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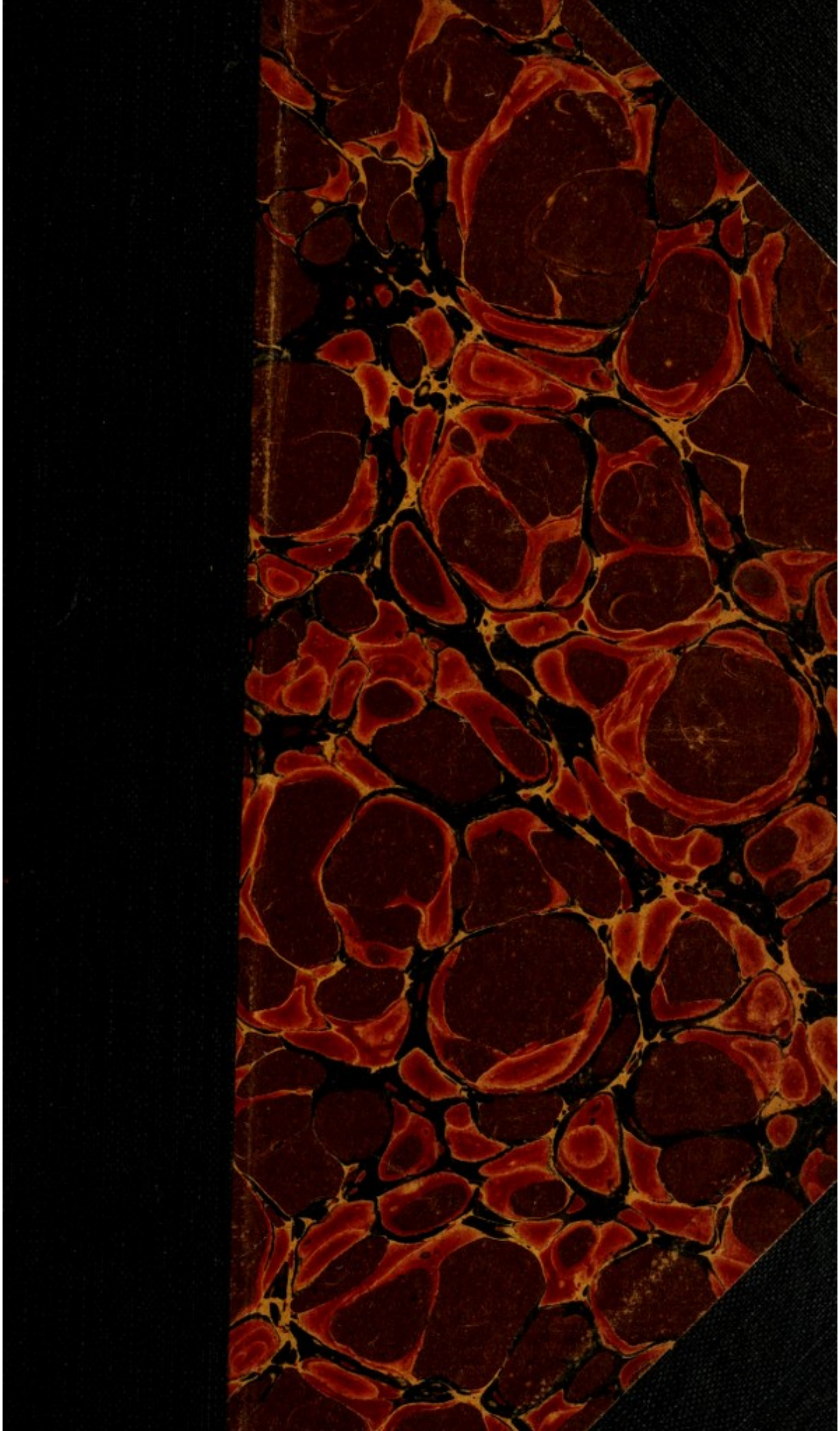

A CATECHISM

OF THE

MEDICINE AND SURGERY

OF THE

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EYE AND EAR.

For the Clinical Use of Hospital Students.

BY

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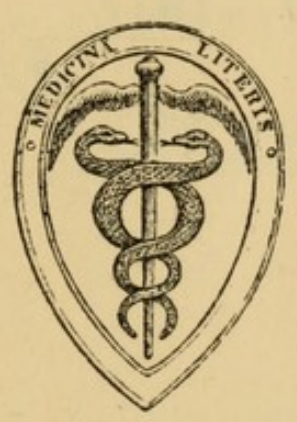

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TO

THE STUDENTS

OF

UNIVERSITY COLLEGE HOSPITAL,

THIS LITTLE WORK

Is Dedicated,

BY THE AUTHOR.

PREFACE.

In general practice, cases of disease of the eye are always occurring, and many of them are so dangerous to the sight that the most prompt treatment, including the observance of numerous special details, is necessary to save the patient from blindness.

It is not by looking on occasionally at operations, that a student will gain the knowledge of the diagnosis and treatment of the diseases of the eye necessary to qualify him for practice; he must watch case after case, and that throughout their whole course. Unless a student takes the trouble thus to make himself familiar by observation with the various eye-diseases as they present themselves, and the effects of remedies on them, he will, when he comes to enter on practice for himself, run the risk of allowing a case of ophthalmia neonatorum to run on to destruction of the cornea; or, by failing to distinguish a case of iritis which requires active general treatment, from one of catarrhal ophthalmia, in which local applications are so necessary, he will probably find, after a

great expenditure of eye-water, drops, and ointment, the inflammation not only not cured, but the sight of his patient seriously injured by obstruction of the pupil with lymph.

By such disastrous experience, our young practitioner will, when it is too late, be made sensible of the error he has committed in neglecting the opportunities for the study of eye-diseases which his hospital afforded.

Let not the student suppose that, because he may have been diligent in acquiring a knowledge of other departments of medicine and surgery, he is at once competent to undertake the management of any of the diseases of the eye, without having previously paid any special attention to the subject. Although the elementary forms of disease be the same in all organs, still, in consequence of the different purposes the different organs may have to serve in the economy, their parallel or corresponding diseases may prove to be very different in relative importance and ulterior effects. That the relative importance and ulterior effects of the elementary forms of disease in the eyes must be quite peculiar, will be at once evident, if we call to mind the nature of these organs in respect to particular structure and function.

Thus many of the inflammations to which the eye is subject, have a tendency to render opaque some one or other of the dioptric media, or to obliterate the pupil; so that, even if we should

succeed in subduing the inflammation and alleviating the pain—in short, effecting for the eye what might be considered a cure in most other organs—yet by the neglect of some practical details, the eye might be left incapable of performing its function, notwithstanding it had recovered in other respects.

It must, then, be by special clinical observation and study alone that the student can acquire that tact and acquaintance with detail by which he will be enabled to make a successful application of his general knowledge in particular cases of ophthalmic disease.

To the young surgeon, therefore, I would say: Embrace every opportunity to examine cases, so as to become familiar with the various forms which eye-diseases put on, and the relations in which they stand to constitutional affections, or affections of other organs. Attend not so much to this or that kind of eye-water, this or that kind of eye-salve, it being often indifferent whether one kind or another be employed, for they may be all equally injurious if the surgeon has not a correct diagnosis to guide him in their application; and if he has, the knowledge and experience which qualified him to form it, will, at the same time, have taught him that one application will frequently answer as well as another, if used with method and discrimination.

Question and answer being calculated to bring

forcibly and briefly to mind at the moment the salient points of a subject, I have drawn up this Catechism in the hope of aiding the student in his clinical observations at the hospital. For more systematic study in the closet, during leisure half-hours, I would recommend my "Principles and Practice of Ophthalmic Medicine and Surgery."

The remarks which I have now made in regard to the importance of the clinical study of the diseases of the eye, are equally applicable to that of the diseases of the ear. And as the study of the latter may be advantageously prosecuted along with that of the former class of diseases, I have thought it not unappropriate to append a short Catechism of Ear-Medicine and Surgery, which I have drawn up from the article on the "Diseases of the Ear and Hearing," which I published some years ago in the 'Cyclopedia of Practical Surgery.'

THE AUTHOR.

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A CATECHISM

OF

EYE-MEDICINE AND SURGERY.

The formulæ for the local remedies referred to will be found in the Appendix.

CHAPTER I.

SECT. I.

THE OPHTHALMIÆ.

WHAT is ophthalmia?

Ophthalmia is an inflammation of the eye.

Is ophthalmia always of one and the same character, or are there different kinds of the disease?

There are different kinds of ophthalmia.

Is there any practical advantage in recognising the different kinds of ophthalmia?

Much. For the plan of treatment adapted for one kind, if trusted to in another might lead to destruction of the eye.

How are the different kinds of ophthalmia distinguished and designated?

According to the particular structure of the eye, which is the chief seat of the inflammation.

Why say the chief seat of the inflammation?

Because the inflammation is seldom confined altogether to a single structure.

Mention the different kinds of ophthalmiæ as distinguished and designated according to the particular structure of the eye affected.

Conjunctivitis, or inflammation of the conjunctiva. *Sclerotitis*, or inflammation of the sclerotica. *Corneitis*, or inflammation of the cornea. *Aquo-capsulitis*, or inflammation of the membrane of the aqueous humour. *Iritis*, or inflammation of the iris. *Choroiditis*, or inflammation of the choroid. *Retinitis*, or inflammation of the retina.

Of these different kinds of ophthalmic inflammation, do we meet with species and varieties?

Yes.

What are the circumstances which principally distinguish and give name to the species and varieties of the ophthalmiæ?

First, the particular part affected of the structure which is the chief seat of the inflammation; second, the structures which are co-affected; third, the nature of the exciting cause; fourth, the state of the constitution, or the constitutional disease by which the inflammation appears to be modified; fifth, the nature of the event of the inflammation.

OPHTHALMIA EXTERNA.

CONJUNCTIVITIS.

What are the species of conjunctivitis?

First, pustular ophthalmia; second, catarrhal ophthalmia; third, the different varieties of purulent ophthalmia—viz., Egyptian ophthalmia, gonorrhœal ophthalmia, ophthalmia neonatorum; fifth, erysipelatous ophthalmia.

Pustular Ophthalmia.

Describe the characters of pustular ophthalmia.

The inflammation, which usually occurs in children, pre-

sents itself as a circumscribed spot of vascular injection, with a small pustule, or flake of matter in the middle, seated in the ocular portion of the conjunctiva, at some little distance from the margin of the cornea.

Does pain, or intolerance of light, or lachrymation, attend pustular ophthalmia?

Little or none.

Are there not cases in which the pustules are seated at the margin of the cornea, and in which there are intolerance of light and lachrymation?

Yes; but such cases form a transition to common scrofulous ophthalmia.

How should pustular ophthalmia be treated?

By the application to the eye of some stimulant, such as the nitrate of silver drops, every other day, whilst the bichloride of mercury lotion is used on the intervening days.

Catarrhal Ophthalmia.

What are the appearances presented by an eye affected with catarrhal ophthalmia?

With redness and swelling of the eyelids there is great vascular injection of both palpebral and ocular conjunctiva, sometimes patches of ecchymosis in the latter; whilst yellowish puro-mucous secretion is collected in the lower palpebral sinus, at the inner canthus, and on the eyelashes along the edges of the eyelids.

Is the cornea at all affected?

In general not.

Does any pain accompany catarrhal ophthalmia?

Often a very distressing feeling, as if sand were in the eye, and sometimes pain across the forehead in the region of the frontal sinuses.

Is the patient troubled with intolerance of light and lachrymation?

There is little or no intolerance of light, but occasionally a discharge of tears takes place.

What general treatment is necessary in catarrhal ophthalmia?

No general treatment is usually required beyond some restriction of diet, and attention to the state of the bowels. In severe cases, in which leeches may be necessary, three or four are to be applied in the neighbourhood of each canthus of the affected eye, whilst eight or ten grains of Dover's powder, with two or three grains of calomel, may be given at bed-time, followed by a black draught next morning.

What are the appropriate local remedies for catarrhal ophthalmia?

The four-grain nitrate of silver solution dropped into the eye every other day, the bichloride of mercury lotion to bathe the eye with three times a-day, and the weaker red precipitate salve to anoint the edges of the eyelids with at bed-time.

Ophthalmia Neonatorum, or Ophthalmia of New-born Infants.

What is the nature of ophthalmia neonatorum?

A purulent ophthalmia, to which infants are liable within a few days after birth.

How would you know that an infant is actually affected with this ophthalmia?

By the eyelids being red and swollen, by their edges being gummed together, and by the discharge of yellow matter which takes place from between them when they are opened for examination.

In what state is the conjunctiva found on examination?

The palpebral conjunctiva is intensely red and sarcomatous-looking, and usually so much swollen that it readily becomes everted when we open the eyelids. When the disease has been going on for some time—as it usually has been, before the infant is brought to the medical man—the swelling of the eyelids and palpebral conjunctiva is so great, that the front of the eye cannot be seen. When seen, the ocular conjunctiva, though red, is usually observed not to be at first so much affected as the palpebral, but by-and-by it may become raised up in the state of chemosis.

What is the great danger to the eye in this ophthalmia?

Injury of the cornea by ulceration, or destructive purulent infiltration.

What is the cause of the disease?

That the disease is frequently occasioned by inoculation of the eyes with leucorrhœal or gonorrhœal matter—more frequently the former—during labour, there can be no doubt. Sometimes the disease can be attributed to no other exciting cause than such as gives rise to catarrhal ophthalmia.

Is the prognosis favourable, or unfavourable?

The disease, if taken in time and properly treated, may be in general completely cured. Left to itself, or inefficiently treated, it will run on to destruction of the cornea and abolition of sight.

Describe the most appropriate treatment.

The eyes are to be cleansed from the matter three times a day, by bathing them with the bichloride of mercury lotion, which must be allowed to run into the eyes as completely as possible. When the infant goes to sleep, the edges of the eyelids are to be anointed with the weaker red precipitate

salve. Besides these applications, the four-grain nitrate of silver solution is to be dropped into the eyes, or a piece of the stronger red precipitate ointment introduced between the eyelids every second day. When, as is usually the case, the palpebral conjunctiva is gorged with blood, and sarcomatous-looking, it should be scarified immediately before the use of the nitrate of silver drops or stronger red precipitate ointment.

When inflammation and ulceration have implicated the cornea, are the same applications still proper?

No. The best application then is the belladonna lotion.

What general treatment is required in ophthalmia neonatorum?

A grain or two of grey powder, with a little sugar, to keep the bowels open, if necessary, is all that is required as long as the cornea is safe. When the cornea is threatened, it is advisable to give $\frac{1}{4}$ to $\frac{1}{2}$ grain of calomel twice a day, with or without an equal quantity of quinine, according to circumstances.

Is counter-irritation useful?

Yes, especially when the cornea is threatened. The counter-irritation may be made either by the application of a small blister, or by painting the tincture of iodine behind the ears or on the temples.

Egyptian, Purulent or Contagious Ophthalmia.

What kind of ophthalmia is that called Egyptian?

It is the disease of the eyes which so severely affected the English and French troops in Egypt at the beginning of this century, and also after their return home; and which has since raged in the armies of almost all the states of Europe.

Enumerate the most striking characters of the disease.

First, the great swelling of the eyelids; second, the copious discharge of matter from the eye—hence the name purulent, by which the ophthalmia is distinguished; third, the chemosis, or elevation of the intensely red and swollen ocular conjunctiva, like a wall round the cornea; fourth, the sarcomatous-looking and granular state of the palpebral conjunctiva.

What is the prognosis in this disease?

It is in general very unfavourable, for though the inflammation in its acute form may be subdued and the cornea saved from actual destruction, the conjunctiva of the eyelids often remains thickened and granular, whilst that of the cornea is more or less opaque and vascular, states very difficult of cure.

Describe the treatment to be first adopted in a well-marked case of Egyptian ophthalmia.

If there is chemosis, the first thing to be done is to make three or four incisions in the elevated fold of conjunctiva, in a direction radiating from the cornea. It may be necessary, also, to scarify the palpebral conjunctiva, and apply leeches around the eye.

What local treatment would you order?

Drops of the nitrate of silver solution into the eye, or even pencilling the palpebral conjunctiva with the nitrate of silver in substance, or the application of the stronger red precipitate ointment. One or other of these irritants may be applied once a day, or every other day; and the bichloride of mercury lotion used three times a day for cleansing the eye from matter, whilst with the weaker red precipitate salve the edges of the eyelids are be to anointed at bed-time.

Is any special general treatment necessary?

Not unless severe pain in and around the eye, with other symptoms of internal inflammation, supervene, when it will

be necessary to have recourse to venesection, and to bring the patient under the influence of mercury, by giving calomel (gr. i–ij.) and opium (gr. $\frac{1}{4}$–$\frac{1}{2}$) three times a day.

In this case is any change to be made in the local applications?

Yes. Belladonna lotion should be substituted for the bichloride of mercury lotion, and the other irritating applications suspended, or more sparingly used.

Is the disease contagious?

There is good reason to believe that the disease is propagated from one person to another by the direct contact of matter, this being occasioned by the use in common of towels, basins, &c.

Does the disease spread otherwise than by the direct contact of matter from a diseased eye?

Yes; the most common mode of propagation appears to be by infection, through the medium of contaminated air, where persons labouring under the disease are collected together. This is the explanation of the spread of the ophthalmia in armies, schools, workhouses, prisons, &c.

What preventive measures should be adopted to arrest the spread of the disease among large bodies of people collected together?

Care should be taken that towels, basins, &c., be not used in common; the healthy should be immediately separated from the diseased, and if possible removed to another locality where there is good air and water, but no damp.

Gonorrhœal Ophthalmia.

What is gonorrhœal ophthalmia?

Gonorrhœal ophthalmia is a purulent ophthalmia of a most dangerous character, occasioned always, there is every reason

to believe, by the accidental application of gonorrhœal matter to the eye.

Describe the most striking characters of the disease?

As in Egyptian ophthalmia, there are great swelling of the eyelids, copious discharge of matter, sarcomatous state of the palpebral conjunctiva, and chemosis; but in gonorrhœal ophthalmia the chemosis is usually greater, whilst the swelling of the eyelids and sarcomatous state of the palpebral conjunctiva may not be so great.

In what other respects does gonorrhœal differ from Egyptian ophthalmia?

Gonorrhœal ophthalmia more frequently and more rapidly runs on to destruction of the cornea, than Egyptian ophthalmia. Moreover, gonorrhœal ophthalmia most generally affects only one eye, whereas in Egyptian ophthalmia both are usually attacked.

What is the treatment which should be employed for gonorrhœal ophthalmia?

The same as for Egyptian ophthalmia, only, if possible, more active. Incision of the chemosed conjunctiva should be as early as possible had recourse to.

Is a person unaffected by gonorrhœa, liable to this ophthalmia?

Yes; matter is sometimes accidentally applied to the eye of a healthy person through the medium of foul cloths, &c. It is in this way that children are sometimes inoculated. Inoculation with the matter of gonorrhœa is occasionally the cause of the ophthalmia of new-born infants, when the mother labours under the disease at the time of her confinement.

Is there any other form of gonorrhœal ophthalmia than that which you have described?

We sometimes meet with severe catarrhal, or catarrho-

rheumatic ophthalmia, in patients, from exposure to cold while labouring under gonorrhœa. In such cases the discharge from the urethra is perhaps at the same time checked.

Is there such a thing as a gonorrhœal iritis?

