great pain in defecation, but the anus was not involved, the disease being wholly within the rectum, which it nearly filled with a very dense mass of tissue. An incision through the disease and sphincter was performed with but temporary relief, and a few weeks later lumbar colotomy was performed, which gave considerable relief, which continued until her death about nine months later.

The second case was a lady about thirty-five years old, with a voluminous growth springing from the anterior wall of the rectum, and filling out the perineum. The pain in this case seemed to be due largely to the growth of the mass, and was largely in the hip. There was also tenesmus and frequent desire to defecate although no obstruction. An active application of the actual cautery was made, as it was feared that colotomy would not relieve the symptoms in this case. The operation freed her from pain, but she sank and died apparently from no special inflammatory process, about three weeks later.

Attempts at extirpation have been quite unsatisfactory, and I am inclined to advise as little interference with the disease locally as possible, unless it be seen at a very early stage. But such a case has never presented itself to me. Indeed, I have never seen one where it seemed mechanically possible to remove the whole growth.

Colotomy is a palliative operation in certain cases, but not by any means in all; for those near the anus it may relieve the acute local pain; for those higher up it is only indicated in case of marked obstruction which, however, does not always occur.

CANCER OF THE ŒSOPHAGUS.

My experience with dilatation of the stricture produced by the disease in this locality has not been encouraging. The painful nature of the treatment and the rapidity with which obstruction occurs on its discontinuance, make this a method unsatisfactory to both surgeon and patient. On one occasion, an attempt to pass the ivory probang in a very old lady with cancerous stricture, although made with great care and gentleness, was followed by death of the patient three days later. In another case, the persistent and most careful use of the bougie, although it kept the stricture from closing entirely, did not prevent great irritation of the œsophagus from obstruction. Considerable inflammation occurred around the locality of the disease, tracheotomy was performed, and at the autopsy, some weeks later, perforation of the œsophagus was found, with the production of which, of course, I had the privilege of being accredited. In a case which has been under treatment during my present service at the hospital, I have accordingly tried the operation of gastrostomy. Until the termination of the case it will not be possible to express an opinion on its merits and disadvantages. The management of the fistula requires an amount of intelligence which the average hospital cannot always be depended upon to possess.

The use of a flexible tube permanently retained in the œsophagus offers certain advantages over either of the other methods, which would incline me to give it a trial.

In regard to the efficacy of drugs in the treatment of cancer, I have had no positive results.

Arsenic has been tried repeatedly in cases of lympho-sarcoma, without the slightest success. In a

recent case of this disease an exploratory incision was made, and since the wound thus made has healed, the tumor has slightly decreased in size. This result may have been due to severing some of the vascular connections of the tumor. I have used chian turpentine also in several cases, without any effect, in cancer of the breast, of the œsophagus and rectum.

The recent publication by Mr. Clay, of cases of successful treatment of cancer of the lip, tongue and uterus, has again called attention to this drug, and the mode of administering it is accordingly given here. Mr. Clay maintains that physicians are too easily discouraged, and that its administration should be continued through the period of at least three months, in order to obtain favorable results.

The mixture which Mr. Clay recently recommended was the following:

Chian Turpentine	:	:	:	3 iss
Flor. Sulph.	:	:	:	3 i.

Divide into thirty pills.

Magnesia should not be used as an excipient, and they should not be coated.

Two pills should be taken three times a day for three weeks; then three pills three times a day, or twenty-seven grains of chian turpentine daily. They should be taken about one-half hour after eating; after being taken for three months, they should be discontinued for three days in every fortnight. Messrs. Metcalf & Co. write me, "The mixture he had made contained five grains of the chian turpentine and two grains of sulphur to the teaspoonful, made up with mucilage of tragacanth. The pills have been much used, but the mixture being rather unsightly and not agreeable to the palate, has fallen out of use." The "Southall" mixture, which he has recently advised, contains resorcine instead of sulphur, but its composition I have not been able to ascertain. I have myself used the following combination:

R.	Chian Turpentine.			
	Resorcine	:	:	aa 3 ii.
	Mucilag. Gum Acac.	:	:	3 ii.
	Aq. Cinnam.	:	:	3 i.

Sig. Teaspoonful three times a day.

If carefully prepared it is not a disagreeable mixture, but most patients prefer the pills.

I am one of those who are hopeful that a bacterial study of this affection may further our knowledge of its etiology, and pave the way to a more intelligent treatment. It may be that, like the treatment of traumatic infective diseases, this may be prophylactic rather than curative. But it hardly seems possible that with so rapid advances in surgical knowledge in other directions, we should still continue to remain nearly helpless to aid humanity affected with so terrible a disease.

