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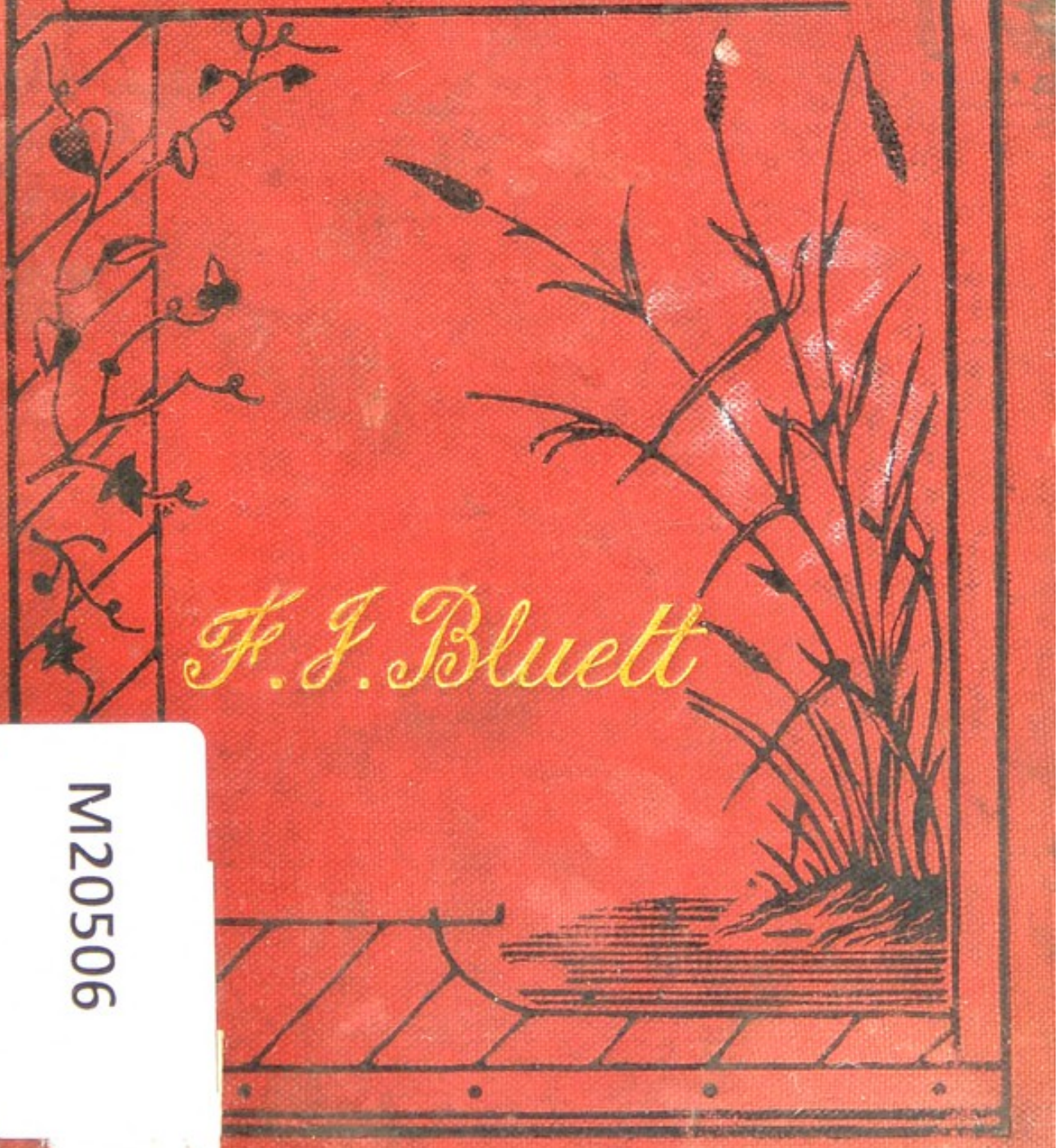
DEFECTIVE VISION:

ITS CAUSE AND CURE.



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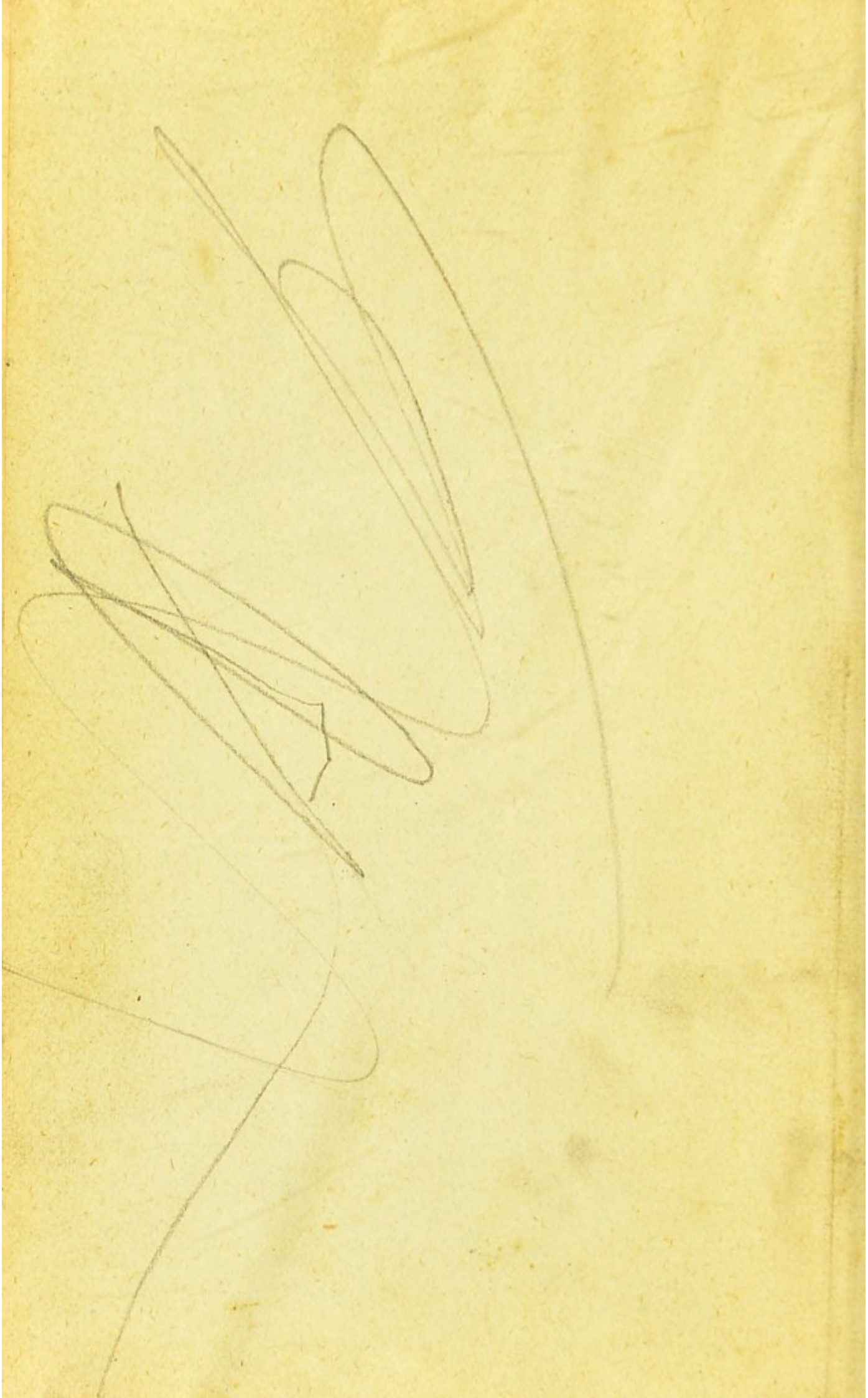

DEFECTIVE VISION:

ITS CAUSE AND CURE.

