or dread and has had a very comfortable time.

No sepsis has resulted from the use of the urea compound as far as I know. Patients distinctly neurasthenic are the type of case in which the most noticeable results are obtained. It certainly is most gratifying to witness such absolute post-operative comfort. The surprise to the patient is even greater than to the surgeon. I cannot say enough in praise of this whole procedure, as I feel sure it adds a strong element of safety in any surgical operation—especially operations in the abdominal cavity and gives the patient a sense of comfort not obtainable in any other way.

Before closing this paper, it is necessary to give a summary of some recent work done in England by Gray and Parson. These authors worked along the same line as Crile, especially on blood-pressure. They divide shock into three stages:

(1) Stage of stimulation or pressor stage, which is characterized by a rise in blood-pressure.

(2) Stage of depression or depressor stage, characterized by a gradual fall in blood-pressure, and

(3) Stage of equilibrium, when the active, abnormal, afferent impulses are in abeyance.

These authors believe that one of the most important factors in the production of shock is the region of the body which is attacked. To each tissue, organ, structure or operation a certain "shock value" may be ascribed. Consequently shock values vary directly with the relation of pressor to depressor fibers in the nerve supply of a part. In general, those parts which are physiologically most active contain the largest proportion of depressor fibers in their nerve supply and show the highest shock value. These authors made extensive observations on humans and supplemented them by like operations on dogs. The literature is very extensive and full and abundantly illustrated by charts of blood-pressure. They definitely and emphatically state that the most careful histologic examination of the brains and spinal cords of shocked animals failed to reveal any changes in the motor cells as described by Crile and Dolly. In the spinal cords they found no cystolytic changes at all. The cerebral cortex showed very little change and the Purkinje's cells showed no striking alterations. They conclude that there is no fatigue in shock of nerve centers to be detected histologically. Sensory cells, however, show some slight damages which, however, are not constant. The authors conclude that shock cannot be accurately defined, for the term does not express a state or condition, but rather a mechanism, which establishes, first, a defense of the organism against the harmful effects of injury and next, the protection of the vital centers from a degree of exhaustion from which they could not recover, *i.e.* shock is the reaction of

the central nervous system to exaggerated or abnormal afferent impulses. The study of shock means the study of pathological vasomotor reflexes regarded as a symptom of the activity of the central nervous system. These authors believe that they have shown that a low blood-pressure is not an essential accompaniment of the clinical picture of shock. They, however, advise the methods of Crile for treating shock, with the exception of strychnia, which they believe is indicated before, during and after the operation involving shock. It seems evident from a careful survey of their work that their strong opposition to the findings of Crile is not well founded as they admit that there *were* some changes in the brain cells and that a degree of exhaustion of the nervous centers from which they could not recover is a possibility. They, therefore, admit two factors which, however, they were unable to prove experimentally.

A summary of the evidence in regard to the causative factors in the complex condition of shock may be stated somewhat as follows:

Shock is a condition of lowered vital resistance produced by varying factors, such as fear, injury or infection, of varying degrees. It is not possible to determine in a given case what physiologic function is first disturbed or what the exact sequence of pathologic changes are, but it does involve in its progress disturbance of the respiratory centre followed by disturbance of the oxygen-carbon dioxid equilibrium, lowering of body heat and depression of vasomotor tone resulting in a final paralysis or exhaustion of vasomotor activity, failure of respiration, cardiac failure and death.

Its treatment is based on a recognition of *all* of these factors. No one factor gives adequate explanation of the phenomenon.

THE CONTROL OF OPHTHALMIA NEONATORUM IN MASSACHUSETTS WITH SUGGESTIONS FOR THE IMPROVEMENT OF EXISTING CONDITIONS.*

BY FREDERICK E. CHENEY, M.D., BOSTON.