A person who has suffered from gonorrhœa often remains subject to severe attacks of rheumatism. The eyes, under such circumstances, sometimes suffer from anterior internal inflammation, presenting the ordinary characters of rheumatic iritis.

Erysipelatous Ophthalmia.

Describe the most remarkable appearance in this disease.

Elevation of the inflamed sclerotic conjunctiva, by effusion of a watery fluid in the subjacent cellular tissue, so that it looks like a bladder of a yellowish red colour, half burying the cornea, and protruding between the eyelids.

What is the treatment to be adopted in a case of erysipelatous ophthalmia?

As there is usually derangement of the stomach and liver, it is necessary to commence the treatment by giving three or four grains of grey powder or blue pill, with two or three grains of extract of hyoscyamus, followed by black draught. As to local treatment, all that is required is the use of the bichloride of mercury lotion three times a day.

SCLEROTITIS.

Do cases of ophthalmia occur in which the sclerotica is the seat of the inflammation?

That part of the sclerotica visible during life through the conjunctiva, is often the seat of increased vascularity; but in most such cases the primary and principal seat of the inflammation is some other part of the eye, *e.g.*, the cornea, iris, or choroid.

But are not cases of ophthalmia met with in which the sclerotica is the principal and primary seat of the inflammation?

Cases are sometimes met with, but they are comparatively rare, in which there is pink vascular injection of the sclerotica, with thickening and elevation of the tendinous insertion of the recti muscles, in patches adjacent to the cornea, chiefly at the nasal, temporal, and lower margins, but sometimes extending all round the cornea. There is some corresponding conjunctival injection. Slight dimness of the adjacent parts of the cornea, and even discoloration of the iris may supervene, but the sclerotica and tendinous insertions continue the parts principally affected.

What are the age and constitution of the persons affected with this kind of ophthalmia?

Young persons of scrofulous constitution, and adults of rheumatic habit.

May we therefore admit two species of the inflammation?

Yes. Scrofulous sclerotitis and rheumatic sclerotitis.

Do pain and intolerance of light attend these inflammations?

In general, little or none; but both pain and intolerance of light are sometimes very severe, especially in rheumatic sclerotitis.

What treatment should be adopted for scrofulous sclerotitis?

The application of two, three, or four leeches to the affected eye, and two-grain doses of hydrargyrum cum cretâ, or half-grain doses of calomel twice a day. If in the course of a week, improvement does not advance under this treatment, the leeches should be repeated and the mercurial continued. When the inflammation has been fairly checked, the mercurial

may be omitted, and cod-liver oil given and continued for some weeks.

What treatment should be adopted for rheumatic sclerotitis?

Venesection, cupping, or leeches, according to circumstances, and a grain of calomel, with opium or Dover's powder, three times a day until the gums are affected. The inflammation now subsiding, the calomel is to be omitted, and bark and soda (five or ten grains each) ordered three times a day.

What local application should be employed in cases of sclerotitis?

None but bathing with warm water.

Is counter-irritation to be recommended?

When the inflammation has been fairly checked by the general treatment, counter-irritation may be had recourse to with advantage.

CORNEITIS.

Enumerate the species of corneitis.

The species of corneitis are: First, common scrofulous or phlyctenular ophthalmia; second, scrofulous corneitis; third, rheumatic corneitis.

Common Scrofulous or Phlyctenular Ophthalmia.

What is the age at which scrofulous ophthalmia is of most common occurrence?

From the commencement of teething till about the eighth year.

Specify the most striking symptom of this ophthalmia.

Excessive intolerance of light, with lachrymation.

What are the inflammatory appearances presented by an eye affected with scrofulous ophthalmia?

The vascular injection, seated in both the sclerotica and conjunctiva, is not great. That in the sclerotica is a pink blush around the cornea, while that in the conjunctiva is represented by vessels running separately or in fascicules towards the cornea, which is the seat, perhaps, of a phlyctenula, or ulcer.

Are the palpebral conjunctiva and eyelids affected at all?

The palpebral conjunctiva is the seat of considerable congestion, and the eyelids are somewhat red and swollen at their margins.

What is the state of general health of children affected with scrofulous ophthalmia?

There is usually a disordered state of general health. The digestive organs and skin especially are found out of order. Besides the inflammation of the eyes, there may be eruptions about the head, sore ears, running from the nose, &c.

What are common exciting causes of the disease?

The first attack of the disease often comes on from the irritation of teething, after the measles, from cold, &c.

How should this ophthalmia be treated?

The treatment should in general be commenced with hydrargyrum cum cretâ (gr. ij.–iij.) and powdered leaves of belladonna (gr. j.–ij.) night and morning. And as a fomentation to the eyes, the belladonna lotion, warm. If the bowels are much confined, a dose of rhubarb or scammony, with grey powder or calomel, may be required in addition. The application of two or three leeches to the eye is occasionally necessary to relieve the congestion, and thus promote the action of the just-mentioned remedies.

Are tonics useful in scrofulous ophthalmia?

Yes; when the digestive organs have been, by the alteratives and purgatives, brought into a better state, tonics may be ordered. Cod-liver oil, or quinine, or citrate of iron and quinine, or cod-liver and quinine together, will be found of the greatest efficacy.

Is counter-irritation of use?

After the preliminary treatment above indicated, counter-irritation is usually of great service, but not at first.

How is the counter-irritation to be made?

By blisters, or caustic solution of iodine behind the ears or to the temples. In obstinate cases, the skin of the eyelids may be pencilled with the iodine solution, or with the solid nitrate of silver.

Is any other local application called for than the belladonna lotion?

The acute symptoms having been overcome by the treatment now indicated, recourse may be had to the use of the bichloride of mercury lotion three times a day, and the weaker red precipitate ointment at bed-time; whilst at intervals of two or three days, the four-grain nitrate of silver solution may in many cases be advantageously dropped into the eyes.

Is scrofulous ophthalmia liable to relapse?

It is peculiarly so.

What are the means best adapted to guard against relapse?

Good air and exercise, moderate light, friction of the skin, the tepid bath, comfortable clothing, and simple nourishing diet, are important dietetic adjuvants in the treatment, and the best means of guarding against relapse.

Acute or Erethitic Form of Scrofulous Corneitis.

How is corneitis first manifested?

Corneitis is first manifested by opacity of the cornea.

Is there no redness of the cornea from vascularity?

Not at first, because the cornea is non-vascular. Subsequently, however, the cornea may present redness, from the development of new vessels.

Is there no increased vascularity attendant on corneitis?

There is increased vascularity, but it is seated in the adjacent conjunctiva and sclerotica.

What are the varieties of scrofulous corneitis?

There are two varieties,—the acute or erethitic form, and the chronic or torpid form.

Describe the characters of the acute form of corneitis?

Besides the opacity and redness of the cornea, which are seated in its proper substance, there is sometimes opacity and vascularity of the conjunctival layer; sometimes this layer is merely rough and dim. There is usually very great intolerance of light, and lachrymation, but not much pain.

What are the age, constitution, &c., of patients usually affected with acute corneitis?

The subjects of acute corneitis are usually older than those of scrofulous ophthalmia, but of a similar constitution.

What treatment is to be first adopted for acute corneitis?

The same as for common scrofulous ophthalmia,—viz., a few leeches, if the condition of the patient admits of, or seems

to call for, the abstraction of blood; two or three grains of grey powder, with a grain or two of powdered leaves of belladonna night and morning for two or three days. After this, oil of turpentine and cod-liver oil may be given for some days—fifteen minims to half a drachm of the former, with two drachms to half an ounce of the latter, three times a day.

Is any local treatment to be at the same time employed?

The eye should be fomented three times a day with the warm belladonna lotion, or exposed to the steam from a cupful of hot water, into which a teaspoonful of tincture of belladonna has been put.

What effect may be expected from the above treatment?

A very striking check to the inflammation, and intolerance of light.

In such case, what treatment is next to be adopted?

The exhibition of tonics, attention being at the same time paid to the bowels, and counter-irritation.

What tonics?

The cod-liver oil, with or without a grain or two of quinine, two or three times a day,—or quinine alone, or citrate of iron and quinine, according to the condition of the patient.

Is any irritating eye-water admissible?

Not until the inflammation has been fairly arrested, when the clearing of the cornea will be promoted by the occasional use of the bichloride of mercury lotion, and the weaker red precipitate ointment.

Chronic or Torpid Form of Scrofulous Corneitis.

Specify the most peculiar appearance in the chronic form of scrofulous corneitis.

Roughness of the surface of the cornea, like that presented by ground glass. The cornea may be at the same time of a dirty-yellowish green tinge, and unnaturally prominent.

Is there any pain or intolerance of light?

There is neither pain nor intolerance of light; the patient complains merely of dimness of sight.

What is the treatment applicable in this form of corneitis?

The treatment applicable in this form of corneitis is the alterative and tonic.

Rheumatic Corneitis.

In what sort of persons does rheumatic corneitis occur?

Rheumatic corneitis, which is not a common ophthalmia, occurs in persons of adult age and rheumatic constitution.

Specify the appearances which the affected eye presents.

The cornea, perhaps rough on its surface, is opaque and vascular to a greater or less extent; and on the side next the opaque and vascular part of the cornea, the conjunctiva and sclerotica are redder from vascular injection than on the other sides.

Is there any pain and intolerance of light?

There may be severe pain over the eyebrow and in the temple, and some intolerance of light.

What treatment is necessary in such cases?

Abstraction of blood by leeches, cupping, or venesection,

according to the condition of the patient, followed by calomel and opium until the mouth is affected. If now the inflammation begins to subside, cod-liver oil or bark and soda may be given, and blisters applied behind the ear.

Is any local treatment called for?

None but fomentations with warm water or belladonna lotion.

COMPOUND EXTERNAL OPHTHALMIA.

Scrofulo-catarrhal Ophthalmia.

What are the characters which scrofulo-catarrhal ophthalmia presents?

It presents a combination of the symptoms of common scrofulous and catarrhal ophthalmia, having sometimes more of the characters of the former, sometimes more of the characters of the latter, with occasionally an admixture of pustular ophthalmia.

What are the striking points of difference between this ophthalmia and catarrhal or scrofulous?

Scrofulo-catarrhal ophthalmia differs from catarrhal, principally in the great liability of the cornea to become the seat of vascular speck, onyx, phlyctenulæ, or ulceration; and from scrofulous ophthalmia (both common and corneitic), in the less degree of intolerance of light or the total absence of it, and in the deeper redness of the white of the eye, as also in the great degree in which the borders of the eyelids are affected.

What are the local remedies adapted for scrofulo-catarrhal ophthalmia?

Stimulants—which may be commenced at once—will be found to act more efficiently in this ophthalmia than in common scrofulous. The four-grain nitrate of silver solution is to be dropped into the eye once every second day; the

bichloride of mercury lotion used three times a day, and the weaker red precipitate ointment at bed-time.

Is any general treatment necessary?

Yes; it is of great importance to give two or three grains of grey powder, with soda and rhubarb, twice a day for a few days, and if necessary a black draught or two; the stomach, liver, and bowels having been thereby put into order, cod-liver oil, with or without quinine, may be prescribed.

Are leeching and counter-irritation necessary?

If there be much gorging of the vessels of the conjunctiva, a few leeches will be of great use in helping the action of the other remedies. And when the inflammation begins to subside, blisters will hasten the cure.

Catarrho-rheumatic Ophthalmia.

What are the distinguishing characters of catarrho-rheumatic ophthalmia?

There is deep inflammatory redness of the conjunctiva, with the feeling as if sand were in the eye, characteristic of the conjunctival affection; and the pale redness of the sclerotica, with severe circumorbital pain coming on at night and preventing sleep, characteristic of the sclerotic part of the ophthalmia.

Are the cornea and iris at all affected?

There is great tendency in the cornea early to become the seat of phlyctenula, or abscess and ulcer. Not unfrequently the iris and pupil are slightly affected, the former changed in colour and the latter somewhat contracted.

What is the age at which this ophthalmia occurs?

Adult age.

Is the system generally much disturbed?

There is considerable febrile disturbance, and derangement of the digestive organs.

What treatment should be prescribed for catarrho-rheumatic ophthalmia?

Venesection, if there be much circumorbital or temporal pain, followed by calomel (gr. iij.–v.) with Dover's powder (gr. x.–xv.) at bed-time, and black draught next morning; after that calomel, gr. j., and opium, gr. $\frac{1}{4}$, two or three times a day until the gums are touched. The inflammation having been checked by this treatment, and the bowels being free, bark and soda may then be prescribed.

What local applications are necessary?

At first nothing but warm-water fomentations; afterwards, when the sclerotic part of the inflammation has been subdued, the bichloride of mercury lotion and weaker red precipitate ointment should be prescribed, to remove what remains of the catarrhal part of the affection.

Is counter-irritation useful?

Yes, when the inflammation has begun to yield.

OPHTHALMIA INTERNA ANTERIOR.

IRITIS, OR INFLAMMATION OF THE IRIS.

What appearance does the iris present when inflamed?

Its surface is dim-looking, and changed in colour—if naturally blue, to green—if blue grey, to green grey; if green, to yellow-green; if dark brown, to reddish brown; if bright brown, to yellow brown—in short, of a colour which is a compound of its own natural colour, and that of the congested blood-corpuscles. Its pupillary circle being naturally thinner and less coloured, is often distinctly reddish at first, but when

lymph has been exuded into its substance, it is thickened, and presents a more or less tawny colour.

Is there any vascular injection of the adjacent parts of the eye?

Yes; the circumcorneal zone of pink sclerotic injection is well marked. The conjunctiva may be little or very much injected, so much sometimes as to hide the sclerotic injection.

What is the state of the pupil in iritis?

The pupil is contracted, and by the lymph which exudes from the inflamed iris, is apt to become obstructed.

Does the patient suffer pain in iritis?

Yes, sometimes severe pains: one kind of a rheumatic character, in the temple, around the orbit, and down the side of the nose; another kind, a feeling of distension within the eyeball. Sometimes, however, the patient does not complain of much pain.

Is he affected with intolerance of light?

Usually he is, but sometimes not.

What disturbance of the system is there?

Sometimes there is smart inflammatory fever; sometimes however, little or no constitutional disturbance.

At what age does iritis most frequently occur?

The disease is most frequent in adult age, less so before puberty and in old age.

What states of the system in adult age predispose to, modify, or even excite iritis?

Rheumatism, common or gonorrhœal, and syphilis. Hence are recognised the two varieties of rheumatic and syphilitic iritis.

What state of constitution is similarly connected with iritis in young persons?

The scrofulous diathesis.

What state in old persons?

The arthritic constitution.

Do these constitutional diseases influence the treatment of iritis?

Yes, so much so as to warrant the recognition of the following as so many varieties: scrofulous iritis, rheumatic iritis, syphilitic iritis, and arthritic iritis.

What is the treatment by which the inflammation in iritis may be most speedily arrested, and thereby a stop put to the exudation of lymph, and the condition established for the absorption of what lymph has been already exuded, and by which also the pain is most quickly and decidedly relieved?

Bleeding and mercurialization.

When the use of mercury is not admissible what remedy may be tried instead?

Oil of turpentine, in doses of ʒss. three times a day in milk.

How is the pupil to be guarded from becoming contracted or closed by exuded lymph?

By keeping the iris, throughout the disease, under the influence of belladonna.

The lymph which may have been exuded being, by the action of the mercury on the system, in process of absorption, would there be any objection to giving iodide of potassium to promote the absorption, instead of a further use of the mercury?

A great objection; because the effect of the iodide is to

remove the mercury from the system, and thus allow the exuded lymph to become consolidated and fixed in the pupil, from which it does not afterwards admit of being readily absorbed.

Is counter-irritation of any use?

Not until the inflammation has begun to yield, when it will promote the cure.

Is the treatment now indicated equally applicable to all the species and varieties of iritis,—scrofulous, rheumatic, syphilitic, and arthritic?

In the main it is, but the precautions and modifications which the different states of the system render necessary, must be carefully observed. For instance, in scrofulous iritis, the abstraction of blood by a few leeches is sufficient, and calomel should be given only in half-grain doses three times a day, along with small doses of quinine. Sometimes, instead of calomel, it is sufficient to give oil of turpentine in cod-liver oil, as for corneitis—of the former, gtt. xv.–xxx.; of the latter, ʒij.–ʒiv. Afterwards, when the inflammation has been checked, quinine or cod-liver oil, alone, or the two combined, will promote the cure.

In arthritic iritis, again, bleeding and mercurialization require to be cautiously employed. When they have been pushed as far as is considered safe, colchicum may be tried,—gtt. xv.–xxx. of the tincture with soda or magnesia. When the disease has begun to decline, bark and soda, with counter-irritation, will prove useful.

AQUO-CAPSULITIS AND CRYSTALLINO-CAPSULITIS ANTERIOR.

What are the characters of the inflammations called *aquo-capsulitis*, and *crystallino-capsulitis anterior*?

In aquo-capsulitis, or inflammation of the membrane of the anterior chamber, the inflammation is manifested by exudation

between the proper substance of the cornea and the membrane of Descemet, in the form of punctiform opacities on the one hand, and discoloration of the anterior surface of the iris on the other; whilst in crystallino-capsulitis anterior, or inflammation of the lining membrane of the posterior chamber, the inflammation is manifested by exudation of lymph from the posterior surface of the iris on the anterior wall of the capsule of the lens.

What is the general plan of treatment to be employed in such cases?

Depletion and mercurialization, with belladonna lotion, in the early stage, and tonics with counter-irritation in the later stages, are the remedies; but their employment must be regulated and modified according to the circumstances of each individual case.

OPHTHALMIA INTERNA POSTERIOR.

What is ophthalmia interna posterior?

Inflammation of the internal structures of the posterior segment of the eyeball—viz., the choroid, retina, and vitreous body.

Can the state of these structures be made the object of direct examination?

To a certain extent, by means of the ophthalmoscope.

Are there any externally visible symptoms of the inflammation?

None exactly pathognomic. When vascular injection exists, it is symptomatic rather of supervening anterior-internal ophthalmia.

What are the subjective symptoms, or morbid sensations, or perversion of the common and special sensibility, attending posterior-internal inflammation?

There may be deep distending pain in the eyeball, pain in

the head, especially in the occiput, intolerance of light, photopsy, and dimness of sight without sufficient cause in the dioptric parts of the eye.

Of all these symptoms, which is the most constant and characteristic?

The dimness of sight without sufficient cause in the dioptric parts of the eye.

Is the inflammation acute, or chronic?

Most usually chronic, with supervening acute attacks.

Reference has been made to the circumstance of anterior-internal ophthalmia supervening on posterior-internal: now, does posterior-internal ophthalmia ever supervene on anterior-internal?

Yes.

What are the principal forms of posterior-internal ophthalmia?

First, cases in which the inflammation proceeds to diminution or destruction of vision without any very marked external symptom of inflammation, and sometimes even without pain or photopsy; second, cases, again, similar to those just mentioned, but in which chronic iritis has supervened, and which therefore have been sometimes put down as cases of primary iritis; third, cases in which inflammatory symptoms are more severe and externally more evident, as, along with the affection of the internal tunics, there is inflammation of the sclerotica, resulting in sclerotic staphyloma: the inflammation also commonly involves more or less the cornea and iris; fourth, cases occurring in aged persons of arthritic constitution, ending in glaucoma: the inflammation being commonly chronic, with acute symptoms supervening.

Can these forms of inflammation be properly distinguished into *choroiditis, retinitis, hyaloiditis,* or the like?

