

cow is milked the pail is taken to the milk-room and emptied through muslin into a tank, from which the milk flows over a hollow metal cooler filled with cold brine, and collects at the bottom in another metal tank from which it is at once drawn into sterilized glass jars and is then ready for delivery to customers. During its passage over the cooler the temperature is reduced from about 90° to nearly 36°. This cooler must not be confounded with the ordinary milk-cooler before mentioned, which is quite a different thing. Milk handled in this way is as nearly clean as it can be made; the proprietor showed me the muslin strainer through which the milk of fifty cows had passed; it was scarcely soiled at all, and he remarked with some pride that a few days before a visitor had said that he had often seen as much dirt come from one cow's milk as this strainer had got from one hundred and fifty. There is nothing fancy about this milk farm; the buildings are not expensively built nor is it run in an expensive manner; no glass or silver-lined milk pails are used, nor do the milkers wear white duck uniforms when milking; but they, the cows, and the premises are kept clean, the milk is cooled and bottled as quickly as possible and with the least possible chance of contamination. That it is kept clean is shown by the fact that it keeps sweet; the proprietor told me that he had never had a quart of sour milk returned to him, and that the milk would keep sweet if left in the glass jars for a couple of days at the ordinary room temperature.

When one considers the origin of the city's milk-supply, it seems hardly possible that any legislation can be of much benefit. Any system of inspection of the farms would be very costly and also inefficient; there are about four hundred farms supplying this city, many of them outside of the State, while to be of any benefit whatever a weekly inspection would be necessary, and even then the chance of an inspector's discovering a case of infectious disease among a farmer's help or in his family would be very slight. Under our system it is directly against a farmer's interest to have a case of sickness discovered, for it means that his milk will be refused by the contractors and left on his hands, provided anything is done about it; and of course he will do all in his power to avoid such a calamity.

The system followed in Copenhagen is certainly much better; there a large milk firm, corresponding to our contractors, supplies the city and buys from the farmers, who are required by contract to notify the firm if any case of sickness occurs in their families or among their cattle. If they do this the firm continues to pay for the milk produced, though it is not used; but if they do not and the firm finds it out, the milk is at once shut off and all further payment refused.

The only way I can see to apply a similar method here would be for the city or State to require such a notification in case of sickness on the farm or among the persons subsequently handling the milk, paying any damage which such a notification might cause, and imposing heavy penalties in case it was not done. This would not give entire safety, as some of the cases of infection are caused by persons who do not consider themselves sick enough to require a physician, but it would doubtless reduce the danger.

In order to secure complete safety milk should be Pasteurized just before it is delivered to customers. I have recently tried a few experiments in Pasteurizing milk, with the following results: The largest num-

ber of germs found in un-Pasteurized milk was about 14,000,000 per cubic centimetre, the average number being about 2,000,000. The best results were obtained by heating to 165° to 170° F. for half an hour. After such an exposure about 150 to 250 colonies developed per cubic centimetre. If heated much above this point, the boiled taste became quite marked and the results were not much better, while in milk heated enough above this point to be more nearly sterilized the boiled taste became very noticeable. At not over 170° the taste is very slightly altered; those to whom I gave samples thought not enough so to be objectionable.

The thermal death-point of the typhoid bacillus is given by Sternberg as a ten-minute exposure to a temperature of 165°; while about the same degree of heat is said by the same author to be fatal to the diphtheria bacillus. The tubercle bacillus seems to have a greater resistance to heat; but according to experiments quoted by Sternberg, tuberculous material exposed to the above degree of heat and then injected into guinea-pigs does not cause infection. This would seem to show that milk accidentally contaminated with either of these organisms, if properly Pasteurized, becomes harmless, while I think all agree that it does not have the objectionable qualities of sterilized milk. When done on a large scale Pasteurization does not increase the price more than one or two cents a quart, so that milk which now sells for seven or eight cents a quart would cost if Pasteurized nine or ten, but whether the public is sufficiently alive to the danger of using raw milk to pay the extra price is a question I find it very hard to answer.