THIS paper is primarily concerned with the laws for the control of ophthalmia neonatorum in Massachusetts, the work which is being done in connection with these laws and with certain suggestions whereby, it seems to me, these laws may be still further improved. The necessity of such control is naturally more apparent to the oculist who is continually seeing babies incurably blind from this disease than it is to the other members of the profession who see these cases only occasionally or not at all. For an oculist to read a paper of this nature before a society composed principally of men in general practise, might under certain circumstances be regarded as a so-called "delicate situation." I believe,

* Read at a meeting of The New England Ophthalmological Society, Nov. 12, 1912, and at the semi-annual meeting of the Essex North District Medical Society, Jan. 1, 1913.

however, that the large body of our profession, men high-minded and sincere in their endeavor to do everything possible for the best good of the patient, recognize the justice and necessity of such laws. State medical laws like laws in general are directed against the small offending minority. The vast majority can be counted upon to "run straight" independent of control.

We know that blindness as a result of ophthalmia neonatorum is of the rarest occurrence if the disease is properly cared for and treated from the beginning. We also know that ophthalmia neonatorum is accountable for at least 20 per cent. of the cases of blindness in young children at the present time. For years the oculist has presented papers, at frequent intervals, advising the use of prophylactics and appropriate treatment, and the symptoms of the disease have been made so prominent that a failure in its recognition must be regarded as inexcusable neglect and not as justifiable ignorance. It has gradually become apparent that a more aggressive campaign than the writing of such papers must be undertaken if great good is to result. The recent vigorous work of the American Medical Association, of various local societies and organizations, and the passage of laws by many states within the last few years in an effort to limit the deplorable consequences of this disease, have undoubtedly accomplished much good and it is to be expected that the results will become more pronounced and prominent in the near future.

In 1905, action was taken by the Massachusetts Legislature in an effort to control ophthalmia neonatorum, and the law as it now stands, I will quote in full:

Sec. 49 (as amended by chap. 269, acts of 1910) . . . "Should one or both eyes of an infant become inflamed, swollen and red, and show an unnatural discharge at any time within two weeks after its birth, it shall be the duty of the nurse, relative or other attendant having charge of such infant to report in writing within six hours thereafter, to the board of health of the city or town in which the parents of the infant reside, the fact that such inflammation, swelling and redness of the eyes and unnatural discharge exist. On receipt of such report, or of notice of the same symptoms given by a physician as provided by the following section, the board of health shall take such immediate action as it may deem necessary in order that blindness may be prevented. Whoever violates the provisions of this section shall be punished by a fine of not more than one hundred dollars . . ."

Sec. 50 (as amended by Chap. 480, Acts of 1907) . . . "If one or both eyes of an infant whom, or whose mother, he (a physician) is called to visit become inflamed, swollen and red, and show an unnatural discharge within two weeks after the birth of such infant, he shall immediately give notice thereof in writing over his own signature to the selectmen or board of health of the town; and if he refuses or neglects to give

such notice, he shall forfeit not less than fifty nor more than two hundred dollars for each offence."

(Chapter 458, Acts of 1910.) "Sec. 1. The State board of health shall furnish, free of cost, to physicians registered under the laws of the Commonwealth such prophylactic remedy as it may deem best for the prevention of ophthalmia neonatorum.

"Sec. 2. To carry out the provisions of this act there may be expended annually from the treasury of the Commonwealth a sum not exceeding twenty-five hundred dollars."

A law passed by the last Legislature (1912) that aims to impress still more emphatically upon the medical profession the importance of reporting these cases promptly empowers the Secretary of State to place on the State birth return blanks an explanation of the ophthalmia neonatorum reporting law. As a result of this new law, therefore, all birth return blanks have printed at the top in red ink the following:

"Redness, swelling and unnatural discharge from one or both of the infant's eyes within two weeks after birth must be reported immediately to the board of health."—Chapt. 251, Acts of 1905. As the present law "Relative to the Reports and Records of Births" in this State—requires that "physicians and midwives shall within forty-eight hours after the birth of every child in cases of which they were in charge, mail or deliver to the clerk or register of the city or town in which the birth occurred, a notice stating the date and place of birth," etc., this Ophthalmia Neonatorum Reporting law is placed prominently before every physician who delivers a child within forty-eight hours of the birth, that is, of course, if the "report of births" law is universally complied with.

