in their sensitiveness.

Cause.—It is due to a special germ inhaled into the respiratory passages, and carried from patient to patient by the breath, phlegm, articles of clothing, etc. It is mainly a disease of childhood, though occasionally adults suffer, and it is rare that a second attack occurs in the same individual. Simple whooping-cough is not of itself a dangerous disease, but when accompanied by measles and scarlet fever—as it not infrequently is—then the condition is always a serious one. It is significant that it often follows measles.

Symptoms.—For convenience, it is advisable to divide the conditions into three stages, each one having symptoms peculiar to itself.

(1) *First, or Catarrhal Stage.*—This usually begins as an ordinary "cold," in which the child is slightly feverish. There is a cough of an ordinary character present, accompanied by some slight amount of phlegm, and usually a watery discharge from the nose. This stage generally lasts from seven to ten days, and such a condition occurring in a child whilst an epidemic of whooping-cough is in the neighbourhood, should suggest the probability of this disease coming on, and induce parents to treat the case accordingly.

(2) *Second, or Whoop Stage.*—Many of the symptoms of ordinary "cold" now disappear, but the cough lasts longer and changes into the characteristic cough of the disease. Each attack of the cough begins with a long, "indrawn breath," followed by a number of short, sharp, rapid coughs, and ends in a second long, "indrawn breath," which is accompanied by a crowing noise — the "whoop." This "fit" of coughing is usually repeated two or three times, when at last some phlegm is brought up, and breathing resumes its natural quiet form. The "fit" of coughing does not cease until the phlegm is brought up, and then it often ends in vomiting. The sticky nature of the phlegm which irritates the air passages, and the violent coughing, induces this vomiting. In mild cases these "fits" of coughing may only take place three or four times a day, but in severe forms of the disease they recur with great frequency, sometimes as often as forty or fifty times during the twenty - four hours. They occur more frequently during the night, thus disturbing the child's sleep. During the coughing "fit" the face often becomes dark crimson in colour, the veins swell, the eye-balls protrude,

the eyes water, and the child appears to be suffocating. Occasionally bleeding from the nose and ears takes place, and a small blood-vessel may burst under the "white" of the eye.

These symptoms continue for a period varying from four to six weeks, and gradually pass into the . . .

(3) *Third, or Stage of Decline.*—The "fits" of coughing now become less severe, and with gradually a longer interval between them. The phlegm becomes less sticky and is coughed up with comparative ease, until by degrees all the symptoms disappear.

The duration of whooping-cough greatly varies, but when left to itself may extend from three to six months.

Treatment.—During the first stage the child must be kept within one room, and it is advisable that carbolic acid or eucalyptus be used in the form of a spray, so that the child may inhale medicated air day and night. For this purpose a bronchitis-kettle is serviceable, as described under the treatment of acute bronchitis. A teaspoonful of carbolic acid or half a teaspoonful of eucalyptus oil added to a pint of water in the kettle is the quantity to use. A simple cough mixture, such as ipecacuanha wine, six drops, and syrup of tolu, ten drops, combined, may

be given to a child of four years of age every three hours, in a little water.

Great benefit is said to be derived by the child inhaling sulphur fumes. The method is as follows:— The child is taken out of the room, and four tablespoonfuls of sulphur placed on a shovel with a little live coal, and the doors and windows carefully closed for a period of five to six hours. The room is then freely ventilated until the air is fit for breathing. The little patient is then returned to the room, and put into bed. Next morning a great improvement will be observed in the child's condition, as a result of breathing the sulphurous fumes which have impregnated the room and its contents. The quantity of sulphur mentioned is sufficient for a room about 12 feet square. This method is said to cut short the early stage.

During the second stage, if there is no bronchitis or other complication present, the child may be permitted to go outside on dry and sunny days. The chest, back and front, should be well rubbed daily with equal parts of olive and eucalyptus oil, or olive oil and turpentine liniment. For the purpose of rendering the phlegm less sticky, and easier to bring up, a solution of bicarbonate of soda may be kept at hand, and the child allowed to take an occasional drink of it. Half a teaspoonful of the soda in a pint of water is the proportion, and of this

a child four years of age may drink about half a teacupful every three or four hours.

Whilst this stage lasts, a difficulty is often experienced in getting a child to retain sufficient food to keep him in fair physical condition, on account of the frequency of vomiting. Immediately after vomiting takes place, the little sufferer should get a fresh supply of food, and there will be a chance of this digesting before the next attack of vomiting occurs. Further, if the vomiting is more frequent during one period of the twenty-four hours than at another—say, during the day—then a greater supply of nourishment should be given during the night, or *vice versâ*.

The quality of food should be highly nutritious, and be given a little at a time, in order to prevent, as far as possible, the tendency to vomit.

Regarding internal medicine, the most highly recommended is quinine, in the dose of half to one grain to a child of four years three times a day.

During the third, or declining, stage, the child will require tonics, such as cod-liver oil with malt extract, or iron. Should the cough persist for a protracted period, a change to a warmer and drier locality, or to the seaside, is advisable, when the cough will soon disappear.

SCARLET FEVER (SCARLATINA)

These names are equally applicable to an infectious

and contagious disease, mainly of children. Adults who have escaped scarlet fever in earlier life are more liable to contract the disease than other grown-up people. Scarlet fever derives its name from the colour of the rash, which appears on the skin.

Cause.—It is caused by a germ, the vitality of which is very great. It adheres to clothing, articles of furniture, books, pictures, toys, etc., with unimpaired virility for a long time after the disease has apparently disappeared from the locality. The disease is spread by contact with the patient at any time during the illness, but is carried chiefly in the scales of the skin, which come off very freely towards the end of the attack. Probably more than half the cases of scarlet fever arise through children who have had the disease being sent back to school before the infection has properly left them.

Symptoms.—The stage of incubation is very short—one to two days. A person may therefore be exposed to the infection of scarlet fever, two days afterwards be taken very ill, and reach the invasion stage. The "brewing" stage of this disease is of shorter duration than that of any other fever.

The disease develops rapidly, with languor, headache, and a rise of temperature, and all the accompanying signs of fever. The face becomes flushed, the throat sore, and on looking into the latter an acute inflammation is seen to spread uniformly over all its surface,

which is swollen and angry-looking. The tongue has a characteristic appearance. It is thickly coated and of a dirty colour over the back and middle portions, while the point is of a bright red. Frequently, in very young children, the disease is ushered in by vomiting, and in infants sometimes by convulsions.

On the second day of the illness, the eruption appears on the neck and shoulders, and spreads over the whole body in from twenty to thirty hours. The rash first appears in bright red spots, which gradually merge together, till the skin is scarlet in appearance. The colour of the rash is usually a brick red, but varies from a light pink in mild cases to a deep scarlet in severe attacks. It remains of a scarlet hue for about three days, and then gradually fades.

After the rash comes well "out," the temperature becomes lower, and the feverish symptoms abate. The tongue now begins to clean from the tip backwards, and presents a very red appearance, with little fleshy prominences over it resembling those on a strawberry (strawberry tongue). The glands in the neck are swollen and tender throughout the attack.

The stage of decline sets in when the rash begins to fade. The skin then begins to peel. Where the skin is tender, such as on the protected parts of the body, it comes off in the form of powder or thin scales. Where the skin is coarser, such as the hands and feet, it peels off in large scales or flakes. The duration of the

peeling stage varies, but it is usually completed by the end of the third or fourth week. In some instances, however, it extends to as long as six weeks.

The foregoing description applies to a simple or uncomplicated attack of scarlet fever, but there are many cases in which the disease is complicated with other manifestations.

(1) The inflammation of the throat may be very severe, and lead to abscesses in the neck; (2) acute rheumatism of the joints may set in; (3) the ear may become affected by extension of the inflammation from the throat, causing a discharge from that organ, and deafness; (4) rarely, inflammation of the membranes covering the brain (meningitis) sets in, giving rise to head symptoms, and often a fatal issue. In uncomplicated cases of scarlet fever, complete recovery is the rule.

Treatment.—All curtains, carpets, pictures, and superfluous furniture should be removed from a well-ventilated room, and the patient placed therein, and isolated from the other members of the family. If the temperature is high, half a drop of the tincture of aconite should be given to a child four years of age every three hours for four doses, or quinine, half to one grain every three to four hours. If the throat is very bad, sulphocarbolate of soda is probably the best. The dose is two to three grains dissolved in water every three hours for a child four years old.

As to local applications, patients old enough to gargle may use a solution of Condy's Fluid for this purpose. In very young children who cannot gargle, the throat should be painted three or four times daily with a camel's hair brush dipped into a solution of glycerine of borax. Cold compresses applied to the throat are badly borne, and should be employed only if the temperature is very high, in which case they may be also used on the head and upper part of the spine. Hot fomentations are much more comforting to the patient. Frequent tepid sponging of the whole body is to be recommended, especially in all cases with nervous symptoms.

Nourishment should be given in liquid form, such as milk, beef-tea, broths, gruels, etc.

During the time the skin is peeling, the patient should have a tepid sponge bath daily, and the skin be rubbed with camphorated oil, olive oil, or eucalyptus and olive oil combined in equal parts.

All utensils, towels, bed linen, and underclothing used by the patient should be washed and kept apart from those of the household.

The patient should be kept in bed for about ten days, and in the one room for a period of four to six weeks. In order to prevent infection to others, a child should be kept from school for at least two months. During the convalescent stage it will be advisable to give the patient a tonic of some kind,

to enable the child to regain his strength. One of the syrups containing iron, or malt extract with cod-liver oil, will do for this purpose.

MEASLES

Measles is a very contagious disease, much more "catching" than scarlet fever, although not nearly so dangerous. It is a disease of childhood, though adults sometimes suffer, and a second attack is not unknown. When one child in a family takes measles, the other children usually become affected.

Cause.—It is due to a germ, which is contained in the secretions from the nose, throat, air passages, and the skin of an affected person, and is spread thereby.

Symptoms.—After a subject is infected, it takes seven to ten days (incubation period) before any ill effects appear. Then the invasion stage sets in, with all the symptoms of catarrh, such as rise of temperature, running from the nose and eyes, cough, and usually sore throat. The eyes and eye-lids are red, and there is extreme sensitiveness to light. As a general rule, some slight amount of bronchitis is present, and with the cough there is phlegm. Frontal headache and stomach disturbances are generally in evidence. The temperature rarely rises as high as in scarlet fever.

The patient is ill with the above symptoms for about four days, when the rash appears. It presents

itself first on the forehead, then travels down the face, neck, and chest, and gradually spreads over the rest of the body. It appears irregularly in small, elevated patches of a dusky-red or mulberry colour. When the rash is freshly "out" it will disappear entirely on pressure, but not so after a few days. The rash remains for a period extending over four or five days, when the skin begins to peel off in the form of fine scales. On the appearance of the rash, the temperature goes down a degree or two, and by the seventh or eighth day the febrile symptoms have, as a rule, all disappeared.

Treatment.—In a very mild case of measles, all the treatment necessary is to relieve the symptoms present. A purgative should be given at the commencement, which will, as a rule, prevent stomach and bowel trouble from developing. The eyes must be protected from the light by having the blinds drawn, and a little vaseline should be applied to the edges of the eye-lids at bedtime to keep them from being glued together in the morning. If the eyes are painful and blood-shot, a lotion made by dissolving ten grains of boracic acid in two tablespoonfuls of water may be used to bathe them. If there is any bronchitis present, treatment as described under that section will be required.

When the rash comes out early, there is less liability to bronchitis or inflammation of the lungs

complicating the case. Should the eruption, however, be retarded or badly developed, while at the same time the patient has a high temperature and appears very ill, it is advisable to give a warm bath and plenty of hot drinks to cause the skin to act freely. Also, give half-drop doses of tincture of aconite in water every three hours to a child of four. The foods recommended under scarlet fever are also suitable during this disease.

While the skin is peeling, daily tepid sponging of the body should be carried out, and the skin well rubbed afterwards with equal parts of eucalyptus and olive oil.

During convalescence, the child will require a tonic, and the best is malt extract combined with cod-liver oil.

GERMAN MEASLES (FALSE MEASLES)

This is an acute, infectious disease of an epidemic nature, and often mistaken for true measles, and even scarlet fever. The eruption occurs on the first day of the illness, and consists of a red, mottled rash, brighter than that in measles, and varying in size from a sixpence to a two-shilling piece, with various gradations between the two sizes. It begins on the face and soon spreads, usually in one day, all over the body and limbs. At first it is not raised above the skin surface, but soon becomes so. The eruption

fades in about a week, and usually leaves a fine scaliness, which commonly sets up suspicions of scarlet fever. During the course of the disease there is usually slight febrile symptoms, "sore" throat, congested eyes, and the glands of the neck are enlarged.

The condition differs from true measles, by the appearance of the rash, and the fact that it comes on the first day. The symptoms are also of a milder type. It differs from scarlet fever by the absence of the strawberry tongue and the mildness of the symptoms.

Treatment.—No particular treatment is required beyond regulating the bowels, giving milk food, and guarding the child from cold.

CHICKEN-POX

Chicken-pox may be defined as a very mild, eruptive fever of childhood. It is characterised by the formation of vesicles (small bladders of fluid) on various parts of the body, and usually occurs in an epidemic form.

Cause.—It is a contagious disease, due to a germ, and communicated from one child to another by direct contact, by means of clothes, towels, etc.

Symptoms.—The child is usually infected for about a fortnight before any symptoms arise, though he may feel "out of sorts" for a day or two before the rash appears. The eruption comes out in successive

crops, usually appearing first on the breast and shoulders, and on the rest of the body later. It frequently breaks out on the scalp, and sometimes on the face and limbs, but it is never so thickly distributed on these last-mentioned places as it is on the body.

The eruption begins as a small round, red pimple, slightly raised above the surrounding skin surface, and not unlike a flea bite. This enlarges to a clear bladder of fluid (vesicle), and gradually dries from the centre outwards. As the vesicle dries it becomes brownish in colour and forms a crust, which the child usually picks off. This crust leaves no mark or depression in the skin (distinction from small-pox). The time occupied from the breaking out of the rash to the dry crust is only a few days. During the process, fresh crops come out, so that the eruption may be seen all over the body in all its stages at one time. The condition lasts about a week, during which time the skin is very irritable.

Chicken-pox may accompany erysipelas, scarlet fever, measles, or whooping-cough, when it always adds additional risk to the patient.

Treatment.—All the treatment necessary is to give the child some mild aperient, such as fluid magnesia, when the child is out of sorts, or when the rash first appears. The itching of the skin may be relieved by the application of the following ointment, carbolic acid one part,

vaseline twenty-four parts. It is necessary to get a chemist to make this up in order that it may be properly prepared. The child must be kept warm, and not exposed to a draught.

As chicken-pox is highly infectious the child must be kept from school until the crusts have completely disappeared. His clothes, bedding, and bedroom must be thoroughly fumigated and disinfected.

CROUP (TRUE CROUP. MEMBRANOUS CROUP)

In this acute disease there is an inflammation of the interior of the "voice-box," which is followed by the formation of a characteristic membrane, made up of the inflammatory products. This membrane varies in appearance, but is usually of a white or dirty-white colour. The membrane narrows the air passage, and as the disease occurs in young children whose "voice-boxes" are very narrow, even under ordinary conditions, it will be easily understood how difficulty in breathing—the chief symptom in croup—is brought about.

Cause.—Great doubt exists as to the real cause of croup, the majority of physicians being of opinion that it has a close relationship to diphtheria. Often cases arise in which it is most difficult to tell whether the condition is one of croup or diphtheria. Then it is usually termed diphtheritic-croup. Exposure to cold and damp undoubtedly favours its development. The

disease is most frequent between the ages of two and six years of age, and among boys more than girls.

Symptoms.—Usually it is preceded for a few days by the symptoms of an ordinary cold in the throat. At other times its development is quite abrupt, almost the first indication of the trouble being a marked huskiness of the voice. A cough soon develops, which is at first hoarse, with a clanging sound, and occurring in "fits." The voice-channel being narrowed, a peculiar, high-pitched sound is produced in breathing, similar to the whistling of wind (stridulous breathing). The difficulty in breathing gradually increases, until the child tosses about and clutches at his throat, as if trying to relieve the feeling of suffocation. The cough now becomes more "brassy," or metallic in character, and might, perhaps, be best described as a croak—hence croup. At first, there is little or no phlegm; later on, some mucus with small fragments of the croupy membrane may be brought up by the cough. The child's temperature rises, and may reach a fairly high point, and all the symptoms which accompany a feverish condition are present. The skin, at first, is hot and dry, but as the disease progresses and the little sufferer becomes exhausted, the skin gets cold and clammy. The glands in the neck are enlarged and tender.

The above condition may continue for three to five days, when, in a favourable case, the cough brings up

the membrane, and the symptoms clear up. The cough now becomes louder and freer, and the breathing is carried on with comparative ease, while the croupy noise disappears.

Treatment. — As the great danger in true croup is that the child may get choked by the membrane in the throat, the treatment must be directed mainly to soften that structure, and so get rid of it. For this purpose, moist air inhalations must be used as soon as the earliest symptoms of the disease manifest themselves. A bronchitis-kettle must be obtained, or the substitute described under the treatment of acute bronchitis. A teaspoonful of Friar's Balsam, or half a teaspoonful of oil of eucalyptus, should be put into the kettle for each pint of water contained therein, and in addition to this a teaspoonful of bi-carbonate of soda (baking soda). This medicated steam should be allowed to play on the child, day and night. At the same time, a hot linseed poultice, or fomentation, should be kept over the front of the patient's throat, and the upper part of the chest. The bowels should be well opened early in the attack, and plenty of hot drinks given. After the membrane has been softened by the hot vapour, an attempt is made to expel it by emetics. The salt and water emetic is the most effective for this purpose (*see* Appendix). Ipecacuanha wine, as an emetic, is of little use in croup. A small teaspoonful of alum is

a good emetic in such a condition, and may be given in syrup every ten to fifteen minutes till vomiting takes place. After vomiting, part, or the whole, of the membrane may come away, and if the latter, recovery soon follows. An emetic is often assisted by tickling the throat with the fingers or a feather.

Internally, five to ten drops of sweet spirits of nitre may be given every two hours.

As the child will soon get exhausted while suffering from this disease, the feeding should not be neglected whilst the above-mentioned remedies are being applied. The patient will require liquid nourishment every two hours. Probably a stimulant will be necessary during the critical stage of the disease, and for this purpose fifteen to twenty drops of the best brandy, freely diluted in water, may be employed and given to the child every two hours.

CATARRHAL OR FALSE CROUP (ACUTE LARYNGITIS)

While there is an acute inflammation of the lining of the larynx or "voice-box" in both true and false croup, in the latter there is no formation of a membrane.

Cause.—Exposure to a damp atmosphere or irritating vapours. It is more common in young children who suffer from enlarged tonsils. It occasionally accompanies scarlet fever and measles.