Some authors attempt to do so; but there is no practical

advantage to be gained from it, even if the attempt was more successful than it is.

What points really of use in reference to treatment, deserve to be noted respecting the different forms of posterior internal ophthalmia?

The age and constitution of the patient, and the constitutional disease with which the ophthalmia may appear to stand in connexion, such as—scrofula, syphilis, rheumatism, and gout.

What is the prognosis in posterior-internal ophthalmia?

For the most part unfavourable.

What line of treatment requires to be adopted in posterior-internal inflammation?

Mercurialization, in the acute attacks, preceded by venesection or cupping; in chronic cases, cupping or leeches is sometimes also necessary. It is, however, to be observed that the patients do not often bear very active remedies, and it is therefore necessary to pass soon to the tonic and alterative treatment.

PANOPHTHALMITIS, OR INFLAMMATION OF THE WHOLE EYEBALL.

Phlegmonous Panophthalmitis, or Ocular Phlegmon.

Describe the appearance presented by the eye in a case of ocular phlegmon?

The eyeball protrudes from the orbit, stretching the eyelids before it, which are at the same time red and swollen. There is chemosis of the conjunctiva, but this inflammatory œdema is not so great, perhaps, around the cornea as at the circum-

ference of the eyeball. If the cornea be still transparent, a collection of yellow matter is seen in the interior of the eyeball.

What is the cause of the great protrusion of the eyeball ?

Inflammatory effusion in the orbit, and within the ocular capsule.

What is the most prominent subjective symptom ?

Severe pain in and around the eye, with great constitutional disturbance.

What is the cause of phlegmonous ophthalmitis ?

Most commonly injury in particular states of constitution.

What is the treatment to be adopted ?

At the commencement, the treatment for internal ophthalmia, pushed as actively as the condition of the patient will allow, must be had recourse to. The aqueous humour should be evacuated by puncture of the cornea. But when formation of matter has taken place, all that can be done is to apply a poultice, and when matter points, to evacuate it with the lancet. During this stage it is necessary to support the system.

Is it necessary to evacuate the inflammatory effusion within the ocular capsule ?

When there is great protrusion and tension of the eye, this is an important part of the treatment.

How is it done ?

By incising the conjunctiva immediately below where it is cut in operating for convergent strabismus, and passing the lancet by the side of the eyeball between the internal and inferior rectus muscle.

What is the prognosis in phlegmonous ophthalmitis ?

There is not only danger to the eye but danger to life.

The perfect recovery of the eye as an organ of vision, is very rare. The preservation of its form is in general all that can be hoped for. The eyeball usually becomes atrophic, but when it has burst it shrinks to a stump.

EXANTHEMATOUS OPHTHALMIÆ.

Morbillous Ophthalmia.

What is morbillous ophthalmia?

The inflammation of the eyes which occurs in, or supervenes on, measles, and which usually resembles common scrofulous ophthalmia, though it sometimes assumes the scrofulo-catarrhal character, or even runs into internal inflammation.

What treatment is called for?

Such as has been indicated for the idiopathic form of the ophthalmia, which it may more particularly resemble.

Scarlatinous Ophthalmia.

What is scarlatinous ophthalmia?

An inflammation of the eyes similar to morbillous ophthalmia, which is apt to occur in scarlet fever, and the treatment of which is to be conducted on the same principles.

Do measles and scarlet fever leave behind any tendency to inflammation of the eyes?

Yes, the various forms of scrofulous ophthalmia may often be traced in the first instance to these diseases.

Variolous Ophthalmia.

What is variolous ophthalmia?

An inflammation of the eyes occurring in, or supervening on, small-pox, as morbillous does on measles, but usually of a much more severe and dangerous character.

At what period of the general disease does the most dangerous form of the ophthalmia occur?

About the twelfth day from the first appearance of the eruption, and when the secondary fever has commenced.

Are the phlyctenulæ, pustules, or abscesses of the cornea, which may occur in the ophthalmia, to be viewed in the same light as the pustules of the skin?

No; they occur when the general eruption is on the decline, and are no more than may and do occur in ordinary severe cases of scrofulous or scrofulo-catarrhal ophthalmia.

What plan of treatment is to be adopted?

Ophthalmia having declared itself in small-pox, the plan of treatment must be that adapted to the particular form which it has assumed. And in carrying out the treatment, the greatest vigilance is necessary, as the disease is so apt to run a disastrous course, to the great injury or destruction of the cornea.

Does a tendency to inflammation of the eyes remain after small-pox?

Small-pox, like measles and scarlet fever, leaves behind a tendency to scrofulous ophthalmia, scrofulo-catarrhal ophthalmia, ophthalmia tarsi, inflammation of the lachrymal passages, &c.

TRAUMATIC OPHTHALMIÆ.

When a person complains of a feeling as if something were in the eye, where would you look for a foreign body?

The cornea should be first carefully examined, to see whether or not a minute particle is adhering to its surface. If nothing is detected there, the upper eyelid should then be everted, when most likely, if there is anything in the eye at all, it will be discovered adhering to the conjunctival surface.

Suppose a foreign particle be found, how is it to be removed?

By a little delicate manipulation a foreign particle sunk in at the surface of the cornea, may be in general easily turned out of its nidus with some such instrument as a blunt-pointed toothpick. And any particle discovered adhering to the inner surface of the upper eyelid on everting it, may be at once still more readily removed by means of the same instrument, or even with a little bit of folded paper.

But suppose no foreign particle be discovered, what then?

The question would arise, whether the feeling of a foreign particle in the eye is not owing simply to the vascular injection of the conjunctiva, as in catarrhal ophthalmia.

What is the general character of inflammation of the eye excited by injury?

The general character depends partly on the seat and degree of the injury, and partly on the age, constitution, and state of health of the patient.

What treatment does traumatic ophthalmia require?

The treatment must be conducted on the same principles as that for the corresponding forms of ophthalmic inflammation already considered.

What is meant by sympathetic ophthalmia?

An inflammation supervening in the uninjured eye.

Of what character is sympathetic ophthalmia?

It is a chronic posterior-internal ophthalmia, of a nature very dangerous to the sight.

Is there any means of warding off sympathetic ophthalmia?

The greatest attention should be paid to the treatment of the injured eye, and care taken not to exert the other during

the treatment; even after the cessation of the traumatic ophthalmia, much employment of the sight ought to be avoided for a considerable time to come.

Section II.

CHRONIC INFLAMMATION, AND VARIOUS OTHER MORBID STATES OF THE EYE, ACCOMPANIMENTS OR CONSEQUENCES OF THE OPHTHALMIÆ.

Granular Conjunctiva.

Define granular conjunctiva.

That morbid condition of the conjunctiva of the eyelids, palpebral sinuses, and semilunar fold, consisting in excrescences resembling "granulations," which is a distinguishing character of contagious ophthalmia.

Describe the appearances presented in granular conjunctiva.

In one stage or form, the red and thickened conjunctiva over the tarsal cartilages presents yellowish-white points, which tend to become elevated into phlyctenulæ, whilst that of the palpebral sinuses presents a more marked phlyctenular development. Just within the edges of the eyelids, also, phlyctenulæ-like granulations may be met with, arranged in a row. In another stage or form, the granular conjunctiva has the aspect of a highly-injected and hypertrophied villous surface.

What is the prognosis?

Granular conjunctiva is a very intractable morbid condition. The attending chronic inflammation is always ready to become aggravated into a more or less acute attack.

What is the best local treatment for granular conjunctiva?

Scarification of the affected conjunctiva every second or

third day, and immediately thereafter the application to it of some strong salve, such as the red precipitate (ʒj.–ʒj.).

Is not blue-stone much used as an application in granular conjunctiva?

Yes, and abused also; the result too often being the destruction of the palpebral conjunctiva, as well as the granulations.

Vascular Cornea, and Pannus.

What is meant by vascular cornea, and pannus?

Vascularity, and more or less opacity and thickening of the conjunctival layer of the cornea, is a not unfrequent appearance in chronic conjunctivitis, especially in cases of granular conjunctiva, and in that kept up by the irritation of inverted eyelashes. In a slight degree, it is named *vascular cornea;* but when the vascularity and thickening of the conjunctiva corneæ are so great that the cornea wholly or in part appears as if covered with a bit of red cloth, the state is named *pannus.*

What is the treatment?

The source of irritation being removed, the morbid condition of the cornea sometimes subsides of itself, or with the assistance of some local application, such as the bichloride of mercury lotion, and red precipitate ointment. In cases of granular conjunctiva, the treatment of the vascular cornea and pannus merges into that for the granular conjunctiva.

Cuticular Conjunctiva.

Define cuticular conjunctiva.

A chronic inflammation of the conjunctiva, in which the membrane is so altered in structure as to present more the characters of dry skin than those of moist mucous membrane; its epithelium, the epithelium of the cornea included, being thickened, dry, and semi-opaque, like epidermis.

What is the cause of cuticular conjunctiva?

The irritation of inverted eyelashes, exposure to dust and acrid vapours, or the inappropriate use of irritating applications, such as the long-continued use of nitrate of silver drops for ophthalmia.

Can anything be done for the complaint?

Nothing effectual. The treatment can only be palliative. Occasional bathing of the eye with simple tepid water, or water to which aqua potassæ has been added, in the proportion of three or four drops to two ounces.

Onyx and Abscess of the Cornea.

What are onyx and abscess of the cornea?

Depositions of matter in the interstices of the cornea, which are apt to occur in the course of various ophthalmiæ.

Is any special treatment required?

No direct interference is usually admissible. The only indication is to subdue the attending ophthalmia as quickly as possible, by the means appropriate to the particular case, when nature will accomplish the rest.

Ulcers of the Cornea.

Is any special treatment required for ulcers of the cornea?

None, usually; the only indication being to subdue the ophthalmia of which the ulceration may be an accompaniment. It is, however, to be observed, that when an ulcer near the centre of the cornea threatens to penetrate, it is advisable to keep the pupil dilated by belladonna or atropia, in order that, should perforation actually take place, prolapsus iridis may not follow the escape of aqueous humour.

Opacities of the Cornea.

How do opacities of the cornea originate?

The opacities called nebula and albugo originate in the exudation of lymph without ulceration, which sometimes takes place in inflammation implicating the cornea; whilst the opacity called leucoma originates in the cicatrization of an ulcer of the cornea.

Is any special remedy required for opacities of the cornea?

In proportion as the inflammation subsides, nebula and albugo diminish, and may ultimately disappear without any special remedy. If not, it is time enough after the inflammation has ceased to try the use of the red precipitate salve, counter-irritation, tonics, and change of air. As to leucoma, the opacity of the actual cicatrice is permanent, but the surrounding opacity, which depends, like nebula and albugo, on interstitial deposition of lymph, tends, like them, to clear away.

Prolapsus Iridis.

What is the nature of prolapsus iridis?

When the cornea is perforated, whether by a penetrating wound or ulcer, the iris is apt, by the sudden gush of aqueous humour, to be protruded through the opening; and according to the size and position of the opening in the cornea, so is the extent of the prolapse of the iris, and so is the pupil more or less involved.

Under such circumstances, how does the healing process take place?

If the penetration of the cornea has been caused by a wound, inflammation is thereby excited; if by ulceration, inflammation has already existed. Inflammation, therefore, existing in either case, lymph is exuded, and adhesion between the protruded iris and cornea takes place.

After the inflammation has subsided, and the healing process been completed, what is the pathological condition which remains in such a case?

If the aperture in the cornea made by the wound or ulcer has been small, and the extent of iris protruded consequently limited, there results a leucoma or opaque cicatrice of the cornea, with adhesion of the iris at the place; an adhesion which is named *synechia anterior*. If more extensive destruction of the cornea by ulceration has taken place, the iris is prolapsed to a greater extent, and being kept protruded by the aqueous humour behind, the ground is laid for the formation of staphyloma, partial or complete, by the development of cicatrice-substance, or pseudo-cornea, on the protruding iris.

What should be done in a case of a wound of the cornea, with prolapsus iridis?

Measures should be taken to moderate or subdue the inflammation excited by the wound; and if the protruding portion of iris be considerable, it should be snipped of with a pair of curved scissors.

What should be done in a case of penetrating ulcer of the cornea, with prolapsus iridis?

Persevere in the treatment for the attending inflammation, which will now probably have a tendency to remit, in consequence of the diminished distension of the eyeball from the escape of aqueous humour.

Staphyloma of the Cornea and Iris.

Define partial staphyloma.

An opaque prominence involving a part of the cornea, arising from a bag of iris which has protruded through a large ulcerated opening of the cornea, and, whilst distended by the aqueous humour, become covered with cicatrice-tissue, or pseudo-cornea; this new tissue being incorporated and continuous with the corneal-tissue where it had been ulcerated.

Is the sight injured by partial staphyloma?

In a degree corresponding at least to the extent to which the pupil is involved.

Is anything to be done for partial staphyloma?

Speaking generally, it is better to let it alone.

What is total staphyloma?

Total differs only in degree from partial staphyloma—the greater part of the cornea having been destroyed, the iris protrudes, and by cicatrization becomes covered with pseudo-cornea, which tends to be rendered more and more prominent by the pressure of aqueous humour behind.

Is the sight injured by a total staphyloma?

It is wholly and irretrievably destroyed.

What is the object of treatment in total staphyloma?

To prevent the formation of the staphylomatous projection in the first instance, or to remove it if already formed.

How can the projection of total staphyloma be prevented?

By making an incision in the protruding and distended iris with a cataract knife, and extracting the lens. After this, cicatrization takes place without projection.

How is total staphyloma removed when already formed?

By cutting off the prominent part of the staphyloma, at the same time taking care to extract the lens, if it does not escape spontaneously. The removal of the prominent part of the staphyloma is effected by making a section of it with a large cataract knife, as in the operation for extraction of cataract, and then seizing the flap with a pair of hooked forceps, completing the abscission with curved scissors.

Hypopyon.

Define hypopyon.

A collection of pus, or puro-lymph, occupying the bottom of the anterior chamber—the consequence usually of iritis and corneitis.

What treatment is required?

The treatment calculated to subdue as quickly as possible the inflammation in which the hypopyon has originated, when the accumulated matter will in general be absorbed. In exceptional cases, it may be necessary to puncture the cornea.

Synechia.

Define synechia.

Synechia is a morbid adhesion of the iris, generally its pupillary margin, to the cornea, or to the anterior wall of the capsule of the lens. In the former case, it is named *synechia anterior;* in the latter, *synechia posterior.*

How does synechia anterior originate?

In prolapsus iridis.

How is synechia posterior occasioned?

By lymph exuded in iritis, forming a band of adhesion between the pupillary margin of the iris and the anterior wall of the capsule of the lens.

Closure of the Pupil.

What is the cause of closure of the pupil?

Generally, iritis; sometimes, prolapsus iridis. In the former case, closure of the pupil is complicated with total synechia posterior; in the latter, with total synechia anterior.

Sclerotic Staphyloma.

What is sclerotic staphyloma?

A bulging out of some part of the sclerotica, which is at the same time of a bluish-black tint.

What is the cause of sclerotic staphyloma?

A softening and attenuation of the substance of the sclerotica, on the one hand; and a dropsical accumulation in the eyeball, on the other—the consequence of posterior-internal ophthalmia, in which the choroid, with the sclerotica, has been especially affected.

What requires to be done for sclerotic staphyloma?

When, by repeated puncture, no progress has been made in reducing the size of the staphylomatous projection, abscission of it, as in common staphyloma, may be had recourse to.

CHAPTER II.

SECTION I.

Hydrophthalmia, or Dropsy of the Eye.

Where is the seat of the morbid accumulation of watery fluid in hydrophthalmia?

The seat is various: in the aqueous chambers; in the vitreous body; between the sclerotic and choroid, or between the choroid and retina.

What is the treatment?

Any treatment that may be adopted requires to be determined by the circumstances of each individual case.

Hydatids, Cysts, and Tumours in the Eyeball.

In what part of the eyeball has the hydatid called cysticercus cellulosæ most frequently been met with?

In the anterior chamber, floating free in the aqueous humour.

What treatment has been adopted?

Extraction of the hydatid through a small section of the cornea.

In what part of the eyeball have watery cysts been most commonly seen?

Connected with, or projecting through or from, the iris from the posterior into the anterior chamber.

What treatment has been adopted?

Puncture through the cornea, so as to evacuate the contents of the cyst, repeated at intervals of some weeks, until the cyst has completely shrunk.

Encephaloid Disease of the Eye.

At what age does encephaloid disease of the eye principally occur?

In early childhood.

In what part of the eye does the disease originate?

Generally the retina; but sometimes the optic nerve, outside the eyeball.

Describe the general appearance and progress of the disease as it arises from the retina.

First, a small yellowish tumour is seen deep at the bottom of the eye. This, increasing in size, approaches the lens, and by pressure, renders it opaque, so that the tumour can no longer be directly seen. The increasing growth of the tumour is, however, indicated by the eyeball becoming more or less enlarged and misshapen from distension, accompanied by pain and vascular injection. Lastly, the tunics give way, and a bleeding, brain-like fungus protrudes. Ere long, the patient sinks, and dies comatose or convulsed from implication of the brain in the disease.

What are the appearances when the disease begins in the optic nerve outside the eyeball?

The eyeball, unaltered at first in appearance, is gradually protruded by the tumour which evidently fills up the orbit, whilst the eyelids are much expanded and enlarged. Eventually, the eyeball is destroyed and pushed aside by the fungus, which, bursting through the conjunctiva, now protrudes from between the eyelids.

Is it of any use to extirpate the eyeball in the early stage of this malignant disease?

Extirpation of the eyeball has been too generally unsuccessful to allow us to hope for recovery being thereby effected.

But are there not cases of recovery after extirpation, on record?

Such cases, there is every reason to believe, were not cases of true encephaloid, but merely of non-malignant tumour, which would have undergone a spontaneous cure by atrophy.

What palliative medical treatment should be adopted?

The occasional application of a few leeches, alterative doses of mercury, cod-liver oil, and tonics, with the necessary attention to the bowels, diet, and regimen. In the advanced stages of the disease, anodynes are required.

Under what circumstances is extirpation called for?

In cases in which there is great pain, occasioned by the distension of the orbit and protrusion of the eyeball.

Melanosis of the Eyeball.

At what period of life does melanosis of the eyeball occur?

Middle age.

What are the appearances presented by a case of melanosis of the eyeball?

The tumour increasing in size, there is attendant distension and inflammation of the eyeball, with pain. At last, it makes its way through the coats, generally the sclerotica, near the cornea, and protrudes as a black or brown fungus of no great size.

What has been the result of extirpation of the eyeball affected with melanosis?

After extirpation of the eyeball, patients have survived longer than in cases of encephaloid, though in most cases

they have eventually sunk under cancerous disease of the viscera.

What is the main object in extirpating the eye?

Relief for a time from the attending pain.

Abscission, Excision, and Extirpation of the Eyeball.

What is the operation of abscission of the eyeball?

The removal of its anterior part, to a greater or less extent, in staphyloma, dropsical enlargement, &c.

What is excision?

The mere cutting out of the eyeball from the orbital capsule.

How is it performed?

The conjunctiva being cut through all round the circumference of the cornea, together with the insertions of the recti muscles, the eyeball is dissected out from the orbital capsule, and detached by division of the optic nerve at its entrance into the eyeball.

In what respect does extirpation differ from excision?

Extirpation is the removal of both eyeball and surrounding parts in a diseased state.

How is the operation performed?

The particular mode of proceeding depends on the circumstances of the case.