THE SO-CALLED PHYSIOLOGICAL LOSS IN INFANTS.

BY CHARLES W. TOWNSEND, M.D.

It has been found that every infant loses weight during the first few days of life. To what is this loss due? Is it physiological or pathological? Can it be prevented, or, in other words, can this handicap of the infant in the race of life be removed? These are the chief questions that present themselves, and their solution has been aided by studies during my service as house-physician in the Boston Lying-in Hospital,

through the courtesy of the visiting physicians, and by statistics obtained from the records.

In this hospital there are records of the daily weight of each infant from May 1st, 1885. As the birth-weight is taken before the baby is washed and dried, it is evident that a portion of the loss in these, as in probably some other statistics, is accounted for by casix, liquor, mucus, and blood, with which the baby is more or less bedaubed at birth.

To determine this factor, four infants were weighed at birth, and again when washed and dried; in none of these cases was meconium or urine passed before the second weighing. The average loss was an ounce and a half, avoirdupois (47.5 grammes), the least being a little less than an ounce (25 grammes), the greatest about three and a half ounces (100 grammes). Another factor in this decrease of weight is, of course, due to the loss of other extraneous matter present at birth, that is, the meconium and urine; these, in a still-born child, were found to amount to an ounce and a half (45 grammes), but as fully half as much again was lost during delivery, the total amount is probably between two and three ounces. Bouchaud¹ gives the weight of meconium in a still-born child as 60 to 70 grammes. From the so-called physiological loss, then, must be deducted that due to removal of casix, meconium, etc., or three to five ounces, and the remainder will be the true loss of fluids and solids of the body over and above the gain by assimilation of breast-milk.

Leaving out the partly and wholly bottle-fed infants, the premature, and those who died or left the hospital within a few days, and those whose mothers had acute diseases, there were at the Boston Lying-in Hospital, between May 1st, 1885, and July 1st, 1886, 231 infants entirely breast-fed from birth till discharge from the hospital, generally on the fourteenth day; of these, 140 were from primiparous mothers, and 91 from multiparous mothers. It is the custom at the hospital to put the child to the breast generally at the end of from six to twelve hours. The breast is given regularly every two hours, and but once, and in some cases not at all, between 10 P. M., and 6 A. M. The following table is an analysis of these 231 cases:

	Infants of Primiparæ.	Infants of Multiparæ.
Average Loss	10.47 oz. (296 gms.)	8.90 oz. (253 gms.)
Day Weight was Less	Betw'n 4th and 5th day	4th day.
Per cent., who Reached or Surpassed Birth-Weight on 14th Day	60%	63%
Average Gain on 14th Day	-0.06 oz.	+0.20 oz.
Average Gain in those who Surpassed Birth-Weight on 14th Day	5.74 oz. (163 gms.)	6.06 oz. (172 gms.)
Average Loss on 14th Day in those who Failed to Reach Birth-Weight on that Day	7.61 oz. (218 gms.)	7.15 oz. (202 gms.)

Deducting one and a half ounces as the average loss from removal of casix as estimated above, the physiological loss is reduced to 8.97 ounces (247 grammes) in the infants of primiparæ, and 7.40 ounces (205.5 grammes) in those of multiparæ. It is seen by reference to the table that the loss is greater in the former than in the latter class, and that the former began to

gain weight a little later than the latter. The gain on the fourteenth day was, however, practically the same in both, as well as the proportion who equalled or surpassed the birth-weight. The fact that the flow of milk is generally later in primiparæ than in multiparæ, and also the fact that primiparæ are not so skilful in nursing, will explain the difference in the initial losses. That at the end of two weeks, however, this slight difference is done away with is interesting, and corresponds with the general idea that first-born children are, as a rule, as strong and healthy as those coming later.

Bouchaud² found that out of 54 cases, five did not lose — three of these being first-born children — and that the average loss in 21 normal infants was 100 grammes for the first two days, after which they gained, reaching the birth-weight on the fifth to the seventh day.

Odier³ gives a chart of an infant weighing 3,130 grammes at birth, sinking on the second day to 3,000 grammes — "*depression normales*" — which he attributes to loss of meconium, urine, and cutaneous evaporation, and reaching on the third day birth-weight — "*ligne de terre*."