FOURTH EDITION.

DEFECTIVE VISION:

ITS CAUSE AND CURE,

BY F. J. BLUETT.

EXTRACTS FROM PRESS OPINIONS

of the First Edition of this Work.

"Mr. BLUETT writes modestly and sensibly of the tests which he applies to detect defects of vision, and we rejoice to know that the making and fitting of proper glasses, is at last being rescued from the hands of mere shopmen."—April 24th, 1891. *Health.*

"The various defects are dealt with in a masterly and comprehensive fashion, and in a style that enables the explanations to be easily understood."—*The Optician*, April 23rd, 1891.

"Mr. BLUETT is an authority upon the eyesight, and the advice he gives is most valuable and cannot be too highly estimated."—*The Family Doctor*, May 2nd, 1891.

"A sensible and unpretending book upon the eyesight, and conveys much important information."—*Public Opinion*, May 15th, 1891.

"The well known Oculist Optician has published a most interesting work, which deserves to be read by every one."—*The Oracle*, June 13th, 1891.

"A useful book, and many a sensible hint will be found in its pages by persons who are anxious to preserve their sight."—*Jewish World*, December 11th, 1891.

"Mr. F. J. BLUETT, the eminent Ophthalmic Optician, in a Treatise on Defective Vision, has some valuable remarks on its Cause and Cure."—*The Christian Union*, May 23rd, 1891.

"'Sight to the Blind' would scarcely be an exaggerated claim if preferred by Mr. F. J. BLUETT, the well known specialist, as an Ophthalmic Optician."—*Whitehall Review*, July 2nd, 1892.

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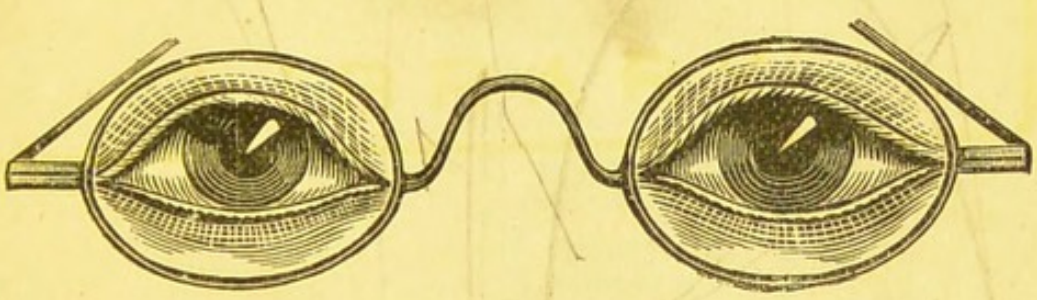
ITS CAUSE AND CURE.



By F. J. BLUETT,

Ophthalmic Optician.

[4 Med]

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PREFACE

THE FOURTH EDITION.

I REGRET that owing to pressure upon my time I was compelled to issue the *Second* and *Third Editions* of my book, without alterations.

I have now been enabled to revise the work thoroughly, adding several new and important items, and an entirely new Chapter upon Diplopia.

I have had the different Defects of Vision fully illustrated, which I believe will considerably help my readers.

I trust, in its new form, my little work will meet with the same favourable reception, that has been accorded to the previous Editions.

FREDERIC J. BLUETT.

8A, GREAT PORTLAND STREET,

LONDON, W.

February, 1896.

PREFACE

TO THE FIRST EDITION.

TWO REASONS have induced me to write this Book. FIRST, because, during the twenty-six years' experience I have had in testing the eyesight and adapting Spectacles, it has pained me greatly to notice *how very little* people think or care about their eyesight, until it is too late; and SECONDLY, because, although there are several good works on the Eyesight, written by eminent Oculists, the terms and expressions used are so essentially Medical, that they are very little understood by the general public; hence I have endeavoured to write this treatise in plain and simple words; so that it may not only be understood, but also that it may interest the readers.

My long experience extending from 1865 to the present day, has afforded me many exceptional opportunities of perceiving and finding remedy for the errors and mistakes made by incompetent men.

I have been consulted by many Oculists, and it has been my delight to overcome difficulties.

This is not intended to be an elaborate Treatise on the Eye, but a simple work to guide the public to a proper consideration of the subject, and to assert the fact that an ill-fitting or badly-made Pair of Spectacles is of far more serious consequence to them than a badly fitting coat or dress.

If I can succeed in bringing this home to them, then my little book will not have been written in vain.

FREDERICK J. BLUETT.

8A, GREAT PORTLAND STREET,
LONDON, W.

March, 1891.

CONTENTS.

DEFECTIVE VISION:

ITS

CAUSE & CURE.

CHAPTER I.

THE HUMAN EYE.

The Eye may be compared to a photographer's camera, the crystalline lens being the front, and the retina being the ground glass upon which the image is received. Most people think that the eye looks out, and pierces the distance; this is not so, the eye receives, and vision depends entirely, first upon the power of the refracting portions of the eye, and next upon the sensitiveness of the retina and optic nerve.

Every normal eye is capable of seeing far and near objects with equal distinctness, but these powers may be easily spoilt, and the unfortunate part of it is that

they seldom show signs of breaking down until the mischief is done, resulting perhaps in the breaking of a small blood vessel at the back of the eye, or the detachment of a portion of the retina, causing permanent impairment of vision.