Section II.

Cataract.

Define cataract.

Opacity of the crystalline body, whereby the light is intercepted on its way to the retina; and vision consequently impaired or prevented.

Enumerate the different kinds of cataract.

First, the *lenticular*, or that in which the opacity is seated in the lens itself; second, *capsular*, or that in which the opacity is seated in the capsule; and third, *capsulo-lenticular*, or that in which the opacity is seated in both lens and capsule.

Lenticular Cataract.

What is the character by which it is practically of most importance to distinguish the different species of lenticular cataract?

Consistence, for this has reference to the kind of operation to be undertaken for their cure.

And what are the species of lenticular cataract thus distinguished?

Hard, soft, and fluid.

How are these different species recognised?

Generally speaking, hard lenticular cataracts are met with in persons advanced in life, and are of a mixed grey and amber colour. Soft cataracts, on the contrary, occur in young persons, and have a milky or milk-and-water tint. Fluid cataracts, again, are white or whitish yellow.

What is the object sought to be gained in the operations for cataract?

The removal of the opaque body from behind the pupil, so

that the rays of light may be again allowed to pass on to the retina, and vision thus be restored.

How is the removal of the opaque lens effected?

By one or other of three different ways, according to the circumstances of the case,—viz., by *extraction*, by *displacement*, or by *division*.

Extraction of Cataract.

What is the method of extracting the cataract from the eye which is commonly practised?

Extraction through an incision in the cornea, is the operation commonly practised.

What is the species of cataract for the cure of which the operation of extraction is commonly undertaken?

The common hard lenticular cataract of old persons.

What are the instruments employed in performing the operation of extraction?

First, a Beer's knife for making the section of the cornea, and a small probe-pointed knife for enlarging the section in case it may have turned out too small; an instrument with a bent point at one end for lacerating the capsule of the lens, and a Daviel's curette or spoon at the other.

What are the principal steps of the operation?

The principal steps of the operation are two in number,—viz., First, the section of the cornea with Beer's knife, and its subsequent enlargement, if need be; second, the laceration of the capsule by means of the bent point, and the escape of the lens.

In what direction is the section of the cornea made?

Downwards, through the lower half of the cornea; up-

wards, through the upper half; or downwards and outwards through the lower and outer half.

Describe the mode in which the section downwards is made?

The eyelids being properly secured and the eyeball steadied, the surgeon, holding the cataract knife with its back upwards and horizontal, pierces through the cornea about one-fortieth of an inch from its temporal margin, and as much above the transverse diameter. The point of the knife, having by this act, which is called *puncturation*, entered the anterior chamber, is pushed on through that cavity, across to the nasal side of the cornea, where it is made again to pierce through the cornea, at one-fortieth of an inch from the nasal margin, from the anterior chamber, an act called *counter-puncturation*. By now continuing to push the knife onwards, it by its increasing breadth *cuts its way out*—an act called *cutting out*. The section being thus completed, the eyelids are allowed to close.

Describe the mode of lacerating the capsule.

The assistant having gently raised the upper eyelid, the surgeon with one hand depresses the lower, and with the other slips the bent point, with the convexity of its bending first, behind the flap of the cornea, and then turning the point of the instrument against the cataract, lacerates the capsule freely from above downwards. This being done, the instrument is withdrawn with its convexity foremost, so as not to hook the iris or cornea.

How does the escape of the lens take place now?

On the laceration of the capsule, the lens may begin to escape. If not, the patient is to be directed to turn the eyeball upwards, when the lens will probably begin to do so; if not, the surgeon makes a little gentle pressure with Daviel's spoon on the lower part of the eyeball, at some little distance from the margin of the cornea, when the lens

will begin to slide by its lower margin through the pupil, and finally make its way out from between the lips of the section of the cornea, the surgeon, if necessary, helping its progress by the bent point or Daviel's spoon.

Now that the lens has been extracted, what remains to be done?

The eyelids, which had been allowed to close after the escape of the lens, are, after a moment's rest to the patient, to be gently opened by the surgeon, to see if the iris and flap of the cornea are in their proper position. This being found to be the case, the eyelids are closed, and the appropriate bandage applied.

Displacement of Cataract.

What are the modifications of the operation of displacement?

Couching, or simple depression of the cataract to below the level of the pupil; and reclination, in which case the lens at the same time that it is depressed, is made to turn back on its lower and outer margin, so that it is forced back by its upper edge into the vitreous humour.

Which of these two modifications is the one usually performed?

Reclination.

What species of cataract is best fitted for displacement?

The hard lenticular cataract; that, namely, best fitted for extraction.

Under what circumstances, then, would you perform displacement, rather than extraction?

In the absence of the conditions necessary for, or at least favourable to, the performance of extraction; or the existence of the conditions unfavourable to, or wholly forbidding it.

What is the instrument employed in the operation of reclination?

A pretty broad, curved, lance-headed cataract needle.

What are the steps of the operation?

First, puncturation of the sclerotica at about one-sixth of an inch from the temporal margin of the cornea, and in the line of its transverse diameter; second, laceration of the posterior wall of the capsule and corresponding part of the vitreous body; third, introduction of the needle into the posterior chamber, so that its lance head is seen through the pupil; fourth, the reclination of the cataract, with laceration of the anterior wall of the capsule.

Should the pupil be dilated preparatory to the operation?

Yes.

Describe the mode of performing puncturation of the sclerotica.

The lance head of the needle should be entered with its convexity upwards and its concavity downwards; and in order that the point may be applied perpendicularly to the place to be punctured, it is necessary to depress the handle at the commencement of the puncturation, but, of course, to raise it to the horizontal in proportion as the instrument penetrates.

What is the object of the second step, or the laceration of the posterior wall of the capsule and corresponding part of the vitreous body?

To make a way for the displacement and reception of the lens.

Describe the step.

Puncturation being accomplished, the point of the needle is to be directed against the posterior wall of the capsule, and by a rotatory movement, made to lacerate it and the vitreous body behind and below to the necessary extent.

How is the head of the needle introduced into the posterior chamber, in order that it may be brought to bear against the anterior surface of the lens, in the act of reclination?

The preceding step being completed, the instrument is to be withdrawn a little, and its handle well inclined back, towards the temple of the patient, when its head, with the convexity of the curve forwards, is to be pushed in from behind through the circumferential part of the lens and capsule into the posterior chamber.

Describe the act of reclining the lens and lacerating the anterior wall of the capsule.

The lance head of the needle is applied by its concave surface flat against the lens and a little above its transverse diameter, and then, by a lever-like movement of the handle of the instrument forwards and upwards, the lens is pressed backwards, downwards and outwards into the vitreous humour. This being done, the convexity of the head of the needle is, by rotating the handle, to be applied against the cataract, in order to complete the depression.

How is the needle withdrawn from the eye?

Having kept the head of the needle applied against the depressed lens long enough to see that the cataract does not reascend, the surgeon brings the head of the instrument back into the posterior chamber by moving the handle a little backwards; here he makes such movements of the head as are calculated to lacerate what of the anterior wall of the capsule may remain opposite the pupil; lastly, the needle is withdrawn by a series of manœuvres exactly the converse of those performed in introducing it.

Division of Cataract.

For what species of cataract is the operation of division performed?

Soft and fluid cataracts.

What is the object of the operation?

The free laceration of the anterior wall of the capsule, so that the opaque lens, being directly exposed to the aqueous humour, may be dissolved, and altogether removed from the eye by absorption.

What are the modifications of the operation?

The operation may be performed either by sclerotic puncturation, or by corneal puncturation.

What kind of needle is used for the operation by sclerotic puncturation?

Either a curved lance-headed needle, or a sickle-shaped needle, cutting on both the convex and concave edges.

What are the steps in the simplest form of the operation?

First, puncturation; second, introduction of the needle into the posterior chamber; third, laceration of the anterior wall of the capsule, and division of the lens.

Describe these different steps.

The pupil is to be well dilated by atropia. If the sickle-shaped needle is used, it is held horizontally, with the concavity of its head directed backwards, in making the puncturation. The introduction into the posterior chamber is performed in the same manner as the introduction in the operation of displacement. The third step, which is that peculiar to division, consists in pushing the needle across the posterior chamber to near the nasal side of the lens, then pressing the concave edge against that body in its horizontal diameter by bringing the handle in a lever-like manner a little forward, when, by withdrawing the needle a little, the capsule will be cut across. This being done, the point of the needle is pushed back to opposite the middle of the pupil, and made, by a rotatory movement of its handle, to lacerate the capsule

upwards and downwards, from near the circumference of the lens to the horizontal laceration of the capsule first made. The capsule being thus lacerated crucially, the head of the needle is to be sunk into the middle of the substance of the lens, and there rotated so as to break it up somewhat.

What kind of needle is used for corneal puncturation?

Either a curve-pointed or straight needle may be used; but whichever be selected, it should be throughout of such uniform thickness that, as it penetrates the cornea, it fills completely the puncture, and thus prevents the escape of aqueous humour during the operation.

Describe the mode of performing the operation.

The pupil being well dilated, the needle is thrust through the cornea at about half way between its centre and its outer and lower margin, and its point steadily pushed on towards the cataract; whereupon the capsule of the lens is to be freely divided.

Operation for Cataract in Infants.

At what period after birth should an infant affected with congenital cataract be operated on?

Before teething commences; or, if that period has been allowed to pass, as soon after teething has been completed as possible.

Which mode of operating is adopted for congenital cataract in infants?

Division.

How is the infant to be secured during the operation?

By wrapping it in a shawl so as to confine the arms and hands, and laying it on its back on a table.

Is it necessary to give chloroform?

In infants above two years old it may be necessary, but scarcely so in the case of younger infants.

Secondary Cataract.

What is meant by secondary cataract?

Some portion of opaque lens, or capsule, which may present itself after an operation. Secondary cataract, therefore, is either lenticular or capsular.

Under what circumstances does secondary lenticular cataract occur?

After extraction, some portion of the lens may remain; but it is for the most part eventually absorbed, although it sometimes requires the operation of division.

Under what circumstances does secondary capsular cataract occur?

Principally after division.

What can be done for the removal of opaque capsule?

Laceration and displacement, or extraction; but the operative procedure will depend on the particular circumstances of each individual case.

SECTION III.

OPERATIONS FOR ARTIFICIAL PUPIL.

What is meant by artificial pupil?

An opening made in the iris to give passage to the rays of light, when the natural pupil is either obstructed by opacity of the cornea, or is itself actually obliterated by contraction and

effused lymph; or when there is a combination of both of these morbid conditions.

How is the operation performed?

There are three principal modes of operating for artificial pupil, and various modifications of them, according to the nature of the case.

Describe the modes.

First, the operation by *incision*, which consists in making the opening into the iris in a case of closure of the pupil, by means of an incision, or incisions; second, the operation by *excision*, which consists in cutting out a piece of the iris; third, the operation by *separation*, which consists in detaching the iris at some part of its circumference from its ciliary connexion, instead of actually making an opening in it.

Suppose a case of extensive central opacity of the cornea preventing the entrance of light into the pupil (but the eye otherwise natural), which mode of operating should be adopted?

Lateral excision.

Describe the operation.

Opposite where there is the greatest extent of clear cornea, next the nose, or next the temple, or below, the piece of iris should be cut out; and to do this a small section of the cornea, close to its margin, is to be made with a cataract knife, when the gush of aqueous humour will probably cause the portion of iris to protrude. The protruding portion is then to be seized with a forceps, and snipped off with a pair of scissors curved on the flat, care being taken to include the pupillary margin of the iris in the excised portion.

If the iris does not protrude spontaneously, what should be done?

The portion of iris to be snipped off is to be seized hold of with a blunt hook or fine forceps, introduced through the

incision of the cornea, and drawn out, care being taken not to touch or injure the capsule of the lens.

Suppose a case in which the cornea is quite clear, but the pupil closed, the lens being supposed to be still transparent, or removed by previous operation, how should an artificial pupil be formed?

By excision; only in this case the section of the cornea should be made mid-way between the margin and centre of the cornea. And as the iris will not spontaneously protrude, the portion of it to be snipped off—which should be, if not actually in the centre, as near it as possible—is to be seized hold of with the fine forceps introduced through the incision of the cornea, drawn out, and snipped off.

Suppose a case in which the pupil is obliterated by the implication of the iris in a cicatrice of the cornea, the result of prolapsus iridis, the iris being otherwise sound in structure, but much on the stretch, what mode of operating should be adopted?

Incision through the sclerotica, if the lens be no longer present; or if the lens be present, and cataractous, incision through the sclerotica, with division of the lens.

Describe the operation of incision.

The instrument—an Adams' iris-knife—is entered through the sclerotica in the same way as the straight cataract-needle in sclerotic puncturation. The point is then made to pierce the iris from behind, near its temporal margin, by inclining the handle very much back towards the temple whilst doing so. This being effected, the handle of the knife is to be inclined a little forward, so that when the knife is pushed further in, its point may pass across the anterior chamber towards its nasal side. By now inclining the handle forwards the edge of the knife is to be fairly applied against the iris, which it is made to cut by a sawing motion. The incision

thus made gapes by the contraction of the fibres of the iris previously on the stretch.

Under what circumstances should the operation by separation be performed?

Only when excision or incision is inadmissible.

Describe the operation by separation through the cornea.

A puncture of about one-tenth of an inch in length being made in the cornea, at a suitable distance—say half the diameter of the cornea—from the margin opposite the place where the iris is to be detached, a small hook is to be slid between the cornea and iris through the anterior chamber, to the ciliary circumference of the part of the iris to be detached. The point of the hook is now to be fairly directed against the iris, and fixed into it, and that as close to the ciliary circumference as possible. The iris being thus hooked, a steady and sustained, but gentle, pull or two is now to be made, until the iris begins to separate. By continuing to pull, separation goes on. The hooked part of the iris is at last drawn out of the corneal wound, and there left prolapsed.

CHAPTER III.

SECTION I.

ABNORMAL STATES OF THE OPTICAL REFRACTIONS AND ADJUSTMENTS OF THE EYE, ETC.

Mydriasis.

DEFINE mydriasis.

A dilated state of the pupil, persisting in opposition to the influences to which the iris is ordinarily obedient, and unaccompanied by any other defect of sight than may be accounted for by such a derangement of the optical adjustment of the eye.

How is this simple mydriasis to be distinguished from the dilatation of the pupil which is so common a symptom of amaurosis?

By requesting the patient to look through an aperture in a card of less than the ordinary size of the pupil, when, if the case is one of simple mydriasis, he will see quite distinctly.

What is the immediate cause of mydriasis?

The immediate cause of mydriasis appears to be, at least in many cases, paralysis of the circular fibres of the iris, which are under the influence of the nerve of the third pair, in common with the levator palpebræ superioris, the recti internus, superior et inferior, and obliquus inferior; hence mydriasis sometimes accompanies ptosis, or incapacity to raise the upper lid, and immobility of the eyeball inwards, upwards, and downwards, arising from paralysis of the nerve of the third pair.

What is the nature of the paralytic affection of the nerve of the third pair, on which mydriasis depends?

In some cases rheumatic.

What should be the treatment in such cases?

Small doses of calomel and Dover's powder, until the gums are affected, and counter-irritation.

Myopia, or Shortsightedness.

Define shortsightedness.

That state of sight in which the person can see objects perfectly distinctly only when they are at shorter distances from the eyes than the average—viz., nine or twelve inches.

What is the condition of the eye on which shortsightedness depends?

Too great power of the refractive media, or too great a distance of the retina behind the lens, so that the rays of light from distant objects come to a focus before impinging on the retina.

How is such a condition induced?

It seems to be in some degree congenital, but is no doubt aggravated when persons about the age of puberty come to use the eyes much in reading and on minute objects.

How is shortsightedness to be prevented from increasing, if not diminished?

By avoiding much exertion of the eyes in minute work, and frequently exercising them on scenes in the open country.

What kind of glasses enable shortsighted persons to see at a distance?

Concave glasses.

How do such glasses act?

By increasing the divergence of the rays of light before they enter the eye, so that they may not be brought to a focus before impinging on the retina.

What principle should guide the choice of glasses for shortsightedness?

The glasses should be of the slightest degree of concavity which will enable the person to see objects at the distance he wishes quite distinctly, and at the same time comfortably. When the shortsightedness is very great, glasses may be not only required for distant objects, but also for reading with. For this latter purpose less concave glasses suffice.

Presbyopia, or Farsightedness.

Define farsightedness.

That state of sight usually occurring in old persons, in which objects can be distinctly seen only when at a very considerable distance.

What is the condition on which farsightedness depends?

Diminished power of the refractive media of the eyes, with a weakened state of the adjusting apparatus, so that the rays of light from near objects impinge on the retina before coming to a focus.

How is such a condition induced?

It is usually induced by advancing age, and hastened on by over exertion of the sight at the turn of life.

How is farsightedness to be warded off?

By avoiding over exertion of the eyes in reading and other minute work, especially by artificial light, at the turn of life, when farsightedness, with diminution of adjusting power, usually comes on.

What is the kind of glasses adapted for farsightedness?

Convex glasses.

How do convex glasses act?

Convex glasses help the vision of farsighted people for near objects by causing convergence of the rays of light, so that they may be brought to a focus on the retina.

What principle should guide in the choice of glasses for longsightedness?

The glasses should be of the lowest power which will enable the person to see objects distinctly at the distance he wishes, and at the same time comfortably. Glasses the next degree more convex than those which suit by daylight are usually required for work by artificial light. When a person is very farsighted, he requires two pairs of spectacles—one for looking about him and one for reading with, or the like.

Cataract Glasses.

What are cataract glasses?

Convex glasses of shorter focus, *i.e.*, of higher power, than the ordinary convex glasses of spectacles, required by persons who have been operated on for cataract.

Why do persons who have had the cataract removed from their eyes, require convex glasses of so much higher power?

Because the refractive power of the eye is so much diminished by the loss of the crystalline lens.

Is the faculty of the eye to adjust itself for different distances, still retained after the cure in a case of cataract, or is it lost?

Lost.

In that case, are not cataract glasses of different degrees of power required, according as the person wishes to view near or distant objects?

Yes; convex glasses of about two and a half inches focus are commonly required for reading, and glasses of about four and a half inches focus for viewing objects around him.

Conical Cornea.

Define conical cornea.

An unnatural prominence of the cornea in the shape of a blunt cone, arising independently of any preceding inflammation.

What effect has this deformed state of the cornea on the sight?

Shortsightedness at first, and, by-and-by, indistinctness of vision at any distance.

How is the defect recognised?

Viewed in front, the cornea reflects the light strongly, so that the eye has a peculiarly brilliant aspect. Viewed in profile, the conical prominence becomes very evident. Without such special examination, the misshapen state of the cornea is apt to be overlooked, and the defective sight attributed to some other cause.

Can anything be done for conical cornea?

Nothing radical. Deep concave glasses afford assistance to vision in the slighter degrees of the deformity.

Asthenopia.

What is asthenopia?

An incapacity to exercise vision on near objects, as in reading, sewing, and the like, for any length of time, the patient seeing quite distinctly at first.

How does the person see distant objects?

Quite well.

At what age does asthenopia commonly occur?

In early life.

What is the nature of the affection?

Asthenopia appears to consist in debility of the apparatus by which the eye is adjusted for the vision of near objects, along with an irritable state of the retina.

How is this state of the eye occasioned?

Over use of the sight is a common cause; sometimes a debilitated state of the system. Often, however, there is no evident cause.

What is the treatment?