Winckel⁴ states the average loss as 284 grammes. Henoch⁵ gives 200 grammes as the loss during the first three or four days. According to Hoffman, quoted by Evetzky,⁶ the return to birth-weight is on the fifth to the sixth day; and according to Bouchut, on the seventh day.

Schütz⁷ finds that the average loss of 27 males for two days was 188 grammes, and for 36 females 170 grammes, and that children of multiparæ lose less, and more quickly return to birth-weight than do the children of primiparæ.

Russow⁸ states the loss to go on for three days, and the original weight regained on the tenth day, and thinks that a loss always occurs. According to Siebold,⁹ quoted by the same author, the loss is 140 to 280 grammes; and according to Haake,¹⁰ the loss in the first twenty-four hours is one-twenty-fourth of the original weight.

Gregory¹¹ found that infants invariably lose; that of 45 breast-fed infants, 88% began to gain on the second or third day, and 12% after the third day, and that the loss in these two days averaged 203 grammes; that boys began to gain sooner than girls, and that a nourishing diet in the mother shortened the period of the loss. The average infant reached its birth-weight on the seventh or eighth day.

This loss is due, first, to the fact that for the first three or four days, milk is not secreted in sufficient quantity, or of proper quality, to nourish the child; and secondly, to the fact that the infant is not urged by nature to obtain more than a small quantity of this food, and, if not disturbed, spends most of the time in sleeping. In fact, it seems to me that this physiological loss must be greater in cases outside of the hospital, where the infant is not so systematically forced to take the breast, and actually shaken to keep it awake long enough to nurse.

² Loc. cit.

³ Recherche sur la loi d'accroissement des Nouveau-nés, 1868.

⁴ Monatsschrift f. Geburtsk., Vol. XV., p. 337.

⁵ Vorlesungen über Kinderkrankheiten.

⁶ N. Y. Med. Jour., xxxiii., p. 172.

⁷ Schmidt's Jahrbuch der Med., Vol. 194, p. 219.

⁸ Jahrb. f. Kinderh., 1880-81, N. F., xvi., 1886.

⁹ Vide also Siebold. Monatsschrift f. Geburtsk., xv., p. 339.

¹⁰ Vide also Haake. Monatsschrift f. Geburtsk., xix., p. 337.

¹¹ Über die Gervichtsverhältnisse der Neugeborenen.

¹ De la mort par Inanition et études Exper. sur la Nutrit. Chez les Nouveau-nés, Paris, 1861.

The colostrum, which serves a useful purpose at first as a gentle laxative — a fact denied by Bouchaud¹² — becomes detrimental if it continues in the milk beyond the normal time. To determine this fact in relation to the physiological loss, the milk of 20 women was examined under the microscope daily, or every other day for a week or more, and it was found that the colostrum-corpuscles disappeared, as a rule, on the fifth or sixth day. In one case, a multipara, in whose milk no colostrum was found on the third day, the infant's loss was only eight ounces. In another multiparous case, the colostrum was present till the ninth day, and the infant's loss was sixteen ounces. In the milk of a primipara, a good many colostrum-corpuscles could still be found on the thirteenth day; and the baby, who was entirely breast-fed, lost fourteen ounces. The mother appeared healthy, and had a good supply of breast-milk.

The average physiological loss in five children of multiparae, where the colostrum-corpuscles were absent from the milk by the fifth or sixth days, was ten ounces. These cases are, of course, too few to be of much value, but are, at least, interesting and suggestive.

J. Lewis Smith¹³ speaks of an infant six weeks old, who, after the first week, had never thriven, had vomited frequently, and was much emaciated. The mother's milk, which was apparently suitable in quality and quantity, showed, under the microscope, colostrum-corpuscles. A change to a wet-nurse was followed by rapid recovery.

That this initial loss always occurs with the rarest exceptions, notwithstanding the health and vigor of both mother and child, shows that it is physiological at least in the present state of civilization. Whether it occurs among savages I do not know, but the observations of Kehrner¹⁴ on the lower animals are extremely interesting. He weighed once or twice daily, from birth, some 10 puppies, 28 kittens, and 17 rabbits. All of these gained from the first with two exceptions, one, a litter of four puppies whose mother was poorly nourished owing to partial starvation before delivery, and secondly a litter of six rabbits, whose mother took but little interest in them. How often do these two causes operate in the human species? In these cases there occurred a slight initial loss which was certainly not physiological. Kehrner thinks that the loss in the human young is due first to the tardy secretion of milk in their mothers, and this in turn is dependent on the slight amount of nourishment the mothers receive before and during the lying-in period. The lower animals feed as usual before labor, and immediately after it develop a lively appetite, and the milk flow is plentiful from the first. A second cause lies, he thinks, in the condition of the new-born itself, helpless, unable to move from place to place and often unable to nurse properly for three or four days, while the lower animals immediately after birth, often even when attached to the navel string suck vigorously. He, therefore, urges that the infant should be placed to the breast as soon as possible, and that an early and copious secretion of milk be obtained by a nourishing diet for the mother previous to and during the lying-in state.

