Ophthalmia Neonatorum.

By Richard H. Lewis, M. D.

Reprint from the North Carolina Medical Journal,
March, 1879.

WILMINGTON:
Jackson & Bell, Printers and Binders.

NORTH CAROLINA

MEDICAL JOURNAL.

M. J. DeROSSET, M. D.,
THOMAS F. WOOD, M. D., } Editors.

Number 3. Wilmington, March, 1879. Vol. 3.

ORIGINAL COMMUNICATIONS.

OPHTHALMIA NEONATORUM.

By Richard H. Lewis, M. D., Raleigh, N. C.

Blindness under any circumstances, even when occurring in the very old, who having almost completed the journey of life have least to lose, is one of the saddest of all afflictions. When it falls upon those in the prime of life, or worse, upon those who have not yet passed the period of joyous youth, and nips in the bud all those bright and happy dreams and anticipations of the future with which the mind of the young is always filled, it is sadder still.

But saddest of all it is, it seems to me, when the "blackness of darkness" settles down over the eyes of the newly born, before they have consciously seen even the glorious light of day, there to remain as long as life shall last, dooming the poor unfortunate to a life of helpless dependence, and in many instances to want and positive suffering. It is true, that those who have never seen do not fully realize their privation, and that their feeling of regret is less keen than that of those who have once enjoyed sight; but that

negative happiness is more than counter-balanced by the deficiencies resulting from their never having had the use of the most important of the senses, as will, I think, be made apparent further on.

Such as have lost their sight later in life, have, previous to that calamity, acquired an amount of knowledge by means of the "unconscious education" received through that sense, which astonishes us when we reflect upon how much of our own knowledge, and of a kind too that could have been obtained in no other way, has been taken in through the eyes. They have secured definite ideas of color and form in the abstract, especially of the more delicate phases of the latter, and they possess, indelibly stamped upon their memories, innumerable examples of both in the concrete. In them the conditions necessary to a high development of the mind are fulfilled, they can appreciate what is told or read to them of the physical world, and their education can be made much more perfect and complete, and their pleasures of course greatly increased. Besides, they have stored up an immense amount of raw material, as it were, upon which the imagination can draw, *ad libitum*, in making up scenes of beauty for the inspection of the mind's eye. A few pieces of colored glass in the kaleidoscope can make, it is said, almost an infinite number of combinations: the number of combinations of bits of form and color possible to the kaleidoscope of the mind, passes comprehension. The imagination is always highly developed in the blind, and they have it thus in their power to weave the most pleasing fancies, to build the most gorgeous air-castles of endless variety; and while such employment is neither profitable nor useful, it is certainly a never-failing source of pleasure, for it is well known that the happiest among men, are those who dwell a large portion of their time in *châteaux en Espagne*.

In this way they can project their thoughts into external objects —in a word, get out of themselves.

On the other hand, those blind from infancy have absolutely no conception of color, and their ideas of form, derived solely through the sense of touch, must necessarily be crude and imperfect. They can tell that an object is round or square, but of form in its more beautiful and graceful manifestations they have no knowledge;—the shape of a box or biscuit they can realize, but to such modifications of form as are seen, for example, in the waving wheat-fields, or the

rippling surface of a moonlit lake, their eyes, both physical and mental, are forever closed. Of the physical world their knowledge must be exceedingly meagre, and having failed to acquire the mass of facts in the possession of their more favored brethren in affliction, the foundation upon which is to be based their mental structure, must, in the nature of things, be more narrow and circumscribed. They are then not capable of as high an intellectual development, and are compelled to occupy a lower plane in the scale of spiritual being. Besides, they are unable to direct their thoughts into channels external to themselves with such facility and with so much pleasure, and consequently they are more prone to brood over their misfortune, one would think.

I am not prepared, however, to assert positively that they are not as happy in this way as the others never having had sufficient opportunities of practical observation to form a just opinion; but, inasmuch as they must be intellectually inferior, their happiness, must be, to say the least, of a lower order. To use a strong illustration: a half-witted man may, after his fashion and according to his capacity, be as happy, or more so, than a highly intellectual man: but one moment of the philosopher's happiness is worth a life time of that of the idiot.