Symptoms.—These are very similar to the symptoms described in true, or membranous croup, but are of

a much milder character. What appears to be an ordinary cold is soon followed by a slight rise of temperature, hoarseness, and, may be, loss of voice. The child has always difficulty in breathing, in proportion to the swollen condition of the "voice-box," and the noises made are similar to those already described in true croup; the symptoms, however, are more intermittent. On looking down the throat, it is seen to be swollen, and very red, but there is no membrane to be observed, as in the case of true croup. The condition lasts for about three days, and is always worse at night.

Treatment should be begun on the appearance of the first symptom. The child should first get a warm bath, to which mustard may be added, the temperature of the water being such as to be pleasantly warm to the nurse's bare elbow. After being dried well, and put to bed in dry clothing, a dose of liquorice powder in warm water should be given to the little patient. The remedies adopted for true croup should then be resorted to, including medicated steam and aconite.

As there is no membrane to be brought up, it will not be necessary to produce sickness. After the child attains his usual condition of health, great care should be exercised for a considerable time, to prevent him from "catching cold," for false croup has a great tendency to recur in a child.

SPASM OF THE THROAT

This is an acute affection which occurs in children (boys particularly) between six months and two years of age. It consists of a tightening (contraction) of the muscles in the windpipe, thus causing great difficulty in breathing. It is most commonly met with in delicate children, especially those suffering from rickets.

Cause.—It may be due to (1) emotional disturbance, such as a fright, or "fit" of crying; (2) constitutional disturbances, as in teething, overloaded stomach or bowels, and worms; (3) brain disease.

Symptoms.—While the child is apparently in its ordinary state of health, an attack comes on suddenly, usually at night, and without a previous warning. He seems to stop breathing, and then inhales with a crowing noise. In a mild case, this may be repeated for a few minutes, after which the ordinary breathing is resumed. In a more severe attack the breathing ceases completely for a considerable time—fifteen to fifty seconds—when the little patient lies back with an expression of terror on his face, his eyes staring, the veins in the neck distended, and to those around he appears to be dead. All at once the spasm of the throat muscles cease, and he takes a long breath, which is accompanied with a crowing noise. During the attack, the fingers and toes are usually clenched, and occasionally convulsions set in.

Spasm of the throat is apt to be mistaken for a

mild attack of false croup. By noting the following points this mistake will be avoided:—(1) There are no feverish symptoms present; (2) the child appears in good health immediately before and after the attack; (3) it is always quite sudden in its onset.

Treatment.—As soon as the attack comes on, all garments must be loosened round the neck, and the child put into a warm bath, care being taken that in the excitement of the moment the water is not too hot. If comfortably warm to the nurse's elbow, the temperature of the bath will be right. (*See* Appendix.) While in the bath cold water may be thrown over the face and head. After the breathing is restored, hot fomentations should be applied over the throat and upper part of the chest.

In order to avoid a return of the trouble, investigation should be made to find out the probable cause of the spasm, and treatment rendered accordingly. It may be necessary to regulate the stomach or bowels, lance the gums, or to treat the child for intestinal worms.

CHAPTER VIII

Rupture and Complaints of the Bladder and Rectum

rupture (hernia)

(1) *Navel Hernia.*—The navel sometimes protrudes in a young child, producing the condition known as umbilical hernia. This need not be considered a serious condition, for under the following treatment, if continued for a few weeks, it will usually disappear.

Treatment.—Each morning, after the child's bath, press in the protrusion, draw the skin over from above and below, and apply a broad piece of Mead's adhesive plaster, so as to keep the navel out of sight. This simple application is far better than elaborate trusses made for the purpose. No conical pad should be used, for it will defer the cure.

(2) *Groin or Inguinal Hernia.*—This condition is sometimes seen in baby boys. It consists of a knuckle of the bowel protruding on the inner side of either groin, covered by skin only, making its way into the scrotum (purse). It may be recognised by an enlarge-

ment which is free from inflammation, and which moves when the child coughs or cries. It is most prominent when the child stands erect.

Treatment.—As the condition is easily mistaken for a testicle which has not yet descended into its proper

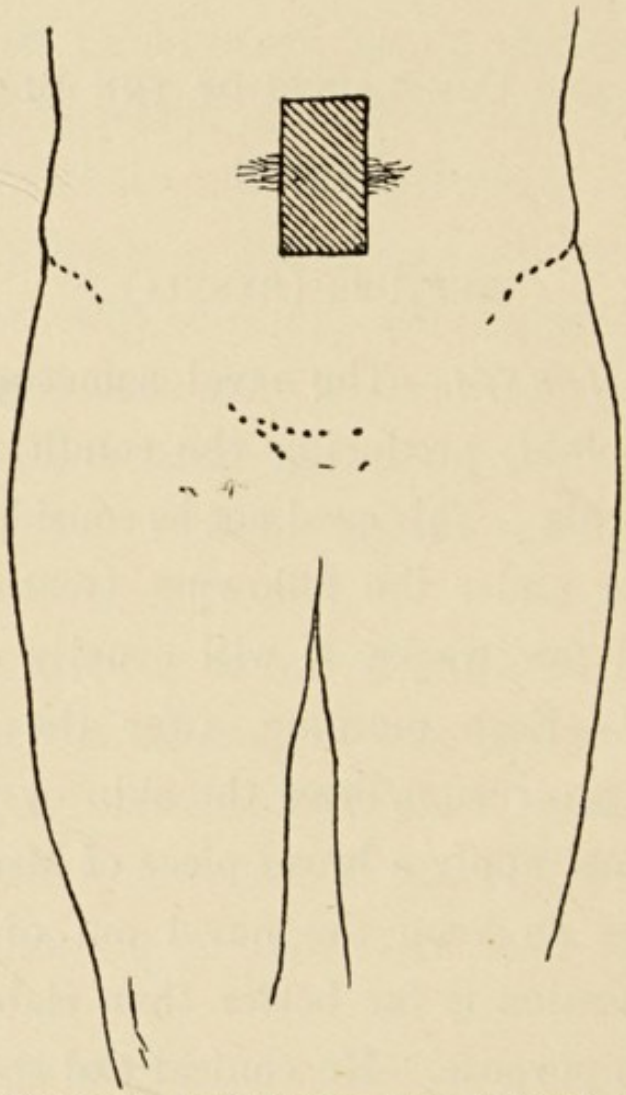


FIG. 6.—SIMPLE APPLIANCE FOR NAVEL HERNIA.

place, it is always advisable to consult a medical man before doing anything to the child. If it proves to be a rupture, then a well-fitting truss covered with waterproof material should be worn for a prolonged period, and this always effects a cure, unless the rupture be very large.

If the infant's skin is so tender that it will not stand the ordinary truss, then for a few months a skein of Berlin wool, consisting of twenty threads and about 22 inches long, will be sufficient to keep the rupture back. One end of the skein of wool is held exactly over the rupture, and the skein then passed round the opposite side of the child's body, round the waist; the other end is then passed through the loop of the first end, and

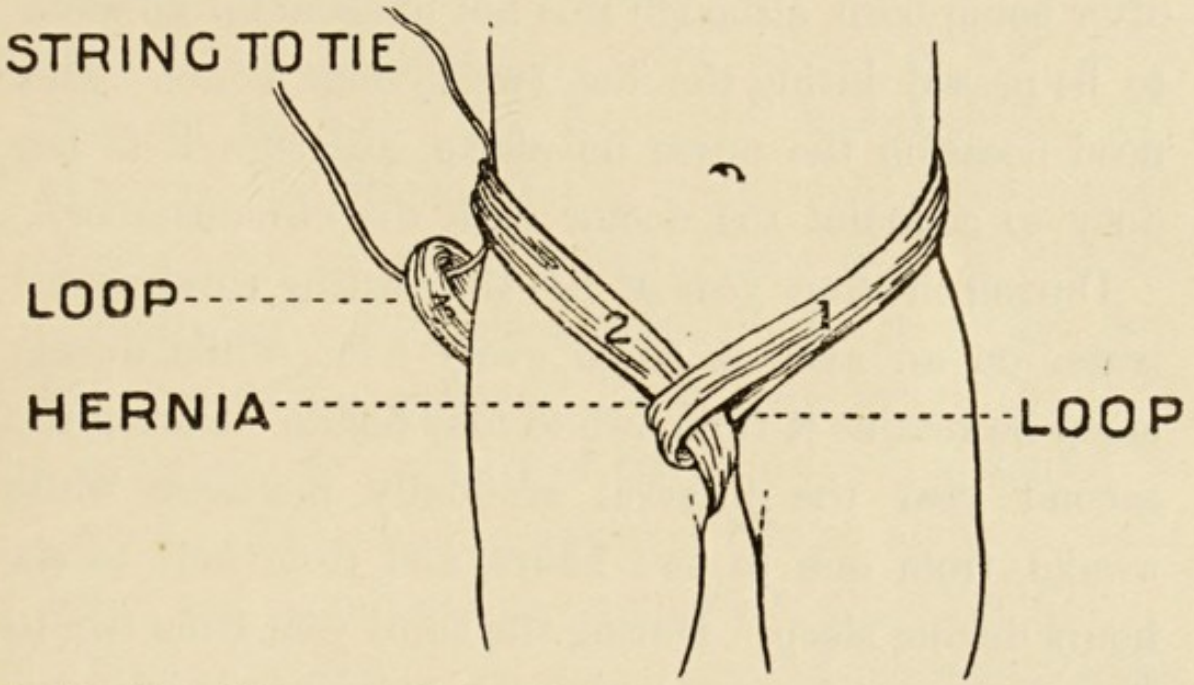


FIG. 7.—THE WORSTED SKEIN TRUSS APPLIED FOR GROIN HERNIA.

continued round the inner side of the groin, and then fastened by tapes to the wool round the child's waist. The wool over the rupture must be moderately tight. Two skeins will be required, one being in use, and the other clean, ready for use.

While a truss is worn by an infant, the parts of the skin the truss presses on should be hardened in order to prevent the breaking of the skin. For this purpose,

equal parts of methylated spirits and water may be sponged on the skin, once daily, and allowed to dry.

If the rupture is a very large one, an operation will be necessary to effect a cure.

THE BLADDER

As the kidneys of a child secrete urine before birth, it is not uncommon to find a child passing water soon after being born, although it is not unusual for no water to be passed during the first twenty-four hours. This need occasion the nurse no alarm, although it is her duty to acquaint the doctor with the circumstance.

During the first year of life the healthy child passes water on an average twice every hour, while during sleep he retains it from two to four hours. During the second year the interval gradually increases while awake, from one to two hours, and from four to six hours during sleep. During the third year from two to three hours, and from eight to nine hours, respectively.

A well-trained, healthy child is able to exercise a certain amount of control over his bladder by the time he reaches the age of from twelve to eighteen months. When a child reaches the age of three years without being able to control the bladder during the day, the condition is known as "Incontinence of Urine."

INCONTINENCE OF URINE (BED-WETTING)

This is a very common trouble in young children,

especially amongst boys. As a rule, the affection is not limited to the night time, for the child who wets the bed during sleep is usually unable to retain his urine very long during the day.

Causes.—(1) There may be no definite cause ascertainable, except an extremely nervous and highly emotional temperament. (2) In boys, a very long foreskin, which causes the accumulation of irritating secretions. (3) Intestinal worms. (4) A loaded lower bowel. (5) Too much liquid allowed the child within a few hours of going to bed. (6) Excessive bed-clothing. (7) Abnormal conditions of the urine, such as an excess of uric acid, or gravel, which causes local irritation.

Treatment.—A cause should always be looked for, and, if possible, removed. Some time before the child goes to bed, the quantity of liquid given him should be limited. He should be wakened late at night to make water, and should not lie on his back while sleeping.

The child should be encouraged to practise holding his water as long as possible during the day, and so educate his bladder to retain a larger quantity.

These measures failing, and no definite cause being ascertainable, it may be advisable, in order to strengthen the controlling muscle of the bladder, to give a child of four years of age three to five drops of tincture of belladonna in a teaspoonful of water at bedtime. If this fails, after a trial extending over two or three weeks, it is advisable that a doctor be consulted.

If the boy has a very long foreskin, the simple operation of circumcision should be resorted to.

Nothing can be more foolish than the punishment of a child for wetting the bed. It makes him more nervous, and consequently less able to control the bladder, the trouble thereby becoming worse.

RETENTION OF URINE

This condition is the reverse of the one just considered, and is rare in children.

Causes.—It may be caused by stone in the bladder, or thread-worms in the bowel. In boys the most common cause is a tight foreskin.

Symptoms.—If a child goes unduly long without passing urine, he will suffer discomfort; later he will complain of pain over the lower part of the belly.

Treatment.—As soon as the condition is recognised, the child should be given a warm bath. Failing relief, medical advice must be sought at once.

PHIMOSIS (TIGHT FORESKIN)

In the male infant, the foreskin at birth is usually tight, preventing the retraction of the skin over the head of the penis. The skin gradually becomes loose, so that at the end of three or four weeks the nurse should be able to retract it beyond the head of the penis.

When the foreskin cannot be so retracted the

condition is known as phimosis. As a result of phimosis the secretions of the head of the penis accumulate, and may give rise to various conditions, such as local irritation, sleeplessness, bed-wetting, straining in emptying the bladder and bowel, as well as bad habits in older boys.

An attempt should therefore be made early in infant life to draw back the foreskin and clean the parts. If this is impossible owing to the existence of phimosis, then it is advisable that the simple operation of circumcision be performed.

PROLAPSE OR PROTRUSION OF THE BOWEL

This consists of "a falling" or protrusion of the bowel beyond the anal, or ordinary opening. In a mild form, a swollen ring of the lining membrane of the bowel will protrude only; while in a severe case the whole thickness of the bowel falls out, presenting a large inflamed mass.

Cause.—The condition always results from severe straining whilst the child is at stool. Whatever produces straining, therefore, is the original cause of prolapse. Severe straining may result from prolonged constipation, diarrhœa, worms, and in boys a tight foreskin.

Symptoms.—The mother's attention is usually directed to the condition by the cries of the child while he is at stool. On examining the part a large red mass is

seen hanging out two or three inches beyond the ordinary opening of the bowel, and this mass has a distinct hole in the centre, corresponding to the bowel space. If the bowel is not soon returned, it is apt to become inflamed and ulcerated.

Treatment.—The protruding mass should first be washed with lukewarm water, after which an effort must be made to put the bowel back. This is done by moderate, firm pressure upwards, a soft cloth being used for the purpose. As soon as the bowel is replaced, ice-cold cloths are to be applied to the child's seat for some hours and frequently renewed. If the mother or nurse is unable to replace the protruding bowel on the first attempt, a doctor should be sent for at once.

When a child's bowel has once prolapsed there is a tendency for it to protrude again. In order therefore to prevent undue straining, the child is kept either lying on his side when passing his motions, or his feet are not allowed to touch the ground while he is using the chamber.

Any local irritations responsible for the straining must be removed, and the child's diet regulated to avoid constipation.

CHAPTER IX

Rickets, Scurvy, and Anæmia

RICKETS

Rickets is a disease of early childhood, and usually occurs between the third and eighteenth month of life. It produces marked changes in the structural formation of the growing bones, and, to a less extent, other organs of the body. It is essentially a disease due to malnutrition (improper feeding).

The principal features of rickets are, the bones are unduly soft and their development arrested, causing rickety dwarfs. The deformity results from mechanical causes acting on the softened bones. Thus, if the child walks much he becomes bow-legged or knock-kneed; if he is in the habit of sitting with the legs hanging, the thighs become bent—"sickle" shaped. If he crawls, the arms become bent. The ribs and their cartilages yield to the external pressure, so that the sides of the chest fall in, while the breast bone is pushed out, giving rise to the so-called "pigeon" chest.

The spine is weak, and various spinal curvatures take place. The child's head becomes greatly enlarged, the forehead being prominent and square in shape, and the top of the head wide and flat. The ends of the long bones become swollen, and this appears most marked at the wrists and ankles, elbows and knees.

Causes.—(1) It is due chiefly to improper feeding, as when infants from a very early age are brought up on farinaceous and starchy foods. These foods contain too little proteid and fat materials, and authorities are now agreed that the absence of these materials in infants' food is the main cause of rickets. The disease is therefore common amongst children who are reared mainly on diluted milk, condensed milk, patent foods, biscuits, arrowroot, cornflour, etc. M. Guérin, in his experiment, weaned lion cubs at an early age and fed them on a diet of raw flesh, with the result they became so rickety that they could not be reared. He also performed the same experiment on puppies, with a similar result.

Babies fed on milk of a very poor quality, which contains little cream, often develop some symptoms of rickets. This is especially so when skim milk is used as babies' food. Such is even the case in breast-fed infants, when the mother's health is feeble, and suckling too prolonged.

(2) Chronic indigestion and chronic diarrhœa are sufficient in themselves to produce rickets, in so far

as a child suffering from these conditions is not able to digest, absorb, and assimilate these materials, although the necessary amount of proteid and fat materials are in the food.

(3) Antecedent causes. Though it cannot be said that children from rickety parents are more liable to the disease than others, yet if a woman during pregnancy is weak and feeble in health, and fails to take adequate nourishment, there is greater liability to the child being subject to rickets, as a result of enfeebled vitality. Children who are hereditary victims of syphilis are also subject to rickets; also those born when the mother is beyond middle life, and enfeebled by many former pregnancies.

(4) Although the above are the main conditions in which rickets develop, yet there are a large number of contributing causes. These are bad hygienic conditions, such as foul air, absence of sunlight, etc., which depress the vitality of the child.

Symptoms.—The chief bone characteristics of rickets have already been mentioned in the beginning of this subject. As these, however, are formed after the disease is well established, they are of little use as symptoms to prevent the development of the condition.

During the early period of rickets, the following are the main symptoms to be observed:—(1) Late teething; if a child has no tooth appearing by the end of the tenth month, suspicion may be aroused. (2) The child's

head and neck perspires at night, leaving a wet place on the pillow, whilst the other parts of his body may be quite dry. (3) He kicks off the bed-clothes in his sleep, as if too warm, and the child never enjoys the placid slumber of health. (4) The muscles being weak and flabby, the child is slow in his movements, easily tired, and resents being jolted or tossed about, exercises which the healthy baby enjoys. (5) The bones, being very brittle, are easily broken. (6) The large opening in the top of the head (*fontanelle*) usually closes in a healthy baby between the fifteenth and eighteenth month; in rickets it remains open after the second year. (7) The abdomen is very prominent in rickets, giving rise to the so-called "pot-belly." If the child be thin, on comparing the belly with the proportions of the rest of the body, the difference is very striking, especially with the contracted, rickety chest.

Children suffering from rickets are more liable to the various ailments of childhood, such as catarrh, bronchitis, croup, gastritis, diarrhœa, convulsions, etc. Further, when attacked by any of these affections, there is a tendency for the condition to become chronic —the children not having sufficient vitality to throw off disease. As a result, the mortality in rickety children is high, although the cause of death may be registered as one of the above-mentioned ailments.

