

helpful associate of surgeons. For it is not in our laboratories, but in our consulting rooms, at the sick bed and at the operating table that we have the greatest need to know more of pathology and are inspired with the strongest determination to study all those factors that have to do with the deviation and restoration of health.

If we are ever to solve the problems that baffle our endeavors to-day and place surgery on a much higher plane than it now occupies, our scientific workers must become more practical, our practical workers must become more scientific, and our physicians and surgeons must become more nearly united in their ideas of pathology and treatment. And this can only be accomplished by an organized movement tending to bring all workers into closer touch and sympathy with each other.

Such a combination of forces as I have outlined can be organized and made effective in every community capable of supporting a hospital and a medical society. And in this cause our hospitals should be willing and desirous to meet our needs, for in doing so they would in time fulfill their highest mission of usefulness by developing a great system of scientific institutions distributed throughout the world, where not only the sick and afflicted would be kindly and skilfully attended, but where earnest experienced men of mature judgment might meet and study and work harmoniously together in their efforts to solve those problems that have to do with the prevention of disease, the saving of life and the mitigation of suffering.

But if we are to secure the full benefits to be derived from our hospitals and from our colleagues, the internist and the laboratory worker we must do our part. The medical profession must either own their own hospitals or they must prove to hospital governments or hospital benefactors that our cause is a worthy one and that with their help we can and will make our hospitals a greater blessing to mankind than is possible under the present system.

We must learn to realize that every laborer is worthy of his hire, and that until the recompense of the laboratory worker is proportionate to that of the physician and surgeon the laboratory will not attract its proportion of good men.

We must see to it that this work and these opportunities be not restricted to the favored few who happen to be on hospital staffs. We need the united support and help of every member of the whole profession, and every reputable graduate in medicine should be invited, encouraged and urged to begin early their postgraduate studies and researches, and to continue them through their active life by participating in the educational and other advantages to be offered by those institutions.

These and many other questions which arise in this connection can and should be discussed in detail among ourselves, in our societies and in our medical journals, but we may be assured that in due time they can all be settled satisfactorily if we approach them in a spirit of fairness and good faith.

The workers of the past century had their duties, responsibilities and opportunities; we have ours. They had their means and methods for advancing surgery; we must formulate ours to meet existing conditions. They overcame their difficulties and achieved their triumphs; we will strive to do likewise: and when this association shall hold its regular annual meeting a hundred years hence, and a new and brighter chapter in the history of surgery is read, let us hope that chapter may

not be made up of a long list of brilliant operative procedures made possible by easily-acquired methods, but rather let us trust it may record the coming of many substantial blessings and benefits to mankind through the earnest systematized and united efforts of the men of the twentieth century.

## Original Articles

### INFANTILE SCORBUTUS.

AN ANALYSIS OF FIFTY CASES, INCLUDING TREATMENT.

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Infantile scorbutus developed in seven cases under my direct observation. Six cases were brought to my office, nine were seen at the Infants' or Children's Hospitals, and twenty-eight in consultation with other physicians. The true nature of the illness had been recognized in but five of those seen in consultation.

The following diagnoses had been made previously in these cases and in those seen at the office and hospitals: Acute nephritis, 5; tumor of bladder, 1; excess of uric acid with consequent staining, 2; arsenical poisoning with inflammation of the kidneys, 1; rickets, 2; spinal or Pott's disease, 6; hip disease, 1; periosteitis, 1; rheumatism, 6; gout, 1; nervousness, 1; infantile paralysis, 1; syphilis of cord, 1; difficult dentition, 5. In four of which the gums had been lanced; strain, 1; injury, 1; tuberculosis, 1; gumma of eye, 1. In two other cases the physicians stated that they had no idea what was the trouble.

It is evident that the errors in diagnosis depended somewhat on the prominence of individual symptoms. It is probable, moreover, that other diagnoses had also been made which were not noted in the records. In speaking of errors in diagnosis in connection with infantile scurvy it is only fair to state that it is also possible to mistake other conditions for this disease. I have mistaken congenital syphilis and hematuria from lead poisoning for scurvy and have known septic arthritis to be mistaken for it.