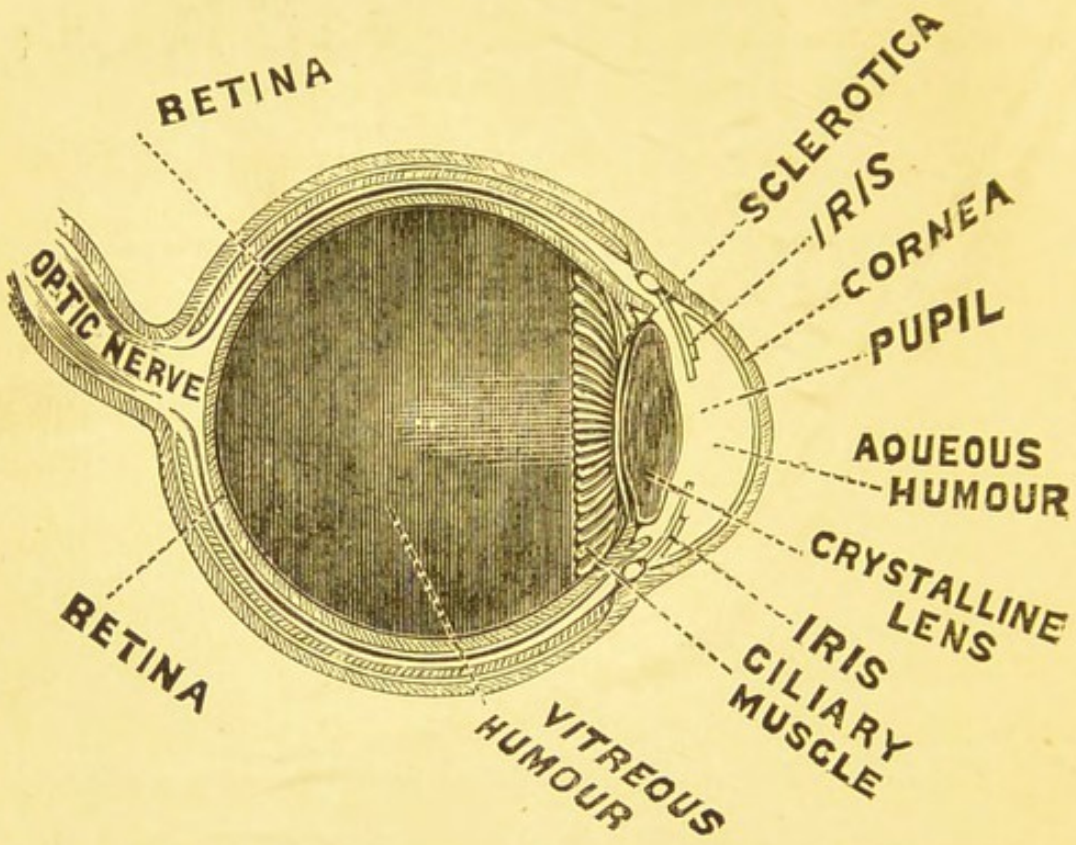


Fig. 1.

I may here give a brief description of the eye, so that my readers may be better able to understand my remarks, as I treat upon the various subjects hereafter.

The outer, or white coating of the eye is called the Sclerotica, and is a hard tough substance which protects the interior from injury. Into this is fitted the

Cornea, and this is the first optical surface through which the rays of light pass.

Behind this is the Iris, or coloured portion of the eye, which has the power of expanding or contracting, to regulate the amount of light which enters, and no doubt most of my readers will have noticed that the pupils of their eyes are much larger by gaslight than by daylight, especially if the day is bright.

The space between the iris and cornea is filled with a clear pellucid fluid, called the Aqueous Humour.

In the centre of the iris is the Pupil—a circular opening—behind which is the Crystalline Lens, remarkable for its transparency, and which is the principal medium through which the rays of light are refracted. The crystalline lens is completely surrounded by the Ciliary Muscle, a bundle of very fine muscular fibres, which has the power of expanding and contracting the lens, so as to enable us to see near and distant objects equally clearly.

At the back of the eyeball is the Retina; upon this all objects are reflected and conveyed by the optic nerve to the brain. The interior of the eye, or space between the lens and retina, is occupied by a jelly-like substance, called the Vitreous Humour. Sometimes this thickens, and causes an appearance of floating bodies in front of the eye; again, black specks may be seen falling continually down. In the former case the particles may move in any direction,

and have a feathery or fringed appearance, but in the latter case they are minute specks and fall in the one direction only, from top to bottom, and these proceed generally from the liver. Attached to, and spreading itself over the retina, is the Optic Nerve, which conveys the image to the brain.

The eye-lashes protect the eyes from dust or any foreign substance entering, and the glands supply moisture or tears to keep them clean. Then there are the Strait or Recti Muscles. These have the power of moving the eyes in every direction.

There are other parts of the eye not described, but I have given the principal ones, which is all that is necessary for a small work of this kind.

From the above short description, the reader will see that the eye is a very delicate organ, and any unusual strain upon it must cause mischief.

CHAPTER II.

WHEN SPECTACLES ARE NEEDED.

THERE are a large number of people who think it best to put off wearing glasses as long as possible, thereby thinking they are preserving their sight. This is a very great mistake. Directly the eyes begin to fail they should have assistance; because, if glasses are taken to directly they are required, they at once relieve all strain, and restore the eyes to their normal condition. But if their use is delayed for a year or two longer, the vision is permanently impaired, and not only is it necessary to use much stronger glasses than would otherwise be required, but even then the eyes become weak and easily fatigued.

An important fact—not generally known—is, that the liver and lungs complain *directly* they are over-taxed, but this is not so with the heart and the eyes, therefore when *they* complain, the matter should have immediate attention, as it is a sign that they can bear the strain no longer.

When the eyes begin to fail it is first noticed at night. Reading by gaslight becomes difficult after a

time, and more light is required, or it is necessary to bring the light nearer the book. The print loses its blackness, and after reading for a time, the letters appear to run into each other, and it becomes necessary to stop and rest the eyes for a while, but soon after resuming the same thing occurs. Or in looking at a Bradshaw's Railway Guide, it is difficult to distinguish between the figures 8, 5, and 3, and frequently a pricking sensation is felt at the back of the eyes. In some cases Frontal Headache, or Sick Headache is the first intimation that the eyes require assistance. People are then apt to press the fingers on the eyes, but so far from this doing any good, it involves great risk, and is liable to lead to serious mischief and bring on inflammation, or congestion, and may even go so far as to cause the formation of cataract.

When any of the foregoing symptons appear, Nature is calling for help, and although none of us may like to think we are growing old, or that spectacles do not become us, still we must remember that our eyesight is of paramount importance, and the assistance asked for should be cheerfully given. The time for heavy unsightly spectacles is past, and the neat nice-looking frames now made are so becoming that ladies are pleased to wear them.

It is when the necessity for the first pair of spectacles becomes evident that the advice of a skilled Ophthalmic Optician should be sought.

Many people — I may say many hundreds of people—think that any pair will do to commence with. I have had people say to me, "Oh! I only want a cheap pair, as they are my first." This is a grave error; a common, badly made pair of spectacles may do when the sight is gone, but when the eyes require their first preservative they need the very best, as it means sight preserved, or sight destroyed.