By the use of convex glasses of low power, the patient is enabled to exercise his vision in reading, or the like, but much use of the eyes should, if possible, be abstained from. As to treatment, bathing of the eyes with cold water, good diet, exercise, country air, sea bathing, tonics, and the like, are to be mentioned.

Section II.

Muscæ Volitantes.

What is meant by muscæ volitantes?

Appearances like flies floating before the sight.

Is the sight interfered with by these appearances?

No, for when the muscæ float away out of the field of view, everything is seen distinctly.

What are muscæ volitantes owing to?

They are owing to the presence of particles in the interior of the eye, close in front of the retina, throwing their diffracted shadows on that membrane.

What is the nature of the particles?

It is not exactly known, but they appear to be of normal occurrence in the eyes, because under certain circumstances any person may see muscæ volitantes.

What is the condition on which muscæ volitantes, considered as a disease, depend?

An irritable state of the retina, arising from over use of the sight, derangement of the digestive organs, or the like

What treatment is to be recommended in such cases?

Rest to the eyes, mercurial alteratives, tonics, change of air, and the like; and as a local application, cold water to the eyes.

What are fixed muscæ?

Appearances, in reading, for example, like blotches on the paper, owing to insensible spots of the retina.

How are they distinguished from floating muscæ?

By their not suddenly changing their relative position in the field of view.

CHAPTER IV.

SECTION I.

AMAUROTIC AFFECTIONS.

DEFINE amaurosis.

Impairment or loss of sensibility of the optic nervous apparatus, so that vision is in various modes and degrees affected, from simple and temporary impairment to total and incurable blindness.

Daltonism.

What is the nature of the defect of sight called Daltonism, or colour-blindness?

An inability, in most cases congenital, to distinguish from each other certain colours, such as red and green, the sight in other respects being unimpaired.

Why is the affection named Daltonism?

Because Mr. Dalton, the author of the atomic theory in chemistry, had the defect of sight in question, and wrote on the subject.

Can anything be done for it in the way of cure?

No.

Transitory Hemiopia.

What is the disturbance of sight in hemiopia?

In hemiopia, one half only—the right or the left, as the case may be—of objects looked upon is seen.

For what length of time does the attack continue?

From a quarter of an hour to two or three hours

Under what circumstances has the attack been found to occur?

After fatigue, along with gastric derangement.

What is the treatment which has been found beneficial?

At the time of the attack, stimulants, such as wine; and to ward off the recurrence of new attacks, regulation of diet and exercise.

Does not hemiopia occur of a more serious and permanent character.

Yes; common amaurosis sometimes presents itself as a hemiopia, in which it may be the right side or the left side of the field of view, or the upper half or the lower half, which is obscured; and so far from coming on suddenly and going off suddenly, this form of hemiopia comes on slowly, and continues gradually to extend until the whole field of view is obscured, and that perhaps incurably.

What is the treatment in such a case?

The ordinary treatment of amaurosis.

Night-Blindness.

What sort of defective sight is night-blindness?

Dimness of sight to a greater or less degree, recurring regularly after sunset.

Under what circumstances does the affection occur?

Sometimes as a congenital and hereditary infirmity, sometimes epidemically; most frequently as an occasional complaint.

Does climate appear to influence the occurrence of night-blindness?

Yes; Europeans are most frequently attacked in warm

countries, and warm latitudes at sea, and sometimes do not get free of the complaint until their return to Europe.

Does the complaint occur in this country?

Sometimes.

What is the prognosis in night-blindness?

When congenital, nothing is to be expected from treatment, but in the other forms of the complaint the prognosis is in general favourable.

Describe the treatment to be adopted.

Gastric derangement, if it exists, is to be corrected, and a succession of blisters applied behind the ear or to the temples. In some cases it may be advisable to take blood, by cupping or leeches, and to put the patient on a course of mercury; but the most beneficial results have been obtained from the oil of turpentine, in doses of from ℥xv. to ʒss., three times a day, combined with a dessert or tablespoonful of cod-liver oil.

Amaurosis.

Define amaurosis.

Impairment or loss of sight from disease of the retina, optic nerve, or part of the brain with which the optic nerve is connected.

What is there to be said regarding the symptoms of amaurosis?

That they are very various and inconstant, and that not one alone perhaps, is pathognomonic of the disease.

What is there to be said regarding the causes of amaurosis?

That they are morbid conditions of the optic nervous apparatus, differing both as regards nature and seat.

What is there to be said regarding the diagnosis of amaurosis?

The diagnosis of amaurosis from cataract, mydriasis, shortsightedness, farsightedness, asthenopia, muscæ volitantes, &c., requires to be formed in a great measure by the process *per exclusionem*. This being done, it remains to determine, as far as can be, the nature and seat of the affection of the optic nervous apparatus, on which the defect of sight in the particular case depends.

Amaurosis would, then, appear to be no special disease, but merely a symptom of different affections of the optic nervous apparatus?

Exactly so.

And therefore the prognosis and treatment must be regulated accordingly?

Equally true. Each particular case of amaurosis must be specially studied to that end.

Is there any particular mode of treatment empirically found useful in the majority of cases?

Mercurialization and counter-irritation, with or without abstraction of blood, according to circumstances.

Section II.

Glaucoma.

Define glaucoma.

A peculiar greenish opacity of the crystalline lens, usually accompanied by amaurosis, from a morbid state of the retina.

What is the peculiar condition of the eye in which glaucoma occurs?

That condition of the eye called, conventionally, *arthritic*;

a condition, namely, which presents itself after the turn of life, often in gouty persons, and in which arthritic ophthalmia is very apt to come on, either in a chronic or in an acute form. In an acute attack the vision may be extinguished in the course of a single night.

What is there to be said of the prognosis and treatment of glaucoma?

That the restoration of sight is hopeless.

CHAPTER V.

SECTION I.

Diplopia, or Double Vision.

What is the cause of double, or rather manifold, vision with one eye?

Irregular refraction; as, for example, when the eye is not adjusted to the distance of the object looked at; hence shortsighted people may see distant objects, and farsighted people near objects, with one eye, double, or multiplied, and, at the same time, indistinct and iridescent.

How is double vision with two eyes to be distinguished?

A case of double vision with two eyes is at once distinguished by closing one eye, when the objects looked at will be seen single.

What is the cause of double vision with two eyes?

Double vision with two eyes is the result of loss of the natural correspondence in the direction of the two eyes, arising most frequently from irregular or impeded action, or paralysis, of one or more of the muscles of the eyeball.

What, again, is the cause of the disturbed action of the muscles of the eyeball, thus giving rise to double vision?

It may be an affection of the muscles themselves, or of

their nerves; or it may be drunkenness, or fear, or derangement of the stomach; or it may be disease or injury of the brain.

Double vision with two eyes is, then, in itself merely a symptom?

Yes.

And sometimes a symptom of disease of the brain?

Yes; being popularly known as such, but not distinguished from double vision with one eye, patients affected merely with the latter, sometimes come to the medical man under great fear of impending apoplexy. This fear, however, the surgeon may immediately allay by bidding the patient shut one eye, when, if the double vision still continues, it will be evident that the patient is not going to die of apoplexy, but only requires a pair of spectacles.

Strabismus, or Squint.

Enumerate the principal forms of strabismus.

1. Strabismus convergens.
2. Strabismus divergens.
3. Strabismus sursumvergens.
4. Strabismus deorsumvergens.

Which of all these forms is the most common?

Strabismus convergens.

Give a description of strabismus convergens.

One eye is more or less turned in, whilst the other eye is capable of being naturally directed to the various objects looked at. When, however, this latter eye is closed, the patient acquires control over the habitually misdirected eye to turn it in any direction.

What is the operation performed for the cure of strabismus convergens?

Section of the internal rectus muscle.

Describe the first step of the operation.

The eyelids being held apart by an assistant, the surgeon, with a hook-pointed forceps, takes hold of the conjunctiva half way between the inner margin of the cornea and the semi-lunar membrane, and raises it up in a transverse fold, which he immediately divides with a pair of straight blunt-pointed scissors, so as to make a free vertical incision, not only through the conjunctiva, but also through the sub-conjunctival cellular tissue, until the tendinous insertion of the internal rectus muscle is laid quite bare.

Describe the second step of the operation.

The eyelids being again held apart by an assistant, a bent probe or blunt hook is passed behind the tendon, either from above or from below. Having now command of the eye, the surgeon rolls it a little from the inner canthus, and with a blunt-pointed pair of scissors divides the tendon along the nasal side of the hook.

What remains now to be done?

The second eye having been operated on in the same manner, if necessary, which is usually the case, the surgeon, before pronouncing the operation completed, should satisfy himself, by a re-introduction of the hook, that no tag remains uncut, and that the two eyes are directed straight forward.

Paralysis of the Muscles supplied by the Nerve of the Third Pair.

To what muscles of the eye is the nerve of the third pair distributed?

The levator palpebræ superioris, the internal, superior, and

inferior recti; the inferior oblique, and the sphincter fibres of the iris.

Enumerate the effects of paralysis of the nerve of the third pair.

First, ptosis, or falling down of the upper eyelid; second, inability to roll the eyeball inwards, upwards, and downwards, and consequently diplopia on looking to the left side, if the affection be on the right side, when the drooping eyelid is raised, from the non-correspondence of the two eyes; third, mydriasis, and indistinctness of sight, depending on that defect of adjustment.

May these effects exist separately, or are they always met with together?

They are sometimes met with together, but often separately, showing that one or other branch of the nerve of the third pair may be paralysed without participation of the others.

What is the cause of the affection?

Sometimes intracranial disease, but most commonly exposure to cold and damp, as in rheumatism.

What is the prognosis in the cases of rheumatic paralysis?

Favourable, though recovery is slow.

What is the treatment?

Bleeding, mercurialization, and counter-irritation.

Paralysis of the Nerve of the Sixth Pair.

What is the effect of paralysis of the nerve of the sixth pair?

Inability to turn the eye outwards, from paralysis of the external rectus, and consequent diplopia when the patient looks to the affected side.

What is there to be said of the causes, prognosis, and treatment of this affection ?

Much the same as what may be said of paralysis of the nerve of the third pair; with the remark, that the cure is oftener more tedious or unsuccessful, the paralysis being perhaps more frequently the result of slow intracranial disease.

CHAPTER VI.

DISEASES OF THE EYELIDS.

SECTION I.

INFLAMMATION AND ULCERATIONS OF THE EYELIDS.

Phlegmonous Inflammation of the Eyelids.

Describe the appearance in a case of phlegmonous inflammation of the upper eyelid.

Very considerable redness of the skin and swelling of the whole eyelid, going on to the formation of an abscess in the subcutaneous cellular tissue, which, left to itself, usually bursts externally, near the outer canthus.

What is the treatment to be adopted?

A free incision of the skin with a lancet through the middle of the swelling, followed by a warm bread and water poultice, or warm water fomentations. A dose of grey powder and rhubarb, or calomel and jalap, is at the same time to be ordered.

At what stage of the inflammation should the incision with the lancet be made?

In the inflammatory stage, if the case is seen sufficiently early, in order to relieve tension, and promote resolution; or, in the stage of abscess, if that has already supervened, in order to evacuate the matter.

Erysipelatous Inflammation of the Eyelids.

What is the treatment to be adopted in erysipelas of the eyelids and neighbourhood?

Three or four grains of blue pill or calomel, with an equal quantity of extract of hyoscyamus, at bed-time; and a black draught in the morning, will in simple cases be sufficient. In severe cases, in which matter has formed in the subjacent cellular tissue, punctures or incisions of the skin with a lancet are necessary.

Ophthalmia Tarsi.

Define ophthalmia tarsi.

A chronic inflammation of the tarsal borders of the eyelids.

What are the forms under which the disease presents itself?

First, catarrhal ophthalmia tarsi, which mostly occurs in adults, and principally affects the delicate integument of the border and the adjoining conjunctiva and skin of the eyelid, especially at the outer angle; second, scrofulous ophthalmia tarsi, which occurs in children, and affects principally the glandular structures at the borders of the eyelids, and the roots of the eyelashes.

Catarrhal Ophthalmia Tarsi.

What treatment is applicable to catarrhal ophthalmia tarsi?

In the first place, exposure to cold and damp, to bad air, and mephitic vapours, and intemperance in spirituous drinks are to be avoided, if, on inquiry, it appears that the patient has been subjected to their influence. In the second place, a pill containing two or three grains of blue pill, with a grain or two of extract of hyoscyamus, may be ordered to be taken for a

few times, and afterwards, when the bowels are free, a course of bark and soda. In the third place, the bichloride of mercury lotion is to be used three times a day, and the weaker red precipitate ointment at bed-time, while counter-irritation behind the ear may be occasionally employed.

Scrofulous Ophthalmia Tarsi.

What is the treatment applicable in scrofulous ophthalmia tarsi?

It is to be observed that the diet and regimen necessary in cases of common scrofulous, or scrofulo-catarrhal ophthalmia, are equally indicated in this chronic disease, which is commonly a sequel of them.

The first point in the local treatment, is the removal of the incrustations of dried matter, and the plucking out of the loose eyelashes from the affected borders of the eyelids. This is to be done as often as is necessary, while the bichloride of mercury lotion is used three times a day, and the weaker red precipitate ointment applied to the edges of the eyelids at bed-time.

Hordeolum, or Stye.

Define hordeolum, or stye.

A circumscribed inflammatory swelling at the edge of the eyelid, like a miniature boil, implicating the roots of the eyelashes.

What is the treatment?

A few grains of grey powder or blue pill are to be ordered, and the eye fomented with warm water. When suppuration has become established, the eyelashes at the place, which will be found quite loose, are to be plucked out; and the matter evacuated by a slight puncture with the point of a lancet. This being done, the warm fomentations are to be continued for a day or two.

Abscess of a Meibomian Gland.

How would you distinguish a case of abscess of a Meibomian gland from a common stye, seeing that externally the one closely resembles the other?

On everting the eyelid, the affected gland is seen through the conjunctiva turgid with yellow matter, which perhaps may be made by pressure to ooze out of the corresponding Meibomian aperture at the border of the eyelid.

What is the treatment to be adopted?

If on everting the eyelid the affected gland is seen very turgid with matter, it is to be opened by a touch with the point of a lancet, and the matter evacuated.

What inflammations and ulcerations of a specific kind should the surgeon be prepared occasionally to meet with affecting the eyelids?

Carbuncle, malignant pustule, syphilitic ulceration, and cancerous ulceration.

Section II.

ECTROPIUM, OR EVERSION OF THE EYELIDS.

Define ectropium.

Eversion of one or other eyelid.

What is the cause of the eversion?

In some cases, extrusion of the conjunctiva in a thickened and sarcomatous state, aided by a contraction of the skin of the eyelid from excoriation; but in other cases, the eversion is owing to bad cicatrices of the skin after wounds,

burns, abscesses, ulcerations, the thickened and sarcomatous state of the conjunctiva being the consequence of the exposure.

What can be done for the cure of ectropium?

In many cases the eyelid admits of being restored to its proper position, by an operation planned according to the nature of the eversion.

In a case of ectropium of the lower eyelid from extrusion by a thickened and sarcomatous conjunctiva, what kind of operation should be adopted?

If the eversion be not very great, repeated pencilling of the thickened and sarcomatous conjunctiva with the solid nitrate of silver, will perhaps cause contraction sufficient to bring the eyelid back into its natural position. When the eversion is to a greater degree, however, it is necessary to have recourse to the excision of an elliptical-shaped piece of the thickened and sarcomatous conjunctiva.

If, in consequence of the long continuance of the eversion and relaxation of parts, there is such transverse elongation of the tarsal border, that the eyelid, even when the eversion is removed, does not admit of being closely applied to the eyeball, what is to be done?

A wedge-shaped piece, of the whole thickness of the eyelid, is to be excised, and the edges of the wound thus made, united by the harelip suture.

In cases of ectropium from contraction of the skin in consequence of cicatrices, &c., what can be done?

As there is here a loss of skin, a sufficiency to permit of the restoration of the eyelid to its proper position requires to be borrowed from the neighbourhood, either by transplanta-

tion or transposition, variously modified according to the peculiarities of each individual case.

Describe briefly the principle of the plan by transplantation.

The contracted skin being divided, and the tarsal margin of the eyelid reinstated in its natural position, the gap which is left by the separation of the edges of the divided skin, is filled up by a flap dissected from the temple, if the upper eyelid be the subject of operation; from the cheek, if the lower eyelid.

Describe the principle of the plan by transposition.

The eyelid is set free by incisions, embracing a triangular flap in such a way that when the eyelid is brought back into its natural position by sliding of the flap the wound which is left may be closed by bringing its edges together by suture, and thus obtaining immediate union.

ENTROPIUM, OR INVERSION OF THE EYELIDS.

Define entropium.

Inversion of one or other eyelid; that is, the free border of the eyelid with the eyelashes is turned in against the eyeball, which is thereby kept in a state of constant irritation.

What is the cause of entropium?

In some cases, simple relaxation of the eyelid; in other cases a contracted and deformed state of the tarsal cartilage resulting from chronic inflammation, or chemical injury of the palpebral conjunctiva.

Which eyelid is most prone to be affected with entropium from relaxation?

The lower.

At what period of life does this form of entropium occur?

Old age.

How can the lower eyelid be restored to its natural position in cases of simple relaxation?

By excision of a transverse elliptical fold of the relaxed integument of the eyelid near its tarsal border. For this purpose the surgeon first calculates how broad a piece of skin it will be necessary to remove in order that, when the edges of the resulting wound are united, the eyelid may be retained in its natural position. Then, with an entropium forceps, pinching up the fold of skin, he snips it off with a pair of sharp and straight scissors. After this excision, the edges of the wound are united by two stitches.

Is cauterization of the skin ever used instead of excision?

Yes; cauterization with strong sulphuric acid, applied by means of a pencil of wood; caustic potash also may be employed for the purpose, but, except in slight cases, excision is to be preferred as more effectual and not more painful.

Is one eyelid more prone than the other to entropium from a contracted and deformed state of the tarsal cartilage, or are both equally prone?

Both are equally prone, and very often both eyelids of the same eye are affected.

Can entropium from a contracted and deformed state of the tarsal cartilage be remedied?

Not so effectually as that from simple relaxation.

Is the excision of a fold of skin alone, as in the last case, of any use?

In some of the slighter cases it may be, but usually an additional proceeding is necessary,—viz., one or two vertical

incisions through the whole thickness of the eyelid at its border, these incisions being left to fill up and heal by granulation.

What is the principle of this additional proceeding?

To remedy the transverse shortening of the tarsus, to which the inversion, in the cases under consideration, is in a great degree owing.

Trichiasis.

Define trichiasis.

A growing in of the eyelashes against the eyeball.

What is the distinction between entropium and trichiasis?

In entropium, the eyelashes are turned against the eyeball, because the border of the eyelid whence they spring is inverted; in trichiasis, the eyelashes only are turned in, the margin of the eyelid retaining its proper position.

But may not entropium and trichiasis co-exist?

They not unfrequently do so, especially in cases of contracted and deformed tarsal cartilage.

What is the remedy for trichiasis?

A palliative remedy is, to pluck out the inverted eyelashes from time to time, as often as they are reproduced. In simple cases of trichiasis, in which there are only a few inverted eyelashes, this treatment can be easily followed, but in cases in which trichiasis is complicated with some degree of entropium, the necessity arises for the permanent removal of the faulty eyelashes.

How can the eyelashes be permanently removed?

By extirpation of their roots.