*Sex and Age.*—The patients were nearly evenly divided between the two sexes, twenty-three being males and twenty-seven females. The age at the onset of the symptoms varied between three and nineteen months. Thirty-three or 67 per cent. of forty-nine cases with complete data were between six and ten months. Seven were under six months and nine over ten months.

The duration of the symptoms before the patients were seen varied between two days and ten months, in all but six being between one week and three months. The age of the patients when first seen varied between four and twenty-one months, thirty-seven, or 74 per cent., of fifty cases being between seven and twelve months. Four were under seven months and nine over twelve months.

*Etiology.*—Table 1 shows the foods which were being taken at the time when the symptoms of scurvy developed.

TABLE 1.—FOODS DURING THE USE OF WHICH SCURVY DEVELOPED.

PROPRIETARY FOODS:	
With water .....	8
With milk:	
Irrational mixtures, boiled .....	9
Irrational mixtures, pasteurized .....	2
Rational mixtures, unheated, pasteurized .....	2
Rational mixtures, heated and peptonized .....	1
Rational mixtures, unheated .....	3

<b>MILK AND WATER MIXTURES: Irrational:</b>	
Peptonized and boiled .....	1
Unheated .....	1
Heat unknown .....	1
<b>LABORATORY MIXTURES:</b>	
Too weak:	
Peptonized and pasteurized.....	1
Pasteurized .....	1
Rational, pasteurized .....	4
<b>HOME MODIFICATIONS:</b>	
Irrational, same for four months pasteurized.....	1
Too weak, same for months, unheated.....	1
Unheated .....	2
Rational, boiled .....	2
Peptonized and pasteurized .....	2
Barley water, peptonized and pasteurized.....	2
Barley water, pasteurized .....	1
Oatmeal water, pasteurized .....	1
Same for five months, pasteurized .....	1
Pasteurized .....	1
Pasteurized and beef juice .....	1
Barley water, unheated .....	1
<b>GENERAL DIET at 13 months, but with no fruit or vegetables....</b>	<b>1</b>

From the point of view of modern ideas of reasonable infant feeding the food was irrational in nineteen of the cases taking proprietary foods, in four of those taking milk mixtures, and in the case of the infant on a general diet, making a total of twenty-four. Milk was used in the preparation of the food in forty-one cases, while no milk was used in eight cases. One baby was on a general diet. In the forty-one cases in which milk was used in the preparation of the food the mixture was boiled in twelve, pasteurized in nineteen and unheated in nine, while in one case there was no data as to whether or not heat was used. The food was also peptonized in four of the pasteurized and in one of the unpasteurized mixtures. The mixture was manifestly too weak in five cases, and the same mixture was continued for months in two cases. The food was often unsuitable in several ways in a single case. In one case only was a rational unpasteurized mixture being taken, and that was prepared with barley water instead of with water. Bread and crackers in two, egg in one, beef juice in one and a general diet in another case failed to prevent the development of the disease.

Analysis of the foods taken by these cases justifies the conclusions of the committee of the American Pediatric Society that "the development of the disease followed in each case the . . . employment of some diet unsuited to the individual child" and that "the farther a food is removed in character from the natural food of a child the more likely its use is to be followed by the development of scurvy." Analysis of this table also seems to show that the absence of "freshness" and the heating of the food are very important elements in the production of scurvy.

The digestion was good in twenty-three and feeble in twenty-seven of these cases, apparently showing that the scurvy was not due to disturbance of digestion and that foods may cause scurvy without causing disturbances of digestion.

The onset of the scurvy was immediately preceded by measles in one case, influenza in three, bronchopneumonia in one, and infectious diarrhea in four. It is probable, however, that these diseases had no direct influence on the development of the scurvy unless possibly by weakening the general resistance.