Is it worth while to try to improve on nature, and, by a partial artificial feeding during the first few days

of life, prevent if possible this loss? This is what is attempted by the sugar teats, the milk and water and the pap with which the infants of the ignorant classes are often stuffed, and generally with disastrous results.

To answer this question the effect on the initial loss was observed when the infant was given additional food, which was done only in children of primiparae. In thirteen infants half an ounce of milk and an ounce of water were given four times daily for the first five or six days in addition to the regular nursing. In ten cases half a drachm of cane sugar in an ounce of water was given in a similar way. In fifteen cases half a drachm of a granulated extract of malt in an ounce of water was given; and in five other cases the infant for the first three to five days was put to nurse at the breast of a woman whose milk-flow was already established, alternately with the breast of its mother, the nursings coming every two hours. The following table shows the results obtained:

	Breast and milk.	Breast and sugar.	Breast and malt.	Mother's breast and another's.	Average 43 cases.
Average Loss.	9.38 oz. (266 gms.)	10.70 oz. (302 gms.)	8.80 oz. (249 gms.)	7.40 oz. (209 gms.)	9.25 oz. (262 gms.)
Day Weight was Least.	5th day.	4 to 5	3d to 4th.	3d to 4th.	4th day.
Per cent. who reached or surpassed birth-weight on 14th day.	83	80	64	80	77 %
Average gain on 14th day.	1.45 oz.	2.66 oz.	0.92 oz.	1.20 oz.	1.51 oz. (43 gms.)

On comparison with the previous table of entirely breast-fed infants, it is seen that there is a slight reduction in the initial loss, most marked in infants fed also from another breast, and a slight increase in the gain over the birth-weight on the fourteenth day, greatest in those fed additionally with sugar, where, curiously enough, the loss is also greatest. The infants also began to gain sooner, and a greater proportion reached or surpassed the birth-weight on the fourteenth day.

The practical objections, however, to this artificial feeding more than counterbalance, it seems to me, the slight benefits to be derived, and unless the greatest care is used, such as can be obtained from trained nurses in a hospital, the results would probably be unfavorable — such results as are seen in the lower class already referred to. The objections, — besides the great one of its being unnatural, — are that in a considerable proportion of cases the presence of artificial food causes vomiting, and in a smaller number diarrhoea, thus at the very start of life interfering with that most important function of digestion and assimilation. Another objection is that infants take the additional food either with great difficulty, or more often so readily that the breast is afterwards refused. In fact after once giving them a taste of artificial food obtained so easily from a nursing bottle, it often requires the greatest patience and persistence to induce them to nurse their mothers. Many mothers under these circumstances would prefer to put them entirely on the bottle and let their milk dry up rather than continue the struggle, or, what is more probable, the milk would dry up notwithstanding their efforts, owing

¹² Loc. cit.

¹³ "Diseases of Children," 5th Ed., p. 36.

¹⁴ F. A. Kehrner. Archiv. für Gynæk., I, 124.

to the refusal on the part of the infant to take the breast.

The objection to feeding from another's breast in addition to the mother's would simply be its impracticability. The fact that it is impossible to prevent the loss even by this method of a plentiful supply of milk, owing to the difficulty in making the baby nurse sufficiently, shows apparently the normal character of this loss.

Bouchard¹⁶ says that infants placed at once on the breast of another in whom the milk-flow is established lose but little or no weight. Schutz¹⁶ and Krüger quoted by Russow,¹⁷ find that infants under these conditions begin to gain quicker.

Another practical point in relation to the initial loss is the matter of early or late ligation of the umbilical cord. According to Zweifel¹⁸ late ligation of the cord by allowing more blood to enter the infant's circulation than in early ligation, renders the infant more vigorous and diminishes the physiological loss. By weighing the blood remaining in the placenta, he estimates that the child receives 100 grammes more blood if the cord is not cut till the placenta is expelled by Credé's method. In eleven infants thus treated he found the average physiological loss to be 156.7 grammes, while in twenty-five where the cord was cut at once, the average loss was 211. grammes.