How is the operation of extirpating the roots of the eyelashes performed?

The lid to be operated on being raised and stretched by a horn spatula inserted behind it, an incision is made parallel to the border of the eyelid, and about one-twentieth of an inch from the line of issue of the eyelashes, through the skin, cellular substance, and ciliaris muscle, down to the tarsal cartilage. This incision is to be followed by another parallel to it, and also down to the tarsal cartilage, but about one-eighth of an inch from the line of issue of the eyelashes. These two parallel horizontal incisions are to be joined at their ends. The narrow strip of skin thus isolated by the incisions, together with the subjacent cellular tissue, fibres of the ciliaris muscle, and bulbs of the eyelashes, is now to be taken hold of at one end with a toothed forceps, and cleanly dissected from off the tarsal cartilage by means of a curved pair of scissors. To insure the destruction of any remaining bulbs, the bottom of the wound is to be touched with caustic potass.

Lagophthalmos, or Hare's Eye.

What state of eye is it to which the name lagophthalmos, or hare's eye, has been given?

A retraction of the upper eyelid, so that the eye remains constantly open and exposed.

What is the cause of the retraction?

There are three different causes giving rise to as many different forms of the affection,—viz.: 1. Paralysis of the orbicularis muscle allowing of the unrestrained action of the levator palpebræ superioris. 2. Cicatrices of the skin of the upper eyelid. 3. Congenital imperfect development of the eyelids.

What is the treatment of lagophthalmos depending on paralysis of the orbicularis palpebrarum muscle?

The treatment resolves itself into the treatment of the cerebral disease—the disease of the ear,—or rheumatic affection which may be the cause acting on the portio dura nerve.

What is the treatment of lagophthalmos from cicatrices, &c., of the eyelid?

An operation similar in principle to one or other of the operations performed for ectropium of the upper eyelid depending on bad cicatrices.

Ptosis.

We have had occasion to speak of ptosis, or falling down of the upper eyelid, in consequence of paralysis of the levator palpebræ superioris: are there any other forms of ptosis met with?

Yes; sometimes a ptosis from actual injury of the levator muscle itself; sometimes a ptosis from extension and relaxation of the skin, or of the whole substance of the eyelid; and sometimes a congenital ptosis.

Section III.

MORBID CONNEXIONS OF THE EYELIDS.

Anchyloblepharon.

Define anchyloblepharon.

An adhesion of the eyelids to each other by their borders.

What *forms* of anchyloblepharon are met with?

Mediate, that is anchyloblepharon in which the borders of the eyelids are united through the medium of a false mem-

brane; and *immediate*, that is anchyloblepharon in which the adhesion is without any intervening substance.

Are there degrees in the extent of the adhesion?

The adhesion may be partial or total, according as the borders of the eyelids are united in part only, or along the whole extent of their borders.

What is the cause of anchyloblepharon?

Anchyloblepharon is occasionally congenital, and somewhat analogous to the closed eyelids presented by animals, such as puppies and kittens, that are born blind, as it is called. It is, however, persistent, and may be either mediate or immediate, and partial or total, generally total, and often coexisting with imperfect development of the eyeball. As to acquired anchyloblepharon, it is usually the result of excoriations of the edges of the eyelids by burns or escharotics, and is often complicated with symblepharon, or adhesion of the eyelid to the eyeball.

What is the treatment of anchyloblepharon?

Division of the adhesion on a director passed between the eyeball and the united eyelids. In cases of total anchyloblepharon, in which there is not even an opening between the eyelids at the inner angle, the united eyelids are to be pinched up into a vertical fold, and drawn from the eyeball, while a cut is made between the two, to make an opening for the introduction of the director.

What requires to be particularly attended to in the treatment after the operation?

The prevention of re-adhesion.

Symblepharon.

Define symblepharon.

Adhesion of the conjunctival surface of one or both eyelids to that of the eyeball.

Is the cornea involved in the adhesion?

Generally, more or less.

What are the modifications of the adhesion?

Mediate or immediate, partial or total.

What is the cause of symblepharon?

Usually injury of the conjunctiva from the action of escharotics intruded into the eye.

What is the treatment?

Immediate symblepharon is incurable; but in mediate symblepharon, division of the morbid adhesion by the knife, and the adoption of measures calculated to prevent reunion.

Section IV.

TUMOURS, ETC., OF THE EYELIDS.

Molluscum.

The tumour called molluscum contagiosum is sometimes found imbedded in the skin and subcutaneous cellular tissue of the eyelids: in such a case, how is its removal to be effected?

By dividing it, as well as the investing integument, by a stroke with a lancet, and, by pressure, squeezing out the mass from its nidus.

Chalazion, or Tarsal Tumour.

What is a chalazion?

A circumscribed deposit of a gelatiniform fibrinous matter in the tarsal cartilage, seated some little distance from the margin of the eyelid; and though causing some prominence externally, more frequently gives way on the inner surface of the eyelid.

What requires to be done for chalazion?

When the tumour has become large, the eyelid being everted, a free incision is to be made into the tumour through the conjunctiva, and the contents pressed out, so far as they admit of it, and what remains broken up by means of a probe introduced through the wound.

When the tumour is very prominent externally, may it be opened by incision through the skin?

Yes; the incision is to be made parallel to the margin of the eyelid, and the contents pressed out.

When not large, does the tumour admit of being dispersed by treatment?

Often. By attention to the digestive organs, giving a few doses of grey powder, or blue pill, and afterwards some such tonic as vinum ferri, or the citrate of iron with quinine; whilst locally, friction with camphorated mercurial ointment is employed.

Encysted Tumour.

What is the kind of encysted tumour most commonly met with?

Tumours containing a suetty-like matter, mixed with short hairs, and situated in the upper eyelid, near the outer angle, under the orbicularis muscle, and sometimes adherent to the margin of the orbit.

What is the treatment?

A free external incision being made, or if the tumour be large, two, so as to include an elliptical piece of skin, in the direction of the fibres of the orbicularis, the cyst is to be dissected out entire.

CHAPTER VII.

SECTION I.

DISEASES OF THE CONJUNCTIVA.

Pterygium.

Define pterygium.

A vascular and thickened state of a circumscribed portion of the conjunctiva, of a triangular form, the apex encroaching more or less on the cornea, the base corresponding to the circumference of the eyeball.

On what side of the eyeball does pterygium most commonly occur?

The nasal side.

How does it commence,—by its base or apex?

By its apex, close to the edge of the cornea.

What is the treatment for pterygium?

As long as it does not encroach so far on the cornea as to obstruct the pupil, all that should be done is to attempt its dispersion by occasionally touching it with the nitrate of silver solution, or vinum opii.

When this treatment proves insufficient to prevent the growth extending so far as to obstruct the pupil, what then should be done?

It should be removed by operation.

How is the operation performed?

The eyelids being held apart by an assistant, the surgeon

seizes hold of the pterygium with a hook-pointed forceps, near the cornea, in such a manner that it is raised up in a fold; he then, with a pair of curved scissors, snips away the encroaching part.

Trichosis Bulbi.

What is trichosis bulbi?

A small congenital tumour with hair growing from it, usually seated on the white of the eye, at the margin of the cornea, on which it encroaches more or less.

What is the structure of the tumour?

Dense cellular tissue similar to that of the sclerotica, with which it is continuous on the one hand, and covered with conjunctiva, in which the hairs are enrooted.

How is the tumour to be removed?

By seizing it with the hook-pointed forceps, whilst an assistant holds the eyelids apart, and snipping it off in a transverse direction, close to its root, with a pair of sharp curved scissors.

Hydatids in the Sub-conjunctival Cellular Tissue.

What is the appearance presented in a case of hydatid under the ocular conjunctiva?

Usually that of a vesicular-looking tumour the size of a pea, and freely moveable under the conjunctiva.

How is the body removed?

By raising the conjunctiva in a fold, with the hook-pointed forceps, and making a small snip through it with scissors, whereupon the hydatid will slip out.

Section II.

DISEASES OF THE SEMILUNAR FOLD AND LACHRYMAL CARUNCLE.

What are the diseases of the semilunar fold and lachrymal caruncle the surgeon may expect to meet with ?

Catarrhal inflammation; abscess of the glands of the caruncle; encanthis, or chronic enlargement; fungous or polypous excrescences, &c.

CHAPTER VIII.

SECTION I.

DISEASES OF THE LACHRYMAL PASSAGES.

Lachrymal Fistula, and Fistula of the Lachrymal Sac.

What is meant by fistula lachrymalis?

The term, fistula lachrymalis is often, though improperly, used as synonymous with stillicidium lachrymarum, or dropping of tears from the eye, in consequence of obstruction of the derivative lachrymal passages.

What is true lachrymal fistula?

True lachrymal fistula, or fistula of the lachrymal gland, is a minute fistulous opening on the upper lid near the outer canthus, communicating with the lachrymal gland, and discharging a clear fluid like tears, and the result of injury or abscess of the lachrymal gland.

Define fistula of the lachrymal sac.

A fistulous opening in the region of, and communicating with, the lachrymal sac, from which tears, mixed with mucus or matter, may be pressed.

What is the cause of a fistula of the lachrymal sac?

Usually the bursting of the abscess, in which acute dacryocystitis, or inflammation of the lachrymal sac, is apt to end.

Acute Dacryocystitis, or Acute Inflammation of the Lachrymal Sac.

How is acute dacryocystitis at first characterized?

By a hard circumscribed, red, and very painful swelling, of the size and shape of a horse-bean, in the situation of the lachrymal sac, with great œdema of the eyelids.

What treatment should be adopted in this early stage of the inflammation?

Leeches and warm fomentations, and action on the liver and bowels.

What is to be done if, by this treatment, the stage of abscess should not be averted?

Evacuation of the matter by puncture of the sac with a lancet, and continuation of the fomentations.

Chronic Dacryocystitis, or Blennorrhœa of the Lachrymal Sac.

By what symptom is attention usually first drawn to the existence of chronic dacryocystitis?

By stillicidium lachrymarum.

On making an exploration, what is discovered?

Chronic inflammation of the palpebral conjunctiva, and a fulness in the region of the lachrymal sac, from which, on pressure, tears, mixed with puriform mucus, are made to regurgitate by the puncta.

What is the treatment to be adopted in such a case?

Iodide of potassium, internally, is sometimes useful; and as local treatment, the bichloride of mercury lotion, and weaker red precipitate ointment; care being taken to empty the sac

by pressure previously to their use. Besides these, occasional counter-irritation behind the ears, and friction with camphorated mercurial ointment on the side of the nose, in the course of the nasal duct. It is to be observed, however, that more often an amelioration of the symptoms rather than a permanent cure, is obtained from the treatment indicated.

What operation may it be at last desirable to have recourse to, in order to afford more effectual relief from the chronic inflammation and wateriness of the eye?

The operation of laying open the lachrymal sac, and inserting a style or tube into the nasal duct.

Describe the operation of laying open the lachrymal sac.

The incision is made in the anterior and outer wall of the sac, below the tendon of the orbicularis. The patient's head being supported by an assistant standing behind, the surgeon with his left hand stretches the skin over the sac, and then directing the point of a small scalpel perpendicularly to the surface of the skin, whilst the edge of the instrument is directed outwards and somewhat downwards, he penetrates the sac. Having done so, he raises the handle of the instrument, and pushes the point a little in the direction of the nasal duct, in order to enlarge the opening obliquely across the sac, and parallel to the margin of the orbit.

How is the style introduced?

The point of the style is to be directed nearly horizontally backwards and inwards through the opening in the sac until it strikes upon its opposite wall. The instrument being then raised, the point is directed down into the nasal duct, which runs downwards, backwards, and outwards. If by a little rotation and gentle pressure the style does not readily pass, the surgeon must stop and consider whether he has actually entered the sac with the point of the instrument.

Suppose a fistulous opening into the sac already exists in a case in which it is wished to introduce a style into the nasal duct, what is to be done?

If the fistulous opening is small, a thin style is first to be introduced, and this followed, at intervals of a day or two, by a succession of thicker ones, until one of sufficient thickness can be passed.

Mucocele.

Define mucocele.

Distension of the lachrymal sac, with an accumulation of inspissated mucus, often mixed with blood, which, shining through the skin, gives the hard swelling over the sac a bluish or livid appearance.

What is the treatment?

The sac should be laid open by incision, the accumulated mucus removed, and a style introduced into the nasal duct through the opening.

Atony, or Relaxation of the Lachrymal Sac.

What is the state of matters in the cases of what is called atony, or relaxation of the lachrymal sac?

Tears and thick glairy mucus accumulated in the dilated lachrymal sac, though the nasal duct be not actually obstructed, as is shown by pressure over the sac emptying it through the nose. The consequence is, that the eye is affected with stillicidium lachrymarum.

What can be done for relaxation of the lachrymal sac?

Frequent pressure on the sac, and evacuation of its contents by the nose with the use of astringent lotions. But if no benefit results from this, the sac may be laid open, and a style introduced into the nasal duct.

CHAPTER IX.

DISEASES OF THE ORBIT.

What are the diseases which may be met with in the orbit?

Inflammation of the orbital cellular tissue, which may be acute or chronic, and ending in abscess. Inflammation of the periorbita and bones of the orbit. Growths and tumours of various kinds.

Idiopathic Inflammation of the Ocular Capsule.

What is the ocular capsule?

The condensed cellular tissue which immediately surrounds and supports the eyeball, and through which, anteriorly, its muscles pass to their insertions.

Describe the symptoms of inflammation of the ocular capsule.

With the exception that the eyeball may be otherwise healthy looking, they are the same as have been described in the case of phlegmonous panophthalmitis.

What is the prognosis?

Resolution may take place, but it may also happen that matter forms within the capsule.

What is the treatment in the first instance?

Bleeding and mercurialization.

If suppuration has taken place, what then?

The matter must be evacuated.

A CATECHISM

OF

EAR-MEDICINE AND SURGERY.

The formulæ for the local remedies referred to will be found in the Appendix.

As an introduction to this Catechism, I quote the following observations from my article on the Diseases of the Ear and Hearing in the *Cyclopedia of Practical Surgery* :—

'The eye and ear, though apparently very different, resemble each other in many respects, both anatomically and pathologically. As the diseases of the former are more easy of investigation, and therefore better known, than those of the latter, the cautious use of the analogy alluded to will prove of material service in illustrating the subject of this article.

'It is usual in discussing the diseases of the eye, to call attention to the fact, that in it is found a miniature specimen of every tissue met with in other parts of the body, as well as tissues peculiar to itself. Into the composition of the ear in like manner, there enter more or less well-marked specimens of membrane,—cellular, fibrous, serous,

synovial, mucous, and tegumentary,—of cellulo-vascular expansions, of glands, of cartilage, of bone, of ligament and tendon, of muscular fibre, of the various kinds of nervous fibre, and of structures *sui generis*.

'The distinguishing characteristic of certain parts of the eye is *transparency*, of the ear, *vibratility*. Both these physical properties are readily impaired or destroyed by disease—a circumstance which, coupled with the great susceptibility of the special nervous expansion peculiar to each organ to have its energies enfeebled or annihilated by various morbific influences, explains the nicety required in the diagnosis and treatment of the diseases of these organs.

'As there are the same structures, the same elementary forms of disease present themselves in the eye as in other parts of the body, hence, in this organ alone, may be read a very good epitome of general pathology. Not only, however, is the general pathology of the ear illustrated by that of the eye, but its special pathology likewise. That part of the eye which is the seat of some of its most important diseases, is the *conjunctiva*, a mucous membrane placed at the peripheral surface of the eyeball. In the ear, some of the most common cases of its derangement consist, in like manner, in the morbid condition of a mucous membrane, *that lining the cavity of the tympanum*, which being situated at the peripheral surface of the labyrinth—the essential part of the apparatus of

hearing—bears exactly the same anatomical relation to it as the conjunctiva does to the eyeball. Again, the *nasal duct*, a mucous canal, is the seat of some not unfrequent and very troublesome affections of the eye—the *Eustachian tube*, which resembles the nasal duct in every anatomical particular, does so also in a remarkable degree in its pathological states. Obstruction of the nasal duct, however, it is to be observed, has not such an immediate effect on vision, as the corresponding state of the Eustachian tube has on hearing: a circumstance depending on the difference of conditions required for the due exercise of the functions of the two organs. In the labyrinth there are vascular and nervous parts and humours, in all respects comparable with those of the eyeball; hence, diseases similar to what are met with in this were to be expected in that, though, as yet, knowledge on the subject is infinitely less perfect.

'The direct connexions and relations which subsist between the ear and other parts of the body are in every way analogous to those presented by the eye; nor are the sympathies of the one less marked than those of the other.

'If the eye is prone to participate in the various diseases of the skin, the ear is equally obnoxious to them. If the conjunctiva, the mucous membrane of the eye, be continuous by the derivative part of the lachrymal apparatus, with the mucous membrane of the nose, and by that with the respiratory and digestive mucous membranes; the

mucous membrane of the ear also, that lining the tympanum and covering the peripheral surface of the labyrinth, is continuous through the Eustachian tube with the mucous membrane of the nose and throat, and thence with the respiratory and digestive mucous membranes. If the nerves of the eye have communications with the great sympathetic, so also have the nerves of the ear. And if, by the communication between the nerves of the eye, and the sympathetic, as also by the continuity of mucous surface, a connexion is established between the abdominal viscera and the eye, capable of explaining many points in the pathology of the latter; the same holds good in the case of the ear.

'If a close reciprocal influence is established between the eye and the brain, with its membranes, by means of the nerves which enter the orbit, by the fibrous sheath of the optic nerve and the periorbita, a similar influence must be established between the brain and the ear, for nerves pass from the former into and close by the latter; the dura mater lines the internal auditory meatus, as well as covers the surface of the petrous bone; moreover, it is connected with the labyrinthic cavity through the aqueducts. The ophthalmic artery is a branch of the internal carotid: the internal auditive artery is a branch of the basilar. The ophthalmic vein throws its blood into the cavernous sinus; the internal auditive artery is accompanied by a corresponding vein, which

carries back blood from the labyrinth and empties it into the superior petrosal sinus. If, in consequence of the origin and termination of its bloodvessels, the eye must participate in determinations of blood to the head; the same thing, for the same reasons, must take place in the ear.

'Both eyes very frequently suffer together; one ear can scarcely become affected alone; and what is remarkable, local treatment applied to one has sometimes been found to exert its beneficial influence equally on both.

'Lastly, if constitution and constitutional affections exert a modifying influence over the diseases of the eye, it is obvious they must do so over those of the ear also.

'The analogy between the diseases of the eye and ear might be longer dwelt on, but what has been said is sufficient to draw attention to it for the present, and to prove that there is nothing peculiar in the diseases of the ear, except in so far as they are rendered so by the peculiarity of the structure and function of the organ; and this is the case more or less with all organs, and is what requires a difference in the details of treatment.

GENERAL EXPLORATION OF THE EAR.

Enumerate the parts of the ear which are open to ocular inspection.

The auricle, the auditory passage, the membrana tympani, together with the handle of the malleus, and the exterior of the mastoid process.

Is the Eustachian tube accessible to any kind of exploration?

The Eustachian tube may be catheterized through the nostril, and its permeability determined by injection of air through the catheter into the cavity of the tympanum.

Is there no other way of determining the permeability of the Eustachian tube but by catheterism?

Much may be inferred from the patient's account of the sensations he experiences when, with his mouth and nose shut, he attempts to expire forcibly through the latter. As every one knows, a sensation of fulness in the ears is felt on making this effort, when the passage through the Eustachian tube to the cavity of the tympanum is free.