At any rate, it is clear, I think, that those blind from infancy are more deeply afflicted than other blind persons who have first enjoyed some years of sight; and I have been led to say thus much upon a subject that some may think superfluous, for the purpose of showing, that if there can be degrees in the responsibility attaching to such cases, it rests upon us with peculiar heaviness in those cases of threatened blindness, occurring in the earliest dawn of that short day we are allowed on earth.

Its applicability to the subject in hand appears, when I assert that the inflammation of the eyes of the newly born stands at the very head of the list of, certainly incurable, blindness occurring at any and all periods of life; and, that of the blindness coming on in the first few weeks after birth, it is the almost invariable cause.

Mr. Carter, in his recent admirable work on the eye, when speaking of this disease, says, that it is supposed to be the cause of nearly one-half the blindness at present existing in England. I hardly think that the proportion would hold good altogether in this country,

for two reasons; first, because in England, on account of the greater abundance of eye-surgeons, those cases that can be remedied by a timely operation, seek and obtain relief, while with us very many cases, notably congenital cataract, are neglected, either because the family physician has not the instruments necessary, or because of his reluctance to surgically interfere with an organ so delicate as the eye. There are a number of such cases at present in our asylum for the blind, which no doubt could have been given their sight by an operation during their infancy; but now, from non-development of the retina, it is too late. The other reason for the relatively larger proportion of blindness from the ophthalmia of the new-born in England, is the greater crowding of the inhabitants into filthy tenements, and the consequent violations of the laws of health which do not occur on this side of the Atlantic to such an extent, except possibly in a few of our largest cities. Rural populations are much less liable to this disease, and we would, therefore, expect to find a minimum of it in our own State, and doubtless it is as rare here as anywhere; yet, nevertheless, it is the most frequent cause of blindness among the pupils at the asylum, and I learn, from a list kindly furnished me by the matron, that of those who lost their sight under the age of three years, about 70 per cent. became blind during the first few weeks of life, and presumably, from the disease under consideration.

From the above it appears that the inflammation of the eyes of the newly born is the most destructive to sight of all the diseases of the eye, and consequently, there can be none in that class of more interest to the physician, or more deserving of our careful consideration; particularly, when we note the fact, that if promptly taken in hand, and properly treated, it rarely ends otherwise than in recovery. And it is of interest, not so much to the specialist, as it is to the general practitioner, for it is the accoucheur who first sees the disease, and who in a large majority of cases, is called upon to treat it.

Ophthalmia neonatorum, or to speak more accurately, the conjunctivitis to which the newly born are peculiarly subject, is not a specific disease, possessing as it does, the same general characteristics as inflammations of the conjunctiva in older persons; but, on account of its greater gravity when attacking those of such tender

age, and because of certain modifications resulting from the infantile organization, it deserves, and in the best text books it has been given, a special name and a section to itself.

The causes of this affection are various, but in most instances it can be traced to a want of cleanliness in one shape or another; and generally, it is the result of an inoculation of the eyes of the infant with some vaginal discharge, leucorrhœal or gonorrhœal, either directly, during the passage of the head through the vagina in delivery, or, indirectly, through the hands of the attendants, or clothes soiled with it. "The impure air of a room filled with excrementitial exhalations, smoke, dust, or acrid vapors, as well as the musty damp air of an unventilated room," is a frequent source of this disease; and the children of the poorer classes who inhabit such tenements are much more liable to it than the children of those in better circumstances. It not infrequently owes its origin to exposure of the eyes to bright lights soon after birth, or to draughts of cold air, or other irregularities of temperature which would be likely to excite catarrhal trouble in other parts of the body; for the potency of the catarrhal influence, whatever it may be, in producing conjunctivitis, all will admit, who have observed the epidemics of "sore eyes" that often prevail at the same time that "colds" of various kinds are peculiarly rife. Still another cause, is the entrance into the eye of some of the soap used in washing the child, or of the whiskey, that is by some midwives "absurdly rubbed over its head."