Fat Rickets.—Although the rule is that a child suffering from rickets is thin, yet this is not always

the case. If a child receives an abundance of food which contains an excess of sugar and starch, he may become quite fat. If such food, however, contains an inadequate supply of proteid and fat materials, though abundantly fed, the child's bones and muscles are practically starved. In such circumstances we get "Fat Rickets." It is these babies which are often exhibited at baby shows, and take prizes by virtue of their size and weight, in proportion to their age. It is such babies, too, that Proprietary Food Companies exhibit as living examples of the benefits derived from the use of their preparations.

Progress of Rickets.—From the foregoing, if the disease is at all marked, it will be comparatively easy to conclude that a child is suffering from rickets. Mild cases are, however, often overlooked even by physicians. If wise treatment is adopted early, all signs of the condition rapidly clear, without leaving any permanent effects on the child's frame or constitution. In advanced cases, if deformities in the bones have become very manifest, although decided improvement will take place under treatment, yet certain structural defects in the bones may remain, such as knock-knee, bow-legs, spinal curvature, or dwarfed stature.

Treatment.—(1) Attention to the diet is most essential in treatment. The quality of the food is all-important. It is necessary that the proteids and fats

(cream) be in their proper proportion to the other elements in the food, and also that they be in an easily digestible form. These conditions can be readily assured, if the patient be a young baby, by giving him humanised milk, to the exclusion of all other foods. (*See* Humanised Milk, Section I.) Extra care will have to be taken that the cow's milk, from which the humanised milk is prepared, is of the best quality, and that it contains a good proportion of fat (cream).

Patients a year old and upwards should get from one and a half to two pints of good cow's milk daily. In addition they should eat oatmeal porridge with a little cream; egg beaten up in milk; raw meat juice, or raw meat pulp; and a limited quantity of bread and butter. Potatoes and other starchy foods must be denied them.

(2) Due regard must be paid to the child's digestive capabilities. Thus, if there is a tendency to indigestion, vomiting, or diarrhœa, it is advisable that the diet be regulated so as to meet these conditions. (*See* article on Indigestion, Vomiting, and Diarrhœa.)

(3) Hygienic laws must be fully complied with. The child must live as much as possible in the open air and sunshine. He should sleep in a large, well-ventilated room. His clothing should be warm, without being thick and heavy. A cold douche twice daily does much to invigorate the child, and prevents him from catching cold readily.

Massage (rubbing) of the muscles of the limbs, chest, and back, will remove their flabbiness.

(4) *Tonics.*—Cod-liver oil, with or without malt extract, is the best of tonics in rickets, but care has to be exercised in seeing that the oil does not interfere with the child's digestion. If anæmia be present, raw meat juice, or raw meat pulp, may be given with advantage, but these must be prepared fresh twice daily, as they do not keep. (*See* Appendix.)

Prevention of Deformities.—If the foregoing lines of treatment are carried out, the disease of rickets responds readily, and the child always makes rapid progress health-ward. It will be, however, necessary to take steps to modify any existing deformities. Thus, if the child be heavy he should be kept as much as possible in the lying posture, to avoid spinal curvature and the bending of the legs.

A return to health gradually improves the formation of the chest, and as the child gets older, breathing exercises and calisthenics will be all that is necessary to complete the cure.

INFANTILE SCURVY

This condition, like rickets, has its origin in the use of improper food, and consequently both diseases are sometimes found in the same child. Scurvy, however, is a much more rare disease than rickets.

The disease occurs between the sixth and eighteenth month of child life.

Popularly, scurvy is regarded as a skin disease only, but its manifestations are by no means limited to the skin. In scurvy, the blood is more watery, and does not coagulate so readily as in health; is deficient in salts; and the red corpuscles are diminished in number. Hence, scurvy is a blood disease rather than a skin disease.

Cause.—There are certain elements (not yet definable) in milk and vegetable juices which are necessary to the health of mankind. When neither milk nor fresh vegetables are included in the dietary of man, the disease of scurvy arises. Thus, when both milk and fresh vegetables are unobtainable, such as in war sieges, or as in the old days of long sea voyages and Arctic expeditions, one of the chief dangers of loss of life was scurvy. With the advent of modern science, enabling vegetables to be kept fresh for an indefinite period, scurvy is now almost unknown in the experience of seamen.

Fresh vegetables not being articles of diet suitable for infant life, nature has provided milk (both mother's and cow's milk) with this anti-scurvy property. Hence, when children are brought up on the breast, or on good fresh cow's milk, scurvy does not occur.

Milk kept too long before use, subjected to pro-

longed or repeated boiling, or which undergoes various processes for the purpose of preservation, loses this anti-scurvy property. The reason is not yet quite understood, but it is known that fresh raw milk has a power which is not possessed by stale, boiled, or preserved milk, namely, of preventing the growth of certain destructive germs. Milk kept for six hours before use loses a perceptible amount of this scurvy-preventing property; milk kept for twelve hours loses a fair amount; while milk kept for twenty-four hours is almost devoid of this virtue.

The cause of scurvy in infants is therefore the prolonged use of boiled milk, condensed milk, or proprietary foods. It is a disease more often found amongst the well-to-do, who can afford the expense of proprietary foods for their babies.

Symptoms.—The disease sets in gradually with loss of appetite, listlessness, and general debility. The child becomes very anæmic (bloodless), and the skin is of a sallow, earthy hue. There is great muscular weakness, with disinclination for moving the limbs. The limbs are sometimes swollen, and are always extremely tender, so that the child cannot bear the weight of the bed-clothes without complaint. Various hæmorrhages (bleedings) take place under the skin surface.

These are apt to follow from slight pressure over the skin, and present the appearance of discoloured

bruises. The gums become swollen, spongy, and tender so that they bleed freely, and ulcers form on their surface. The ankles become swollen—dropsical.

Treatment.—Condensed milk and proprietary foods must be stopped as soon as the disease is recognised. Good fresh cow's milk must be substituted for these, and the milk must not be boiled or sterilised. If the child be very young, it will be advisable to prepare humanised milk, and carry out systematic feeding as described under that heading. (*See* Section 1.)

Orange or lemon juice must be given in one to two teaspoonful doses three to four times a day. Fresh grape juice is also good. Raw meat juice should also be given (a dessertspoonful) thrice daily. Raw meat juice has not only anti-scurvy properties, but it also counteracts the extreme anæmia which is always present in scurvy. (For preparation and quantity to be given *see* Appendix.)

In older children (beyond the first year) sieved or very finely mashed vegetables, including potatoes and carrots, form an excellent part of the diet. Later on, when the stomach has become stronger, tonics may be required, such as cod-liver oil and an iron mixture. Any faulty hygienic surroundings must be improved.

The patient so readily responds to the above treatment, that within a few days marked improvement generally sets in, and a return to health speedily follows.

ANÆMIA (BLOODLESSNESS)

Babies frequently suffer from anæmia, and it is found occasionally in young children.

Causes.—(1) Deficiency of proteids in the food, as when suckling takes place during ill-health of the mother, or when cow's milk of very poor quality is used; (2) chronic indigestion; (3) diarrhœa; (4) lack of fresh air and sunlight, owing to being kept too much indoors; (5) rheumatism; (6) lowered vitality, as a result of disease.

Symptoms.—The child is usually, though not always, thin, feeble, and pasty-looking. The natural rosy colour of the lips gives place to a pale hue. The muscles are soft and flabby. The appetite is always impaired.

Occasionally we find infants and young children who are quite plump and fat suffering from anæmia. This type of anæmia is most frequently found in children who are fed on bread, arrowroot, cornflour, biscuits, and proprietary foods, instead of a good supply of fresh milk. Children suffering from anæmia are liable, owing to their enfeebled condition, to be attacked by other diseases.

Treatment.—This must be directed, as far as possible, to the removal of the cause. If indigestion is present, it must be cured. (*See* Indigestion.) Suitable food, adapted to the age of the child, should be given. The common practice of giving Parrish's Food (or Syrup) to babies

and young children as soon as anæmia is suspected, unless ordered by a doctor, is to be deprecated. Parrish's Syrup, although a good general tonic for anæmia in older children, contains iron, and it must be remembered that all preparations of iron disagree with infants and young children.

The most suitable remedy for anæmia in such young patients is raw meat juice, given three or four times daily (for preparation *see* Appendix), and the child should have the benefit of plenty of fresh air and sunlight.

CHAPTER X

Teething and Convulsions

TEETHING (DENTITION)

Infants in perfectly good health frequently "cut" their teeth without any discomfort. Infants in imperfect health, however, usually suffer to some extent with local pain or irritation, and a train of general disturbances. Teething being a natural process in the child's development, it should not be regarded in any sense as a disease.

The temporary or milk teeth are twenty in number, and as these are shed the permanent teeth appear.

Age.—The period at which the milk teeth come varies greatly. Cases are on record in which children have been born with some of the teeth through the gums, whilst occasionally in perfectly healthy infants the period is delayed. The mother need not fear for her child even though no teeth appear before the tenth month. In fact, it is now generally recognised that a little delay is an advantage, for the teeth develop

a thicker plate of enamel when detained under the gums, and are consequently stronger.

Should no teeth appear after the child is ten months old, the probability is that the cause is disease—most likely rickets.

The milk or first set of teeth, as a rule, come through the gum in pairs ; those of the lower jaw precede similar teeth in the upper jaw by a few weeks. The average ages at which the teeth appear are as follows :—

		Total
6 to 9 months old	4 front teeth	4
9 to 12 ,,	4 cutting teeth	8
12 to 18 ,,	4 first double teeth	12
18 to 24 ,,	4 eye teeth	16
24 to 30 ,,	4 second double teeth	20

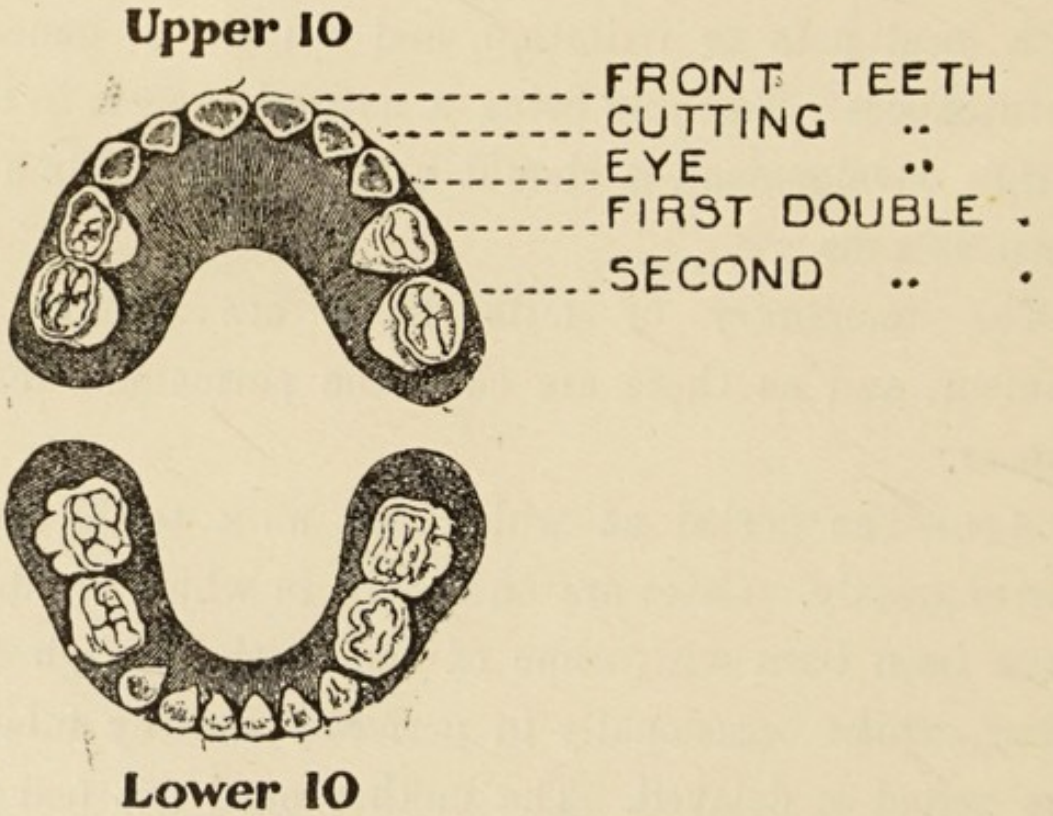


Fig. 8.—Diagram of Milk Teeth.

Thus a child at nine months of age usually has four teeth (two above and two below); at one year

old, eight teeth; at one and a half years of age, twelve teeth; at two years of age, sixteen teeth; and at two years and a half, twenty teeth.

Symptoms of Teething.—The first symptom of teething is always an increased flow of saliva—dribbling. The gum over the presenting tooth becomes bright red and slightly swollen. There is usually pain in the jaw, which causes the child to be fretful and "out of sorts." The lips are usually compressed, and any attempt to look into the mouth is resented. The hands are frequently directed towards the head and face, and the fingers, or any hard substance obtainable, often placed into the mouth.

Often the local irritation gives rise to general disturbance, rendering the child very ill. Then we have a flushed face, hot and dry skin, thirst, furred tongue, loss of appetite, constipation or diarrhœa, and even vomiting. Twitchings of the muscles are common, and the child is often suddenly startled during sleep. Convulsions frequently take place from teething alone. Occasionally various skin rashes appear over the child. Through loss of sleep and lack of nourishment the child becomes thin and the features have a pinched appearance. The little patient becomes very irritable, cries a great deal, and sometimes the temperature rises several degrees. While the teeth are passing through the gums, the above-mentioned symptoms do not readily respond to treatment. When, however, the

offending teeth are fully through, the train of symptoms usually disappears.

With symptoms of disease (such as diarrhœa, constipation, cough, skin eruption, etc.) occurring during the period of teething, it is always a matter of difficulty to tell how much is due to the teething process itself.

For example, it often happens that a child has a reflex cough from teething alone ; or the cough may be due to an independent bronchitis or pneumonia (inflammation of the lungs).

It is here that the province of the physician comes in, and in all cases, when a child is very ill, the doctor should be called, whether teething is taking place or not. Special stress is laid on this, for it happens so often than when a child is very seriously ill during the expected teething period mothers say : "Oh, he is only teething, and the child will be all right when the tooth comes through." This phrase is popular, because it exempts mothers from blame for the child's condition, which may be due to bad feeding, exposure to draughts, or other neglect. All children's diseases are aggravated during the time the milk teeth are being "cut," and for this reason it is advisable to obtain the services of a doctor without delay, if there is any complication.

Prevention of trouble when teething is expected.—As a child is more liable to disease during teething than at any other period, he should be prepared for the ordeal. The child's health should be invigorated by plain

wholesome food, given at regular intervals, by attention to the bowels (keeping them slightly relaxed), by plenty of fresh air, by exercise out-of-doors during suitable weather, and by keeping the child in his normal element and surroundings.

A dribbling baby frequently wets his chest and thereby often takes cold. To prevent this, he should wear an oiled-silk dribbling bib underneath his silk, flannel, or cotton one.

Treatment during teething.—In favourable cases little need be done. The diet should be of the simplest character, and the bowels be kept open regularly, by the aid of simple aperient, if necessary, such as one teaspoonful of fluid magnesia. The head should be kept cool by daily sponging with cold or tepid water, and warm headgear should be avoided. Frequent sponging of the face with cold water is very soothing and refreshing to the child.

If the child be feverish, the whole body should be sponged every four hours with one part of vinegar to three parts of cold water.

As thirst is always present during the period of teething, the suffering baby may have frequent drinks of sterilised water about blood-heat. This greatly relieves the acute suffering of the child.

The clothing should be suitable for the weather. Mothers frequently err by putting too many clothes on babies and very young children in hot weather.

The gentle rubbing of the gums with the finger, a crust, or other semi-hard substance greatly relieves the irritation, eases the pain, and tends to break the gum. All hard, unyielding substances, such as ivory and coral, should be avoided, as they tend to harden the gums. An india-rubber ring makes a good gum-stick. If the child is allowed to bite a crust, care must be taken, for fear of him choking, that he does not swallow a piece.

Inflamed Gums.—The old-fashioned practice of lancing every inflamed gum during teething is now considered bad treatment. This should be left in the hands of the doctor, who is best able to judge as to its necessity. When once a tooth is partially through the gum, however, it may be helped in its exit by the edge of a clean shilling piece, gently rubbed over the part.

The following is a good preparation to apply to the gums when they are inflamed, irritable, and painful:—Nitrate of potash, 20 grains; syrup of roses, 1 ounce. This may be rubbed on the part with the finger, or a clean, soft, woollen rag.

To relieve sleeplessness and irritability, the following is a safe, and usually an effective, remedy:—Elixir of aniseed, six drops to a child of six months old; ten drops to a child ten months old, in a teaspoonful of water every two hours.

Diarrhœa is probably the most frequent accompaniment of teething, especially during summer and autumn. (For treatment *see* article above.)

Loss of appetite, vomiting, and constipation, are also common complaints whilst teething. (For treatment *see* articles on these subjects.)

Note of warning.—Mothers who spend sleepless nights with restless, irritable, teething babies, are often tempted to resort to one or other of the "soothing powders," "teething powders," or "soothing syrups," on the market. As these all contain opium in one form or another, they must be strictly forbidden. Many innocent babes have been so "soothed" out of this world and into the next.

Care of the Milk Teeth.—It is a false idea, prevalent amongst many mothers, that care of the milk teeth is of little consequence. Whereas, if care is not taken of the first set of teeth, the child is not likely to develop a good and regular set of permanent teeth. If the milk teeth become so decayed that extraction is necessary, then the permanent ones will, in all probability, grow irregular and crowded.

The teeth should be cleaned with a brush and powdered chalk at least once a day, preferably at night. When a greenish stain is observed at the junction of the teeth and the gum, it should be removed at once, as decay will soon follow. For this purpose pumice powder is good, and it may be rubbed on the teeth by means of a pointed piece of wood.

Sweets of an adhesive nature must be avoided, such as improperly made toffee, badly made butter-scotch,

caramels, painted confectionery, etc. No sweets should be given at night after the teeth are cleaned.

In order to develop the jaws and teeth, and to encourage the latter to grow regularly, children should eat a quantity of hard, coarse food daily, such as crusts of bread, toast, rusks, crisp biscuits, nuts, etc.

CONVULSIONS

A convulsion in a child is not to be regarded as a disease in itself, but rather as a symptom which may arise from many diseased conditions. One authority (West) states that convulsions in children correspond to some extent to delirium in adults. In support of this, it may be pointed out that children frequently become convulsed under circumstances which render adults delirious, viz., a sudden rise of temperature.

Children are liable to convulsions from the time of birth to the end of the seventh year. Convulsions are most common during infancy, due, no doubt, to the more excitable condition of the nervous system during this period, and to the many sources of irritation peculiar to early life.

Causes.—These may be divided into two groups :—(1) Those due to structural disease, such as inflammation, injuries, tumours or abscess in the brain ; inflammation of the kidneys ; tuberculosis, etc.