There were signs of rickets in the osseous system in all but nine of these cases. They were slight in twenty-six, moderate in eleven, and marked in four. There was, however, no evident relation between the severity of the rickets and that of the scurvy. It seems rational to conclude, therefore, that the rickets had no influence on the development of the scurvy and that if there was any connection between them it was merely that they were both the results of a common cause.

The only evident cause for the development of the

scurvy in these cases, therefore, is found in the food. No further conclusions as to the etiologic connection of the food and the disease than those already stated are, however, justified.

*Symptoms.*—It seems best to analyze the private cases separately as to the order of the development of the symptoms, as it is possible to get from them a better idea of the onset and course of the disease in its early stages than from those seen after its more complete development. In all of these cases a gradual loss of color preceded for weeks or months any other symptom. This loss of color was often associated with loss of appetite. Tenderness of the back was the next symptom noticed in two, tenderness on handling in three, and hematuria in two cases. The next symptoms which developed were swelling of the gums in one, tenderness on handling in two, and paresis of an extremity in two. The time between the onset of the second and third symptoms varied between one week and two months.

Table 2 shows the comparative frequency of the various symptoms and also the relative order of their appearance.

TABLE 2.—ORDER OF APPEARANCE OF SYMPTOMS.

	First.	Second.	Third.	Fourth.	Fifth.	Sixth.	Total.	Pri- vate Cases Added.
Tenderness .....	21	12	2	1	1	1	38	43
Inflamed gums .....	10	3	2	1	1	1	17	18
Hematuria .....	7	3	2	1	1	1	15	12
Paresis .....	4	3	3	2	1	1	14	22
Pallor .....	2	2	3	2	1	1	11	13
Swelling .....	1	2	3	2	3	1	13	11
Echymoses .....	1	1	1	1	2	1	6	6
Hemorrhage: Bowels..	1	1	1	1	1	1	6	3
Mouth .....	1	1	1	1	1	1	6	3
Orbit .....	1	1	1	1	1	1	6	1

It is noticeable how seldom pallor was noted in these cases. That it was overlooked, however, is shown by the fact that on examination pallor of various degrees was found in thirty-six, or 75 per cent., of forty-eight cases. In five others the color was noted as fair, while in only seven was it good. Examinations of the blood were made in but two cases. They both showed a marked diminution in the hemoglobin and in the number of red corpuscles with a slight leucocytosis, the relative proportions of the white corpuscles being normal. Tenderness was the symptom most commonly noted, while paresis of the extremities comes next, closely followed by inflammation of the gums, swelling of the extremities and hematuria. Tenderness on handling was the first symptom noted in nearly one-half of the cases, swollen or purple gums in about one-quarter, and hematuria in nearly as many.

Fever was never mentioned among the symptoms, but in several of the hospital cases the temperature was slightly elevated, running in one case as high as 103° F. No other causes were found for these temperatures, which diminished steadily with the cure of the scurvy. It is reasonable to conclude, therefore, that the fever was due to the scurvy and not to complications.

There was very great variety in the suddenness of the onset and in the severity of the early symptoms; for example, the gums were swollen for six months in one case, and there was hematuria in another for three months before the appearance of tenderness, while in still another there was tenderness in the legs for two months before there was any swelling. In one case there was a history of a fall, with immediate loss of power and pain in one leg; in another, marked swelling of the leg developed in forty-eight hours after a fall; while in still another a fall on the floor was followed by immediate loss of power

in the leg, this in turn being followed in five weeks by inflammation of the gums.

*Physical Signs.*—Careful analysis of the physical signs found in these cases shows that there must have been many errors in observation regarding the frequency and order of development of the symptoms. This has already been shown in the note regarding pallor.

Twenty-nine infants had teeth and nineteen had no teeth. The gums were normal in six and abnormal in twenty-three of the cases with teeth, while they were normal in seventeen and abnormal in only two of those without teeth. The gums were normal, therefore, in twenty-three and abnormal in twenty-five cases. When there were both upper and lower teeth the upper were involved alone in eight cases, while the lower were never involved alone. The gums were involved about all the teeth in fifteen and about part of the teeth in eight cases. Other portions of the gums besides those about the teeth were involved in eight cases.