And now let us consider for a moment, what are the qualifications necessary, for the optician to accurately gauge the sight and adapt the proper lenses. He must first have a thorough knowledge of the theory of vision, the structure of the eye, the science of optics, and the laws of light and vision; in addition to which he must have had years of PRACTICAL experience. The eye is a physiological as well as an optical instrument, and theory is of no use without practice. There are so many things to take into consideration in guiding the optician as to what is best for his patient, and this specially applies to cases of Astigmatism.

It may seem strange to most of my readers, but it is nevertheless true, that to be able to properly correct all defects of vision, requires the person prescribing the lenses to understand the eye both Anatomically and Optically, and this knowledge is possessed by very few, hence the reason why only a small proportion of our opticians, can correct any but the most elementary cases for want of anatomical

knowledge, and it is also the reason why many of our Surgeon Oculists fail to properly prescribe, owing to their deficient study of optics.

The first thing a quack vendor of spectacles does when a person goes to him, is to make a pretence of examining his eyes, and then tell him he has some serious disease, which only the spectacles he supplies will cure. I wish I could impress upon my readers, how useless it is to believe such rubbish. Spectacles carefully adapted by a skilled optician will frequently prevent disease, where the eyes have been over-worked, but when disease has once shown itself, spectacles can effect no cure; it becomes a matter for an Ophthalmic Surgeon.

I may be misunderstood, but I really must warn my readers against buying spectacles from watch-makers, jewellers, and ironmongers. No one would believe the mischief that is done in this way. I was literally astonished some time ago, to find that a large number of people had been to exhibitions, and had bought spectacles and folders from the stalls. In the bustle and confusion they were talked into buying them, and no one was more surprised than the purchasers, when they had time to think how silly they had been.

Do not believe that any special kind of lenses, with a high-sounding name, are a *Cure-all* for every complaint of the eye. Perfect lenses are certainly of the first importance, but the skill of the optician is just as necessary.

I remember some years ago, that an American adventurer flooded our small country towns with spectacles supplied to watch-makers, jewellers, and chemists, as agents, and that by advertising largely in the local papers people were led to buy them, thinking they were going to get perfection in the way of sight, and to overlook the fact that neither the vendor nor the purchaser were able to tell what were the requisite foci necessary. The result was, that after doing much mischief, the sales subsided and the vendors were left with a large stock of useless spectacles, the American being the only person who gained anything by it.

I wish people would understand and remember one stern *fact*—namely, that spectacle lenses can only be made from glass or pebble, and when they see advertised, "lenses made of so-and-so," they may rest perfectly satisfied that they are only glass, *and only ordinary glass, just the same as any other person's spectacles are made from.*

CHAPTER III.

HYPERMETROPIA OR OVERSIGHT.

THIS is an abnormal condition of the eye, in which the eye, from front to back, is too short, and therefore

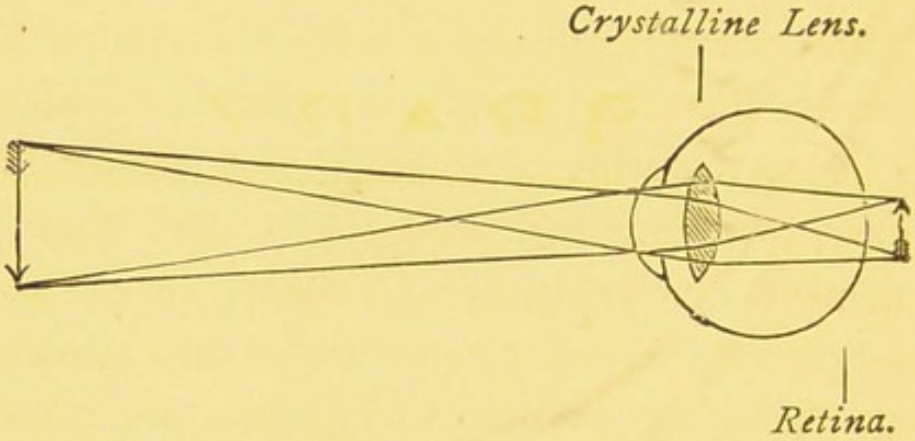


Fig. 2.—EXISTING HYPERMETROPIA.

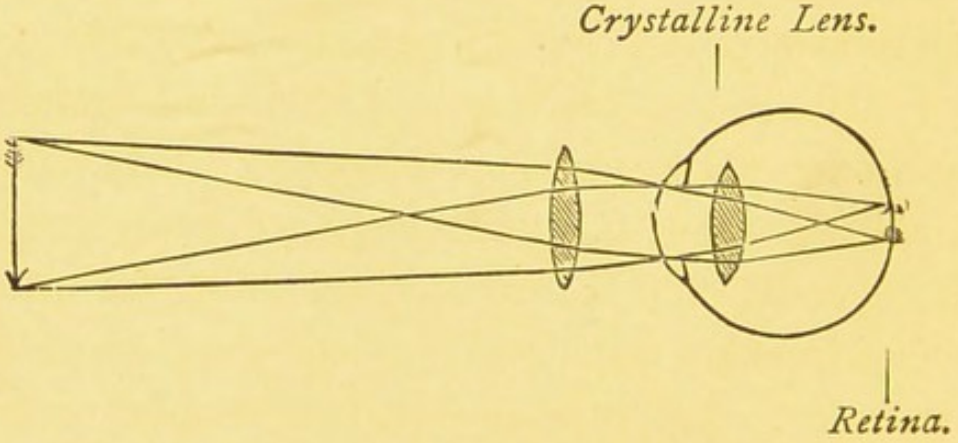


Fig. 3.—CORRECTED HYPERMETROPIA.

the image instead of being thrown upon the retina, goes beyond it, and requires convex lenses to converge

the rays at a shorter distance, and so bring them on to the retina. This defect must not be mistaken for old sight, because, although the effect is practically the same, the cause is quite different, and requires different treatment.

Generally, convex lenses, properly adapted, restore the eyes to a normal condition, and the one pair of lenses enables a person to see near and distant objects equally well.

Children frequently suffer from this complaint for a considerable time before it is noticed, and they get very little sympathy; they are thought to be stupid because they can only read slowly, and then only large print. By bringing all their power of accommodation into play they can read for a time, but they have to bring the book up very close to the eyes, and nine out of every ten opticians mistake this for short sight, and give concave lenses, which only increase the difficulty, and causes irreparable mischief.

I have had several cases of this kind brought to my notice. One I will mention. A lady living at Chelsea brought her daughter (aged twelve) to me, as she could only see to read by holding the print six inches from her eyes, and she had given up learning music, as to read it necessitated her leaning over the piano to get within eight inches of her music. Her mother remarked that her daughter was short-sighted, but the spectacles (concave) supplied to her by two or three opticians were of no use. I found so far

from their being of use, they had actually done serious mischief by paralysing the muscles of accommodation. I found with twenty inch convex lenses the reading distance increased to nine inches, with fourteen inch lenses to eleven inches, and with ten inch to thirteen inches. I made her a pair of spectacles with ten inch lenses, and after wearing them a few months the accommodation relaxed itself, and I reduced the power. I changed these again in two months, and now the young lady is wearing twenty-seven inch convex lenses for all purposes, and sees perfectly. Had this child been a few years older, it would have been impossible to make good the mischief done by the concave glasses supplied in the first place.