A CASE OF MYASTHENIA PSEUDO-PARALYTICA GRAVIS (JOLLY) OR ASTHENIC BULBAR PARALYSIS (STRUMPELL).

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THE patient, L. D., age two and three-fourths years, male, was brought to my office on July 13, 1897, by his mother, who had been referred by the family physician, Dr. H. Fleischner, for examination and treatment of the case.

The history, as given by the mother, was as follows: The child, previously healthy, seemed to suffer very much from the heat of the first week of July, and to this cause his parents attributed his illness. In answer to a question, it was also stated that he had had a mild diarrheal attack a few days prior to the appearance of the first symptoms. On or about July 6th it was noticed that the child was at times unable to hold his head up properly and that it was thrown or carried backwards. At other times his head was erect as usual. This condition lasted three or four days, and was unaccompanied by noticeable fever or vomiting, nor was there complaint of headache or other pain at this time or later. During this period also he seemed unable to masticate his food properly, stopping after a few attempts, and later beginning again, though still later he refused to try. There was some difficulty in swallowing, and there was a tendency for liquids to regurgitate through the nose, though such did not actually take place. At times his speech was affected so that he could not be readily understood, while at other times his speech

was natural. Since the diarrheal attack he has been somewhat constipated. Micturition has been normal. He has not been confined to his bed at all up to the present time. Noting a day or two ago that his eyes were half-closed and that he seemed unable to smile, his parents grew alarmed and consulted the family physician, who referred the case to me.

Examination.—Family history good; other children, both older and younger, healthy. Patient well nourished, not anemic, and mental condition normal. Runs about the office. Heart, lungs and abdominal viscera normal so far as physical examination could determine. The first feature to strike the eye was the pronounced ptosis on both sides; and though it was incomplete, in a quiescent condition the lids both hung low and did not follow the upward movement of the eyeball on attempting to look at the ceiling. He could, however, raise them somewhat by a strong effort of the will. The other external ocular muscles were normal, and the pupils were equal and reacted to light and accommodation. It was stated, however, that he has been squinting at times. The face was expressionless, and he neither did nor could laugh or smile. The muscles employed in expressing the emotions seemed relaxed and paretic. His mother says he cannot laugh, and what worried her more than all else was the fact that he did not smile. Saliva ran from his mouth at times. Tongue clean, and protruded readily and straight. Lower lip hangs somewhat, and his mouth is at times half-open, but can be closed by an effort of the will only to relax again after a short time. Soft palate normal in position and movements. Voice good. Deep and superficial reflexes normal. No paralysis of the muscles of the extremities, nor any apparent weakness at present of the muscles moving the head upon the spine. After walking a short time he becomes unsteady on his legs, and after sitting awhile his body begins to sway so that he asks to lie down. Pulse 84, and of good quality. Temperature and respiration normal. No atrophies anywhere. Electrical examination unsatisfactory, owing to uneasiness of child.

Rest in bed in the recumbent posture was ordered, diet regulated, and strychnia with an intestinal antiseptic prescribed.

During the following days he improved to such an extent that on July 18th, when I called, I found that, notwithstanding stringent orders to the contrary, he was running about the house, seemingly as well as ever. There was no complaint except that his mother spoke of his very profuse perspiration.

On July 19th I was sent for, owing to a peculiar rolling of the eyes which came upon him; which condition had passed off, however, when I arrived. His mother said he seemed weaker to her, and she thought the heat had caused a relapse.

July 31st. Ptosis is gone, no strabismus, no drooping, can chew, swallow and can smile; pulse 84, temperature and respiration normal; runs about as he did before he was taken sick. His mother considers him well, and I was practically discharged.