How is the diagnosis of the diseases of the labyrinth made out?

From a consideration of the subjective symptoms, or the account of his sensations elicited from the patient.

But would this alone be sufficient?

No; it is first necessary to determine by careful examination, that there is nothing in the state of the other parts of the ear to account for the symptoms.

What is the most common and constant attendant on diseases of the ear, whatever may be their nature in other respects?

Dulness of hearing is very frequently the only symptom, even when the ear is found on examination to have undergone material changes of structure.

What is the value of tinnitus aurium, or noises in the ear, as a symptom?

Inconsiderable, because it may, or may not, accompany very different diseases of the ear.

Does tinnitus occur without some change in the power of hearing?

Rarely.

Is ear-ache a symptom of any importance in cases of disease of the ear?

Of very great importance, as it in almost every case indicates the existence of acute inflammation of some part of the ear; an inflammation, too, which may in general be subdued by treatment, and material damage to the structure and function of the ear thereby obviated.

Is inflammation of the ear generally accompanied by ear-ache?

Unfortunately not.

Why unfortunately?

Because the patient is thereby not warned in time, and the inflammation is too often allowed to proceed until very decided deterioration of hearing has been occasioned by the injury of structure, which the surgeon discovers to have already taken place on making his examination.

What are the inflammations in which ear-ache is most commonly met with?

Phlegmonous inflammation, within the entrance of the auditory passage; and acute inflammation of the membrana tympani and the adjacent fibrous structures; and acute inflammation of the tympanum.

What is to be remarked of otorrhœa, or discharge from the ear, as a manifestation of disease?

That it is a symptom of inflammation going on somewhere. The seat of the inflammation, however, is not in every case the same. In examining a case of otorrhœa, therefore, attention should be directed to ascertain whether the source of the discharge be the auditory passage alone, or whether the

discharge do not also come from the tympanum, the membrana tympani being destroyed; or, from within the cranium, the petrous bone being perforated by caries; or whether it comes from some part in the neighbourhood of the ear; or from an abscess in or about the parotid, and only communicating with the passage by a fistulous opening.

What is the most prolific source of discharge from the ear?

Inflammation of the membrana tympani.

How is the investigation of a case of ear complaint to be proceeded with in order to a diagnosis?

After listening to what the patient has to say of his ailment; the state of his hearing; whether he is troubled with tinnitus aurium, or noises in the ears; if he is suffering from pain in the ear or not; and whether he has, or has had, discharge from the ear,—the surgeon proceeds to make an actual examination of the organ.

DISEASES OF THE AUDITORY PASSAGE AND MEMBRANA TYMPANI.

Exploration of the Auditory Passage and Membrana Tympani.

How would you proceed to examine the state of the auditory passage and membrana tympani?

The patient is to be seated close to a window, with the affected ear turned towards it, and his head strongly inclined to the opposite side. The surgeon standing behind, then draws the auricle upwards and backwards, and inserts the end of the funnel of the *speculum auris* into the auditory passage.

In using a common dilating speculum auris, what precautions require to be observed?

It is to be remembered that, as it is the cartilaginous and

membranous portion only of the auditory passage which admits of being dilated, the closed end of the instrument should not be pushed far in, as such a proceeding would only serve to narrow the passage; and any attempt at dilatation by pressing on the arms of the instrument would occasion pain.

In what direction should the halves of the funnel be separated by pressure on the arms of the instrument?

Upwards and downwards, so that the upper and lower walls of the cartilaginous and membranous portion of the auditory passage may be the only parts pressed on.

What are the morbid appearances which the auditory passage may be observed, on examination, to present?

Accumulations of wax, with cuticular desquamations; inflammation of the lining integument, with discharge; phlegmonous inflammation, with swelling, so great that the passage is much contracted; polypous excrescences, &c.

What can be seen of the membrana tympani?

Any accumulation of wax or matter which may exist being removed by syringing, if there be no swelling, nor polypous excrescence obstructing the view, the membrana tympani may be seen in its whole extent, and that whether it be inflamed, thickened, or perforated by ulceration.

Foreign Bodies in the Auditory Passage.

In a case in which a foreign body has got into the ear, or is alleged to have got in, what should be done by the surgeon in the first instance?

He should make a careful examination of the auditory passage, so as to satisfy himself that there is a foreign body, and if so, to determine its position.

How should the surgeon then proceed to remove the body?

No precise directions can be given on the subject. The surgeon's own ingenuity must suggest the means best fitted for the exigencies of the case. In general, it will be found that the body, if wedged in, will be most readily turned out by means of a small lever-like instrument, or hooked out with a small eye-hook. If the body is not wedged in, it may be brought away by syringing with tepid water.

Accumulation of Cerumen, &c., in the Auditory Passages.

How is the existence of accumulated cerumen in the auditory passage discovered?

By simple ocular inspection. In many patients it is necessary merely to draw the auricle upwards and backwards, whilst the auditory passage is exposed to the light, in order to discover immediately the dark-brown shining surface of the mass of wax. Should it be deeper, it cannot escape notice if recourse be had to the assistance of the speculum auris.

What do the patients complain of in whom, on examination, accumulated cerumen is found in the auditory passages?

More or less deafness, often tinnitus aurium, and sometimes a dull, uneasy feeling in the ears.

Are both ears usually affected?

Yes; but frequently the patient complains of only one. The surgeon, however, ought always to examine both.

What is the cause of accumulation of cerumen in the auditory passage?

Most commonly superficial inflammation of the lining in-

tegument implicating the ceruminous glands, such as often forms part of a violent cold in the head.

Does the accumulated mass consist of nothing but cerumen ?

Besides cerumen it may consist of epidermic desquamations, hairs, and sometimes earthy matter.

How is the accumulated cerumen removed ?

By syringing with tepid water; the accumulated cerumen, it may be remarked, generally admits of being more readily brought away by dropping some warm sweet oil into the ear the night before.

Is it proper to assist the syringing by loosening and breaking up the mass with a curette ?

Yes; for by that means less syringing will be necessary—two or three syringefuls only, perhaps.

If the whole mass does not come away after breaking up with the curette, and after several syringefuls of water have been thrown in, but some indurated cerumen is seen on examination, still remaining impacted deep in the passage, what should be done ?

The syringing had better not be persisted in, especially if the ear is tender to the manipulations, but some warm sweet oil should be again dropped into the ear at bed-time, and the syringing repeated next day. It is to be observed that sometimes, in addition to the exfoliation of epidermis from the walls of the auditory passage, there is exfoliation of epidermis from the membrana tympani in numerous layers, which being tinged brown with unhealthy wax, looks like a plug of wax deep in the passage. It sometimes adheres closely to the membrana tympani, and does not admit of being readily removed, and no attempt should be made to remove it. By-and-by it becomes loose, and comes away.

How is it known when all the wax has been removed?

By examination with the *speculum auris*, which should be made from time to time in the course of the operation.

On examining the walls of the auditory passage after the removal of an accumulation of wax, are any traces of inflammation observable?

Not unfrequently the skin of the walls of the middle and inner end of the auditory passage is found red and abraded.

What should be done in such a case?

Two or three leeches should be applied behind the ear, and the bichloride of mercury lotion, made tepid by the addition of hot water, poured into the passage twice a day. A counter-irritant at some distance from the ear may be also applied. Furthermore, it is often useful to pencil the walls of the auditory passage with the four-grain nitrate of silver solution every second day for a few times.

Inflammation of the Skin of the Auditory Passage and Ceruminous Glands.

With what disease of the eye is inflammation of the skin of the auditory passage and ceruminous glands in some respects analogous?

Scrofulous ophthalmia tarsi.

At what age and in what constitutions is the disease of most common occurrence?

In childhood, and in scrofulous constitutions.

Enumerate the symptoms which draw attention to the disease.

Heat and itching, growing into pain, in the auditory passage; with discharge either of a serous or of a muco-purulent

matter, occasionally streaked with blood, and often very stinking and acrid.

Describe what is seen on examination of the ear.

The skin of the auditory passage is found spongy, superficially abraded, and red. The cerumen, when any is present, is light coloured, and vitiated, like a mixture of wax and matter.

What is the state of hearing in such a case?

Considerable dulness, with or without tinnitus.

What is the cause of the disease?

Often merely cold in patients predisposed by their state of constitution. The disease may be excited by foreign bodies in the ear, or acrid applications; it is also a frequent consequence of the spreading of eruptive diseases from the auricle.

What complications may attend the inflammation?

The membrana tympani may be involved in the inflammation, and there may be polypous and fungous growths from the walls of the auditory passage.

What general treatment is indicated in this disease?

Inflammation of the skin of the auditory passage and ceruminous glands being, like ophthalmia tarsi, frequently connected with a faulty state of constitution, general treatment is of great consequence. The liver and bowels having been brought into a good condition, cod-liver oil, with or without quinine, according to circumstances, should be given.

What is the local treatment to be adopted?

If there be much tenderness, a few leeches may be applied, and the auditory passage kept clean by gentle syringing with tepid water; after the leeches, counter-irritation, by means

of painting the skin with a strong tincture of iodine, *not close to the ear*, as the disease may be thereby aggravated, but on the further side of the mastoid process. After leeching and counter-irritation, the bichloride of mercury lotion, at first diluted with an equal quantity of water, is to be poured into the passage two or three times a day. Pencilling the affected surface with the four-grain nitrate of silver solution every second or third day, is also useful.

Polypi, and Fungous Excrescences in the Auditory Passage.

Whence do polypi usually spring?

From the wall of the auditory passage.

In what manner do they distress the patient?

They are attended by discharge from the ear, and, if large enough to stop up the auditory passage, not only cause a great degree of deafness, but a feeling of pressure and weight in the head.

To what points should the surgeon direct his attention, preparatory to any operation for the removal of a polypus from the auditory passage?

He should ascertain whether it be pedunculated or not, and if pedunculated, the extent, the thickness, and point of insertion of the pedicle.

If the polypus be so large as to fill up the auditory passage, how can the surgeon ascertain this?

By means of the probe, which is to be carried in all directions round the tumour.

How is a polypus removed?

By ligature, by twisting off with a forceps, by abscission with a very fine curved scissors, or with a slender curved knife. In regard to the use of these means, scarcely any

precise rules can be laid down, as everything depends on the ingenuity and dexterity of the operator. But this much is to be said, that the polypus ought to be detached as close as possible to its root, which is afterwards to be touched occasionally with lunar caustic until it is destroyed.

Though cancerous disease involving the internal parts of the ear, usually manifests itself in the form of swellings around the auricle, may it not first make its appearance in the form of a polypus in the auditory passage?

Yes; the fungi of the dura mater, for instance, which so readily destroy the bones, and make their way into all their openings, sometimes get into the tympanum, and from thence appear in the auditory passage.

In such a case, how is the diagnosis to be made from common polypus?

The appearance of the cancerous fungus in the auditory passage is preceded by severe, deep-seated pain; whilst, after its appearance, the fungus grows rapidly, and ere long a general swelling is observed around the ear.

Phlegmonous Inflammation of the Wall of the Auditory Passage.

What is the seat of phlegmonous inflammation of the auditory passage?

The subcutaneous cellular tissue towards the outer part of the auditory passage.

Describe the symptoms of the inflammation.

Heat and pain in the ear, slight at first, but in the course of a short time extremely severe, and accompanied by throbbing. The pain is aggravated by pressure, or when the lower jaw is moved. The auditory passage feels as if stuffed up, and there are buzzing in the ear and dulness of hearing.

What is observed on examination of the ear?

The skin of the auditory passage is very sensitive to the touch, and so much swollen that the passage is closed, or very much contracted.

What is the usual event of the inflammation?

Abscess, which, bursting, gives vent to matter, perhaps streaked with blood, whereupon the patient experiences striking relief.

What is the cause of this inflammation?

With constitutional predisposition, generally cold. It sometimes occurs along with cynanche tonsillaris.

What is the treatment to be adopted in the first stage of the inflammation?

Leeches to the outside of the entrance of the auditory passage, and warm fomentations.

If resolution be not thereby brought about, what are the means to be taken to promote the maturation of the abscess?

Emollient poultices over the ear, and, on changing the poultices, fomentation with warm water.

Where does the abscess generally point, or burst?

Into the auditory passage, though sometimes it makes its way between the auricle and the mastoid process.

Should the abscess be opened?

If it points within reach.

After evacuation of the matter, what is to be done?

The auditory passage is to be kept clean by occasional gentle syringing with tepid water.

Inflammation of the Membrana Tympani.

What are the points in respect to structure which it is necessary to keep in mind in studying the subject of inflammation of the membrana tympani?

That the membrane is composed of a basis of fibrous tissue, and that is is invested externally by a continuation of the tegumentary lining of the auditory passage, and internally by a continuation of the mucous lining of the cavity of the tympanum.

What, in reference to inflammation of the membrana tympani, do these points, in respect to its structure, explain?

How that the membrane should be more or less implicated in inflammation of the walls of the tympanum, as well as in inflammation of those of the external auditory passage; how, on the other hand, the membrane may itself be the original seat of inflammation, whilst this may be afterwards followed by affection of the tympanum and auditory passage.

In acute inflammation of the membrana tympani, what is the most prominent symptom?

Severe pain deep in the ear, radiating all over the side of the head.

What are the morbid appearances seen on examination?

Redness and opacity, somewhat like the redness in some cases of corneitis, especially at the circumference of the membrane, and around the handle of the malleus, which often cannot be recognised on account of the thickened state of the cutaneous layer of the membrane. The wall of the auditory passage in the immediate neighbourhood of the membrana tympani is also sometimes very red.

How does acute inflammation of the membrana tympani terminate?

It may terminate in resolution, but it is apt to pass into the chronic form.

Describe the characters of chronic inflammation of the membrana tympani.

There is little or no pain, or tinnitus, but very considerable dulness of hearing. On examination, there is found a serous or puriform discharge in greater or less quantity, and on cleansing this away by gently syringing the auditory passage with tepid water, the membrane will be discovered to be pale-red and thickened, and perhaps perforated by ulceration.

Is chronic inflammation always preceded by the acute form?

Most frequently it is not; indeed, primary acute inflammation is comparatively rare.

Does acute ever supervene on the chronic inflammation?

Not unfrequently.

What is the relative frequency of the acute and chronic forms of the inflammation?

The acute form is very much less frequent than the chronic.

Indicate the causes of inflammation of the membrana tympani.

Cold is a common cause of both the acute and chronic forms, and very readily occasions relapses, or aggravates an already existing disease. The inflammation often supervenes in, or occurs as a sequela of, small-pox, measles, scarlatina, and other diseases of the skin.

As chronic is rarely preceded by acute inflammation, and dulness of hearing is the only sub-

jective symptom constantly present in chronic inflammation of the membrana tympani, how is this to be distinguished from other causes of deafness?

By careful exploration of the ear.

In reference to treatment, what have we to consider in connexion with the age of the patient?

That in young persons the inflammation is probably of a scrofulous character; in adults, rheumatic; in old persons, gouty.

In the case of a young person just seized with acute inflammation of the membrana tympani, attended by severe ear-ache, what treatment would you adopt?

Leeches behind the ear, followed by warm fomentations. The number of leeches to be regulated by the age of the patient. Two or three grains of hydrarg. c. cretâ, with a grain or two of powdered leaves of belladonna, night and morning for a few days. The leeches are to be repeated next day if the pain is not abated. No application but warm fomentations, two or three times a-day, should be made to the ear, and a drop of warm sweet oil.

When should blisters be applied?

Not until the acute symptoms have abated, and then, if thought necessary, only at some distance from the ear.

In acute inflammation of the membrana tympani in an adult, with great pain in the ear, and general fever, what should be done?

Venesection or abstraction of blood by leeches around the ear, followed up by two or three grains of calomel and eight or ten grains of Dover's powder at bed-time, and a black draught in the morning. No application to the ear but warm fomentations and a drop of warm sweet oil. If under this

treatment the pain does not quickly subside, the application of leeches may be repeated, and a grain of calomel, with a quarter of a grain of opium, given two or three times a day, until the gums are slightly affected.

In chronic inflammation of the membrana tympani, what is it advisable to do?

First, to apply a few leeches behind the ear; secondly, to employ counter-irritation at some distance from the ear; and thirdly, after cleansing the auditory passage from accumulated secretion by gentle syringing with lukewarm water, to pour into it three times a day the bichloride of mercury lotion, more or less diluted with hot water to make it lukewarm.

What general treatment is necessary?

Alterative and tonic medicines—among others, cod-liver oil, with or without quinine.

Is chronic inflammation of the membrana tympani apt to be complicated with fungous excrescences at the bottom of the auditory passage?

Not unfrequently fungous excrescences are found arising from the adjacent part of the wall of the auditory passage, or from the membrana tympani.

What can be done for the removal of such excrescences?

Touching them with solid nitrate of silver every second or third day. The caustic is for this purpose to be secured in a slender holder, or what is better, coated over the end of a probe by melting. In applying the caustic, the surgeon ought to see distinctly what and where it touches; for this purpose good daylight is indispensable. After the application, a little tepid water should be thrown in to remove any remaining caustic.

In cases in which the membrana tympani is perforated or destroyed by ulceration, may excrescences spring from the diseased lining membrane of the tympanum?

Yes.

Should they be touched with caustic?

No.

DISEASES OF THE MIDDLE EAR.

What are the diseases to which the middle ear is liable?

Diseases very analogous to those of the derivative lachrymal passages. The mucous membrane lining the Eustachian tube, that lining the cavity of the tympanum, and that lining the mastoid cells, may be separately or simultaneously the seat of inflammation; and the inflammation may be catarrhal, catarrho-rheumatic, or purulent. The consequences are, increased secretion and accumulation of mucus; thickening, swelling, and sarcomatous and polypous degeneration of the membrane; abscess; and, lastly, caries of the bony walls of the tympanum, and more or less extensive destruction of the membrana tympani, with partial or complete loss of the ossicles. Sometimes tuberculous matter has been found in the cavities of the tympanum and mastoid cells.

Exploration of the Middle Ear.

What points is it of consequence to bear in mind in studying the diseases of the middle ear?

That the mucous membrane of the Eustachian tube is continuous with that of the nose and throat; that the lining membrane of the cavity of the tympanum is continuous with that of the Eustachian tube; and that the lining membrane of the mastoid cells is continuous with that of the tympanum. That through the Eustachian tube, atmospherical air is ad-

mitted to and from the cavity of the tympanum; and that a condition essential to the due performance of the function of the tympanum is, that its cavity be filled with air.

Is the Eustachian tube always wide open?

The Eustachian tube is not habitually wide open, but, on the contrary, in the state of rest its walls lie collapsed. By this arrangement, the Eustachian tube is as if provided with a valve opening either way, but so weak as to be readily forced by the breath in deglutition, &c.

Is the tube hermetically closed while its walls lie collapsed?

No; and therefore the passage of air is not absolutely prevented, only its too ready course in and out.

In a case of deafness, in which nothing irregular or morbid is found in the external auditory passage and membrana tympani, to what parts of the ear should the surgeon direct his attention?

To the Eustachian tube and cavity of the tympanum; but, as a preliminary, it is of consequence also to examine the state of the nostrils and throat.

How does deafness occur in nasal catarrh?

The catarrhal inflammation extending to the mucous membrane of the Eustachian tube, that membrane becomes tumefied. By this, and by gluing together with thickened mucus, the passage is obstructed, and deafness to a greater or less extent, occasioned.