(2) Those due to temporary disturbance of the nervous system by reflex action, whereby the controlling powers

of the brain and spinal cord are reduced. This latter group of causes is the one we have most to do with here, and fortunately they are by far the most common. They include irritation from undigested matter in the stomach or bowels, teething, fright, intestinal worms; any painful affection, such as gall-stone, or stone in the kidney; any sudden rise of temperature, such as occur in fevers.

The children of parents who are very young or very old are said to be more liable to convulsions than the children of parents in the prime of life. The children of epileptics and drunkards are especially liable to convulsions.

Symptoms.—These vary greatly according to whether the attack is mild or severe.

In an ordinary attack of convulsions the child is usually irritable and peevish for some time before the seizure. Suddenly, without warning, the body becomes stiff and the legs and arms stretch out, while the hands and feet are firmly clenched, with the thumbs and toes turned inwards. The muscles of the face twitch in various contortions, and the face becomes bluish red, which, however, soon gives way to pallor. The breathing is irregular and laboured, and the pulse is rapid and weak. During the "fit" the urine is passed, and sometimes the bowel empties itself.

The above condition lasts from one to two minutes and gradually passes off, and if there is only one fit

the various muscles become relaxed, and the face regains its ordinary hue. The child, however, has a frightened look, and cries, after which he usually falls asleep and becomes bathed in perspiration. Or, before the child is thoroughly out of the first "fit" a second one, or even a series of "fits," may ensue. Or, again, after an interval of several hours another attack may come on, if the cause be not removed.

As a rule, the more severe the attack of convulsions the shorter is its duration.

Treatment.—When a child is seized by convulsions a doctor must be sent for at once. During the "fit" the child should be placed in a warm bath at a temperature of 98 degrees Fahr. If a thermometer be not at hand the mother can put her bare elbow into the bath water to test the temperature for the child. If the water is comfortably warm to her elbow, it will be the right temperature for the child.

It not unfrequently happens that in the excitement of the moment the child is immersed in water which is too hot. A child's skin is very tender, and therefore the above precautions are necessary. Whilst the child is in the bath, towels dipped in ice-cold water are applied to his face and head. The child must not be kept in the bath for a longer period than ten minutes, and be removed before that time if the convulsive attack has ceased.

If the convulsions do not cease, or have a tendency

to return after the warm bath, then it is advisable that a "mustard pack" be given. One dessert-spoonful of mustard is mixed with a small quantity of cold water and prepared as if for table use. This is then put into a quart of tepid water. A large towel is wrung out in this mustard water, and wrapped round the child's body, after which he is covered with warm blankets. He is kept in the pack for ten to fifteen minutes. After the child is taken from the pack he should be kept lying on one side of his body, as in this position the convulsions are less likely to occur than if he is placed on his back.

The bowels must be thoroughly opened, and for this purpose on enema of soapy water (half a pint for a child of four to six years old) is used, to which may be added a tablespoonful of olive oil. After the enema has acted, give a dose of aperient medicine, such as rhubarb or liquorice powder.

The physician attending the case will make enquiries as to the original cause of the convulsions (stomach, bowels, teething, etc.), and will prescribe accordingly.

Possible Results of Convulsions.—When convulsions are severe, they frequently leave parts of the body paralysed for a time. Thus an arm and leg on the same side of the body may become paralysed; one side of the face; the tongue, rendering the child unable to speak; one or more of the muscles controlling the movements of the eye-ball, giving rise to squint.

After a series of convulsions some mental dulness frequently follows, which may be temporary or permanent.

If the cause of the convulsions be due to one of those mentioned in group No. 2 of possible causes, the paralysis is usually of a temporary nature, and may disappear in a few weeks or months if the child be kept under proper medical supervision and treatment.

CHAPTER XI

Paralysis, Epilepsy, and Rheumatism

INFANTILE PARALYSIS

As its name implies, this is a disease of infancy, rarely occurring after the third year. It consists of paralysis of one or more limbs, usually the lower. The whole limb is seldom affected, the paralysis being, as a rule, limited to a group of muscles which work together.

Cause.—It is known that the condition is due to a degenerative process taking place in certain parts of the anterior portion of the spinal cord which control the motor power of the muscles affected, the motor nerves being involved at a later stage. The real cause of such degenerative process, however, has not yet been discovered. Teething, and exposure to cold and damp, have been suggested as causes, but the matter is still in doubt. The causation is further mystified by the fact that infantile paralysis occurs in children who are apparently healthy in every other respect, and whose parents show no signs of

any disease which may be considered hereditary. If the disease be situated in the upper part of the spinal cord (cervical portion), the upper limbs (or limb) will be affected; if the lower part of the cord (lumbar portion), the lower limbs (or limb) will be involved.

Symptoms.—As the cause of this disease is somewhat obscure, so, too, the symptoms are misleading. An apparently healthy child becomes suddenly ill, and exhibits the ordinary signs of feverishness, such as rise of temperature, rapid pulse, hot skin, etc. The usual remedies may be applied, as in other similar febrile attacks in children, with no suspicion of anything further developing, as the attention of parents is never directed to any particular limb at this, the earliest stage of the disease, on account of the absence of pain. This attack of feverishness may last from a few hours only to a period extending over ten days. The paralysis usually comes on early and unexpectedly; often the condition is discovered on the child waking from sleep. It extends rapidly for a few days, until it has reached its limit. The muscles of the part affected now become flabby, the limb is colder than its healthy fellow limb, and the child is lame. Pain in the back has been observed in a number of cases during the early stages of the disease, but this is not a constant symptom.

The condition of the limb, just described, usually lasts for varying periods of from two to six months,

without any apparent change. Then, under judicious treatment, a slight improvement takes place, and may be maintained for a few months, when the condition becomes permanent, no further response being made to the most rigid treatment, so that the limb is left permanently damaged. The subsequent growth of the affected limb is retarded, so that it is usually shorter than its fellow, and this, combined with wasting of the muscles, often produces great deformity.

The foregoing description applies to the average case of infantile paralysis, but occasionally the disease lasts only for a few weeks, and complete recovery sets in; or the disease may be very gradual in its development.

Treatment.—Unfortunately, the case is not usually suspected until paralysis has set in; the opportunity for treatment in the early stages is then lost. Opening medicines should be given as early as possible, such as a dose of liquorice powder, and an effort made to reduce the febrile condition. Half a drop of tincture of aconite every two hours will do for this purpose. If this fails to reduce the temperature, half to one grain of phenacetin should be given every two hours. These doses are for a child of about three years of age.

During the feverish stage, clothes should be wrung out in ice-cold water, and applied along the upper or lower part of the spine, depending on which limb is

affected. After the temperature is reduced to normal, however, hot fomentations are better than cold applications. The body may be sponged frequently with tepid water, to which is added a teaspoonful of liquid ammonia to the pint of water.

At a later stage, when all the acute symptoms have disappeared, a counter-irritant, such as tincture of iodine, may be painted over the spine daily, or a stimulating liniment well rubbed along that part. The following is an excellent preparation for the purpose :— Liniment of camphor, liniment of chloroform, and liniment of soap—of each 2 ozs. Two teaspoonfuls of liquid ammonia is added to this, and the whole well shaken and used with equal parts of water. Such a preparation may be used thrice daily. If found too strong for a baby's tender skin, a little more water may be added.

Locally.—The affected limb should be well wrapped in cotton wool or new flannel, in order to maintain its heat. Massage, or rubbing, must never be neglected, and the value of this can be enhanced by the use of olive oil as a lubricant. The massage must be performed twice or thrice daily, rubbing always from below upwards. If an expert *masseur* be found too expensive to employ continually, the parent, or those in charge of the child, should at least obtain one good practical lesson on the subject, after which they may be able to carry it out themselves. Electricity usually

does good, by stimulating the muscles which are only slightly paralysed, and increasing their power of contraction. Its proper application, however, demands expert knowledge.

During the last stage of the disease there is a great tendency to deformity by the healthy opposing muscles of the limb contracting. This must be obviated as far as possible, by rubbing, bathing, and exercise of the limb, as well as by some mechanical help. As a rule, the general health of the child is not materially affected by the disease.

EPILEPSY (FALLING SICKNESS OR FITS)

This disease, as a rule, first becomes manifest from the second to the twelfth year, rarely before or afterwards.

Cause.—(1) The most common cause is that one or both parents are drunkards before the child is conceived, 20 per cent. of all cases of epilepsy being estimated to be due to this cause. (2) Heredity ; in 10 per cent. one or both of the parents are epileptics. (3) Organic disease of, or injury to, the brain or the bones of the skull. (4) Sometimes in nervous children, mild attacks of epilepsy are set up reflexly by the presence of phimosis (tight foreskin), intestinal indigestion, intestinal worms, adenoid growths, etc. (5) Other causes which are not known or understood.

Symptoms.—Occasionally before an epileptic "fit"

comes on, there are various premonitory symptoms which are warnings of an impending seizure. These vary in regard to character and duration; but they usually consist of giddiness, headache, mental confusion, dimness or illusion of vision, and may appear many minutes, or only a few seconds, before the "fit" begins.

The Epileptic Fit.—The patient suddenly falls to the ground with, or without, a scream, and remains there insensible and convulsed. In very mild cases consciousness is not completely lost, and the convulsive movements may be limited to one limb, or one side of the body. Usually, however, insensibility is complete, and the muscles of the body and limbs are in a state of spasm. The limbs are bent, and the hands are clenched, with the thumbs turned inwards. The eyes are fixed and slightly opened, the pupils are equally dilated, and sometimes squinting takes place. Breathing is laboured or almost suspended, and the face, at first pale, soon assumes a dusky hue. The features are distorted, there is gnashing of the teeth and foaming at the mouth, and the tongue is thrust forward and often bitten, when blood mingles with the foam. Gradually all these symptoms subside, and the patient falls into a sound sleep, from which he wakens exhausted and ignorant of what he has passed through; or more rarely, he may have a succession of such "fits."

The duration of an epileptic attack varies, the average length of time being from five to eight minutes,

but it may be much shorter or longer than this. The periods at which the "fits" recur also vary. As a rule, when the condition first begins there is an interval of one to three months between the attacks. If the disease is progressive the interval gradually lessens, until the patient may have one fit every day.

A "fit" may come on at any time, day or night—before going to sleep, or after waking. They may occur at any place—at home, on the street, near a fire, on the top of a precipice, etc., etc. Hence, serious accidents are very liable to befall an epileptic child, and consequently he should be well guarded and cared for.

TREATMENT OF EPILEPSY

(1) *During the fit.*—Unfasten all tight clothing round the neck, chest, and waist, and give the child plenty of breathing space in the fresh air, or from an open window or door. If he falls near any hard substance, such as a wall, heavy piece of furniture, etc., pull him away to save him hurting himself, place him on his back, and support his head. Place a piece of wood, cork, or india-rubber between his teeth, and hold it there to prevent injury to the tongue.

No stimulants or anything else is to be given. Cold wet cloths applied to the head are serviceable, especially when the face is congested.

(2) *In the interval of "fits."*—All cases of severe

epilepsy should be treated by a doctor, who will examine and study the individual peculiarities and outstanding features of each case, and arrive at an opinion as to the treatment to be adopted. Those due to injury of the brain or skull are benefited by an operation. In other severe cases, a prolonged course of drug treatment is beneficial, but such treatment should be supervised by a physician.

When the fits are preceded by some warning symptoms the child should be instructed to inform his mother or nurse when these symptoms come on.

The mother should then promptly get the child to inhale a few whiffs of amyl nitrite, obtainable in glass capsules, which will often, though not invariably, avert an attack. When amyl nitrite is kept in a home, it must always be out of a child's reach. A small pinch of fine table salt snuffed up the nose has sometimes the same effect in averting a fit.

In mild cases of epilepsy occurring in children of a nervous temperament, if a medical examination reveals phimosis, intestinal indigestion, intestinal worms, adenoid growths, or any other condition which is likely to set up reflex brain irritation, the cause should be removed.

The general health of a child subject to fits should be carefully studied. Indigestion and constipation must be avoided. The diet should be plain and wholesome, and consist chiefly of milk foods and vegetables;

while meat, spices, and condiments are to be strictly denied.

Habits which tone up the nervous system are to be encouraged, such as the morning cold shower bath, or as a substitute, the tepid sponge-bath; a fair amount of daily exercise in the open air; early and regular hours; plenty of sleep; quiet amusement, etc.

The important subject of education has always to be seriously determined in the case of epileptic children. It is to be regretted that in most instances their educational opportunities have to be neglected in favour of efforts to check the recurrence of "fits." If a confirmed epileptic is sent to an ordinary school, the strain on his nervous system to keep pace with his fellow-schoolmates is very liable to accelerate the number and duration of the epileptic seizures. Further, the child is rendered an object of ridicule, a fact which he, although mentally dull, is not long in recognising.

Probably the best rule to observe is to keep the child from school altogether if the epileptic attacks are of frequent occurrence; and to send him to school if they occur at moderately long intervals, say, once in two or three months. In the latter case, the child must never be pushed in his school work.

The question then arises, what is the child to do, how is he to employ his time, if kept from school? He must certainly not be allowed to lead an aimless, idle, and vacuous existence, concentrating all his limited

thoughts upon self. A certain amount of discipline is necessary in order to take the child's mind from his trouble, and so effect a cure.

He should have simple duties to perform daily, with objects of interest attached; a little out-door work in a small garden patch of his own, where he could be taught to sow seeds of plants and flowers, and watch their growth under his own care, would have an elevating effect on the child's mind. He should also have plenty of out-door play. It is not advisable that he be kept from the companionship of other children, but it is to his advantage that his companions be of a sympathetic nature, who would not ridicule him, and so wound the child's feelings.

RHEUMATISM

Rheumatism, while practically unknown during the first two years of childhood, is nevertheless more common than is generally supposed among children from three to twelve years of age. Many of the so-called "growing pains" which children complain of are due to rheumatism.

Causes. — (1) Insufficient clothing during severe weather; (2) exposure to cold and draughts; (3) damp feet; (4) wet clothing; (5) damp dwellings and wet playgrounds.

Symptoms. — The form of rheumatism in children differs from that in adults in the following particulars:

—(1) In about half the cases there is no joint affection, while in those cases in which the joints are involved the inflammation is of minor degree; (2) the temperature does not rise very high; (3) the child does not perspire very freely.

Rheumatism, however, affects the heart more frequently in children than in adults, and the result, in a neglected case, is that a child's constitution may be seriously affected by heart disease.

Other affections which are common accompaniments of rheumatism are tonsilitis, chorea (St Vitus's dance), skin eruptions, and rheumatic "nodules."

Rheumatic nodules vary from the size of a small shot up to a small marble, and are chiefly found over the bony prominences of the elbows, knees, and ankles. These nodules are under the skin, but not adherent to it, and the skin surface is not reddened. They may come singly, or in crops, and stay for weeks or months.

Their significance is that the rheumatic condition has got a firm hold of the subject, who requires all the skill and care possible to get the poison out of his system.

Treatment.—Whenever a child complains of pains in the limbs, especially if these pains follow the wearing of wet clothing or damp boots, he should at once be put to bed and kept between blankets. This precaution is essential, even though there be little or no

feverishness present. In order to get the bowels well opened, an aperient should be given, such as a good-sized dose of liquorice powder. The child should be kept chiefly on a milk diet. If the joints are painful, the following liniment should be applied to them:—Washing-soda, ½ oz., liniment of opium, 6 ozs. This solution is warmed, and a piece of lint saturated with it. The lint is then wrapped round the affected joint, and covered over with oil-silk. A piece of flannel is then placed over the oil-silk. It is highly advisable that a doctor be sent for at an early stage of the disease, and the case placed in his hands. If any serious condition of the heart has developed, the child may have to remain in bed for many weeks.

Prevention of Rheumatism.—Children often get wet feet, and refrain from informing their mother for fear of being punished. Young children, as a rule, are very fond of paddling in water. They should be encouraged to make it known when their feet are wet, for a change of foot-gear may often prevent serious illness. When children's outer garments are wet, they must also be changed, and on no account is the child to be allowed to sit near the fire with the object of drying his clothes upon his body.

CHAPTER XII

Diseases of the Skin

Infants and young children are liable to be attacked by the same skin diseases as adults. There are a few skin diseases, however, to which childhood is more especially liable, owing to the tenderness of the skin in early life. Those treated below are the most common.

UNDUE MOISTURE OF THE SKIN

Excessive perspiration occurs in infants and young children suffering from tuberculosis, rickets, and chronic intestinal indigestion. It is also caused by the child being too warmly clad, especially in hot weather.

Treatment.—The cause must be ascertained, and if due to constitutional disturbances, these are to be treated by internal medicines according to circumstances.

The diet must always be well regulated, and the child must have plenty of out-door exercise, and live in well-ventilated rooms.

The skin surface should be bathed twice daily with cold water, and excess of clothing avoided. A dusting powder, consisting of equal parts of oxide of zinc powder, boracic acid, and powdered starch, should be applied to the skin after each bath.

UNDUE DRYNESS OF THE SKIN

A dry condition of the skin may be caused by tuberculosis, chronic intestinal indigestion, or chronic diarrhœa.

Treatment.—As in the former case, internal medicine will have to be taken to correct the cause. When dryness of the skin is due to obstinate diarrhœa, effective treatment will retain the moisture in the body, and the skin then becomes normal.

To remove the harshness, the skin should be rubbed with olive oil twice daily.

RED GUM OR RED RASH (LICHEN)

This consists of a redness of the skin surface, with small pimples scattered here and there, the latter corresponding to the sweat-ducts of the skin. It is essentially an inflammation of the sweat-glands, causing an increase in their secretion, resulting in blockage of the sweat-ducts.

Cause.—It is often due to the infant being kept too warm, and is usually more evident when his tender skin is covered with roughly-woven flannel or

flannelette. The condition is often seen when a baby is kept close to a mother who is feverish.

Symptoms.—As a rule the redness of the skin and the pimples occur in patches, corresponding to the parts kept most warm—neck, chest, etc.

The general health of the child is unaffected; and this fact will serve to prevent the mother from suspecting a case of measles, for which it has been mistaken.

Owing to the extreme tenderness of the skin, red gum is much more common during the early weeks of baby life, although it may occur at any period during the first few months of infancy.

Treatment.—Keep the child from being too warm. Remove any irritating clothing. Give a mild laxative. Apply twice daily to the affected parts a little dusting powder, such as equal parts of powdered boracic acid and powdered starch. As a result of such simple treatment the skin recovers in from three to four days.

CHAFING OF THE SKIN (ACUTE ECZEMA)

Chafing or scalding of the skin is a local inflammation, or eczema, due to excessive moisture or some local irritant.

It most frequently occurs at the buttocks, or near the opening of the bowel. In very fat infants the condition is often found where skin rests on skin,

such as the neck, behind the ears, the groins, and the privates.

Cause.—(1) Parts not kept thoroughly dry, as when wet napkins are not changed immediately, or when the child is not properly dried after the bath.