Sometimes this defect is discovered by a nurse or mother noticing that the child can see with its grandmother's spectacles, but generally it is thought very little of, the spectacles are taken away and the matter forgotten—in which case the child is deprived of the only assistance that could be of use to him. Or again, I have known cases in which a child has been allowed to wear his mother's or father's spectacles, simply because he could see better in them; but it is cruel carelessness and want of thought to allow such a thing. Directly a nurse, mother, or anyone having the care of a child, notices that he can see better with spectacles than without, or that a book is being held nearer than twelve

inches from the eyes, he should at once be taken to an Ophthalmic Optician to have his sight carefully tested.

Squinting in children is frequently caused by Hypermetropia being neglected.

It is of the utmost importance in hypermetropia that the spectacle frames should be carefully adjusted, and that the lenses should have their centres exactly opposite the centres of the pupils. On this depends a great deal of the comfort of wearing them, besides getting the maximum accuracy of vision.

CHAPTER IV.

MYOPIA OR SHORTSIGHT.

THIS defect is exactly the reverse of Hypermetropia, the eye being too long from back to front, and the

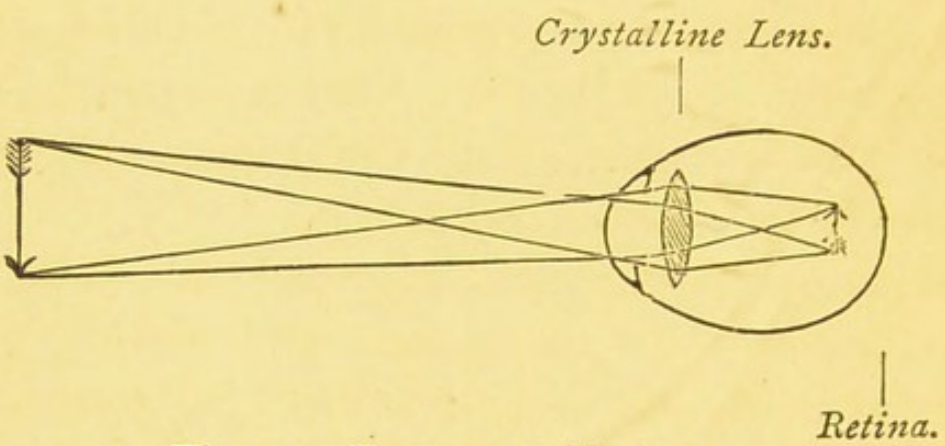


Fig. 4.—EXISTING MYOPIA.

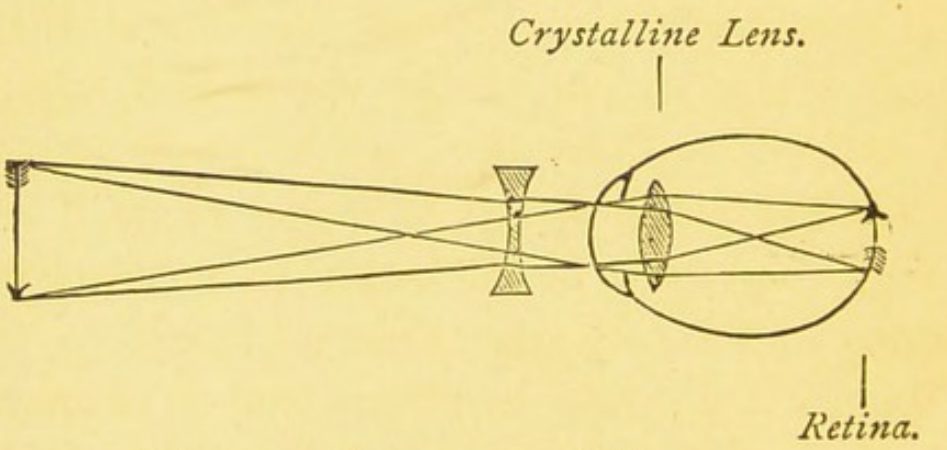


Fig. 5.—CORRECTED MYOPIA.

rays are thrown short of the retina, and require concave lenses to diverge them, and so send the rays farther back on to the retina.

In this defect, the sufferer has to hold the print close to the eyes, the distance varying according to the degree of short-sightedness, and distant objects are indistinct or not visible at all.

Where the deficiency is Myopia pure and simple, the remedy is easy, and concave lenses of the proper power will overcome the difficulty; but in many cases of Myopia, it is associated with Astigmatism, especially where the Myopia is great. In these cases the eyesight requires very careful handling, and great skill is required in determining the exact curves of the lenses necessary.

Many people think that short sight is a benefit—that the eyes are strong, and that as they grow older the sight will become perfect. So great is the prevalency of this idea as to almost become universal, but it is one of the popular errors. Short-sight in a child, provided it does not exceed one to two dioptrics, may, by the careful use of spectacles, be reduced as time advances; but in more advanced cases it is generally progressive, and where it exists in a high degree it is not simply an inconvenience, but may lead to very grave complications.

Myopia is generally hereditary and is encouraged by sedentary occupation, and using the eyes upon close and small objects. It is undoubtedly on the increase, and although few children are born short-sighted they become so as soon as their attention is directed to small objects.

The cause of myopia is that the sclerotic coating of the eye being soft and yielding, the muscles of convergence and accommodation exert a kind of pressure on the globe causing elongation; with the result that the image is thrown short of the retina in front, and requires the rays to be lengthened by the use of concave glasses, which diverge the rays of light, and cause them to converge at a greater distance.

In cases of marked short-sightedness, the eye assumes the shape of an egg, and anyone looking at the eye can see that it is prominent; but this elongation is much more marked at the back than the front.

The popular belief that short-sight is stronger than ordinary good sight, is founded upon the fact that such persons find that to some extent they have microscopic vision, and that they can see smaller objects than other people, and can read in a dim light when others cannot. This would be all very well, were it not for the fact that their distant vision is imperfect, and in time their eyes are likely to break down from the constant strain put upon them; besides which myopic people are much more liable to inflammation and congestion than others.

Any of my readers who are short-sighted to any extent, and whose glasses are not correctly adapted to their vision, will have noticed that after reading or working for any length of time, the eyes become red and congested.

I have had innumerable cases of children's eye-sight where the myopia has been taken in time, and I have been able to reduce the power of the lenses gradually, until they have been able to discard them altogether.

One case in particular I may mention. A lady living at Hammersmith came to me with her daughter, as the school-mistress was always complaining that she could not see her lessons without having her face in her book. I found the little lady was myopic to the extent of 1.75 dioptrics. I made her a pair of spectacles, and reduced the power every three months, until I was able to advise that the glasses should be left off altogether. They were worn from first to last three years. I have since seen the young lady, and her sight is perfect.