One leg only was affected in nine cases; in seven of these it was the right and in two the left leg. Both legs were affected in twenty-five cases. The arms and legs were both affected in eleven cases, but the arms were never affected alone. Pain on motion of the extremities was noted in forty-three cases; that is, in practically all those which were not cases of simple hematuria. There was tenderness on handling in thirty-seven cases. Limitation of passive motions was noted in but ten and paralysis in but eight cases. These latter figures are undoubtedly too low because of the failure to record all the observations. Swelling limited to the diaphyses of the bones was present in twenty-seven cases. In one the sternal ends of the clavicles were affected. The arms were affected in ten cases, the swelling being in the upper arm in four and in the lower in six. The legs were affected in thirty-four, the thigh being involved in seventeen, the lower leg in fifteen and the feet in two cases. The swelling sometimes involved the whole, but was more often limited to a portion of the diaphysis. The upper portion of the humerus, the lower of the bones of the forearm and of the femur, and the lower portion or the whole shaft of the tibia were most often involved. The swelling in the feet was always on the back.

The position of the legs was very characteristic in twenty-seven cases, although the completely typical position was not always present. The tendency was always to hold the lower extremity rigidly with the thigh flexed on the abdomen, the leg flexed on the thigh, the foot extended and the whole leg rotated outward.

Pain on motion of the back was noted in five cases. This proportion is undoubtedly too low, partly because of failure to record the point and partly because of the difficulty of determining the presence or absence of pain in the back when there is pain in the legs.

Ecchymoses were present in eleven cases. They were on the legs and feet in five, the eyelid in three, the face in two, the body, chest and abdomen in one each, and all over the body in one. There was also a hemorrhage into the orbit, with consequent protrusion of the eye in one case.

There was edema in eleven cases. It was in the eyelids in two, in the legs and feet in five and in the feet alone in five. This was a true edema of the soft tissues and not an inflammation or hemorrhage under the peritoneum.

*Cases of Hematuria.*—The cases of hematuria form such a characteristic and peculiar group that they seem worthy of separate consideration. The urine was nor-

mal in twenty and abnormal in fifteen cases. In three of these, however, it was merely noted that the urine stained the diapers red or brown. There were no data as to the urine in fifteen cases. Barring pallor in two of the private cases, hematuria was the first symptom noted in eight of the proved cases of hematuria. It was the only symptom of scurvy in two and in the rest preceded the other symptoms by one-half, one-half, three and one-half, four, five and one-half and nine weeks respectively. The urine was usually red, but was sometimes brown. The blood was both normal and abnormal, but usually normal. It was often present in large amounts. The amount of albumin corresponded to the amount of blood, which was often large enough to give an alkaline reaction. Hyalin and fine granular casts and an excess of cells were found occasionally; brown granular and blood casts were also found in one instance. In one of my own cases the true nature of the hematuria was not recognized until tenderness developed, while in the other it was recognized at once. In the other cases the diagnoses, based on the hematuria, were acute nephritis in five, tumor of the bladder in one, uric acid staining in one, and arsenical poisoning in one. The response to treatment was rapid and the urine became normal in all. There was marked improvement in the hematuria in one day in two cases. The urine was clear in five days in two, in ten days in two and in fourteen days in two cases. There were no accurate data as to the duration in the other six cases.

It is evident from these figures that the earliest symptom of scurvy is, as a rule, loss of color, which is often associated with loss of appetite. The first symptom to attract attention and to justify the diagnosis of scurvy is most often tenderness or pain in the legs or back on handling. Swollen and purple gums or hematuria may, however, precede the tenderness and pain. Tenderness and pain on motion of the extremities almost always develop sooner or later, and in about half of the cases are accompanied by swelling about the diaphyses. The legs are affected about three times as frequently as the arms. The gums are affected in about half of the cases; almost always when there are teeth, very rarely when there are no teeth. Hemorrhages, except under the periosteum, are comparatively uncommon.