(2) Local irritation being set up from the use of soap containing too much soda or potash; the soap lather frequently not being washed off.

(3) Diarrhœa is a frequent cause of chafing of the buttocks, due to the moisture and irritation of the discharge.

Common soap used for washing clothes contains an excess of soda or potash, and therefore should not be used for washing a baby's tender skin.

No soda is to be added to the water in which baby's diapers are washed, and particular care must be taken to see that all soap is well rinsed out of them.

Treatment.—To avoid chafing, the baby should be washed with a good quality of soap, such as pure Castile. In drying the baby, a mopping movement should be adopted, and not a rubbing one, and a very soft towel used for the purpose. As soon as the diaper is moist it must be changed.

When the chafing is severe, the parts are to be carefully washed with rain water, or water which has been boiled and allowed to cool, gently mopped with a soft towel, and a little oxide of zinc ointment spread over a piece of lint, which is then applied to the part. It is

advisable that the ointment be made up with benzoated lard instead of common lard, as the latter is apt to become rancid and act as an irritant. The fastened napkin keeps the lint in position.

As the trouble subsides, or if the chafing is not severe, instead of applying the ointment, the affected part may be dusted with violet powder, or carbonate of zinc powder.

SCURFY HEAD OR CRADLE-CAP (CRUSTED ECZEMA)

A scurfy or "dirty" head consists of an accumulation of dried scales, dirt, and matted hair all glued together by the secretion from the sweat-glands of the scalp, and dried soap lather (when soap is used). The scurf may be in isolated patches, or in very bad and neglected cases it may form a complete hard cowl over the whole head of the child.

Crusted eczema may occur on other parts of the skin surface as well as on the head.

Cause.—An excess of soap is used in washing the head, and frequently this is not thoroughly washed off. The presence of lice and general neglect are common causes.

Treatment.—In mild cases a little glycerine should be well rubbed into the scalp, after which the head should be brushed with a soft brush morning and night. A comb must not be used.

In severe cases, where the scurf is very thick, other

measures must be resorted to in order to remove the hard crust. Prepare cold starch as if for starching clothes, add sufficient hot water to make it of the consistency of a poultice. Place this warm poultice on the child's head at bedtime, and keep it there all night. Next morning the crust will be soft and easily removed. After removal, rub the following ointment into the scalp:—Powdered oxide of zinc and powdered starch, of each one part; vaseline seven parts.

This dressing should be applied to the parts once or twice daily, and protected by a bandage. The ointment should not be allowed to accumulate on the scalp, but is to be washed off with warm water (no soap) before each fresh application.

RUNNING TETTER (IMPETIGO OR PUSTULAR ECZEMA)

This is an inflammation of the skin, characterised by an eruption of small, flattened pustules, which often form in groups on the face, neck, limbs, and, more rarely, the body.

The pustules burst and, in neglected cases, the discharge dries, and forms, with the scales of the skin, thick, rough, yellow scabs. As the scales dry the patch of skin underneath becomes ulcerated and discharges. In very bad cases the whole face may be covered as with a mask. The condition gives rise to a great deal of heat, itchiness, and discomfort.

Impetigo sometimes takes a contagious form, and spreads amongst members of the same family.

Treatment.—If the disease is treated in its early stage, *i.e.*, before the pustules have developed, a lotion of equal parts of lime water and olive oil will not only be found soothing, but may prevent the further development of the condition.

When the disease has fully developed, then all the scabs must first be got rid of. This is done by the same process as that described for the removal of the hard crust under the preceding article on Scurfy Head. The ulcerated patches are then washed with plain warm water, which has been previously boiled. The parts are then dressed with zinc oxide ointment spread on lint. The wounds are thoroughly cleaned and a fresh dressing applied night and morning.

General Treatment in Eczema.—When acute, crusted, or pustular eczema occurs on a child, the state of the general health will usually require attention. Constipation must be guarded against, and for this purpose there is nothing better than an occasional dose of fluid magnesia or Carlsbad Salts. In infants the diet must be well regulated, and any excess in feeding carefully avoided. In older children cod-liver oil or malt extract may be given as tonics. If anæmic, *see* Anæmia for treatment.

CHILBLAINS

Chilblains are due to the influence of external heat acting on a part of the skin, the vitality of which is depressed by cold.

The complaint may occur at any age, but is most common in feeble children with weak circulation.

The condition is found most frequently on the ears, fingers, toes, and heels, where bluish-red, tender patches appear, which become itchy, tingling and burning on exposure to heat. The skin over these patches is apt to break and form ulcers, which are difficult to heal, on account of the depressed vitality of the part.

Treatment.—When the skin is unbroken, bathe the affected parts twice daily in one part methylated spirits to two parts cold water; this hardens the skin. Or paint the chilblains once a day with tincture (not liniment) of iodine. Another good remedy is a ½ oz. of tannic acid in 6 ozs. of cold water. This is applied two or three times daily. When the chilblains are broken the following ointment may be applied and the wound covered:—Resin ointment 1 drachm, mixed with zinc ointment 1 oz.

During treatment, avoid exposure of the affected parts to excessive heat, such as to the fire.

Prevention of Chilblains.—Children who are liable to chilblains should be taught not to approach the fire too closely after coming from external cold. They should be encouraged to take plenty of out-door exercise, and

not be "coddled" and kept by the fire. In winter time they should be provided with warm gloves, stockings, and strong, roomy boots. When chilblains have once formed, ill-fitting boots tend to break the skin.

NETTLE-RASH (URTICARIA)

This consists in an eruption of prominent patches or wheals, which closely resemble those produced by the sting of nettles, hence the name. The eruption takes place most commonly on the loins and buttocks, outside of the arms and legs, and the wrists and hands.

The rash is often accompanied with febrile disturbances, and a burning, tingling and itching of the patches. The condition is most common in summer time, and in young children under two years of age.

Cause.—Nettle-rash is usually associated with some gastro-intestinal disturbance, brought on by the use of improper food. Shell-fish, pork, pepper, etc., bring it out in some children. It sometimes accompanies teething, and may also be due to exposure to cold or heat. The rash appears occasionally without any apparent cause.

Treatment.—Special attention must be paid, so that no indigestible food, such as those already mentioned, be permitted. At the beginning of the rash the bowels should be opened by a dose of magnesia or rhubarb.

Locally.—The following lotion is recommended to be

applied twice daily:—Liquor carbonas detergens, ½ oz., glycerine, ½ oz., lead lotion added to 8 ozs.

RINGWORM

This skin disease is due to a parasite of the fungus order, and is highly contagious amongst children. In most cases the parasite attacks the roots of the hair, which it destroys. Although the disease is most common in the scalp, yet it is often seen on the face, neck, arms, and other parts of the body. When the head is attacked it is always more difficult to cure, and if neglected usually leads to permanent bald spots.

The disease occurs in circular, or oval, scurfy patches, which are very slightly elevated above the skin surface. The hair within the patches loses its natural gloss and becomes discoloured, dry, and brittle. It soon breaks off close to the scalp, and presents a "nibbled" appearance. The diseased patches spread at the outside, and may extend to a large area. Two or more patches may unite and form one large one.

When a child is attacked by ringworm he is usually pale, languid, and in bad health generally.

Treatment. — The child's general health must be attended to, and as it is necessary that he be kept from school on account of the infectious nature of the disease, a change of air, from city to the country, is advisable.

Locally.—The parts should be well washed daily with soft soap and warm water, and the diseased hairs

pulled out. If the disease is discovered at its early stage, shaving the affected area may be all that is necessary. If scabs or crusts have formed, they must be treated as described under Scurfy Head. After thus clearing the ground, an attempt is made to destroy the parasite by using a lotion consisting of sulphurous acid one part, distilled water seven parts. This is applied to the patch night and morning. The following ointment is also used for the same purpose :—Ammoniated mercury ointment, 2 drachms, sulphur ointment, 1 oz., mixed well together, and applied night and morning after the patches have been bathed in warm water. For the head, the ointment is the better of the two preparations; the lotion may be reserved for ringworm on other parts of the body.

PSORIASIS

This skin disease consists in an eruption of various sized patches, which are slightly raised above the surface of the skin and are covered by thin, whitish scales, consisting of the epidermis (scarf-skin) alone. The patches may be confined to one part of the body, or they may be scattered all over.

The eruption is slightly itchy, and the patient usually scratches the scales off, leaving a well-defined red area, which bleeds slightly.

The condition is not contagious, but it is very chronic, and usually difficult to cure.

Cause.—The condition is very common in syphilis, but it is by no means limited to that disease. Children frequently get this skin disease as a result of eating too much animal food, and not having sufficient fruit and vegetables.

Treatment.—First, the scales are softened by placing the child in a warm bath and allowing him to lie in the water for a few minutes. They can then be removed by using the blunt edge of a clean knife. Then dress the affected parts with one of the tar preparations, the following ointment being one of the best:—Liquor carbonis detergens, 30 drops, chrysophanic acid, 20 grains, benzoated lard, 1 oz. This is applied to the surface each night.

Chrysophanic acid stains the skin a deep yellow colour, and the linen is also stained by it. The skin stain wears off. If the stain is objected to, the ointment may be made without the chrysophanic acid.

The treatment must be persisted in for some considerable time, during which the general health must be attended to.

VERMIN

The excuse for treating this subject is that there are many skin eruptions which occur amongst children attending public schools, the origin of which seems obscure.

As vermin are responsible for many such eruptions,

it is well that they should be thought of as a possible cause under such circumstances.

Vermin not only produce skin rashes, but enlarged glands in the nape of the neck and behind the ears are a common result of their presence in a child's head.

Treatment.—If crusts are present they must be first removed. (*See* Crusty Head.) A safe and effective remedy for vermin is an infusion of stavesacre seeds, obtainable at most chemists. This is to be rubbed on the hair and scalp each night by means of a piece of flannel.

The "nits" have a greater vitality, and are consequently more difficult to kill. Ammoniated mercury is the best for this purpose, and a suitable preparation of it is made by D. & W. Gibbs in the form of "Head Soap," and sold by retailers. The head is first moistened with warm water, the lather well rubbed in and left for a few moments, after which the head is washed with plain water. This is to be repeated each night for several occasions.

CHAPTER XIII

Pain, Headache, and Earache

PAIN

Pain of a slight character, and changing its position readily, may be regarded as a symptom of little importance.

When, however, pain is persistent, and is always located in one particular region, then it is a symptom of definite organic disease. The condition must then be considered sufficiently serious to warrant keeping the child under strict supervision until such time as the cause is determined, or the services of a doctor obtained.

The following localities of persistent pain in children will be a guide to the possible cause:—Between the ear and the jaw—mumps. The neck—enlarged and inflamed glands, threatening abscess formation. Over the front, sides, and back of the chest—pleurisy, or pleurodynia (neuralgia). Upper right side of abdomen — gall-stone or liver trouble. Lower right side of abdomen—appendicitis. Lower left side of abdomen—a collection of fæcal matter. Over the

lower part of abdomen — retention of urine. All over the abdomen—colic. In all affections of the abdomen, although the pain may be located more at one part than another, yet there is usually some pain in the region of the navel. In the thigh or inner side of the knee—hip-joint disease. Along the spine and upper part of thigh — spine disease. In middle-sized joints—rheumatism.

Pain in passing urine may be due to undue tightness of foreskin of penis (phimosis), gravel, inflammation in the pipe, or an excess of uric acid in the urine. Pain in emptying the bowel may result from a fissure (crack) at the opening of the bowel, piles (rare in children), prolapse of the bowel, or the passage of hard fæcal matter.

CRYING

The cry of a new-born, healthy baby is due to his sudden expulsion from a sphere of blood-heat into a cool atmosphere. This healthy cry has the effect of expanding his lungs and aiding his circulation. Until the third or fourth month the cry of a baby is rarely accompanied by tears, as the tear glands are not thoroughly developed until this age. It is good for a young baby to cry occasionally throughout the day, it being one mode of exercise for him. The cry of health, however, can be easily distinguished from that of pain, discomfort, or temper.

The cry of health is loud and strong, almost amounting to a scream, and the child gets red in the face. As a rule no tears flow, and the cry does not last long.

In acute conditions of the lungs and bronchial tubes there is seldom any real cry; under such circumstances the child is unable to sufficiently expand his chest to cry loud, and gives vent to what is more a smothered groan than a cry.

In croup the cry is hoarse and muffled, with a metallic sound or crowing inspiration (indrawing of breath).

In acute brain disease there is a single cry, which is sharp, short, and loud, occurring at long intervals.

In gastritis and intestinal trouble the cry is sharp, prolonged, and persistent, except when the child has become very exhausted, then the cry gives place to a low and prolonged moaning.

The cry of hunger and thirst is fretful and continuous, but not, as a rule, vigorous.

The cry of pain is loud and sharp, and if the pain is continuous, the cry is persistent in character. The limbs twist and bend, and the child's features contract.

The cry of colic is the same as that of pain in other parts of the body, but as the pain in colic is intermittent in character, the cry comes on in gusts, during which the child's belly is hard and tense.

The cry of earache is continuous, and may be suspected when the crying child buries the affected

side of his head in his pillow, restlessly moving his head about, or crushing it against his mother's breast. Earache is a common accompaniment of teething.

The cry of temper is loud and vigorous. The child kicks, stiffens his body, and is violent.

The cry for indulgence is fretful and peevish, and ceases immediately the desire is granted, to begin again when withheld. This is symbolic of spoilt children.

When a child cries persistently an attempt should always be made to ascertain the cause.

If it be due to temper only, let the child "cry it out," for the exercise involved in the effort will do him good. If it be a cry for indulgence, to get what is not good for him, the baby should always be denied. Such treatment is good both for nurse and baby, as it means discipline for both.

If the crying be due to pain or discomfort in an older child he will be able to help to localise the trouble. In the case of young infants this is impossible. The nature of the cry must then be studied, and a process of elimination be resorted to in order to determine the cause.

Apart from acute febrile affections, the following is a list of causes which may give a child pain and discomfort, and result in continuous crying:—

(1) Hunger and thirst; (2) indigestion and constipation; (3) cramp, from lying too long in one position; (4) pin-pricking; (5) binder too tight; (6) discomfort, as

from cold feet, too many clothes, or soiled diapers; (7) colic; (8) earache; (9) gum-ache; (10) itchy skin; (11) rheumatism; (12) an overlooked bruise; (13) insect bites.

COLIC (BELLY-ACHE)

Colic is defined as painful, spasmodic contractions of the bowels, from disturbance of their muscular walls. The term "colic" is vague, and as applied to infants and young children includes also pain in the stomach from flatulent distention. Colic is not a disease in itself, but is merely a symptom of many conditions, and there is no inflammation associated with the condition.

Cause.—It may arise from (1) undigested food; (2) foreign bodies swallowed, viz., fruit stones; (3) fæcal masses in chronic constipation; (4) intestinal worms, especially the round worm; (5) exposure to cold; (6) strong purgatives, such as senna.

Flatulent distention of the stomach, commonly known as "wind," is very common in bottle-fed babies, and it is then, as a rule, most frequently the result of the infant swallowing air from an empty feeding-bottle, or the feeding-bottle having a long rubber tube attached. Sucking too greedily will likewise cause colic.

Wind in the bowels arises from chemical decomposition of the food, due to (1) the milk not being sufficiently diluted (an excess of proteids); (2) too

much cane sugar added; (3) starchy and farinaceous foods given too early.

Symptoms.—Suddenly the child utters a strong, loud scream, jerks his body about, bends his knees, and draws them up towards his belly, bends his arms, clenches his hands, and the muscles of his face contract. All these symptoms indicate pain. After a few moments, and just as suddenly, he ceases crying, and all his contracted muscles become relaxed. These spasms may recur from time to time.

It is well to know the difference between a child's cry of pain and that of hunger. (*See* chapters on Pain and Hunger.) When a child is suffering from colic, his belly is usually hard, and there are frequently white particles in the motions. These white particles consist of curdled milk which has not been digested, and is nearly always an indication that the food is too rich in proteids—not diluted sufficiently.

Treatment.—All food must be withheld for a few hours. Then give the child peptonised milk, for which *see* Appendix. Unfortunately, babies suffering from colic will take food readily, giving the mother the impression that the child is hungry. The first thing to do is to get rid of the wind, and as the wind is most frequently in the bowels, it is advisable to get them to move at once. For this purpose inject into the bowel of an infant six months old 3 to 4 ozs. of warm water, to which may be added a tablespoonful of salad

oil. For a child of one year old double the quantity of warm water and oil may be used. As soon as the bowels move, gas will come away and relief will follow. If the wind is in the stomach, one drop of essence of peppermint, or half a soda mint tabloid dissolved in a dessertspoonful of warm water should be given to a child of six months. Failing relief, give fifteen to twenty drops of whisky well diluted.

To prevent a recurrence of the pain a dose of opening medicine should be given as well as the injection, such as castor oil, fluid magnesia, or liquorice powder.

Dry, hot flannels should be applied to the belly, and the feet kept warm.

Prevention of Colic.—As colic is often an habitual occurrence in some infants, it is always advisable to try and find out its origin, and so prevent it. If curds are found in the motions, the probability is that the milk is too strong for the child, and further dilution by water should be resorted to. Colic rarely affects babies fed alone on the breast, or on humanised milk, up to five or six months of age. If there are no curds found in the motions, and yet the child suffers periodically from colic, then the cause must be sought elsewhere. If cane sugar be used in preparing the food, this may be the cause; then use milk sugar.

The mother or nurse should ask herself the following questions, and then read carefully the passages on

bottles and nipples above: — (1) Is the baby fed regularly? (2) Is a proper bottle used? (3) Is the bottle kept scrupulously clean? (4) Has the bottle a long india-rubber tubing attached to it? (5) Does the teat fit the bottle tightly? (6) Is the hole in the teat too large? (7) Is the teat full of milk while the baby sucks?

Colic occurring in breast-fed babies is usually due to the child sucking too greedily, or getting the breast too often. The mother must in the one case press the nipple between her thumb and forefinger to prolong the feedings, and in the other case extend the time between the feedings.

Colic in Older Children.—The cause is mostly due to too much food, eating between meals, unsuitable food, irregular meals, and eating unripe fruit.

The symptoms and treatment are much the same as in younger children. Give an enema of warm, soapy water—15 to 20 ozs. (a pint)—to a child of twelve years of age. Follow this treatment with a dose of opening medicine, and for a few days give the child principally milk food.

HEADACHES

Children, like adults, are liable to suffer from headaches.

Causes.—Apart from those headaches which always accompany brain disease, the eruptive fevers, and acute,

inflammatory processes, the most common causes are: —(1) indigestion; (2) constipation; (3) disease of the teeth; (4) adenoid growths; (5) overwork at school; (6) defective eyesight.

Symptoms.—Headaches due to indigestion and constipation are usually limited to the forehead, and are of a dull, depressing character. They are usually relieved by vomiting, purgation, or starvation.