In short-sight, glasses should be selected which make the objects clear without diminishing their size, or giving any unnatural brightness. If no ordinary concave glasses will do this, then there must be some complication of astigmatism which requires correction.

Where there is one case of myopia in which the muscles of accommodation are perfect, there are ninety-nine in which they are not; so it is quite an exceptional case in which one pair of glasses answers for all purposes, although, I must confess, a great many people use only the one pair, but the result of this, in nearly every case, is to increase the short-

sightedness, besides causing a considerable amount of unpleasant feeling about the eyes and head, if nothing more serious.

Lenses of a much weaker power should be used for reading, as they cause less strain, and tend to keep down the increasing myopia. Where it is inconvenient to change the spectacles, as in the case of a schoolmaster, who wants to look constantly both near and far, my "Franklin" Spectacles will be found invaluable, as the top portion will enable him to see *distant*, and the bottom part, *near* objects with equal distinctness and without strain.

CHAPTER V.

PRESBYOPIA: OLD OR FAILING SIGHT.

The age at which the eyes first begin to fail varies considerably according to constitution and

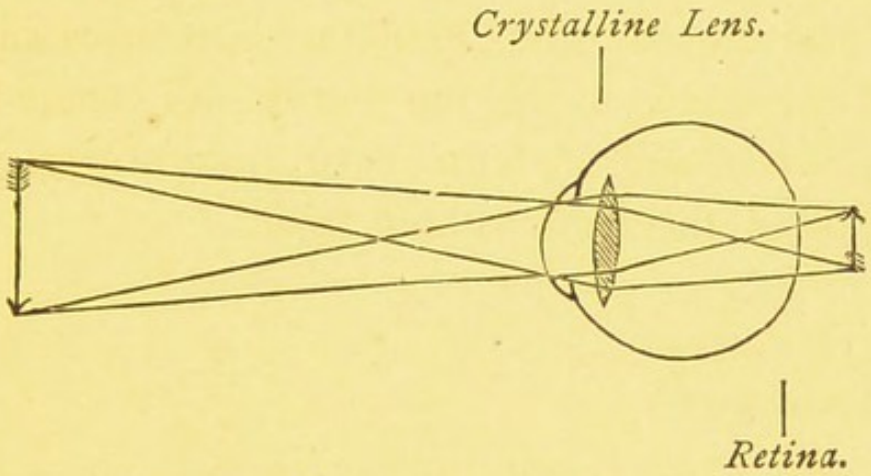


Fig. 6.—Existing Presbyopia.

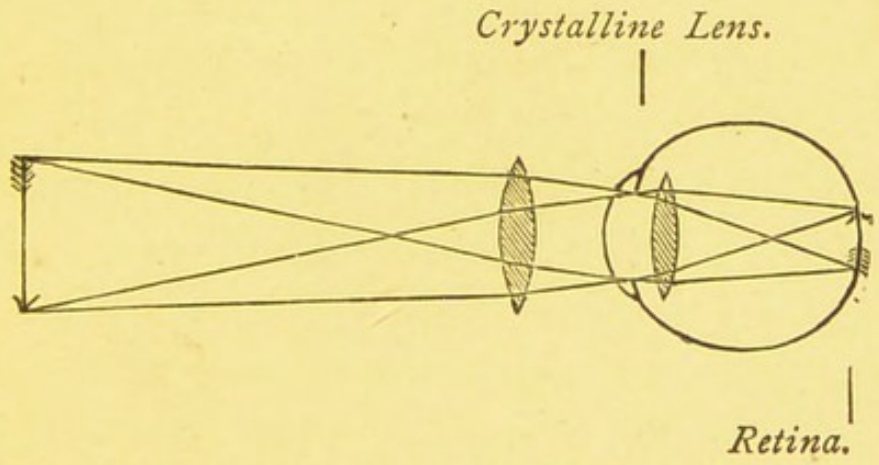


Fig. 7.—Corrected Presbyopia.

occupation; and it may commence at any age, but it generally begins with men from forty to forty-five,

and in women, from thirty-five to forty years of age. At first some of the symptoms described in Chapter II. will present themselves, but such persons will find they are still able to read well by holding the print further away from the eyes, although this is injurious, but after a time, neither this method, nor bringing the light nearer, will enable them to read with any degree of comfort. When this is the case, the distant vision becomes usually clearer, and far-away objects can be seen with greater distinctness. The portion of the eye now at fault is the crystalline lens, which gradually begins to harden, and the ciliary muscle loses its power of expanding or contracting it to suit different distances, and focus the rays upon the retina.

Here arises an opportunity for many people to damage their eyesight, and I am sorry to say I have come across many cases in which it has been done, that is, they take a single lens or magnifying glass and commence to read with it. In fact, I have seen gentlemen in dining-rooms, railway-carriages, and other places, puzzling over a paragraph in a newspaper with a single lens held up to the eye between the fingers. I have often felt inclined to point out to the persons the mischief of which they were laying the foundations, but I have refrained for fear they might not take my interference in the way I intended it. I had the case of a lady who had been injuring her eyes in this way, but finally, having

to take to spectacles, she bought a pair at a country optician's, and had worn them for some years. As she was an invalid, I went to her house to test her sight, and found her reading, with the book *at least* two feet away from her eyes, and holding her head sideways, because the right eye had lost all power of accommodation. After testing her sight, I made a pair of spectacles which proved a success far beyond my expectations. This lady afterwards wrote me a very nice letter, which will be found amongst my testimonials at the end of the book.

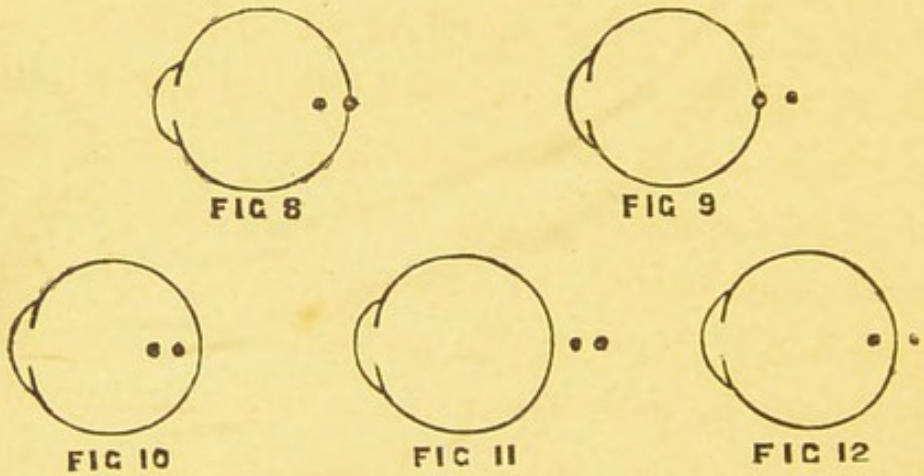
There are many cases in which temporary failure of eyesight takes place, such as, after any serious illness, mental worry, or sitting up night after night with a sick friend. Or again, with men, excessive smoking will cause it. In these cases, the sight will generally recover itself when the pre-disposing cause is no longer present, but a pair of weak convex lenses or plane glasses with a slight tint are sometimes beneficial and greatly help on the recovery.