A measure adopted by the Boston Board of Health that should accomplish much good is a "special notice to parents to prevent blindness in children." It is sent to the parents on the receipt of the birth notice from the attending physician or midwife. This notice printed in English, Italian, or whatever nationality of the parents the birth returns may indicate, is as follows: "Should one or both eyes of an infant become inflamed, swollen and red and show an unnatural discharge at any time within two weeks after its birth, it shall be the duty of the nurse, relatives or other attendant having charge of such infant to report in writing within six hours thereafter, the fact that such inflammation, swelling and redness of the eyes, and unnatural discharge exists, to the Board of Health." Mr. Henry Copley Greene has suggested that this notice might be still more effective if the danger of blindness from the inflammation was made prominent and I fully agree with him. I also believe that a similar notice should be sent out by every board of health in the state upon receipt of birth notices and that a law requiring this would be an extremely valuable measure.

The question of prophylactics will be referred to later but it may be said here that while such remedies are not required by law of the Massachusetts physician, the State Board of Charities requires their use in all licensed lying-in hospitals: "either the one per cent. solution of nitrate of silver furnished to physicians by the State Board of Health or of a similar preparation having the approval of said Board." Every licensee is also required "to report within six hours to the State Board of Health the discharge from his lying-in hospital and the destination of any infant whose eyes are inflamed, swollen and red and show an unnatural discharge."

The midwife-practice is always a difficult one to deal with in connection with ophthalmia neonatorum and the printed notice sent out by the Commission for the Blind to all midwives whose names they are able to obtain is certainly to be commended. This notice states in a simple, direct way the contagiousness of "babies' sore eyes," the danger of resulting blindness, the fact that such cases must be reported at once to the Board of Health and the fine of \$100, that is imposed if such cases are not promptly reported. It is also advised that the midwife ask some doctor or the Board of Health to provide them with the one per cent. silver solution, tells them how to cleanse the baby's eyelids at birth and how to apply the nitrate of silver.

Dr. Mark W. Richardson, Secretary of the State Board of Health and Mr. Henry Copley Greene, Field Agent for the Conservation of Vision of the Massachusetts Commission for the Blind, have kindly written me in regard to prosecutions for failure to carry out the reporting law. While there have been no prosecutions by the State Board, the Boston Board of Health, beginning October 8, 1910, have brought nine physicians and two midwives to court. There have also been prosecutions of physicians by the Massachusetts Society for the Prevention of Cruelty to Children. The value of such prosecutions is indicated by the fact that the number of reported cases of ophthalmia neonatorum has been greatly increased since that first prosecution was made. The State Board of Health has twice sent the physicians of the state a solution of nitrate of silver (one per cent.) as a prophylactic and, in compliance to the law is prepared to furnish prophylactic remedies free of cost to all the physicians registered under the laws of the Commonwealth. Especially to be commended are the circulars accompanying the remedy which briefly refer to the serious nature of the disease as a cause of blindness, the importance of routine preventive treatment and of the doctors being notified at once if the eyes become inflamed. Also the advice as to placing the child in the hands of an oculist when possible and the desirability of sending cases to the Massachusetts Charitable Eye and Ear Infirmary or a similar institution. The printed state laws are included in this circular so that no reasonable

excuse should exist for failure in reporting these cases when they are met with.

In 1910, at the suggestion of the Massachusetts Commission for the Blind, the Research Department of the Boston School of Social Workers investigated the question of ophthalmia neonatorum in ten cities of Massachusetts. This work was largely done by Mr. Henry Copley Greene, Miss Ethel W. Chase and Miss Gerna Saville. The conditions found to exist are most admirably presented by Mr. Greene in his monograph: "Ophthalmia Neonatorum in Ten Massachusetts Cities." A brief reference to this paper will help to make apparent the deplorable condition of affairs in 1909. It is certainly probable that these conditions have improved in a measure since this investigation. There can be no doubt, however, that much still remains to be accomplished if we are properly to control this disease. In these ten cities, Boston not included, there were in 1909, 147 cases of ophthalmia neonatorum known to have occurred. It is probable that these figures do not represent the entire number. Of these 147 cases the treatment was investigated in 104 with the following results:

"Thirty-two were treated in hospitals, 11 by oculists without the aid of any nurse, 14 by district nurses working under oculists or general physicians, 45 by obstetricians, 1 at a city farm and 1 unknown. Private physicians attending births were not only responsible for 85 per cent. of the above severe cases, but they also endeavored to cure 43 per cent. . . . Out of 61 registered physicians in eight of these cities, each of whom was confronted at least once during 1909 by a case of ophthalmia neonatorum, 39, or over 64 per cent., neither asked at any time for expert help nor yet transferred these cases to any hospital but invariably tried their inexperienced hands at restraining the disease which they had failed to prevent. Their methods and results are as follows: If the parents could and would pay enough, these 39 treated the baby at home. If the parents could or would not pay sufficiently, these 39 only treated the baby when brought to the office. In one way or the other, they treated 44 gonorrheal or probably gonorrheal cases; and they saved on an average nearly one baby's eyes apiece. But the sight of nine babies they did not save and of these nine they lost by death, three. For these 39 physicians the best that can be said is that they reaped the result of their own laxity in 20 per cent. of their eye cases; or in other words, they failed to prevent blindness in every fifth case."

As a comparison with the above results in ophthalmia neonatorum treated by the general practitioner, let us take the results of those treated by the oculist. Among 116 babies treated in the same year (1909) at the Massachusetts Charitable Eye and Ear Infirmary, only six became blind and *all of these* were brought to the Infirmary after ulceration of the cornea was well established. Furthermore, it may be said that if

these six patients had received appropriate treatment and care from the beginning, it is not probable that blindness would have resulted in a single case. Yet, of these cases of ophthalmia neonatorum treated by the general practitioner one case in five became blind. These babies were not in out-of-the-way, country places, but might have been placed under the care of a competent oculist with very little effort on the part of the physician.

Ophthalmia neonatorum is most emphatically a disease for the oculist to treat and it is regrettable that placing these unfortunate babies under the care of a competent oculist is so often delayed. It is still more regrettable that in most of these cases no legitimate excuse for the delay exists. It is unnecessary to say that the very large proportion of men in general practice will not treat ophthalmia neonatorum unless they are forced to it by circumstances over which they have no control. The question may naturally be asked why are general practitioners not qualified to treat ophthalmia neonatorum? It is easily recognized and it is a seemingly simple matter to keep the eyes clean and to apply some one of the various silver salts suggested by the oculist. My answer to this question is that I believe that the general physician with but a limited experience in treating diseases of the eye will rarely recognize an *early involvement of the cornea* if it takes place. The swollen and engorged lids and conjunctiva, the purulent discharge, the crying, struggling baby are all against his recognizing the beginning of corneal ulceration. It will often escape his attention until the ulcer has so seriously involved the cornea that the child is rendered partially or completely blind in consequence. The rapidity with which an ulcer of the cornea may develop, assume grave proportions and demand immediate expert treatment to save the sight is not generally appreciated. The following case will serve to illustrate this point as well as the successful outcome that may sometimes be obtained as a result of prompt, operative interference. The patient was a poorly developed marasmic child under treatment at the Massachusetts Charitable Eye and Ear Infirmary during my 1909 service. The conjunctival inflammation was about well, there was practically no discharge and we were expecting to send the child home within a few days. When seen by me one Saturday, both corneae were perfectly clear. I did not see the child on Sunday, but it was examined by one of my assistants during the morning, who reported no corneal involvement. When I examined the baby Monday morning, twenty-four hours later, I found at the lower inner quadrant of the cornea a nearly circular ulcer of about two millimeters in diameter, extending in depth nearly to Desemet's membrane and surrounded by a wide area of infiltration. The sudden development of this ulcer and its evident tendency to rapid progress convinced me that prompt action was imperative if the eye were