Those due to decayed teeth are either over the forehead, or one side of the head in the temple. Those resulting from adenoid growths and overwork at school may be over the forehead or on top of the head, or both.

The headaches arising from defects of eyesight may be due to long-sightedness, short-sightedness, or to astigmatism. These headaches, as a rule, do not come on until the child attends school, and the eyes are in consequence subjected to extra use. They are usually felt at the back of the eyes, but may be over the forehead, temples, or even the back of the head.

Treatment.—The treatment of headaches must be directed to the cause, which, as a rule, is not difficult to determine, if the articles in this book on each subject mentioned as causes are studied.

Any eye defect should be remedied as soon as possible, for as long as it exists, the child not only suffers, but he is unable to make the best use of his educational opportunities. The child should be taken to an

oculist, not to an optician, for the purpose of having suitable glasses prescribed.

EARACHE

Children often suffer from earache, which is frequently associated with inflamed gums when the back teeth are coming through.

The pain is usually severe, continuous, and prolonged in some cases for days, accompanied by shrill, piercing screams. The child crushes his head into the pillow, or presses with force against his mother's breast.

Treatment.—Syringe the ear with a solution of boracic acid in warm water—10 grains to the ounce of water. In the absence of a syringe, lay the child's head on a flat pillow, so that the affected ear is uppermost, and drop a few drops of warm water into the ear-passage; this may be repeated several times. After the adoption of either of the above methods, dry the ear, cover with cotton wool or flannel, and apply dry heat. This may be done by placing the child's head on a flat bottle, such as a spirit flask, covered with flannel and filled with hot water; or a bag filled with bran, which has been heated in the oven.

If a gathering takes place and a discharge of "matter" comes away, then the child should be taken at once to a doctor, even although the pain has disappeared. A neglected "running" ear frequently results in deafness.

CHAPTER XIV

Stammering, Sleeplessness, and Nervousness

STAMMERING OR STUTTERING

Speech is produced by the co-ordination of certain muscles, and a healthy child gradually acquires command over the organs of speech in the same manner as he does over the other muscular organs of the body, such as in walking, etc.

Stammering, in the great majority of cases, is a functional, nervous affection, and in its worst forms the vocal apparatus is usually found to be normal. The affection is met with in a temporary form in very young children, but persistent stammering does not usually begin before the sixth or seventh year. The condition is usually associated with other nervous symptoms in the same child.

Cause. — The cause of stuttering is not always apparent. Occasionally it begins after a prolonged illness in which the nervous system has been exhausted. In many a case the child has been associated with a stutterer, and has acquired the habit through conscious or unconscious imitation.

Treatment.—The habit of stammering once acquired, causes the nervous child to become still more nervous, and very sensitive regarding his defect, and any allusion to the subject has the effect of making the stammering more pronounced. Hence, before attempting a cure, the condition should be made lightly of, and never spoken about as if it were of any significance when the child is present.

The child must be taught to speak slowly, distinctly, and with the full use of the voice—vocal resonance. He must be instructed never to attempt to speak unless he has plenty of air in his chest—to take a deep breath before speaking. He should practise reading aloud, at least from five to ten minutes three times daily, but this exercise is not to be performed in the presence of other children.

It is a good plan for a parent to make a written list of the various words the child stumbles at, and get him to practise these at the end of each reading lesson. If the child can sing, he should be encouraged to exercise his vocal powers in this way as much as possible.

The child should not be allowed to go to a school where his reading aloud would be enforced before an unsympathetic audience. If a stammering child attends school, arrangements should be made with the master that at least no public exhibition be made of the child's defect.

On the first appearance of stammering in a child, care should be taken to prevent him from associating in any way with a stutterer; and the treatment of the condition should be begun as early as possible, for the longer the defect continues, the more difficult is the cure.

SLEEP AND SLEEPLESSNESS

Sleep.—Babies and young children require a very large amount of sleep, especially in order to develop their nervous system. The sleep of a healthy baby is quiet and prolonged, and his features bear a peaceful, contented expression. In perfect health the eyes and mouth should be closed, the breathing taking place through the nose.

During the first few weeks after birth, a baby should sleep about twenty hours per day; at six months, sixteen hours; at twelve months, fourteen hours; and during the second and third years, about twelve hours. From four to six years of age a child should have at least eleven hours continuous sleep; from six to ten years, ten hours; and older children never less than nine hours.

When babies and young children are deprived of their necessary amount of sleep, it results in their being irritable and fretful; while in older children attending school insufficient sleep frequently causes reduced mental energy and physical collapse.

Sleeplessness.—If a child is unable to sleep the number of hours mentioned according to his age, and especially if his sleep be of a disturbed nature, then we are justified in thinking there is some reason for this sleeplessness.

Causes.—Apart from sleeplessness as the result of severe, acute disease, the following are the most common causes of the condition:—

(1) An overloaded stomach; (2) hunger or thirst; (3) constipation; (4) catarrh; (5) teething; (6) eczema, or other itching skin affection; (7) intestinal worms; (8) earache; (9) rickets; (10) a tight foreskin of the penis (phimosis); (11) congenital syphilis; (12) light playing on the child's eyes; (13) excitement before going to bed; (14) lying too long in one position (cramp); (15) discomfort from cold feet, too many bedclothes, or soiled diapers; (16) faulty training, in accustoming the child to frequent feeding during the night; (17) defective ventilation; if a child sleeps soundly whilst in the open air, and badly when in bed, this cause will be obvious; (18) in older children attending school sleeplessness is often due to extreme mental exertion and anxiety over lessons.

Treatment.—The cause, or causes, must be found and removed. Matters conducive to the child's repose of mind should be studied. Care is to be taken that the child is kept free from excitement of any kind before being put to bed.

Foolish mothers train their children to dread the dark; wise mothers accustom their children to darkness by putting them to bed without a light.

A baby should not sleep in bed with the mother or nurse; this rule prevents frequent nursing during the night, and, more important still, the overlying by the mother, whereby many infant lives have been lost.

In older children the last meal of the day should never be just before bedtime, and children attending school should always have some respite between evening lessons and bed.

It should be kept in mind that enlarged tonsils, adenoid growths, and nasal obstruction, contribute largely to sleeplessness, by causing a child to breathe through the mouth instead of through the nose.

Whatever be the condition of sleeplessness in children, no drugs must be given, such as soothing syrups, teething powders, etc.

NIGHTMARE AND NIGHT-TERRORS

These attacks occur in children of a very nervous and highly excitable temperament. They usually take place soon after the child has fallen asleep, or in the early part of the night, and therefore it is natural to infer that they have their origin in intense impressions and experiences of the day, acting on a highly sensitive brain. Children who lead an unexcitable, uneventful,

rural life—the natural and proper child life—do not, as a rule, experience night-terrors.

Fright, punishment, or grief endured throughout the day by children of a nervous disposition is frequently followed by night-terrors, more especially if a late or heavy supper has been taken prior to going to bed.

By way of prevention it may be necessary to enquire into the child's school life; whether or not he is being pushed harder than his mental capacity and excitable temperament will endure.

His habits may require observation, especially those relating to his play and his diet. An excitable child is very apt to swallow his food with little or no chewing, in his extreme eagerness to resume play.

A child who suffers from nightmare or night-terrors should have his whole day systematically mapped out for him. If this be done, and there be no contributing causes, such as enlarged tonsils, adenoids, nasal obstruction, or chronic indigestion, the child will become free from the attacks.

NERVOUS INFANTS AND YOUNG CHILDREN

At birth the average weight of a child's brain is 4 ozs. This would appear to be out of proportion to the size and weight of a child's other organs at birth. During the first two years of infant life the brain grows so rapidly that it nearly doubles its weight.

This rapid growth of nervous tissue requires abundant rest and quietness.

The great frequency with which we meet with nervous diseases in early childhood supports the contention that the nervous system of young children is especially sensitive and irritable. It is well known that very slight irritation, which would have little or no effect in adults, upsets the nervous equilibrium in children, and produces symptoms out of all proportion to the original cause. Thus we get (1) convulsions; (2) spasmodic croup; (3) chorea (St Vitus' dance), with its spasm-like movements; and (4) infantile paralysis, etc., from apparently very trifling causes.

It is, therefore, not to be greatly wondered at that extreme nervousness is very common in infants and young children; more especially so is this the case in those whose parents are possessed of highly sensitive natures.

The important question arises, then, what can be done to subordinate this nervous tendency?

All infants of a nervous temperament should be kept as much as possible in quiet and peaceful surroundings. They should have only a few familiar faces around them, and not be subjected to the notice of strangers. Rocking in the cradle, or in the arms, is to be discouraged. They must not be excited by being played with until after six months old, and then only for brief intervals during the morning or after the midday sleep; never

during the evening. They should be taken out in the open air a great deal, and have large airy sleeping rooms.

Special care must be taken that the digestive system (stomach and bowels) be well regulated; long intervals between feedings are considered very beneficial to nervous children, for this gives the nervous system greater rest, and the child obtains the maximum amount of repose.

All the above measures may be summed up, briefly, as those aiming at giving the infant a large amount of quiet rest, by the avoidance of everything tending to irritate the nervous system, and so make it possible for the child to outgrow his nervousness.

CHAPTER XV

Accidents, etc.

SUNSTROKE

If a child be exposed to a high temperature for some time, whether it be that of the sun or artificial heat, he will become suddenly sick and faint.

Treatment.—Remove the child to a cool place, and apply ice, or ice-cold water, to his head. The clothing should be loosened. No stimulants must be given.

Prevention of Sunstroke.—No child should be exposed to the hot sun without the head being well protected from the sun's rays; while the body should be lightly and loosely clothed.

FROST-BITE

Parts of the body exposed to extreme cold are liable to become frost-bitten. Thus the fingers, toes, ears, and nose of a child are usually the first affected. At first the child may cry as a result of the severe cold, but when frost-bite has once set in, there is no pain, for then the nerves lose their sensation.

Symptoms.—The affected part changes its colour to that of a greyish white, like tallow, and later to a dark purple.

Treatment.—Avoid bringing the child into a heated atmosphere until the sensation and circulation are restored to the affected part. Use friction over the part until it assumes a healthy appearance.

BURNS AND SCALDS

A burn is produced by dry heat, while a scald results from moist heat. The effects upon the body of the child, and the treatment, are practically the same.

Treatment.—If the skin is merely reddened, sprinkle plenty of flour as quickly as possible over the wound, in order to protect the part from the air. Then cover with cotton wool and bandage lightly.

When the skin is blistered or broken, soak a piece of lint or clean linen in olive, salad, linseed, or castor oil, or spread with vaseline or lanoline, and cover the wound. "Carron oil," so commonly used in burns, consists of equal parts of linseed oil and lime water. This can be prepared for the second dressing. When blisters form they should not be broken, except by a doctor.

Before removing the child's clothes, see that the local applications are ready to be applied. The clothes should be taken off very carefully, using the scissors freely, and drenching the parts with oil when they adhere to the skin. Afterwards warmth must be applied to the surface

of the body, by wrapping the child in blankets and keeping him in a warm atmosphere, and giving warm drinks to him, in order to counteract any shock which may follow.

Infants and young children are very liable to succumb to burns, especially when they occur on the neck or body. It is therefore advisable to obtain medical aid when these young subjects are the victims of such accidents.

BITES OF ANIMALS

If a dog, cat, or other domestic animal bites a child, and the animal is known to be healthy, and especially if the bite be through the child's clothing, then the wound may be treated as any wound should be. (*See* Wounds.)

If, however, the animal be a stranger, or known to be suffering from rabies, the following more severe measures must be used :—(1) In order to prevent the poison from being carried into the general circulation, apply at once a ligature (piece of string, tape, or boot-lace) very tightly round the limb immediately above the bite (on the side of the wound nearest the heart) so as to constrict the part. Thus, if the finger is bitten, the string should constrict the member between the wound and the hand; if the hand, then the constriction must take place higher up, *i.e.*, at the wrist. (2) If the attendant's lips are free from cracks he should suck the wound

thoroughly, and spit out the saliva. (3) Wash the wound in warm water to encourage bleeding. (4) Burn the wound by means of a fluid caustic, such as pure carbolic acid, nitric acid, caustic potash, or caustic soda. The caustic should be applied on the end of a pointed piece of wood, in order that it may reach the bottom of the wound. (5) Dress the wound and keep the limb elevated. (*See* Wounds.)

SNAKE AND ADDER BITES

Symptoms.—A sharp, stabbing pain will be felt at the seat of the bite, after which the part will swell and become stiff. Soon the patient will feel faint and sick, and if the reptile be of a very venomous type, the breathing becomes hurried, the pulse quick, while convulsions and insensibility will follow.

Treatment.—The wound itself is treated the same as the bite from a rabid animal, described in the preceding subject. Care must be taken that the ligature is very tightly applied, and if in doubt as to its tightness, a second ligature should be tied higher up the limb.

As the bites of snakes and adders usually take place away from home, and caustics are not available, as a substitute a little gunpowder should be placed on the wound, and a lighted match applied; this may be repeated several times to ensure destruction of the poison. A fusee, or a red-hot wire, may likewise be employed in the absence of gunpowder.

As shock is a prominent symptom in these cases, a quarter of a teaspoonful of sal volatile in water should be given every hour to a child four years old, or a little freely diluted whisky or brandy, often repeated.

The patient should be prevented from falling asleep until all the symptoms of poisoning have disappeared.

Stings or bites of venomous spiders, scorpions, centipedes, etc., give rise to similar symptoms to those already described, though in a less marked degree, and the treatment is practically the same.

The stings of bees and wasps may be removed by the aid of a key-barrel, and the wound mopped afterwards with liquid ammonia, whisky, or brandy.

WOUNDS

A wound with the skin broken should be thoroughly cleaned, with cool boiled water, to which may be added to the pint, half a teaspoonful of lysol, a few crystals of permanganate of potash, or other disinfectant in common use. Dry the part well, and then dust powdered boracic acid over the wound. Apply a piece of lint, or, better still, medicated gauze; cover with cotton wool and a bandage.

If the wound has been caused by a clean, sharp instrument, such as a knife, piece of glass, etc., and the wound gapes, the edges may be kept together (after the wound has been cleaned) by strips of adhesive plaster.

When severe hæmorrhage (bleeding) takes place from a wound, an endeavour must be made to control it. This may be done by (1) direct pressure on the wound itself by the thumb or fingers, or by a hard pad of lint or other material placed on the wound, and secured by means of a bandage, or handkerchief tightly tied round the limb; (2) indirect pressure, when the hard pad and bandage are applied higher up the limb than the bleeding part (nearer the heart). The pad in this case is applied over the main artery of the limb, so as to obliterate all pulsation below the seat of constriction.

The main artery of the upper limb runs from the arm-pit, down the inner side of the arm (not forearm), and the best place to apply the pad is slightly higher than the middle of the arm (between the arm-pit and the elbow), and on the inside.

The main artery of the lower limb lies in the centre of the fold of the groin, where it may easily be felt pulsating. From the groin it runs down the thigh and slightly inwards. The pad may be conveniently applied over the middle upper third of the thigh, and slightly to the inner side of the middle line.

In infants and young children there is no necessity for applying the severe pressure requisite for the use of a tourniquet, as hæmorrhage from their limbs can always be controlled by the above measures.

All wounds of any severity, after being cleaned and

dressed, should be kept quiet by the use of slings, splints, or rest in bed.

When a needle penetrates the skin, breaks, and a part of it disappears, do not attempt to recover it, but keep the parts at rest, for muscular movements will force it to travel. For this purpose it is best to place the limb on a splint, more especially if the wound be near a joint, and take the patient to a doctor.

SWALLOWING VERY HOT LIQUIDS

This accident happens to a child attempting to drink from the spout of a kettle, or by taking very hot tea, soup, etc. The result is that the lips, mouth, and throat are more or less burned. The chief danger to be feared is suffocation from the internal lining membrane of the throat becoming greatly swollen, and so obliterating the opening of the windpipe.

Treatment.—Apply hot fomentations under the chin and front of the neck ; renew them frequently and keep the patient very warm. Give ice to suck, if the child is over six or seven years of age, or sips of ice-cold water. A teaspoonful of olive oil, frequently repeated, will relieve the pain. As the child improves, liquid foods only may be given, until the inflamed throat becomes well.

FOREIGN BODIES IN SPECIAL ORGANS

In the Eye.—A foreign body under the lower eyelid is easily removed by pulling down the lid with the forefinger and gently brushing the part with the corner of a fine handkerchief or other clean piece of linen.

When beneath the upper eyelid, a foreign body is more difficult to dislodge. Take the upper lid between the finger and thumb and gently pull it forward away from the eyeball; push the lower lid under the upper one. This simple measure enables the eyelashes of the lower lid to brush against the inner surface of the upper lid, and, if the foreign body is loose, it usually comes away. The process may require to be repeated several times.

Foreign bodies under the eyelids always set up an acute inflammation of the eyeball, because of the friction against the globe during the movements of the lids. After the few attempts at removal have resulted in failure, the child should be taken to a doctor. In the meantime, place a soft pad of cotton wool over the affected eye, and cover it with a folded handkerchief, which is then tied at the back of the head; this will reduce the amount of lid movements, and so retard the inflammation.

In the Nose.—Children frequently push various foreign bodies up the nose, such as small buttons, peas, slate pencil, etc.

If the child is old enough he should be induced to blow his nose violently, the empty nostril being compressed at the same time. A pinch of pepper or snuff applied to the sound nostril will produce sneezing, when the obstruction may be displaced.

If these measures fail, the services of a doctor must be obtained; but there is not such immediate danger of inflammatory trouble, as in the case of the eye.

In the Ear.—Unless the foreign body is within easy reach of the fingers, it had better be left alone, as there is a risk of it being pushed further in, and serious damage resulting. Never probe or syringe the ear with the idea of removing the foreign body. In order to keep the child's fingers from disturbing the ear, tie his hands down, or bandage the ear by means of a handkerchief. Then take the patient to a surgeon.

In the case of an insect being in the ear, it can usually be removed by filling the ear-passage with olive oil, when the insect will float to the surface.

In the Throat (choking).—This may take place by a piece of meat, a coin, marble, or other hard substance, being drawn into the windpipe, instead of into the gullet.

Symptoms. — The patient starts up immediately, struggles for breath, and becomes purple in the face. If the foreign body be not removed at once, the child will become insensible and expire.

Treatment.—Forcibly open the mouth, boldly pass

the forefinger to the back of the throat, and endeavour to hook the obstruction forward, or displace it. Vomiting may result, and if so, it will help to dislodge the obstruction. If failure results, bend the head forward, and thump the child on the back between the shoulders, with the object of making him cough it up. If the child recovers his breathing and no foreign body has been taken out by the mouth, very probably it has passed into the stomach.

Then the child should be encouraged to eat plenty of dry food, such as bread, potatoes, etc., with the object of covering the foreign body, and so preventing it injuring the bowels. All opening medicines must be avoided.