The order in which the symptoms develop and the intervals at which they make their appearance vary materially. The onset may be very sudden or very insidious. Mild symptoms may persist in some cases for weeks and even months before the development of others, while in other cases several symptoms may appear together or in rapid succession, the typical picture of the disease being developed in a few days.

*Treatment.*—Recovery from the scurvy occurred in all cases, although a few died later from coincident diseases.

The food was not changed in fifteen cases. The foods are given in Table 3.

TABLE 3.

Laboratory milk, pasteurized . . . . .	2
Home modification, unpasteurized . . . . .	2
Home modification, pasteurized . . . . .	6
Proprietary foods with fresh milk . . . . .	2
Proprietary foods with heated milk . . . . .	2
Proprietary foods with water . . . . .	1

In all the other cases the food was changed, the attempt being made in every case to give not only a more rational food, but one more suitable for the individual baby. Proprietary food mixtures were changed to milk mixtures and milk mixtures to better milk mixtures. Sterilization was always stopped and pasteurization was stopped if the milk supply and time of year permitted. Peptonization was stopped in every case. In fact, the

food was made rational as to its chemical composition, and everything tending to destroy "freshness" as far as was possible omitted.

One patient was given lemon juice. All the others were given orange juice, except two that were given beef juice. Eight others also took beef juice in addition to the orange juice. One who was given beef juice alone took two tablespoonfuls daily while the milk was changed. The amount given in the other case is not known and the milk was not changed. Both recovered rapidly. As has already been mentioned, scurvy developed in one who was taking one ounce of beef juice daily.

The amount of orange juice given varied considerably. Seven patients took one tablespoonful daily; twenty, two tablespoonfuls; and one, four tablespoonfuls. Four took the juice of half an orange, and seven the juice of a whole orange daily. The amount is not stated in seven. In one case in which there was no result from ten drops of lemon juice given three times daily for a week, recovery was very rapid on the juice of half an orange daily. In another case there was no improvement noted in two days while taking one tablespoonful of orange juice daily, but when the amount was increased improvement was very rapid. It seems safe, therefore, to conclude that at least one tablespoonful of orange juice is necessary daily, and that two tablespoonfuls, or the juice of half an orange, is amply sufficient to bring about a rapid cure.

Pain and tenderness were usually the first symptoms to yield to treatment and were soon followed by the return of power in the extremities. Improvement in the condition of the gums usually began later and progressed more slowly. The disappearance of the swelling was, as would be expected, always slow. Marked improvement in the swelling, even if it was extreme, was always noticeable in a week. The protrusion of the eye was gone in six days.

An analysis of the results of the treatment in these cases shows that the mildest cases were well in two days, and that many cases were entirely well in five days. Almost all showed marked improvement in three or four days. Pain and tenderness were always gone in one week, while the gums were rarely normal before one or two weeks. Most cases were well, except for the remains of swelling and hemorrhages, in two weeks, while recovery was always complete in three weeks.

How soon the improvement may begin and how rapid it may be is shown by the following extracts from letters written by the parents of some of these patients: "Immediate improvement;" "better in twenty-four hours, kicking in forty-eight hours;" "different baby in a week;" "progress simply marvelous;" "immediate response to treatment;" "improvement before taking the juice of a whole orange."

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## FEVER IN THE NEWBORN.

A CONSIDERATION OF THE FEBRILE TEMPERATURES OBSERVED DURING THE FIRST DAYS OF LIFE, WITH REPORT OF AN EPIDEMIC INFECTION OF THE RESPIRATORY TRACT IN THE NEWBORN.

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An interesting phase of the first days of infant life is the many deviations from the normal temperature that occur and which are so frequently overlooked unless thermometry is regularly practiced.

It is not improbable, however, that this practice, the importance of which can not be too strongly urged, is seldom pursued to any extent even in maternity wards, unless an infant presents some marked evidence of illness; whereas the thermometer only in many cases renders it possible to determine early the presence of disease which by other methods of examination might be overlooked.