to be saved, and I at once did Saemish's operation. In spite of the child's poor general condition, the recovery was rapid and uninterrupted. At the end of eight days the ulcer had almost entirely healed and the infiltration had cleared except in the area of actually broken-down tissue. There was an anterior synchia but no incarceration of the iris, and the pupillary area of the cornea being uninvolved, an eye with good useful vision was to be expected. This ulcer was probably of traumatic origin, and of the importance of trauma as a causative agent in these cases, I shall have more to say presently. It is of interest to note as an indication of the child's poor general condition and want of resistance that a few days later an abscess suddenly developed in the left ischio-rectal fossa.

Up to the present time, laws have been passed by twenty-five states aiming in a varying degree to control this disease. The laws of Massachusetts already quoted are probably as good as any and better than most of the state laws. It is an interesting fact that in none of these state laws does the word oculist appear. Cases must be reported "to the selectmen or Board of Health of the town" or the infant shall be "immediately placed in charge of a legally qualified practitioner of medicine," etc. It might, of course, be assumed that the selectmen and boards of health would, when possible, place these cases under the care of an oculist, but so far as can be judged, the law is not generally so construed. Mr. Greene writes me that the New Bedford Board of Health pays an oculist to treat practically every serious case. But this strongly-to-be-commended practice is probably exceptional. I am informed that our State Board of Health outside of Boston, through its District Medical Health Inspectors, follows up every reported case and advises with the local boards of health as to the proper treatment. What percent of these reported cases are placed under the care of an oculist, however, I am unable to say. If we are to control this disease, if these babies are to receive proper treatment, if the percent of blindness is to be greatly reduced, we must, I believe, have laws requiring that all cases of ophthalmia neonatorum be placed under the care or at least the supervision of an oculist within a certain time after the symptoms of the disease are first noted. In certain states this may not be practicable for the reason that the country is thinly settled and oculists are not easily obtainable. In this state, however, no such reason exists. We are a thickly settled community and well supplied with competent oculists, not only in the large cities but in most towns of eight or ten thousand inhabitants. That occasionally it would be impossible for some reason to comply with this law is, of course, probable, but such cases would be exceptional and the law could be so modified that a legitimate reason would free the practitioner from the legal consequences. It is also important that printed regulations as to the recognition of the disease, the immediate care

and protection of the eyes, the laws relating to the placing of the child under the care of an oculist (if such a law can be passed), be *forced* upon the medical profession, nurses and midwives at frequent intervals. Our State Board of Health and Commission for the Blind are, as we know, doing much good work in this direction. It seems to me important, however, that such instructions should be sent out frequently and for a long period of time. We all know from personal experience that the busy medical man will often "pigeon-hole" pamphlet literature for the want of time to read it and it is quickly forgotten. If, however, such literature were sent out regularly at three- or even six-months' intervals for the next ten years, its frequent repetition must, of necessity, make an impression. In this connection, I wish to make certain suggestions that I have not seen in the pamphlets of instruction and that seem to me important. Admitting the advisability of ophthalmia neonatorum patients being placed under the care of an oculist, there will still be periods of a day or two in many cases where the general practitioner must be responsible for the baby's eyes. Too much emphasis cannot be placed upon the fact, in presenting this subject to physicians and nurses that the prevention of corneal ulceration is the primary end and aim in the treatment of this disease. Aside from treating the conjunctival inflammation, there are certain other important measures for the prevention of corneal involvement that are not so generally recognized and consequently more often neglected. That a certain number of corneal ulcerations in this disease are often of traumatic origin is, of course, well known, but I am inclined to believe that trauma is accountable for a very much larger proportion of such cases than is generally supposed. The rapidity with which an ulcer may develop and become a dangerous condition is well emphasized in the case I have already reported. That this trauma is frequently inflicted by the babe itself, seems to me probable. In support of this conclusion, we have the facts: (1) that the lower, most exposed area of the cornea is oftenest first involved; (2) that a child will naturally carry its hands to an inflamed eye, and (3) that many new-born babes have fingernails of good growth and well adapted for producing a corneal abrasion. In a new-born babe with a discharging eye, one of the first cares, therefore, should be to eliminate this possibility. It may be accomplished by placing a firm binder around the child, extending from the neck to below the waist, fastened in the back and covering in the hands and arms. As an additional precaution, the fingernails should be closely cut so that if the child "breaks away," as they sometimes will, the chances of corneal injury may be minimized. Another occasional cause of trauma is probably the fingernails of those caring for the child. The carefully-trimmed, pointed, well-kept fingernail is not the fingernail to be worn by the doctor or the nurse