A man came to me, a shoemaker, whose sight had become greatly impaired through smoking while at his work. I persuaded him to give up smoking for a month, and then to come to me again. This he did, and I found he had almost regained the full power of vision. This happened over twenty years ago, and I have had several similar cases since.

CHAPTER VI.

ASTIGMATISM.

ASTIGMATISM is a malformation of the eye, which exists from birth, but does not usually shew itself (except where it exists to some considerable extent) until the eyes begin to fail from other causes.



[Diagram shewing the five different forms of Astigmatism. The projecting parts of the diagrams to the left being the front of the eye, or Cornea; the small dots shewing the position in which the horizontal and vertical rays of light, focus the image in relation to the Retina.]

Nineteen out of twenty people probably have a small amount of Astigmatism, but not sufficient to disturb their vision. Generally where it is present to

any extent in young people, it is complicated by Myopia.

Astigmatism is caused by the curvature of the cornea or crystalline lens, or both, being different in the two meridians. The vertical is generally shorter than the horizontal. To give a simple but rather exaggerated idea of this defect, I may say that the cornea or the lens of the eye, insead of being spherical like a marble, is cylindrical like the half of a cork cut lengthways.

There are five different forms of Astigmatism. First, the simple Myopic, in which the rays in the one meridian come to a focus upon the retina, and those in the other meridian at a point *in front* of the retina (Fig. 8). Secondly, the simple Presbyopic, which is exactly the reverse of the first, one set of rays focussing upon the retina, and the others at a point *behind* the retina (Fig. 9). Thirdly, the compound Myopic, in which the rays *in both* meridians focus in front of the retina, but at different distances (Fig. 10). Fourthly, the compound Presbyopic, in which all the rays come to a focus *behind* the retina, but at different distances (Fig. 11). Lastly, the Mixed, in which the rays in one meridian fall *in front*, and in the other meridian *behind* the retina (Fig. 12). There is really a sixth form of irregular Astigmatism, in which the eye assumes the form of a felt hat, that has had a blow which has made a dent in the centre of the crown;

but these cases are very rare, and very difficult to deal with: although I had one case of the kind in which I was successful, and overcame the difficulty by making a pair of spectacles with concave and convex cylindrical curves, almost at right angles to each other. I had this gentleman under tests for two hours one day, and two hours and a half the next day, and he told me he had not only tried every means of getting relief in this country, but had also gone to Vienna to a famous Oculist, who had failed to suit him.

Astigmatic persons will observe that in looking at the name on a shop facia from some little distance, the letters seem to double slightly; or when looking at a clock they see the figures in one direction better than another; or taking a piece of music, they can see the five lines of the stave sharper or clearer in one direction than another, if they turn the book in various directions. Many people do not notice these things, but are only conscious that they have pain and trouble when using the eyes for any length of time; then they go to the ordinary optician or watchmaker, who, not understanding the case, tries to get over the difficulty by giving deep concave or convex lenses, but which lead to considerable mischief.

Astigmatism may exist in one or both eyes, and the axis may be vertical or horizontal, or at any angle therefore in testing for Astigmatism, the eyes must

be tried separately, each eye being covered in turn.

When a person has been fitted with Astigmatic lenses, not only is immense relief found, but they open up a new world, and unbounded gratification has been expressed to me by patients whom I have fitted with Astigmatic Spectacles, and who by their aid can now see with real distinctness; and I have had it occur with people fifty to seventy years of age, one case in particular, being a gentleman, who had worn glasses unsuccessfully for thirty-five years.

In some cases the Astigmatism is so marked as to render the eye apparently useless. This was the case with a gentleman who was Mayor of one of our large towns in Kent. He came to me some eight years ago for spectacles; he told me his left eye was useless, but on testing it I found the eye Astigmatic to an extent of nine dioptrics, and I fitted him with lenses that, much to his astonishment, enabled him to see with *both* eyes.

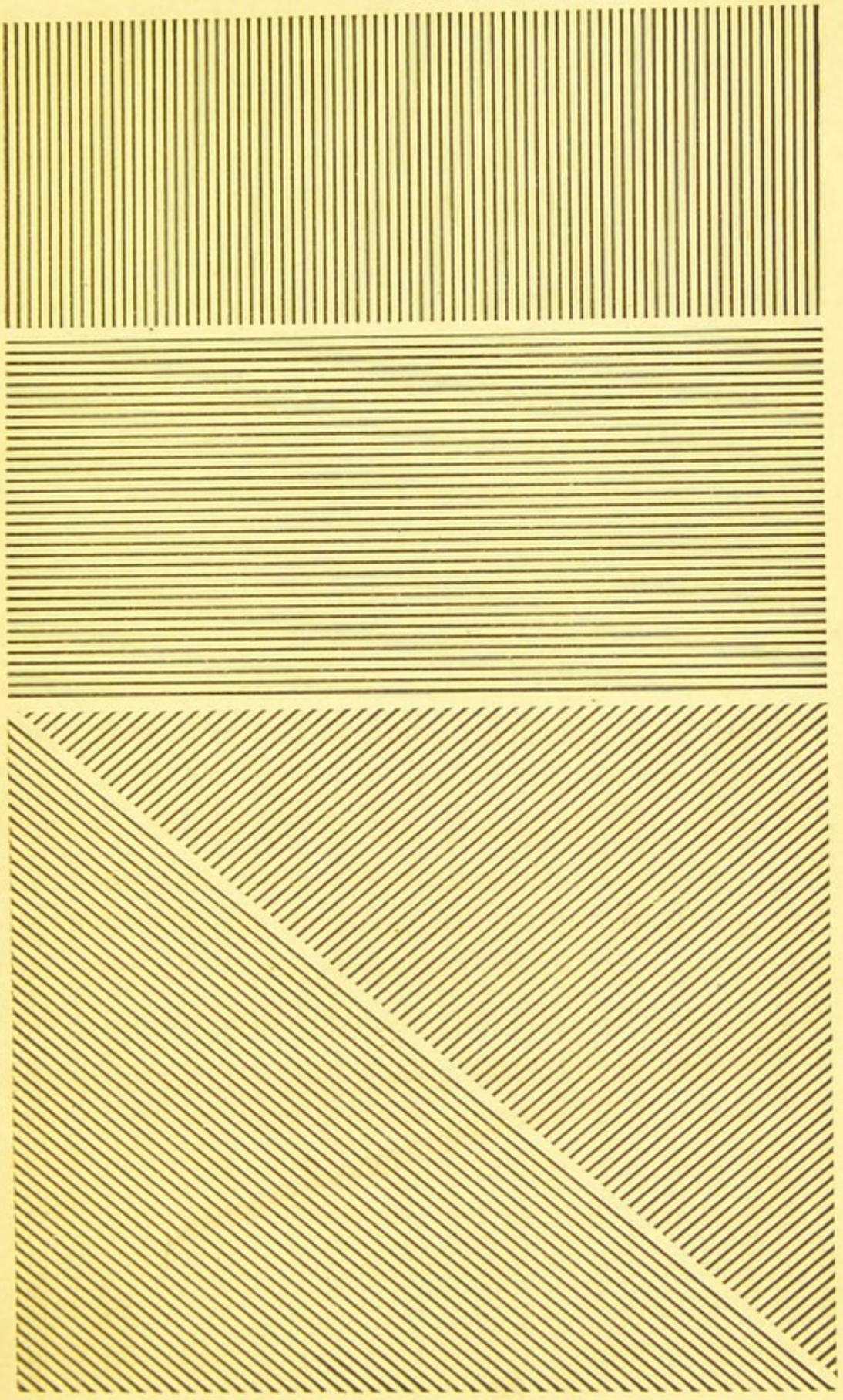
An even more marked cure was that of Mr. W. Cary-Bliss, whose letter of thanks will be found at the end of my book; his Astigmatism was complicated by double vision and Myopia, every object being distinctly doubled and some distance apart. Being an organist, this was a serious defect, and he had been under Ophthalmic Surgeons for some time. When he came to me, he hardly thought it possible that I could give him any relief, and I believe he was in the habit of closing one eye to shut out the confusion.