It makes its appearance almost always within the month, and generally during the first week of life, and in a majority of cases attacks in the beginning only one eye, but it is sure to extend to the other in a very few days, unless we are successful in protecting it from the discharge—a very difficult thing to do, by the way. In intensity it varies from scarcely more than an irritability of the conjunctiva, to full blown gonorrhœal ophthalmia, there being every degree between the two extremes. Some writers recognize two forms, the catarrhal and the purulent, and while such a division of the subject is not demanded by the scientific requirements of the case, as it is one and the same disease throughout, and it is impossible to draw a sharp line of demarkation between the two forms, they melt so imperceptibly the one into the other, yet I think it advisable,

as facilitating the description of the disease, and as affording a more accurate guide to treatment.

The term catarrhal is applied only to the milder forms, those in which the discharge is mucous, or at worst, muco-purulent in quality, and limited in quantity, while the term purulent, is, as its name implies, used to designate those cases of greater severity in which the discharge is purulent in character, and, in some of the worst cases we may almost say, *un*limited in quantity.

In examining a case of the catarrhal form, the first thing that attracts our attention, is an accumulation of dried mucous at the corners of the eye and upon the lashes, glueing them together, and a greater or less amount of puffiness and swelling of the lids. This puffiness of the lids is usually a very prominent symptom, and is attributable to the laxity of the infantile tissues.

On opening the eye we observe, that the edges of the lids are red and not as thin as they should be, and, everting them, we find the palpebral conjunctiva thickened, and diffusely and uniformly red, and that of the globe exhibiting a network of engorged vessels with meshes of varying size according to the severity of the attack, through which the white sclerotic shows. Lying on the inner surface of the lower lid, and particularly on the retro-tarsal fold where the conjunctiva leaps over from the lid to the ball, we perceive flakes or strings of coagulated mucous or muco-pus.

In the purulent form we find all these symptoms exaggerated. The lashes are a mass of matter, and at the inner corner of the eye in most instances, is a little pool of pus, while the redness, puffiness, and swelling of the lids is marked, the upper lid being frequently so much enlarged as to overlap the lower. Opening the eye we find it literally bathed in pus, and after removing the discharge, we see that the palpebral conjunctiva is very red, very much thickened and swollen, and more or less rough in appearance from the enlargement of the papillæ; and that the ocular membrane is likewise diffusely red and swollen, and very often corrugated into concentric folds around the cornea, presenting the condition known as *chemosis*, which is due to a serous effusion into the sub-mucous tissue of the globe. In the severest cases the swelling of the lids is so great, that they "appear as large tumors in front of the orbital opening," though this swelling may, for the reason

previously given, be excessive even in the milder forms,—and they glow with an erysipelatous blush. The conjunctiva is greatly thickened, looks hard and branny, and the chemosis is excessive.

The discharge, which in the beginning may be thin and serous and somewhat scanty, speedily becomes purulent, and so profuse that on separating the lids it gushes in a stream down the cheek. Indeed, the pus is secreted with such rapidity in some of these cases, that it can actually be seen forming on the conjunctiva which had been cleansed a moment before. It is often streaked with blood, and the turgid conjunctiva will bleed frequently at the slightest touch, but it is a matter of no significance as the hemorrhage will be promptly checked by a return of the lids to their proper position. There is apt to be fever, general as well as local, and the little patient suffers much from pain.

In examining every case, mild or severe, a view should, if possible, be obtained of the cornea, for upon its condition will depend the prognosis and, to some extent, the treatment; but if it cannot be easily accomplished it is better to desist. Force should never be employed for three reasons: first, because it is not apt to accomplish the purpose, owing to the redundancy of tissue and the contraction of the orbicularis; secondly, because there is danger of emptying the globe if the cornea be already thinned by ulceration (such accidents have happened); and thirdly, because the crying and struggling of the child will be likely to increase the congestion and aggravate the inflammation.

It can, however, be safely done by gently lifting from the ball, and elevating the upper lid with a retractor, if the physician happen to have such an instrument. Whenever the lids, and particularly the upper lid, is everted for the purpose of examination, or for receiving the application, it should be promptly returned without fail to its proper position, as there is a natural tendency to ectropium and it may remain permanently everted. I need not say that in all manipulations of the eye the utmost care and gentleness should be employed.