That this latter frequently occurs, and that an apparent want of acquaintance with diseases of the newborn exists, is well illustrated in the vital statistics by the meaningless terms ascribed as causes of death, to-wit, icterus, convulsions, etc.

The temperature of the newborn immediately after birth is somewhat higher than that of the mother, the temperature of the latter being from 0.2 F. (0.1 C.), according to Wurster,<sup>1</sup> to 0.9 F. (0.5 C), according to Davy,<sup>2</sup> lower than that of the child. In full term babes the rectal temperature is found to average, according to Barendsprung,<sup>3</sup> 100 F. (37.81 C.); Lepine,<sup>4</sup> 99.8 F. (37.7 C.); Andral,<sup>5</sup> 100.2 F. (37.9 C.); Hennig,<sup>6</sup> 100.2 F. (37.9 C.). In consequence of the cooling of the surface incident to exposure and the first bath, where employed, there is a drop in the temperature in the course of an hour or two of from 1.76 F. (.95 C.), according to Schäfer,<sup>7</sup> to 3.3 F. (1.87 C.), according to Sommer.<sup>8</sup> Eross explains this apparently wide difference by assuming that some observers take the temperature immediately following the bath and thus do not note the subsequent decline. It gradually rises after several hours, and from twelve to thirty-six hours it reaches an average of 99.8 F. (37.67 C.), according to Eross,<sup>9</sup> 99.5 F. (37.5 C.), according to Jurgensen,<sup>10</sup> 99.2 F. (37.35 C.), according to Fehling.<sup>11</sup>

Forester<sup>12</sup> called attention to a second decline on the fourth day, at which time the temperature averages 98.8 F. (37.1 C.). Following this there is a second rise, first noted by Barendsprung,<sup>3</sup> which reaches its maximum on the eighth day, averaging 99.2 F. (37.4 C.).

Fels<sup>13</sup> believes that the fall in temperature between the third and fifth days is due to hunger of the infant. He thinks there exists a direct relation between the decline on the fourth day and elevation on the eighth day and the increase in the quantity of nourishment taken, which was first suggested by Eross,<sup>9</sup> and to the gain in weight, which latter point had been previously made by Barendsprung.<sup>3</sup>

Raudnitz,<sup>14</sup> however, was disinclined to accept the explanations offered for the double rise and fall of temperature in the first week, considering them conjectural, at the same time suggesting the less plausible theory that the second decline and rise of temperature occurring between the fourth and eighth days was a slow reflected compensatory wave following the first marked decline after birth. Lepine<sup>4</sup> observed a somewhat higher tem-

1. Wurster: Berl. klin. Wochft., 1869, No. 37, p. 393.

2. Davy: "Physiological Researches," 1868.

3. Barendsprung: Müller's Arch. f. Physiol., 1851, p. 126.

4. Lepine: Gaz. Méd., 1870, p. 368.

5. Andral: "Note sur la température des nouveau-nés." Acad. des Sciences, 1870, p. 825.

6. Hennig: "Lehrbuch der Krankheiten des Kindes."

7. Schäfer: Inaug. Diss., Greifswald, 1863.

8. Sommer: Inaug. Diss., Berne, 1880.

9. Eross: Jahrb. f. Kinderhk., vol. xxiv, p. 189, also Arch. f. Gyn., No. 43, p. 306; also Jahrb. f. Kinderhk., vol. xxxix, p. 79.

10. Jürgensen: "Die Körperwärme des gesunden Menschen." Leipzig, 1873; also Deutsches Arch. f. klin. Med., iii, p. 165.

11. Fehling: Arch. f. Gyn., 1874, vol. vi, p. 385.

12. Forester: Jour. f. Kinderkr., 1862, No. 7.

13. Fels: Arch. f. Gyn., 1893, No. 3, p. 463.

14. Raudnitz: Zeitft. f. Biol., 1888; p. 545.