On the evening of August 4th I was hurriedly summoned on account of a choking attack which came on during an attempt at swallowing, weakness of the neck muscles so that he could not hold his head up properly, and regurgitation of liquids through the nose. The mother stated that he was up and down from the lounge during the day, for the most part

rather weary, however, and saliva again ran from his mouth. Upon my arrival all of these symptoms had disappeared, and he was lying upon the couch apparently comfortable. He swallowed liquids for me normally, told me his name, and walked for me.

On August 5th during the day he was up and down, drooling at times, and speech at times indistinct. In the afternoon he wanted to get up, and while sitting in his high chair attempting to drink coffee from a cup, a little difficulty in swallowing was noticed, his head drooped and he was dead.

At no time were there any respiratory disturbances. At every one of my visits I found the heart's action good. The difficulty in taking food was at first principally owing to fatigue of the muscles of mastication, later with those of deglutition. No autopsy could be obtained.

This case is very similar in course and symptomatology to that of Wheaton¹ recently reported, they having the following in common: ptosis on both sides, early difficulty in mastication and later difficulty in keeping the mouth closed, fatigue after brief use of the leg muscles, fatigue of the muscles supporting the head, next, disturbance in the muscles of deglutition, and lastly sudden death, though the manner of death varied in the two cases, being in the one a respiratory paralysis and in the other, my own case, a cardiac paralysis. The two cases varied in some of their minor features, the reflexes being normal in my own while exaggerated in Wheaton's case. In my own case, also, the lower facial group was markedly affected. Both cases, however, presented Erb's "Triad" of ptosis, weakness of the neck muscles, and weakness of the masticatory muscles. This symptom group, together with the involvement of the lower facial, the sudden weaknesses in the leg muscles, the remissions and at times apparent recovery, with absence of cerebral symptoms, sensory disturbances and atrophies, would place this case in my opinion with the so-called myasthenia pseudo-paralytica gravis (Jolly). I prefer, with Toby Cohn,² this nomenclature, for the reasons as thus stated by him: "Respecting the nomenclature of the complaint, the designations which pronounce upon the anatomical seat (bulbar paralysis without anatomical findings, polio-encephalo-myelitis, etc.) should all be laid aside, so long as nothing certain is known concerning it. The name myasthenia pseudo-paralytica gravis seems most appropriate because the exhaustibility of the muscles, which simulates paralysis, is the principal symptom (Strümpell) and makes clear the whole clinical picture and course of the disease."

A few points in connection with the case here reported seem to me worthy of note. The duration of the disease was but thirty days, which is contrary to the usual chronic course of the majority of the cases heretofore recorded. There are, however, a few similar acute or subacute cases in the literature. Wheaton's case died fifty-five days after the sudden onset. Fajersztajn's³ case had been ill ten days before his admission to the hospital, but was practically well in six weeks, when he left, though the symptoms, such as ptosis, could be brought out again after moderately prolonged exertion; the further history of this patient was unknown at the time it was reported, one year after leaving hospital. The briefest case of which I can find any record is that of Widal and Marinesco,⁴ a man, age thirty-one, who died fourteen days after a sudden onset, with violent headache followed soon

after with the typical symptoms and course of the disease. In the case of the girl reported by Wilks⁵ the duration was a little more than a month. Wernicke's⁶ case died suddenly in asphyxia on August 2d, two weeks after admission to the hospital, the symptoms having begun in the preceding spring.

The other cases hitherto reported were essentially chronic, one reported by Murri⁷ having a duration of ten years. Of Erb's⁸ three classic cases, one was stated as nearly cured at the end of ten months, the second died suddenly after one and a half years of remissions and exacerbations, while his third case, which entered the hospital with a history of illness of one year's duration, disappeared at the end of fourteen days, no further trace of the patient being obtainable. Silbermark's⁹ case had been going on for six months when first seen, and at that time had the characteristic symptom-complex. Collin's¹⁰ case had been going on three years before it came into his hands. Oppenheim's¹¹ case lasted one and a half years and had been going on nine months before he saw it. Hoppe's¹² case lasted a year, Eisenlohr's¹³ was chronic, Karplus's¹⁴ began at five years of age, and the patient was twenty-four years old when seen by him. Koshenikow's¹⁵ first case died suddenly after six months or more of remissions, while his second case had been going on for six years when he first saw it. One of Brissaud and Lantzenberg's¹⁶ cases had been ailing one and three-fourths years when first seen.