The disease runs its course in from one to eight weeks according to the severity of the attack. In the milder forms it advances slowly, reaching its acme usually in a little less than a week; but in the worst cases it may attain its height in two or three days and totally destroy the eye in that time.

The danger to the eye consists in the liability to an extension of the inflammation to the cornea, and that liability usually bears a direct ratio to the amount of swelling of the ocular conjunctiva, or chemosis. The effusion into the sub-mucous cellular tissue compresses the vessels which impinge upon the edge of the cornea and furnish it with nourishment, and upon the amount of this pressure, depends the character of the lesion in great part. If the calibre of the vessels be only partially diminished, it is probable that the corneal lesion will be a circumscribed infiltration, or a restricted ulceration; while, if it be more or less completely obliterated there is apt to be sloughing of the cornea *en masse*.

The prognosis under proper treatment, if the cornea be bright and clear and entirely unaffected at the time the case comes under care, is, I think I may safely say, almost invariably favorable. I say *almost* invariably, for I cannot altogether agree with Mr. Carter in his assertion that no case of ophthalmia neonatorum should *ever* end in loss of sight.

The experience of other surgeons equally as distinguished, is that there are some rare cases, which are nearly always due to gonorrhœal infection; that in spite of the most skillful treatment, rush on to destruction of the eye; and while I have been very fortunate myself in never having met with one of these cases, nor having had one that has been under my care from the beginning which ended otherwise than in perfect recovery, I remember very well a case that I was once called to see in consultation with one of the ablest and best informed physicians of my acquaintance, in which, notwithstanding the employment by him from the commencement of the most approved treatment, there was ulceration of both corneæ, quite extensive in one and resulting in the condition known as hydrophthalmos and complete loss of the eye.

In this case the conjunctival inflammation was never excessive, and I attributed its untoward end chiefly to the weakly condition of the infant; and that leads me to say that the prognosis will be modified to some extent by the general health and strength of the patient.

Now while the outlook is exceedingly bright and promising if the suitable treatment be used, it is very gloomy if the disease be neglected, as it so often is through the ignorance of parents or mid-

wives, in thinking it a trifling matter, and in relying upon "a little mother's milk," an "alum curd," or some such remedy until irreparable damage is done. I do not deny that a great many cases get well any way, but it is equally as true that very many others eventuate in blindness when the sight could have been saved; and I feel it my duty to urge upon my readers the importance of impressing upon the mothers among their patients, and the midwives of their acquaintance, the fact, that a running from the eyes of a new born child is *not* a trivial matter, be it ever so slight, for there is no telling how soon it may become severe, and also, that they should always promptly summon a physician.

In the matter of treatment the first thing to be looked to, is the prevention of the disease. Upon referring to its causes we will at once realize that the most scrupulous attention to cleanliness in everything, and everybody about the child, will be most effective in this. If the parturient woman be known to have a vaginal discharge of any kind, and, more particularly, if she be the subject of gonorrhæa, the vagina should be well washed out by the injection of warm alkaline water during the labor, and the child's eyes should be washed first as soon after its début upon the world's stage as possible. The injections can do the mother no harm and they may be the very simple means of saving the eye-sight of her offspring.

Great care should be observed on the part of both mother and nurse to see that their hands are always clean before they handle the baby, and that all sponges and cloths of every description used about it are pure, and untainted by foul matter of any sort.

Care should be taken likewise to see that the room during the first week or two of the infant's life, is kept moderately dark, and that its eyes are protected from such sudden changes from darkness to light, as may result, for example, from the opening and shutting of an outer door. This difficulty is chiefly encountered among the poorer classes, notably with us among the negroes who, for the most part live in cabins of a single room, and we should always see to it that a protecting screen of some sort is "rigged up," or that the bed and cradle are placed behind the door. By this means too the mother and child are also shielded from dangerous draughts, but in shutting out the draughts and too much light, we must be on our

guard not to overdo it and exclude the proper amount of ventilation. When we call to mind the fact that the whole family, in many instances consisting of father, mother, and a half-dozen or more children, occupy this one room, and that soap and water are in great part strangers to their skins, we can appreciate the necessity for ventilation.