In what other affections besides nasal catarrh may deafness in a similar manner occur?

The inflammation and tumefaction in quinsy, may, in like manner, extend to the Eustachian tube, and produce similar effects on hearing; as also more chronic inflammation and thickening of the mucous membrane of the nose and throat.

Do nasal polypi and enlarged tonsils cause deafness?

By pressing upon the mouth of the Eustachian tube, they sometimes do. It is to be remarked, however, that deafness is not a constant attendant of nasal polypi and enlarged tonsils, and when it is, it may in some degree be attributed to the inflamed and thickened state of the mucous membrane of the nose and throat accompanying those diseases, extending to that of the middle ear.

There being no affection of the nostrils or throat sufficient to arrest attention in a case of deafness, how is the state of the Eustachian tube and cavity of the tympanum to be ascertained?

The patient is, in the first place, to be requested to make a forcible expiration into the nostrils with the nose and mouth closed, and to describe the sensation, if any, felt in the ears. Most people know the sensation produced by this action in healthy ears.

If the patient either experiences no sensation in the ears, or cannot give any very clear account of what he feels, how can the surgeon satisfy himself as to the state of the Eustachian tube and cavity of the tympanum?

By catheterism of the Eustachian tube, and auscultation, while air is being injected into the tympanum.

But suppose the state of the Eustachian tube and cavity of the tympanum be thereby ascertained, does this diagnosis help the treatment?

Not much.

Is not catheterism, with injection of air into the tympanum, a means of treatment as well as diagnosis?

In some cases it is, by rendering pervious the Eustachian

tube, the walls of which have been glued together by thickened mucus, and thus restoring free access of air to the cavity of the tympanum.

Is the improvement effected by catheterism, and the injection of air permanent?

Seldom.

Why?

Because, as has been just said, all that can be effected by it is the dispersion of any accumulated mucus which may exist in the middle ear. The chronic inflammation of the membrane lining the Eustachian tube and cavity of the tympanum, which gave rise to the accumulation of mucus, still subsisting, muculent obstruction of the middle ear soon returns.

But may not the chronic inflammation be cured?

Experience has shown that it is as stubborn at least as the chronic inflammation of the lachrymal passages.*

Catarrhal Inflammation of the Middle Ear, with Muculent Obstruction.

In colds in the head, the patient not unfrequently complains of dulness of hearing and tinnitus; what is the cause of this?

The lining membrane of the Eustachian tube and cavity of the tympanum being involved in the inflammation, the tumefaction and increased secretion of mucus which take place, cause obstruction to the passage of air to and from the tympanum, and interruption to the transmission of sonorous undulations through the tympanum to the internal ear.

* For a description of the operation of catheterism of the Eustachian tube, and injection of atmospherical air into the tympanum, see the Article "Ear and Hearing, Diseases of," in the *Cyclopedia of Practical Surgery*.

What is the termination of such an attack of deafness?

As the catarrh goes off the tumefaction of the lining membrane of the middle ear subsides, and the Eustachian tube resumes its natural calibre; the air then enters and issues from the tympanic cavity as before, and the disturbance of function disappears.

Is the termination always thus favourable?

Sometimes obstruction still remains from inspissated mucus stuffing the Eustachian tube, or keeping its collapsed walls glued together, or from an accumulation of mucus in the tympanic cavity.

In such a case, how is the hearing sometimes suddenly restored?

By the efforts of coughing, sneezing, yawning, or swallowing, the obstruction of the Eustachian tube gives way: the air thus obtaining sudden entrance, a crack is heard, and the hearing, which was before very dull, is considerably improved.

What treatment does such a fact indicate?

The patient should be directed to make a forcible expiration with the nose and mouth closed, so as to force air into the middle ear.

Chronic Blennorrhœal Inflammation of the Middle Ear.

Is chronic blennorrhœal inflammation of the middle ear often an accompaniment of a similar affection of neighbouring parts?

Yes; it usually coexists with a similar affection of the throat and nose, sometimes of the lachrymal passages, and also of the auditory passage.

In a person complaining of deafness, and labouring under one or other of these affections, is it not

likely that the deafness is owing to this affection of the middle ear?

So likely, that the surgeon should at once direct his attention to that quarter.

How is chronic blennorrhœal inflammation of the middle ear usually brought on?

It may remain from an attack of acute catarrh, or, as is frequently the case, be the dregs of some of the exanthemata; the scrofulous constitution predisposing to it. Indeed, in persons of the flabby scrofulous constitution, the mucous membrane of the nose is very frequently the seat of blennorrhœa; and in this, not only the middle ear, but the lachrymal passages, the frontal and maxillary sinuses, may participate, one or other of these parts being more particularly affected in different cases.

What is the treatment adapted for the relief of the affection under consideration?

By making a forced expiration with the nose and mouth closed, the deafness is in some cases considerably relieved, if not removed; but as the muculent obstruction is kept up by the chronic inflammation of the mucous membrane of the Eustachian tube and tympanum, this must become the particular object of treatment.

Describe the mode of treatment to be adopted?

As this chronic inflammation of the middle ear is very frequently accompanied by a similar state of the throat and nasal cavities on the one hand, and of the auditory passage on the other, attention must be directed to the cure of the latter before much good can be done to the former. The general remedies from which benefit may be calculated on are alteratives, followed by cod-liver oil, quinine, iodide of potassium, and friction of the skin. The treatment more particularly directed to the local affection, consists in counter-irritation to the nape of the neck, premised, if need be, by the application

of a few leeches in the vicinity of the ear and to the nostrils. The throat is to be pencilled with a solution of the nitrate of silver (gr. xx.—ʒj.), and to the auditory passage the bichloride of mercury lotion applied. Into the nostrils the vapour of camphor may be sniffed, when by expiration, as if through the nose, with the nostrils and mouth shut, the vapour is to be driven into the middle ear.

Is the disease under consideration difficult of cure, and liable to relapse after being relieved?

Very much so; but this is not peculiar when we reflect on the difficulty of completely curing a chronic conjunctivitis, a chronic dacryocystitis, or even a chronic inflammation of the mucous membrane of the nose and throat, or the liability of these diseases when cured or relieved, to fall back from the slightest causes.

Deafness from Chronic Inflammation, with Thickening of the Lining Membrane of the Middle Ear.

In a numerous class of cases of chronic deafness, what appears to be the pathological condition of the ear?

Chronic inflammation, and thickening of the lining membrane of the middle ear.

Describe the rise and progress of such cases of deafness.

The patient may have had pain, sometimes only feelings of uneasiness and fulness in the ears, but frequently the affected organ offers no painful symptoms. Dulness of hearing alone is what the patient complains of, and that may have come on so gradually, that it was perhaps first discovered only by accident. One ear alone may be affected, but more commonly both suffer. When this is the case, the deafness may have

come on in both at the same time, or in one after the other. Noises in the ear may or may not be present, and when present, they vary as to degree and continuance.

How is the diagnosis made in these cases?

Per exclusionem, that the proximate cause of the deafness does not lie in the external parts of the ear, nor solely in the Eustachian tubes, nor in accumulation of mucus in the tympanic cavities.

But may it not lie in the labyrinth?

As blindness without any lesion of the parts of the eye accessible to our examination, is put down as amaurosis, or disease of the optic nervous apparatus, so the cases of deafness under consideration have been indiscriminately put down as nervous deafness. But that this is going too far will be evident when it is remembered that we can directly observe the condition of parts of the eyeball besides the nervous, a lesion of which is sufficient to interrupt its function; whereas, there are many structures besides the expansion of the auditory nerve, in and on the labyrinth, the state of which we cannot ascertain by any examination, but disease of which might nevertheless be as efficient a cause of deafness, as cataract, closed pupil, or opacity of the cornea is of blindness.

What is the nature of the thickening of the lining membrane of the middle ear?

The lining membrane of the tympanic cavity being fibro-mucous—at once periosteum and mucous membrane—inflammation of it will vary in its nature and consequences. It may be at one time simply the catarrhal affection of a mucous membrane; at another, the violent purulent *otitis interna*, in which the surrounding osseous textures become so readily involved. The morbid state of the lining membrane of the middle ear in question, appears to be of the nature of periosteal swellings. On dissection, the membrane,

which is naturally very thin and transparent, has been found thickened and swollen, sometimes to such a degree as to bury the ossicles and overlap the fenestræ.

Can anything be done for the cure of deafness depending on these morbid conditions of the middle ear?

Past experience answers,—Not much.

Inflammation of the Tympanum, with Abscess or Purulent Otorrhœa.

With what disease of the eye may purulent inflammation of the tympanum be compared?

Dacryocystitis, or inflammation of the lachrymal sac, acute and chronic.

But from the proximity of the tympanum to the brain, is not purulent inflammation of it a more grave disease?

Much more so, for it is apt to be attended by the severer general symptoms of abscess in the orbit.

Which structure of the tympanum does the inflammation appear to commence in?

The membrane lining the cavity of the tympanum in its capacity of periosteum; hence the bony walls readily become carious, and this eventually leads to implication of the membranes of the brain, and even of the brain itself.

Describe the disease.

In its acute form, the inflammation commences with great pain in and around the ear, and, amidst severe constitutional disturbance, runs on to abscess in the tympanum, from which the matter by and by may burst through the membrana tympani into the auditory passage.

What is the result in such a case?

In favourable cases, the discharge which succeeds this first evacuation of matter gradually becomes less, and recovery to a certain extent may eventually take place. The inflammation, however, may fall into a chronic state, and the discharge become habitual, constituting what is called *purulent otorrhœa.*

Is purulent otorrhœa always preceded by so acute an inflammation?

No; nor most frequently. It is generally the consequence of an inflammation much less severe in its symptoms, and running a slower course, involving the osseous walls of the tympanum in a state of caries, and perforating or destroying by ulceration the membrana tympani, and causing separation and discharge of the ossicles, especially the incus.

What is the character of the discharge from the ear?

The matter is sometimes whitish or greenish yellow, and thick; at other times, watery, bloody, generally acrid and stinking, sometimes insupportably so, and mixed with small pieces of dead bone; sometimes a fungous growth protrudes from the exposed cavity of the tympanum into the auditory passage, and bleeding not unfrequently takes place from the ear.

What is the cause of the convulsive twitchings and paralysis of the muscles of the corresponding side of the face, which sometimes supervene in such cases?

Implication of the portio dura nerve, in its course through the aqueduct of Fallopius, in the mischief going on in the petrous bone.

Are the parts in the neighbourhood of the ear liable to become involved in the disease?

In addition to the fœtid, purulent discharge from the auditory passage, there may be profuse suppuration in the

cellular tissue around the ear, extending down even to the neck, kept up by a carious state of the mastoid process.

In persons labouring under purulent otorrhœa, may acute inflammation supervene?

Acute inflammation and abscess may be renewed from time to time by exposure to cold, the improper use of stimulating injections, &c., and that in a more or less violent degree. At length the abscess bursts, or is opened at the place where the fluctuation is most distinct,—the mastoid process, perhaps, the skin over which had presented a dark, livid-red colour.

What is the peculiar danger in this disease?

Its tendency to spread to the brain and its membranes, and thus destroy life.

What is the cause of the disease?

The disease, in its simple acute form, is rare, and is generally the result of injury. Most frequently it occurs in the chronic form in young persons of the scrofulous diathesis; scarlatina, measles, and other inflammatory affections of the skin, as also dentition, being very frequent exciting causes. That form of it which terminates in otorrhœa, and so often occasions destruction of the membrana tympani and caries of the osseous labyrinth, is almost always connected with a cachectic state of constitution.

What treatment is indicated in the acute form of this inflammation of the tympanum?

Active antiphlogistic treatment, bleeding and mercurialization, regulated by the circumstances of the case, with warm fomentations and poultices to the ear.

What should be done in the chronic form, with otorrhœa?

Existing irritation is to be soothed by the application of leeches, and the employment of warm fomentations;—treat-

ment especially necessary when suppression of a discharge from the ear of long standing has taken place, with an aggravation of the inflammatory symptoms. The ear is, at the same time, to be kept clean by cautious and gentle syringing with lukewarm water night and morning.

The state of the constitution must, in addition, be looked to, and the strength kept up by means of alteratives, cod-liver oil, quinine, &c.

DISEASES OF THE INTERNAL EAR.

Exploration of the Labyrinth.

Have we any means of physically exploring the labyrinth?

None.

How, then, can a diagnosis of its diseases be formed?

The only way of making an approach to a diagnosis of the diseases of the labyrinth, is by first exploring the other parts of the ear, and ascertaining that there exists no lesion of them to explain the subjective symptoms of the case. Having thus, *per exclusionem*, brought home these symptoms to the labyrinth, it remains to determine from the symptoms what part of this is the seat of the disease, and what the nature of that disease is.

Is such accuracy in the diagnosis of the diseases of the labyrinth as you here hint at, attainable?

It is as yet very far from being attained.

Diseased States of the Labyrinth.

Describe briefly the morbid anatomy of the labyrinth.

The osseous labyrinth and fenestræ are readily involved in the diseases of the tympanum. The membranous labyrinth

and humours must suffer more or less in such cases; but appearances, confined to the labyrinthic cavity and its contents, which have been occasionally observed on dissection—such as vascularity of the membranes in the labyrinth, the presence of matter, and the humours changed in quantity and consistence,—would seem to indicate that internal inflammation of the labyrinth may take place in an independent manner;—an occurrence very likely, when it is remembered that in the labyrinth there are parts in all respects comparable to those of the eyeball. Outside the labyrinth, the auditory nerves have been found the seat of structural changes, such as softening, atrophy, morbid growths, &c., or they have been compressed by, or implicated in, various morbid formations of the brain, its membranes, or the bones of the skull.

Can irritation or excitement of the auditory nervous apparatus from other causes than sonorous impulses, give rise to the sensation of sound?

Yes, just as irritation or excitement of some part of the optic nervous apparatus gives rise to the sensation of light.

But is *tinnitus aurium* always purely subjective, that is, independent of sonorous impulses?

No. In many cases tinnitus is owing to the impression of sonorous vibrations excited in some part of the auditory apparatus itself.

What is the symptom to the ear, which photophobia or intolerance of light is to the eye?

Hypercusis, or excessive sensibility to sound.

Nervous Deafness.

What is nervous deafness?

Under the name of nervous deafness have been comprehended all cases of deafness, as a cause of which some lesion

of those parts of the ear accessible to observation could not be detected.

Is such a pathology warranted?

No; for the reasons stated at p. 120.

What may, then, be the nature of many of the cases thus improperly set down as cases of nervous deafness?

They belong to the class of cases above described under the head of chronic inflammation and thickening of the lining membrane of the tympanic cavity.

What is the morbid condition of the auditory nervous apparatus in any disease entitled to the name of nervous deafness?

Similar to the morbid condition of the optic nervous apparatus in amaurosis; for example, congestion or inflammation merely of the auditory nervous apparatus, or some actual organic change, such as was mentioned in describing the morbid anatomy of the labyrinth.

Indicate the treatment for nervous deafness?

Could a correct diagnosis of the nature of a case of deafness be made, and were it ascertained that the auditory nervous apparatus was the part affected, the treatment would require to be conducted on the same principles as those which regulate the treatment of amaurosis.

Deaf-Dumbness.

What is the cause of dumbness in deaf persons?

Dumbness is a necessary consequence of deafness which has existed from birth, or which has supervened before the period at which children learn to speak.

What is the cause of the deafness in such cases?

Dissection of the ears of deaf and dumb persons, has in

some cases disclosed imperfect development of the organs; in other cases the ear, though apparently originally well-formed, had become the seat of disease at an early period of life, generally exanthematous inflammation; other cases, again, and these are the most numerous, have presented acquired morbid changes in addition to original imperfections. In a few cases there has been no appreciable organic defect, original or acquired.

Is there any remedy for deaf-dumbness?

In the treatment of the deaf and dumb, a distinction is to be made betwixt the question of eliciting the power of hearing, and that of teaching the deaf and dumb to speak. Hitherto not much success has attended the attempts to elicit hearing; but experience has shown that the deaf and dumb may be taught to speak, or even sometimes to carry on conversation, without the hearing being in the slightest degree elicited or improved. It is by being taught to watch and imitate the motions of the lips, &c., of their instructors, that deaf persons have acquired in some degree the faculty of speech, and, at the same time, of distinguishing the words spoken by others.

Exanthematous and Postfebrile Diseases of the Ear.

Is the ear, as well as the eye, liable to suffer from inflammation in the exanthematous diseases?

Equally so; especially in scrofulous constitutions.

Name the diseases of the ear which are often excited in the exanthemata.

Inflammation of the skin of the auditory passage and ceruminous glands; chronic blennorrhœal inflammation of the middle ear, but especially inflammation of the membrana tympani and purulent otorrhœa.

Does deafness ever come on in cases of typhus-fever?

Not unfrequently.

Of what nature is the attack?

In some cases it appears—like the amaurosis which is apt to occur under similar circumstances—to be owing to intra-cranial mischief; in other cases it appears to be the result of internal inflammation of the ear itself.

APPENDIX.

LOCAL REMEDIES REFERRED TO IN THE PRECEDING PAGES.

LOTIONS.

Bichloride of Mercury Lotion.

℞ Hydrargyri bichloridi, gr. j.
Ammoniæ hydrochloratis, gr. viij.
Aq. destillatæ, ℥viij.

Solve.

Directions for Use as an Eye-water.—To half a wineglassful add as much hot water as will make the whole lukewarm. With the quantity thus prepared the eyes are to be bathed by means of a bit of lint, or linen rag, particular care being taken to let the lotion run into the eye.

Belladonna Lotion.

℞ Belladonnæ extracti, ℥ss.
Aquæ puræ, ℥viij.

Solve et per linteum cola.

Directions for use, the same as for bichloride of mercury lotion.

Cooling Lotion.

℞ Aceti aromatici, ℥v.
Spiritus ætheris nitrici, ʒj.
Aquæ rosæ,
Aquæ puræ, *aa* ʒiij.
Misce.

Directions for Use.—By means of a bit of linen rag bathe the outside of the eyelids, the side of the nose, the cheek, the eyebrow, the forehead and temples; and leave them to dry by evaporation.

DROPS.

Four-grain Nitrate of Silver Drops.

℞ Argenti nitratis, gr. iv.
Aquæ destillatæ, ʒj.
Solve.

Vinum Opii Drops.

Vinum opii, without the aromatics, pure, or diluted with one or two waters.

Sulphate of Atropia Drops.

℞ Atropiæ sulphatis, gr. ij.—iv.
Aquæ destillatæ, ʒj.
F. solutio.

N.B.—These drops are not to be entrusted to the patient, but applied by the surgeon himself. The application is made by means of a large camel-hair pencil.

OINTMENTS.

Red Precipitate Ointments.

℞ Oxidi hydrargyri rubri bene
lævigati gr. xij.—℥j.
Axungiæ præparatæ, ℥j.
F. unguentum.

The weaker form is entrusted to the patient, for anointing the edges of the eyelids with at bed-time.

The stronger form is applied only by the surgeon himself.

EYE POWDER.

Calomel is the substance used as an eye powder.

It is dusted into the eye by means of a dry camel-hair pencil.

THE END.

By the same Author.

I.

The Principles and Practice of Ophthalmic Medicine and Surgery.

SECOND EDITION.

II.

Defects of Sight;

THEIR NATURE, CAUSES, PREVENTION, AND GENERAL MANAGEMENT.

LONDON: JOHN CHURCHILL.