Next, and perhaps of greater interest, is the age of my patient, namely, two and three-fourths years, the nearest approach to it being Karplus's case, in whom the symptoms began at the age of five. This, however, was extremely chronic in its course, its duration being the longest on record. One of Koshenikow's cases was fifty-four years old when coming under observation, and is, together with one of Strümpell's¹⁶ (also aged fifty-four) the oldest reported.

The following table gives the number of cases on record in each decade of life, and stating the age at the time of onset of the symptoms:

First decade	2 cases
Second decade	4 cases
Third decade	3 cases
Fourth decade	5 cases
Fifth decade	5 cases
Sixth decade	2 cases

In two cases I was unable to ascertain the age of onset.

The acute and subacute cases have been, with very few exceptions, fatal. Those of Wheaton, Widal and Marinesco, Wilks, Wernicke and my own being striking examples. Of the chronic cases, one each of Erb's and Koshenikow's, and those of Eisenlohr, Hoppe and Oppenheim were fatal. Death in most cases occurred suddenly, and generally from asphyxia. The disease began in many cases with a condition of easily induced fatigue in the legs, arms or both, soon followed by ptosis on one or both sides. Headache was the first symptom in several cases; in three cases ptosis was the earliest symptom. Diplopia was also an early symptom in a large number of cases. The weakness of the muscles supplied by the nerves arising from the nuclei of the lower part of the bulb always came on later. The facial group was affected in one or more portions in three-fourths of the cases. Though fatigue of muscles supporting the head is included in Erb's "Triad," being present in all of his cases, and was the earliest and a noteworthy symptom in my case, I find that it was noted as present in but one-half of the cases.

Concerning the anatomical changes, Marinesco¹⁷ reported at the International Congress at Moscow in 1897 that he had found in a case of asthenic bulbar paralysis, chromatolysis in the nerve cells of the medulla, with intact nucleus and achromatic substance.

In this connection it may be of interest to note the changes found in the cord in cases of Landry's paralysis, the course and symptomatology of which are very similar to those of the acute cases of the disease under consideration, allowance being made for the seat of the disease. Marinesco¹⁷ also reported at the International Medical Congress at Moscow, concerning changes found in nerve cells in two cases of Landry's paralysis; besides softenings, vessel changes and increase of leucocytes, there were decay of the chromatophyl elements in the nerve cells; the nuclei of the cells had lost their contours and lay often on the periphery of the cells; the protoplasm continuations were at times swollen and disintegrated. Baily and Ewing¹⁸ also reported on a case of Landry's paralysis the following findings: "Partial or complete absence of the chromophilic masses . . . in many cells the nuclear membrane was indistinct, irregular or granular, and the nucleolus fragmented or absent. . . . The fragmentation of cell processes was occasionally encountered."

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TWO CASES OF EXTRA-UTERINE PREGNANCY, ONE AT FULL TERM.¹

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THE infrequency of diagnosis before rupture in extra-uterine pregnancy, and the manner in which the diagnosis was made in the following case, seem worthy of record.

I was asked to see the patient on account of an irregular flow, she being supposed to be pregnant, and was given the following history: She was twenty-nine years old, and had been married about five months. There was nothing of importance in the family history except that her mother had been of an extremely nervous disposition. As a child she had been well and strong, in spite of going through the diseases of childhood with unusual severity. The menstrual function had developed rather late, not being fully established until she was seventeen, but afterwards was normal as to regularity, amount of flow and absence of pain. Three years ago there was an interruption of menstruation, owing to a chill after the flow had commenced, which was followed by an attack of what was diagnosed as pelvic peritonitis. Following this she had attacks

¹ Read before the Obstetrical Society of Boston, January 18, 1898.