Fortunately, however, for them, their dwellings are generally so full of cracks that the perfection of ventilation—"the admission of fresh air through numerous small openings," is already arrived at. If the disease shall have attacked one eye we must endeavor to prevent its extension to the other; though we very often fail in our efforts. The simplest plan is to place a little soft cotton over the eye, a piece of oil silk over that, and to secure the whole with a a bandage. This should be renewed once every day and the eye examined, and if there be no sign of inflammation it should be replaced.

As cleanliness is the most important thing in the prevention of the disease, so it is a *sine qua non* in the treatment after it is once established, as it seems to me any one on a moment's reflection will admit, though it is by no means uncommon for physicians to prescribe a lotion, and probably a very good one, to be dropped into the eye, without saying a word about first removing the discharge. It is self-evident, that before any curative action can be expected from a remedial agent, the administration thereof must be made under such conditions as admit of the exercise of its peculiar healing properties, and the condition essential to the advantageous employment of local astringents, the class of remedies demanded by the disease under consideration, is, that they shall come into immediate contact with the diseased tissue. Therefore in the proper treatment of ophthalmia neonatorum, when the discharge is at all profuse, it is absolutely necessary that it be removed before the topical application is made. This is usually done in one of these ways; either, with a soft camel's hair brush, or by allowing a stream of water to trickle into the eye from a sponge, or by washing it out with a syringe.

Some object to the syringe on the ground that there is danger in its careless use, of mechanically injuring the conjunctiva, and that the stream is apt to be jerky and at times is thrown with too much

force. I think, myself, that it is not advisable to use any syringe that ca not be manipulated with one hand, nor one that does not work very easily, but there can be no objection to a rubber ball syringe, the simplest form of which is seen in the ordinary drop-tube that ought to be in every drug store, and which answers the purpose admirably. With that little instrument and the most ordinary care, the eye can be safely, quickly and efficiently cleansed, and I much prefer it to any other method, though I am in the habit of supplementing it with the camel's hair brush to remove any fragments that obstinately adhere.

It is always best for the physician to cleanse the eyes and make the application himself whenever he makes his visits, so as to instruct the nurse, and to be sure that it is, at least occasionally, properly done.

The simplest way in detail of doing this is as follows: Having spread a towel over his knees, let him place the child across his lap on the side of the eye that is to be washed, with a sponge or soft bit of rag under the temple to catch the water and discharge.

Then, having tenderly separated the lids with the fingers of his left hand, let him inject a slow, steady stream of water or some astringent lotion into the inner corner of the eye, so that it must pass over the whole diseased surface before it makes its escape on the rag at the outer canthus.

He should be very careful that none of it rebounds into his own eye, as the discharge is exceedingly contagious, and he might in that way contract the disease himself. The syringing should be kept up until the eye is clean or nearly so, when, as above intimated, it may be supplemented with the brush.

This cleansing process ought to be repeated just as often as the eye becomes filled with the discharge, but as a nurse is more apt to carry out definite directions that demand no excercise of judgment (a quality totally lacking in many) on her part, it is safest always for the physician to decide himself how often it is necessary, and to direct that it be done at regular intervals, long or short, as the case be mild or severe, from every four hours to every ten or fifteen minutes during the day, and not quite so often during the night.

Almost any astringent will serve a good purpose in the treatment of this affection, but those most commonly employed, are the

nitrate of silver, sulphate and acetate of zinc, alum, acetate of lead and tannic acid.

Of these, the best in the estimation of oculists generally, and certainly in my own opinion, is the nitrate of silver. The acetate of lead is an excellent remedy if the cornea be intact, but owing to its liability to undergo chemical decomposition and to become deposited upon the abraded surface, if the cornea happen to be ulcerated, in the form of the insoluble carbonate, producing a permanent opacity, it is best, as a rule, to omit it.