To forcibly open the Mouth.—Through fear, a child, as a rule, will keep his mouth tightly closed. It is then necessary to force the mouth open, and for this purpose the following plan may be adopted:—Press the cheeks firmly in with the thumb and forefinger of the left hand, so that the cheeks are forced between the teeth. The child will then relax the muscles of the jaw. Now with the right hand insert the handle of a teaspoon or dessertspoon, on the flat, between the teeth; press it to the side, and turn it as if turning a key in a lock. The mouth will now be sufficiently open for the forefinger to be passed to the back of the throat.

During these manipulations the child's head must be kept firmly held.

CHAPTER XVI

Poisoning

The chief poisons children are liable to suffer from are as under :—

ACIDS

Carbolic, sulphuric (oil of vitriol), nitric (*aqua fortis*), hydrochloric (spirit of salts), and oxalic (salts of lemon or salts of sorrel).

Symptoms.—The lips, mouth, and tongue will be deeply covered with a white, yellow, or brownish stain. Intense pain in the mouth, throat, and stomach, and vomiting. There is always a certain amount of shock to the system.

Treatment.—The mouth is first gently cleansed with a soft, clean, woollen cloth, soaked in lime water, fluid magnesia, or a solution of baking-soda (one teaspoonful to the pint of water). If the child is old enough, he will be able to rinse out his mouth himself with one of these solutions. Then the patient is given small drinks of olive or linseed oil, barley water, milk, or milk and egg flip. Emetics must not be given.

ALKALIES

Caustic soda, caustic potash, ammonia, and quicklime.

Symptoms.—These are very much the same as those produced by acids. The lips, mouth, and tongue are, however, intensely inflamed, and present a deep red colour.

Treatment.—The mouth is washed out with lemon or orange-juice, or with equal parts of vinegar and water; then olive oil, milk, or milk and egg flip is to be given. Emetics must not be given.

NARCOTIC POISONS

These include opium and its preparations, laudanum, morphia, paregoric, chlorodyne, syrup of poppies, soothing syrups, soothing powders, and the majority of teething powders.

Symptoms.—At first the patient is drowsy, and soon falls into heavy slumber, with slow, laboured breathing accompanied by snoring and puffing of the cheeks. From this deep sleep it is difficult to waken him. The face is pale, the skin moist, and the breath has a heavy odour, like that of poppy heads. The pupils of the eyes are very small (pin-point pupils), and light has no effect on them as in health.

Infants and young children are very susceptible to opium, one drop of laudanum having been known to kill a baby. Soothing syrups, soothing cordials, soothing

powders, and teething powders are responsible for many deaths of infants; the deaths being due, in such instances, to the opium contained in the preparations. Anything containing this drug should not be given to babies or young children without a doctor's orders.

When one of the above preparations has been given to an infant by a foolish mother or indifferent nurse, or when a bottle of chlorodyne or laudanum has been left to lie carelessly within easy reach of a child, and he is found in a deep sleep from which it is difficult to rouse him, then suspicion should be aroused that the child is the victim of opium poisoning.

Treatment.—If the patient can be aroused to sensibility, give an emetic; but not otherwise. A teaspoonful of table-salt in four tablespoonfuls of lukewarm water will do for an emetic for a child of four years old, and the forefinger, or a feather, may be used to tickle the throat, and so induce vomiting. Keep the child awake by shaking him or making him walk about (if old enough), and by slapping his face, neck, chest, and back with a wet towel. Give strong black coffee to help to keep him awake. Send for a doctor as soon as the condition is realised.

IRRITANT POISONS

The most common irritant poisons from which children are likely to suffer are those kept in their homes for domestic or general purposes, and are either

given to the child by mistake, or else, being left within the child's reach, he acts on his natural desire to put everything in his mouth, and so poisons himself.

Phosphorus (match heads, rat poison), antimony (tartar emetic), copper (verdigris), and lead (sugar of lead), are the most common. Arsenic, mercury, etc., are also in this group.

Symptoms.—There is always pain of a burning character in the mouth, throat, and stomach, accompanied with retching and vomiting. The knowledge that poison is kept in the house will be suggestive as to the cause; and in the case of poisoning through eating match heads, there will be the strong garlic odour of phosphorus in the child's breath, and the matches will be in evidence.

Treatment.—Give an emetic at once, even although the child is retching; it will make the vomiting of the poison more certain. A teaspoonful of ipecacuanha wine to a child two years old, repeated every ten minutes; or a teaspoonful of table-salt, in four tablespoonfuls of lukewarm water to a child of four. While the emetic is acting, beat up an egg in milk and give it at once, whether vomiting has taken place or not.

In the absence of an egg, milk or strong tea may be given, and, if the case is not one of phosphorus poisoning, olive or salad oil. In phosphorus poisoning,

oil enables the poison to act with greater severity, and therefore must be avoided.

PTOMAINE POISONING

Children frequently suffer from this form of poisoning. It is usually caused by eating tinned fish or meat, stale meat pies, putrid meat, fish, cheese, and occasionally game which is "high." Children should never be allowed to eat any of these things. Boiling putrid meats, etc., will not destroy the poison.

Symptoms.—Severe pain in the belly soon after taking food, vomiting, diarrhœa, and occasionally headache, shivers, and cramp. The pain is always present, even although the other symptoms be absent. As the patient gets worse, the hands and feet become cold, and there is prostration. The condition is of such a serious nature that no time should be lost in procuring medical advice.

Treatment.—This must be directed to removing the cause of the trouble from the stomach as soon as possible. Vomiting is to be encouraged by an emetic of salt and water (*see* Appendix), with frequent copious draughts of warm water in order to wash out the stomach. Even if vomiting has set in this treatment is advisable. Afterwards give a good dose of castor oil.

If there is much prostration, or in case of shivers or cramp, it will be necessary to give a stimulant

—from a half to one teaspoonful of brandy, according to age, in a tablespoonful of water. Hot water bottles to be applied to the feet, and a mustard and flour poultice (one part mustard to three parts flour) to the pit of the stomach for about ten minutes, and the child must be kept thoroughly warm.

After the symptoms have subsided, the child may be fed sparingly with white of egg in milk.

FUNGI POISONING

It not infrequently happens that children, and sometimes adults, hunting for mushrooms gather and eat toad-stools in mistake. The symptoms are sickness and pains in the stomach and bowels, followed by nervous collapse and convulsions.

Treatment.—As for ptomaine poisoning, which see. The poisonous fungi which resemble mushrooms are usually found in thickly-wooded places, and have a rank and putrid smell. The edible mushroom grows in closely-fed pastures, and the delicate pink colour turns black on the addition of common salt. This is a ready means of distinguishing the edible from the poisonous fungi.

SHOCK FROM POISONING AND ACCIDENTS

There is always a certain amount of shock to the system after an accident of any severity, and particularly is this the case after poisoning.

Symptom.—There is a tendency for the temperature to fall below normal, and the patient feels cold and often shivers. The skin surface, especially that of the hands and feet, is cold and moist; the face is pale and has an anxious expression, and the pulse is feeble. The patient may be very quiet or very restless, or he may become delirious.

Treatment.—The patient should be put into a warm bed as quickly as possible, and his circulation encouraged by a good supply of blankets. Hot water bottles covered with flannel applied to his feet, and hot, dry flannels to his abdomen. Care should be exercised that the hot bottles are well wrapped in flannel, otherwise the child's skin may be burned. When permissible, hot drinks, such as milk and water, tea, etc., should be given. Hot drinks, of course, must not be given when the patient is suffering from having swallowed scalding hot liquid.

The Doctor.—Whenever any severe accident has occurred, or it is manifest that a child has taken poison, send at once for a doctor, acquainting him at the same time with what has happened, so that he may know what remedies to bring with him.

CHAPTER XVII

Moral and Intellectual Training

The present happiness and future prosperity of a child are of the greatest importance to the parents.

A child's birthright is to have a strong and vigorous body, without which a sound mind is well-nigh impossible. We have already dilated on the means to be adopted to ensure the child a strong and vigorous body; but such a body, without a well-trained mind, must develop into a mass of mere animalism.

The difference between intellectual and unintellectual men seems at first sight very great; but on close analysis the difference resolves itself mainly into one of training.

The mind of a young child is like a fallow field of rich soil, full of latent possibilities as to a harvest of wheat or tares, dependent upon what is sown therein, and how it is cultivated. "The tiniest bits of opinion sown in the minds of children in private life afterwards issue forth to the world and become a public opinion, for nations are gathered out of nurseries, and they who hold the leading-strings of children may even exercise

a greater power than those who hold the reins of government."

To be effective, the training of a child must be commenced at a very early stage of his existence. Although at birth the baby's senses are imperfect, and his perceptive faculties are very weak, yet before many weeks of his life have passed, the fond mother is rewarded in response to her caresses by indications of developing intelligence and increased perception. Her smile and her kiss bring forth expressions from the babe in tune; or a frown is reflected by a shadow on the little face, and a harsh tone of voice elicits a cry.

"Who, then, has told this infant that a certain expression of the features indicates tenderness for him? How could he, to whom his own physiognomy is unknown, imitate that of another, unless a corresponding feeling in his own mind impressed the same character on his features? That person near his cradle is perhaps not his nurse; perhaps she has only disturbed him, or subjected him to some unpleasant operation. No matter, she has smiled upon him; he feels that he is loved, and he loves in return." Thus the first lesson in reciprocated love is taught and learned while the potential man is in his cradle.

Slowly, and by degrees, as the months roll on, the child's feelings and impulses become stronger, and there will also be observed many indications of the gradual development of his reasoning faculties. "At this time

the naturally cheerful and joyous dispositions of children are to be encouraged; kindness and gentleness are to be taught by example; good habits and noble feelings are to be cherished; generosity and self-denial gently inculcated; and, above all, prompt, implicit obedience insisted upon." An infant can, and should learn that he is not to have his own way by merely crying. There is such a thing as gentle firmness, which when regularly practised with perseverance and patience, not only aids the development of what is best in the child's character, but also brings out in his parents some of the best traits of true fatherhood and motherhood.

It is from two to four years of age that a child is most engaging and interesting. During this period his weakness and innocence are so appealing that the most careful and judicious management is necessary in order to avoid over-indulgence on the one hand, and over-regulation on the other.

Over-indulgence means, that the parents are afraid that correction and necessary punishment will impair the child's affection for them; and to avoid this they comply with his every whim and fancy, until the child becomes master and his will rules the household. An over-indulged child is always lacking in affection; he is unlovable as well as unloving; selfish and unhappy. Thus the seeds are early sown of a selfish, capricious nature.

Over-regulation or undue restriction, in which every

innocent desire of the child is thwarted, is also greatly to be condemned. Such treatment invariably spoils a child's naturally good temper, crushes his joyous feelings, breaks his spirit, makes him fretful, ill-tempered, and deceitful. Gratuitous restrictions and needless vexations continually and systematically exercised towards a child are bound ultimately to cause him to regard his parents as intolerant tyrants and exacting martinets, instead of a loving father and mother, whose dispensations are all good.

A child's inclinations should always be respected, but not necessarily substituted for those of the parents. Even punishment itself can be so judiciously administered with love and forbearance that the child is able to see it is the hand of love which wields the rod, and that to cause him pain does not give pleasure to those of whose love he is sure.

The importance of discipline at a very early stage of a child's existence is seldom fully appreciated. It is common knowledge that early impressions are persistent and lasting; that habits of obedience and regularity can be insisted upon from the cradle upwards. It is quite a mistaken idea to think that a child is too young to be denied undue indulgence, reprimanded, or receive chastisement or reward in a form fitting to his age. Denial, reprimand, chastisement, and reward, however, to be effective, must be carried out consistently and on rational lines. Contradictions in human conduct and

want of uniformity in action are probably more often observed by the pure, simple child mind than they are by the adult intellect, who is more or less accustomed to inconsistency and contradiction in his fellow-man. To promise a child anything, whether it be a reward or a whipping, means, if you wish to retain the child's respect, that the promise must be kept under all circumstances. Not so with an adult, whose intelligence can be appealed to when circumstances have so changed that one's promise is no longer honourably binding. A child's undeveloped mind cannot weigh a set of altered circumstances, and it is quite natural for him to consider himself ill-treated when a promised reward is withheld. Care must be exercised, therefore, in committing oneself to a child, if one is desirous of retaining the child's respect and esteem for honour and truthfulness.

One of the most common faults found in thoughtless and foolish parents is that of bribing their children. A child should be so trained that at all times he will do the bidding of his parents promptly, and without a second request, for the reason that it is his parents who command, and intuitively he knows they would not order him to do what is wrong. A well-trained child, receiving a parental command, does not stop to think whether such an order be right or wrong; it is his duty to perform, and he straightway obeys, even although the task be unpleasant. The reward to such a child

lies in the consciousness of having obeyed and thereby pleased his parents. A child indifferently brought up, who finds that he may with success flout his parents' wishes and desires, and who refuses to do as his parents dictate until a reward is either placed before him or is promised, can have no satisfaction in doing a thing, either because it is right, or ordered by his parents. A toy, a coin, a sweet, etc., is the reward, and thus at the most impressionable age of the child's life he is trained to be sordid in mind, selfish in heart, and difficult to influence for good.

The process of developing the intellect of the child must be begun first through his senses of sight, hearing and touch. Simple and suitable toys, picture books, etc., are given to children not merely for purposes of amusement, for they have an educational value to the young mind. They teach the appearance and proportion of external objects, they impart a desire to know more, and keep the mind gently employed. Simple mechanical toys are especially of value educationally.

"Late springs produce the most abundant harvests." This adage is equally applicable to the child mind. A child should not have school lessons until the age of six or seven years, and then the lessons should be very brief in character, always falling short of tiring the pupil. Precociousness is not a virtue, and it is frequently gained at the expense of the child's physical frame and constitution.

All children should have some simple daily duties to perform. "All work and no play makes Jack a dull boy," truly; but it is equally true that pleasure is lost by its continual pursuit. A little light work daily acts as a disciplinary tonic to a child, and while the work is never of a hazardous or tiring nature, supervision should be exercised to see that the work, or duties, be thoroughly, accurately, and methodically performed.

The study of the child's peculiarities and temperament is a subject which demands the closest attention from parents.

Special studies which have no direct bearing on a general education, and for which a boy or girl shows no aptitude, should be avoided. There are millions taught music, but it may be truly said there are only hundreds who play or sing well. It is a waste of both time and money, besides being vexatious to a child, to send him to learn an art for which he has no inclination or aptitude.

A child's education should be, as far as possible, an all-round one. Faculties which are weak must be strengthened by exercise; those which are over-vigorous and strong are to be gently repressed. Children who are especially gifted, and show a decided preference for any particular study, will have ample time and fuller opportunity of cultivating that speciality after they have acquired an all-round, good, general education. Education is not a mere surface polish or veneer which can be put on at any time of life;

it is the very grain and fibre of the man, the training in body and mind and character, which shapes not only his very earliest growth, but his whole being.

Where a child exhibits the tendency of becoming a bookworm, at the expense of out-door life and consequent sacrifice of his physical development, gentle measures must be used to wean him sufficiently from his books to ensure his taking the proper amount of exercise consistent with good health.

A sound, healthy body, combined with a gifted mind, is greatly to be admired; whereas a stunted infant prodigy, with his limited horizon, is to be greatly pitied. Thus, in this respect, specialisation by children is to be discouraged.

In the untrained, undisciplined child, as in the untutored savage, the emotions and impulses are unchecked, and one of the truest objects of education and training is to bring these feelings of a child under his control. This power of self-control is not so easily acquired by a highly-strung, nervous child, and consequently he is a greater sufferer from fits of temper and excitability than his more phlegmatic brother. A child who gives way unduly to his emotions should have great care exercised towards him by his parents; they should see that he leads a quiet, uneventful life, while at the same time gently guiding him in the paths of self-control.

The proper training of a child demands from the

parents example rather than precept. "In life as in art, and as in mechanics, the only profitable teaching is the teaching by example." "He is the best teacher of others who is best taught himself: that which we know and love we cannot but communicate." A well-trained child esteems his parent as a being who is all perfection. In return, a true parent, though conscious of falling far short of the ideal standard fixed by his child, is, consciously or unconsciously, influenced by the high estimate placed upon him. This influence is displayed in little acts of unselfishness and devotion to his child, until at length the parent has become a better and nobler character through the influence of his own offspring. The self-control exercised in training a child well is the healthiest self-discipline a man or woman can receive.

When the home life abounds with love and affection, when the father's rectitude and the mother's sacrifices are self-evident to the child, then severity and the chastening rod may be dispensed with.

CHAPTER XVIII

General Hints

ADVICE TO MOTHERS ON CONSULTING THE DOCTOR ABOUT THE BABY

(1) Remember that in consulting a doctor you admit that he knows more than you do concerning disease and its treatment.

(2) As you pay for his advice, you should see that you get value for your money by taking heed of all he says. And for this reason, after you have answered all the doctor's questions regarding the baby's symptoms, listen very carefully to all he has to say.

(3) In a well-ordered conversation only one person speaks at a time, the speaker looks at the eyes of the hearer, whilst the hearer looks at the speaker's mouth.

(4) You cannot be impressed with the doctor's instructions if your thoughts are "wool gathering," or if you are fondling or caressing the baby while he is speaking.

(5) Remember that in all cases of illness, medical advice as to the care and nursing of your child, the

preparation of suitable food and local applications, are frequently of far greater importance than a bottle of medicine.

(6) Therefore, as your baby's life may depend upon the doctor's instructions being carried out thoroughly and intelligently, be careful not to leave the consulting room without fully understanding all his directions.

(7) After receiving and paying for professional advice, do not be influenced against it by listening to "Mrs So-and-so, who has had so much experience in such cases," and imagine she knows more than the doctor.

(8) During the intervals between seeing the doctor, should any question arise in your mind affecting the welfare of your sick child, do not trust your memory, but write it in a note-book, to which you can refer at your next consultation.

(9) Remember that while it is to your advantage to get as much advice as possible from your medical attendant, it is equally advantageous to the doctor to give his best, for the sooner the patient recovers the better his reputation.

(10) A doctor is more likely to exercise his skill to the best advantage if all irrelevant matters are kept out of conversation during consultation. Therefore, always confine your conversation strictly to the case of your sick child.

(11) As the average doctor's time is valuable, take your departure as soon as your business is completed,

even though you are a personal friend of your medical adviser.

BATHS FOR BABIES

A healthy child should have a bath night and morning. If the baby is not very strong, it is better to omit the evening bath and to sponge him instead.

The temperature of the bath should be about 90 degrees Fahr., never above 95 degrees. A bath thermometer (*see* Fig. 12) is necessary in order to accurately test the temperature of the bath. In the absence of a thermometer, the mother or nurse should test the temperature of the water by putting the bare elbow into it; the water is about the right temperature when it feels pleasantly warm to the bare skin.

In warm weather, and as the baby grows older, the water need not be so warm, from 80 to 85 degrees will be sufficient.