having to do with diseases of the eye and this applies most emphatically to a disease like ophthalmia neonatorum where the corneal resistance is not only often lessened but the eye bathed in a copious, purulent discharge. Fingernails as short as possible should be the rule for all concerned in the care of this disease. The nurse or attendant must also be cautioned against touching the cornea when removing the discharge from the lids, of not trying to wipe the eye out, that is, passing cotton or anything else between the lids, and against using too great force in dropping solutions into the eye. It is, of course, of the greatest importance to keep the lids from sticking together by the use of some simple ointment like vaseline applied to the lid-borders often enough to make sure of a perfectly free drainage from the conjunctival sac.

I wish now to refer briefly to the preventive remedies that may be employed in this disease. The advisability of passing laws requiring the use of prophylactics in all new-born babes has, of course, been seriously considered. If such laws could be enforced, if the remedies were properly prepared, of proper strength and if intelligently used, there would be few cases of ophthalmia neonatorum. There are, undoubtedly, a large number of intelligent medical men, men who could be counted upon to place a case of this disease under the care of an oculist at the earliest possible moment, whom it would, nevertheless, be difficult to convince that prophylactic treatment is necessary or advisable among the so-called better classes of their patients where ophthalmia neonatorum is so rarely met with. It is among the poorer classes, in our larger cities especially, the poor who are likewise ignorant, careless and unclean, that this disease is especially liable to occur. They neglect themselves and are often under the care of midwives and medical men who are incompetent and also negligent. I doubt very much if such a law could be enforced with any degree of success if it existed at the present time and under present conditions. The State law requiring that prophylactic remedies be furnished free is a movement in the right direction, however, and if these remedies can be sent to all practitioners at regular intervals, the importance of their use will gradually become impressed upon the profession and will become more general. There is, naturally, some difference of opinion among oculists as to whether nitrate of silver or one of the more recently introduced silver salts is best adapted for use among the general profession. In a previous paper¹ I have already expressed my preference for one of the newer silver salts. In the first place, a non-irritating solution like argyrol (25% sol.) will, I believe, if recommended, be much more generally used than the nitrate of silver for the simple reason that it is non-irritating. The very name—nitrate of silver—has come to suggest an irritant and caustic. A one

¹ "The Newer Silver Salts as Compared with Silver Nitrate in the Treatment of Ophthalmia Neonatorum," Frederick E. Cheney, M.D. BOSTON MED. AND SURG. JOUR., March 4, 1909.

or two percent. solution is not, of course, caustic, and no serious results following the instillation of one or two drops into the eye should be looked for. It is, however, an irritant and may cause a catarrhal inflammation of greater or less intensity. Many men who have had little experience in the treatment of diseases of the eye will hesitate to drop into the apparently healthy eye of a new-born babe a solution that he knows to be an irritant and that may give rise to a conjunctivitis. I am convinced from long experience in the use of a 25% solution of argyrol that it is a valuable remedy in the treatment of ophthalmia neonatorum and it should prove an equally valuable remedy, if properly and *freshly* prepared, in its prevention. The fact that it is non-irritating will, I believe, make it a remedy much more acceptable to the general practitioner and its general recommendation should result in a more universal prophylaxis than can be hoped for in advising the use of a recognized irritant like silver nitrate. The comparative prophylactic value of these two remedies is a question which must, of necessity, be under discussion for some time to come. In this connection, the statistics presented by Mr. Sydney Stephenson in his Middlemore Prize Essay² may be again quoted together with a brief analysis made by me in the previous paper already referred to:

THE PERCENTAGE OF OPHTHALMIA NEONATORUM DEVELOPING AFTER THE USE OF:

	PERCENT.	CASES.
Silver nitrate, 2% solution.....	0.703	76,452
Silver nitrate, weaker than 2% solution	0.423	36,132
Argyrol	0.25	6,984
Protargol	0.027	7,383

"The superior value of argyrol and protargol is certainly suggested by these statistics although the fact cannot be ignored that the number of cases in which nitrate of silver has been used greatly exceeds those of the newer silver salts.

"A point worthy of consideration and remarked upon by Mr. Stephenson is that the results are considerably better where nitrate of silver weaker than a two per cent. solution was used than in the series where the solution was two per cent. As a reasonable explanation of this point, I would suggest the following: If silver nitrate causes an inflammation, the conditions are much more favorable for the development of ophthalmia neonatorum, if any gonococci remain undestroyed, than they would be if an inflammation were not present. If silver nitrate is to be used, therefore, a weaker, less irritating solution than a two per cent. is, as these statistics suggest, to be preferred. It is also to be noted that the per cent. of the ophthalmia neonatorum is much smaller in the series of cases treated with protargol than with argyrol. Accurate comparisons cannot be formed as to the comparative value of the two remedies from these statistics, however, for the reason

² "Ophthalmia Neonatorum with Especial Reference to Its Causation and Prevention," Sydney Stephenson, M.B., C.M. The Middlemore Prize Essay for 1907.

that while protargol was generally used in a 10 per cent. or 20 per cent. solution, the strength of argyrol is not given in the larger proportion of cases and in 1334 (the only cases where the strength is given) was but four per cent."

In conclusion it may be said that the work being done in Massachusetts by the various State organizations and allied workers is worthy of the sincerest approval and appreciation of the medical profession and the community. I believe, however, that still more might be accomplished if certain suggestions made in this paper, and which I will briefly restate could be adopted.

1. The sending of a "special notice to parents to prevent blindness in children,"—similar to the notice sent out by the Boston Board of Health,—by every board of health in the state upon the receipt of birth notices. A law requiring the sending out of such a notice would be an extremely valuable measure.

2. A law requiring all cases of ophthalmia neonatorum to be placed under the care of an oculist or at least the supervision of an oculist within a certain time after the symptoms of the disease are first noticed.

3. Printed matter, as to the recognition of the disease, immediate care and protection of the eyes, laws relating to the disease. etc. (the information now furnished by the state organizations with some addition) sent to all doctors, nurses, and midwives, at regular and frequent intervals, and over a long period of time. And,

4. I may add that while the use of a one per cent. solution of nitrate of silver cannot be regarded as objectionable, a more universal prophylaxis against this disease would probably result if the use of a non-irritating remedy like argyrol (25% sol.) were more generally recommended and encouraged.

TYPHUS FEVER (BRILL'S DISEASE) AT THE MASSACHUSETTS GENERAL HOSPITAL IN TEN YEARS (OCT. 1, 1902 TO OCT. 1, 1912).

BY ROGER I. LEE, M.D., BOSTON,

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BRILL,^{1, 2, 3, 4} of New York, in 1898 first described 17 cases of a disease of unknown origin, simulating typhoid fever. From 1896 to Dec. 1, 1910, he was able to collect 255 cases of this fever, which was generally known as Brill's Disease. Louria⁵ of Brooklyn, Ziegel⁶ of New York, Lewis⁷ of Philadelphia and Patek⁸ of Milwaukee have also reported cases of this disease. The disease occurred usually in Russian immigrants. Only two of Brill's cases occurred in the same house. It did not seem to be highly infectious. All epidemiologic studies were fruitless. The characteristics of the disease were sudden onset, often with a chill, a continued fever of 12 to 14 days' duration, with termination by crisis or rapid lysis. On the fifth or sixth day a charac-