If I were called on to define exactly the treatment I would specially recommend, I should say this: Cleanse the eyes in the manner above described with a lotion composed of sulphate of zinc one grain, alum three grains, water one ounce, which, by the way, is the favorite remedy of the Surgeons of the Royal Ophthalmic Hospital of London, just as often as the accumulation of discharge demands, and every 12, 8, 6, or 4 hours, according to the severity of the case, instil into the eye a drop or two of a solution of nitrate of silver of the strength of two grains to the ounce of water.

Under this treatment, if promptly undertaken and faithfully carried out, I am confident that very few cases would fail to recover completely.

In the very mildest form it is generally sufficient to drop into the eyes a little of a weak solution of sulphate of zinc, gr. i—ij. to the ounce, two or three times a day. In the worst cases, where the swelling and chemosis are excessive and more or less tense in character with a scanty serous discharge and fever, it is well to use cold compresses to the closed lids, if their proper application can be assured; but if not, it is best to omit them, as improperly applied they do more harm than good. When obtainable, it is preferable to have a block of ice at hand, with several pieces of lint or soft folded linen lying on it, so that, as soon as the piece on the eye becomes in the least warm, it can be immediately replaced with a fresh one; and when the inflammation runs very high this will have to be done every three or four minutes—hence the difficulty of having it well done. If ice cannot be had the coldest water available will answer. The compresses should be kept up for at least a half hour at a time, and repeated several times during the day and night.

In the earliest stage when the swelling is very great and tense and

the discharge is thin and scanty only the weakest astringents are admissible, but as soon as the swelling subsides somewhat, as will appear from a slight wrinkling of the skin of the upper lid, and the conjunctiva becomes a little relaxed, and the discharge purulent and profuse, it is well, in addition to the faithful use of the zinc and alum lotion and the weak solution of silver, if that fails to check the disease, to apply, once a day, with a camel's hair pencil, to the inner surfaces of the everted lids, a little of a solution of nitrate of silver of the strength of ten grains to the ounce, provided its effect is partially neutralized in a few seconds, and before the lids are returned to their natural position in contact with the globe, with a solution of common salt applied with another brush. It is sometimes advisable in these cases to scarify the swollen and chemotic conjunctiva—it relieves pressure, and the local depletion is often of benefit, but it should always be done after the application of the strong silver, for if done before, the caustic may go too deep in its action.

If the cornea become involved, the only change in treatment indicated is the addition to the other remedies of atropia, or belladonna in some form. The liquefied extract may be painted over the lids and around the eye, or better, a drop of a two grain to the ounce solution of the neutral sulphate may be instilled twice or three times in the twenty-four hours; but remembering the highly poisonous character of the drug, and the tender age of the patient, it is important to keep a sharp lookout for any constitutional symptom (dryness of the throat, flushing of the face, feverishness, &c.,) and immediately upon their appearance discontinue it for a time.

If the disease show a tendency to become chronic it is often of advantage to vary the astringent, as any remedy when long continued is apt to lose some of its virtues, or best of all, if it be possible, to order a change of climate.

I recall a case I had when living in Savannah, which, having obstinately resisted the most conscientious treatment with almost every known astringent for several weeks, was finally cured by a weak collyrium of zinc *and* two or three days at sea.

It is probable, as I have communicated nothing specially new or original in what I have had to say, that I have proven tedious to some of my readers, but, inasmuch as the text-books on the diseases

of the eye are in the hands of comparatively few of the general profession, and as this most important disease is not considered at all in some of the standard works on general surgery, midwifery, and diseases of children, it is not unlikely, I trust, that I have succeeded in giving a useful hint to others, and if I shall have been the means, indirectly though it be, of saving the sight of one of my fellow creatures I shall feel more than repaid.

ERRATA—(Dr. Lewis' Paper.)

On page 135—14th line from the top, "this" instead of *their*.
" 139—3rd " " " "branny" instead of *brawny*.
" 141—20th " " " "first" instead of *just*.
" 142—14th " " " "renewed" instead of *removed*.
" 142—7th " " bottom "these" instead of *three*.