Very little soap should be used for the baby's skin, and particular care must be taken to wash all the soap off the head. This is best accomplished by using a separate bowl of water at the same temperature as the bath. The soap used need not necessarily be an expensive one, but it must be free from excess of soda or potash, not highly coloured nor highly scented. There are so many good soaps on the market that there should be no difficulty in selecting a suitable

brand. In this connection it should always be borne in mind that soap which is used mainly for washing clothes is most unsuitable for the delicate skin of a young baby, notwithstanding specious advertisements to the contrary. Any one of the following soaps can be recommended to be used for washing the baby:—Castile soap, Wright's coal tar soap, "Vinolia" soap and M'Clinton's soap.

Care should be taken during the bath that the child is not exposed to any draught. There must be no dawdling, and the whole operation of bathing, thoroughly drying, and putting on the first garment should not take longer than from five to eight minutes. After the child has been well dried it is advisable to dust some absorbent powder over those parts of the skin which come in contact with skin, such as, behind the ears, the neck, arm-pits, thighs, privates, etc. Fine Fuller's earth or violet powder answers very well for this purpose.

When the limbs become cold or the lips blue after a bath, it may be taken as an indication that the bath has a depressing effect on the child. In such a case it is advisable to substitute sponging for the bath.

COLD DOUCHING

For healthy children over one year old and delicate children over three years of age a cold douche is recommended, provided that the following precautions

are observed: — (1) They should stand in water which is pleasantly warm while a sponge soaked in cold water is squeezed over them. (2) They must be smartly rubbed down afterwards and thoroughly dried. (3) The room must be warm, and the bath must not be given if the child is cold.

The cold douche, so used, strengthens and invigorates a child by stimulating the circulation and nervous system, thus preventing cold feet, reducing the liability to taking cold, and increasing the appetite.

BABY OUT-OF-DOORS

A baby born in summer may be taken out for the first time in a week to ten days after birth; in winter, or during cold weather, it is advisable to postpone the event till the infant is two or three weeks old. On the first occasion, fifteen to thirty minutes, depending upon the warmth of the day, will be sufficiently long. Afterwards he should be taken out every day when the weather is warm and dry. Babies should always be protected from cold winds, rain, and dust, and their eyes should be shielded from the sun's rays.

FRESH AIR AND SUNSHINE

Improper feeding excepted, the absence of an abundant supply of fresh air and sunshine is probably responsible for more deaths in infants and young children than anything else. While a child is warmly

clad and out of the way of draughts he can withstand a fair amount of cold, especially whilst taking exercise. Much more harm is likely to take place as a result of coddling children, for it is a well-known fact that children of the poor and careless are much more robust than those of the better class in country districts, and this is justly to be attributed to the outdoor and freer life.

BABY'S CLOTHES

should be soft in texture, light in weight, and sufficiently loose to permit of plenty of movement to his body and limbs. A baby's heat-producing power is very feeble, hence the clothing, whilst appropriate to weather conditions, should always be sufficient to keep him warm. During the early months of life, therefore, it is inadvisable to send the baby out-of-doors with bare arms or bare legs.

BABY'S DIAPERS

These are usually made of cotton or linen, for the convenience of washing. They must never be washed in water containing washing-soda, and the soap must be thoroughly rinsed out of them, otherwise the irritation therefrom will set up an eczema round the seat.

It is an objectional practice to always have a mackintosh to cover the diaper, as it causes irritation to the skin.

During an attack of diarrhœa, in order to save the baby from an inflamed bottom, it is advisable to form a pad of absorbent cotton wool covered with gauze and placed inside the diaper. This method of protecting the baby's skin will also be found very serviceable if adopted during a long train journey.

APPENDIX

LIME WATER

Lime water is prepared by adding one teaspoonful of pure, unslaked lime (obtainable from any chemist) to a bottleful (about a pint) of recently boiled and cooled water. This is to be well shaken up, and after standing for twelve hours the lime water is made. The clear liquid is then poured off into another perfectly clean bottle and kept well corked.

BARLEY WATER

Two tablespoonfuls of pearl barley are soaked over night, or at least for a few hours, in a quart of water; if wanted quickly the barley may be boiled for five minutes. Pour off this water, or that in which it has been soaked. Now add another quart of water to the barley and boil for several hours, adding water from time to time to keep the quantity up to a quart. After being strained it is ready for use. A quicker method is to take from a dessertspoonful to a tablespoonful of Robinson's Patent Barley, add it to a pint of boiling water, keep boiling for fifteen to thirty minutes, and then strain. No previous soaking is necessary with this method.

RICE WATER

Rice water is made in the same way as barley water, rice or ground rice being used instead of barley.

OATMEAL WATER

Take one tablespoonful of oatmeal, put in a basin, and pour on to this a pint of hot water, keep well stirred for ten minutes, and allow to stand for twenty minutes after. Strain through cheese-cloth, and boil the strained liquid for half an hour. This will form a thin gruel. If the oatmeal is boiled with water it is practically impossible to strain it, and the patient gets food of a more solid nature than that intended.

These three preparations are given during acute attacks of indigeston and diarrhœa, when it is necessary that the child be starved for from twelve to twenty-four hours. They are also useful in feverish conditions, when thirst is a prominent symptom.

RAW MEAT JUICE

An ounce of the best rump steak, free from fat and gristle, is finely minced and put into a tea-cup with four tablespoonfuls of cold, recently boiled water. The contents are well stirred and allowed to stand for half an hour, after which it is strained through cheese-cloth or muslin. The cheese-cloth or muslin must be twisted in order to extract the greater part of the juice.

Raw meat juice is very easily digested by babies, and is especially good in marasmus, anæmia, indigestion, chronic diarrhœa, rickets, and scurvy. It is immeasurably superior to ordinary broths and beef-teas,

and contains all the structural food elements a child requires, as well as anti-scurvy properties.

The quantity to be given is a teaspoonful three or four times a day to a baby one to two months old, and double this quantity to a child of six months. It may be conveniently mixed with milk or water. When given to an older child it is advisable to serve the preparation in a coloured glass, and the addition of a little sugar makes it more palatable.

RAW MEAT PULP

Scrape off the tender muscle from the fibre of a piece of the best rump steak with a sharp knife. The object of this is to obtain the soft, juicy portion of the meat, without any tough or skinny portions. The process is not the same as mincing.

Raw meat pulp is used in the same cases as raw meat juice, but is given to older children. A child one year old may have from half an ounce to an ounce three or four times a day.

ALBUMEN WATER (WHITE OF EGG SOLUTION)

The white of a perfectly fresh egg is separated from the yolk, and well beaten up. Add a pinch of table-salt, a little orange or lemon juice to flavour, if desired, and half a pint of cold water. Put into a bottle, shake well, and strain through muslin. This solution is of great value in vomiting, indigestion, and diarrhœa, especially when much exhaustion is present, and when a milk food is not agreeing with the child. A child of three months old may have two or three tablespoonfuls every two to three hours.

LINSEED TEA

Add two tablespoonfuls of whole linseed to a pint of water, and boil for about two hours, adding water from time to time to replace that which has evaporated. Strain the liquid, sweeten and flavour. The addition of lemon juice or a little liquorice makes a pleasant demulcent drink.

SALT AND WATER EMETIC

Take one teaspoonful of table-salt and dissolve it in half a teacupful of hot water. A teaspoonful of this to be given (while hot) to a child three to six months of age every two or three minutes until vomiting occurs.

This method of inducing vomiting is speedy, safe and not followed by any after-effects.

DRUGS

In the treatment of diseases of infants and young children drugs occupy a very subordinate place.

The age, weight, and susceptibility of children to drugs precludes the use of medicine in most cases.

The average dose of medicine for a child of twelve years old is half that for an adult; that for a child of four years, a quarter; for a child of one, one-eighth. When we come down to infants of a few days old, it will be obvious how very small the dose must be in proportion.

Full directions as to food and drink, careful nursing, local applications, etc., in illness, are of much greater importance to mothers and nurses in the treatment of

infants and children than all the drugs ever discovered. To regard the bottle of physic as having the power to perform the miraculous, is a faith based upon superstition.

Doses.—In the treatment of infants and young children it is much more important that accuracy in doses of medicines be assured than in cases of adults. A teaspoonful is supposed to hold sixty drops, but there are many teaspoons in use which hold half as much again as this quantity. In order to obtain accuracy, it is always advisable to use a glass measure instead of the teaspoon.

When simple mixtures are recommended for children, a chemist should always make them up, where possible.

Castor Oil.—This aperient deserves special notice, by reason of its wide-spread abuse, and from the fact that so many writers on diseases of children recommend it as a "safe and reliable purgative."

As castor oil has a distinct "binding" effect after it operates, the drug should only be given to children when this effect is desired. It is therefore limited in its usefulness to cases when it is desirable to clean out the bowels of gas, undigested food-stuffs, and fæcal matter, when such materials are irritating the bowels and causing diarrhœa or colic. The dose of castor oil is one to two teaspoonfuls to a child of four years of age. It is best given in hot milk, one to two drops of essence of peppermint being added to disguise the taste and prevent griping.

Other Aperients.—The following are much more suitable opening medicines for infants and young children in ordinary cases:—Salad or olive oil, two to three

teaspoonfuls; fluid magnesia, one teaspoonful; liquorice powder, quarter of a teaspoonful. These doses are suitable for the age of one year.

GLYCERINE ENEMA

The glycerine enema is useful in all cases of chronic constipation. A special syringe, having a long, curved, vulcanite tube, so that the glycerine may be introduced high up in the bowel, is used.

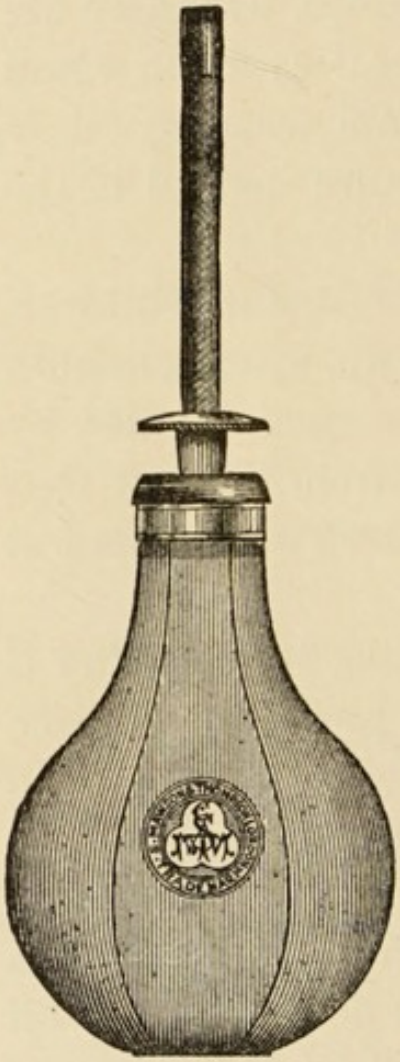


FIG. 9.
(By permission of Messrs S. Maw, Son & Sons.)

The syringe will hold two teaspoonfuls of glycerine, but a mixture of one teaspoonful with an equal quantity of water is preferable for an infant or young child.

SOAP AND WATER ENEMA

Make a lather of soap and warm water, slightly hotter than blood-heat, and add to this one to two tablespoonfuls of olive oil. For an infant at the breast 1 or 2 ozs. is sufficient; a child of four will require from 6 to 8 ozs. A pear-shaped enema is the most convenient to use for infants and very young children (*see* Fig. 9). The tube must be smeared over with vaseline, in order to facilitate its introduction into the rectum, and the injection given slowly. Care must be taken not to use force or give pain.

LIST OF MEDICINES, ETC.

recommended to be kept in households where there are infants or children.

Boracic acid powder
Liquorice powder
Gregory's powder
Fluid magnesia
Lime water
Glycerine
Olive oil
Vaseline
Eucalyptus oil
Friar's balsam
Ipecacuanha wine
Castor oil

Lint
Cotton wool
Bandages

DUSTING POWDERS FOR BABIES

There are several excellent preparations of this nature obtainable. A powder fulfilling the following conditions is suitable—very finely ground, free from gritty particles, non-irritating, and absorbent. If it be slightly antiseptic, so much the better.

The perfume of the powder is quite immaterial, but, as a rule, the use of highly perfumed and coloured powders is not advisable. The powders recommended are Fuller's earth (grey), violet powder, and borated talcum, or talc powder.

THERMOMETERS

A thermometer is an instrument for the purpose of registering the temperature. It consists of a glass bulb and tube containing mercury or some coloured fluid. The mercury or fluid is expanded by heat and contracted by cold; it therefore rises or falls in the tube in consequence of any change in the temperature. Thermometers are marked with various scales, but

the scale referred to in this work is Fahrenheits and is the one mostly employed. Special thermometers

FIG. 10.

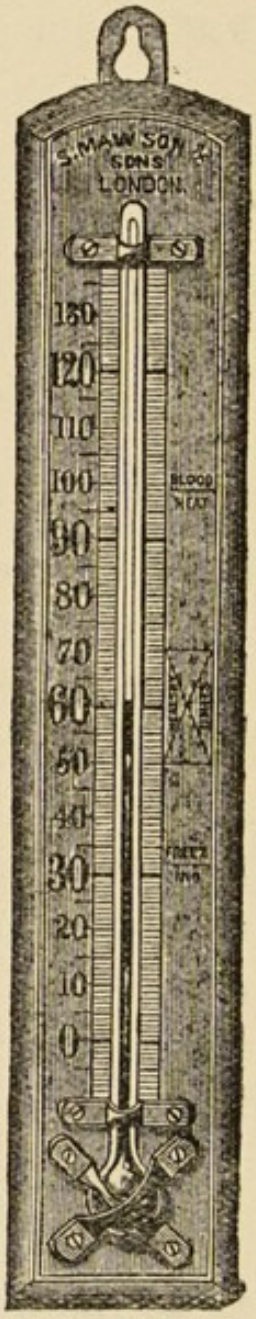


FIG. 11.

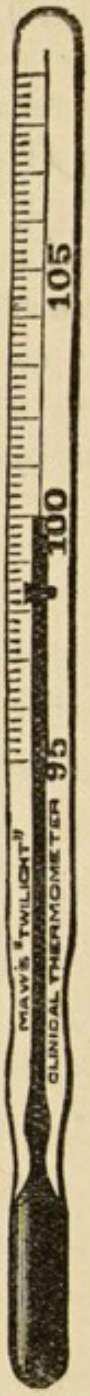


FIG. 12.

(By permission of Messrs S. Maw, Son & Sons.)

are made for various purposes, those most commonly used being as follows :—

(1) The dairy thermometer is used for testing the temperature of milk, as directed under preparation

of humanised milk. The use of this instrument is essential if a satisfactory product is to be obtained. The thermometer is used by dipping it into the liquid which is being heated, and keeping it there for one or two seconds. On taking the instrument out, it will be seen that the fluid in the tube has risen to a certain height; the mark on the scale opposite this height indicates the temperature. The instrument must not be allowed to touch either the sides or the bottom of the vessel while being used.

(2) The *bath* thermometer is used in the same manner in order to test the warmth of the water in the bath.

(3) The *room* thermometer is adapted for hanging on a wall, and indicates the temperature of the room in which it is placed.

(4) The *clinical* thermometer is used to register the temperature of the body. It differs from the foregoing thermometers in having a range of from 90 to 110 degrees only, being much smaller and more sensitive, and in not automatically falling with the temperature, but requiring to be shaken down after use. In taking the temperature, first see that the thermometer has been shaken down; the doctor or a nurse will show how this is done. Then in the case of an adult place the bulb of the thermometer either in the mouth or under the arm-pit and allow it to remain for five to ten minutes. In young infants, owing to their liability to cry or bite the thermometer if placed in the mouth, the temperature should be taken as follows:—the thermometer is placed in the groin and the thigh bent, so as to fold the instrument between the thigh and the groin.

The temperature of the body should be, in health, 98·4 degrees; this is known as normal temperature, and is shown on the thermometer by an arrow head. A slight variation from this should not cause any uneasiness unless other symptoms are persistent, such as pain, headache, vomiting, or diarrhœa. A marked and prolonged departure from normal temperature is a sure sign of ill-health, and no time should then be lost in securing the services of a medical man.

Although a high temperature is an important indication of illness, it is nevertheless only one symptom of departure from health. The constant use of the thermometer in a home is to be deprecated as being likely to cause unnecessary alarm.

PEPTONISED (PREDIGESTED) MILK

Partially Peptonised Milk.—To 1 pint of fresh cows' milk add 4 ozs. (half a teacupful) of previously boiled water and put into a clean jug or bottle. Now take one tube of Fairchild's peptonising powders (obtainable from any chemist), and mix it in a saucer with just sufficient of the milk and water mixture to form a smooth paste; now add more of the mixture to this and pour it into the jug or bottle containing the milk and water, and let the whole be well stirred or shaken. The jug or bottle is then placed in a large basin containing water at 105 degrees Fahr. to 115 degrees Fahr. (slightly above blood-heat) and kept there at the same degree of heat for twenty minutes. The milk will then be partially peptonised. To prevent further peptonisation the milk is heated to boiling-point; this destroys the peptonising ferment. On cooling, the milk

is ready for use, the quantity for each feed being regulated according to the age of the child.

Completely peptonised milk is made in the same manner, excepting that the milk is kept at a temperature between 105 degrees Fahr. and 115 degrees Fahr. for two hours; all the proteids or curds will then be digested.

Peptonised milk is most useful in cases of feeble digestion in infants, and during attacks of acute and chronic indigestion.

For acute indigestion the completely peptonised milk is most suitable; in other cases partially peptonised milk is advisable.

Peptonised milk cannot be used with advantage for an indefinite period, as the digestive functions of the stomach are liable to become impaired from continued want of use. Completely peptonised milk may be safely used for one or two weeks; partially peptonised milk for one to three months. In returning to normal feeding it is best to gradually reduce the time of peptonising and also the quantity of powder used.

Peptonised milk has a somewhat bitter taste, particularly so with complete peptonisation.

For infants up to four or five months old whose sense of taste is undeveloped, this matters little. In older children the taste can be disguised by the addition of cane sugar and lemon juice.

WHEY

A pint of fresh milk is put into a jug. The jug is then placed in a saucepan three parts full of cold water, and the milk raised to 105 degrees. Now remove

the jug from the fire and stir in one crushed rennet tablet, or one teaspoonful of the best rennet extract, into the milk, and allow it to stand for three minutes, when a firm mass (curd) will have formed. Break up this curd thoroughly with a fork, and then return the saucepan to the fire, heating until the fluid contents of the jug reach the temperature of 155 to 160 degrees, at which temperature it is kept for five minutes. The curd will have sunk to the bottom of the jug, and the whey is poured off. Two teaspoonfuls of milk sugar is then added.

If a stimulant is required, one small teaspoonful of the best brandy or whisky may be added to the whey so prepared.

Whey is very nutritious and easily digested. It is used for infants in cases of acute and chronic indigestion, and during feverish conditions. As soon as recovery to health is established the child should gradually receive a stronger food.

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