Meyer¹⁹ thinks that these results are impossible as 100 grammes is equal to one-third of the whole quantity of blood in an average infant weighing 3,300 grammes at birth, and finds that the average gain by waiting till the expulsion of the placenta is only sixteen grammes. Budin²⁰ and Schücking²¹ found a gain of two or three ounces by waiting till the cessation of the placental circulation before tying the cord. I found that the average loss in ten infants,—including two infants of multiparæ and five additionally-fed infants, whose cords were cut at once on account of asphyxia, so that hot and cold water plunges, etc., might be used, was 13.2 ounces. In five cases not asphyxiated, three infants of primiparæ and two of multiparæ, where the cords were cut at once the average loss was 10.8 ounces. In all the other cases it was the custom at the hospital to wait till the cord had ceased or nearly ceased pulsating, before it was tied, but in the cases tabulated always before the expulsion of the placenta. By comparison with the first table it will be seen that in these cases early ligation has little or no effect on the initial loss of weight as compared with late ligation, except in those cases where asphyxia was a factor: here the loss is somewhat larger.

By way of summary it may be said:

First. That in the human infant a loss of weight occurs as a rule during the first few days of life, and is therefore physiological in the present state of civilization, although it does not occur in the lower animals.

Second. That this loss is somewhat greater in infants of primiparous than of multiparous mothers.

Third. That it is due first to the tardy secretion of milk, and in some cases is increased by the abnormally long continuance of colostrum in the milk,

and secondly to the feeble condition of the infant at birth.

Fourth. That the use of additional artificial food or another woman's milk diminishes but does not do away with this loss, and that the practice is for many reasons objectionable.

Hospital Practice.

BOSTON CITY HOSPITAL.

A CASE OF RECURRING INTESTINAL OBSTRUCTION; RIGHT LUMBAR COLOTOMY; RECOVERY.

SERVICE OF E. H. BRADFORD, M.D.

REPORTED BY OLIVER H. HOWE, M.D., formerly House-Surgeon.

KATE MCD., thirty-five years of age, single, and a domestic, entered the Hospital (service of Dr. Gay), March 12th. She said that about five weeks previous she had no movement of the bowels for a week, and had more or less vomiting during that time. This attack was followed, a few days later, by a similar one of the same duration. Following this she felt perfectly well, her bowels moving at least every second day (but generally after medicine), the dejections being small in amount.

Eight days ago she had a scanty movement, since which time she has had no movement, although she has taken large doses of various cathartics. She left off work a week ago, and for the last four days has had frequent vomiting, with constant pain and rolling of her bowels. Says she has been unable to sleep, and has lost considerable flesh.

Said she had always had good health, and that previous to the attack first mentioned her bowels had always been regular. Her father died of cancer of the stomach; otherwise her family history is negative.

Patient is somewhat thin and spare, but does not seem to be much emaciated. Countenance has a rather anxious expression; tongue shows a light, whitish coat. Abdomen is moderately and uniformly distended; tympanitic throughout. Pain mostly at left of umbilicus. Some tenderness in epigastrium and left iliac fossa; gurgling in the latter locality. No tumor to be felt. No hernia nor history of any. Rectum empty, and shows no stricture. Temperature 99.6°, pulse 72.

She was given milk and lime-water to drink, and laudanum fomentations were applied to the abdomen. The next day the distension was slightly less, and she was given calomel, gr. $\frac{1}{2}$, and bismuth, grs. v, every four hours; also nutritive enemata.

The following day (two days after entrance) she had a small dejection. The next day two good dejections, followed by much diminution of the abdominal distension and relief of all her symptoms. After remaining a week longer, and having daily movements with the aid of occasional laxatives, she went home.

Six days later she returned to the Hospital, having had no movement during that time. The attack was precisely similar to the one preceding, and was relieved in the Hospital by the same means in the same time. The matters vomited consisted, as before, entirely of food, and were stercoraceous. Patient remained in Hospital two weeks, during part of which time cathartics had to be used.

Ten days later she reëntered the Hospital (this time

¹⁶ Loc. cit.

¹⁶ Loc. cit.

¹⁷ Loc. cit.

¹⁸ Centralbl. f. Gynæk., No. 1, 1878.

¹⁹ Centralbl. f. Gynæk., No. 10, 1872.

²⁰ Public du Progrès Médical, 1876.

²¹ Berlin Klin. Woch. 1 and 2, 1877.