After very careful tests, I made him two pairs of spectacles—one for walking, and one for reading and music; the lenses were worked with a concave surface one side, and cylindrical the other, and made wedge-shape or prismatic, and so carefully adjusted as to bring the two objects together, It was one of the most difficult cases that could possibly be dealt with, and I was rather anxious as to the result; but I may say that the success was beyond anything I could have hoped for, in fact to use his own words "*Life seems to have a new interest.*"

The general optician, as a rule, knows very little about the eyesight, which requires so many years of study; and how can he give his attention to it, when he is mixed up all day long with answering questions about photography, astronomy, mathematics, and philosophy?

Here, I have given a test which will be useful to my readers in determining whether they are Astigmatic or not. The lines upon the opposite page, should be looked at carefully for some few moments, holding the book at fourteen to fifteen inches from the eyes.

If all these lines cannot be seen perfectly black and equally well in every direction, then Astigmatism is present. In this test, each eye must be covered in turn and tested separately.



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CHAPTER VII.

STRABISMUS OR SQUINT.

Ninety per cent. of the cases of squint in children are brought on by weakness of the muscles, and frequently follow children's complaints, such as measles or whooping cough. The internal recti muscle, by excessive contraction, often causes convergent squint or it may be caused by defective nervous power. Unfortunately, parents as a rule, when they first notice it, doubt whether it is so, and let it go on, thinking it will right itself, or that they may be mistaken. It is one of the simplest things possible to cure in its earlier stages, with a child up to seven or eight years of age, if a pair of spectacles are properly adapted; but after twelve years of age, the muscles have become too set for spectacles to be of any use, and an operation is the only remedy.

This operation, which must be performed by an Ophthalmic Surgeon, is a very simple one, and almost painless. It has one advantage, and two disadvantages. It certainly allows the eye affected to resume its natural position, and the appearance of the face is thereby improved. But the eye operated

upon is very rarely of any use as regards any seeing power; and unless the operator is very skilful, he is apt to cut the ligament too much, and allow the eye to go the other way, so that instead of convergent squint, there exists divergent squint, which in my opinion, is more disfiguring. A cure by the aid of spectacles, in its earlier stages, is far more preferable from every point of view, and parents or guardians are earnestly advised to have it seen to, the moment it shows itself.

In adjusting spectacles for squint, great care and judgment are required, and it is absolutely necessary that the lenses should be strong enough for the purpose, and yet not so as to put a strain upon the accommodation; and therefore in determining how much the lens is to be de-centred for the squinting eye, considerable care has to be taken.

DIPLOPIA OR DOUBLE VISION.

Diplopia or double vision is usually, although not always a result of squint, and varies very much in degree. It may be only slight, or so marked as to cause complete confusion unless one eye is covered. In the case of the patient mentioned in the chapter on Astigmatism, he had quite got used to the habit of walking with one eye closed, until I corrected his eyesight. I have quite lately had a very peculiar case —that of an engineer, residing at Battersea. Some

three years ago he was struck on the temple by the breaking of a leather band, which rendered him insensible, and resulted in a serious illness. Upon recovery, he had distinct double vision caused by a displacement of the crystalline lens. If this gentleman had had spectacles made at the time with properly adjusted prisms, they would have corrected the error, and when the eye righted itself the spectacles could have been discarded, but he went instead to the Hospital where they performed an operation to cure the defect, and instead of curing it they made it worse. After repeated visits to the hospital, he was informed that nothing further could be done and was advised to cover up one eye, and so avoid the confusion. Some months after, he came across a copy of my book, and then consulted me. I made him a pair of spectacles with a plane glass in one eye, and a deep prism in the other properly adjusted, and he has worn them for the last six months with perfect comfort and free from any double image, but at any time the lens of the eye may partially right itself, and then the diplopia will appear again and require further correction, which would not have been the case if the operation had never been performed.

Double vision will sometimes come on at fifty or sixty years of age, through one set of muscles giving way.

Diplopia of course disappears on covering up one eye as it is generally binocular, but in some few cases double sight will appear in one eye, and this may occur in incipient cataract or astigmatism, in the latter case it vanishes as soon as the astigmatism is corrected.

CHAPTER VIII.

TO TEST FOR DEFECTIVE SIGHT.

HERE I will give some test types which will enable my readers to determine whether their eyes require assistance or not.

For the near, or reading and sewing point, the following print should be read easily in a moderately good light, holding the book not more than thirteen, nor less than eleven inches from the eyes.

In 1856 an attempt was made, under the auspices of the British Government, to commence a series of observations in some region "above the clouds," where the serene and quiet air would be specially favourable for viewing the heavenly bodies. The island of Teneriffe was selected for this purpose, as combining more of the required advantages than any other mountain within easy reach of Europe.

The expedition was under the direction of Piazzi Smyth, the distinguished astronomer at Edinburgh; who, in a remarkable and interesting work, has since published a narrative of the expedition. In an article, contributed to a popular magazine, he thus graphically describes the ascent of Teneriffe to a point high "above the clouds."

For the distant point, or to test for short sight the following type should be read at four feet from the eyes.

It was only a few days after—on a morning also cloudy, and with north-east cloud, too—that the little party set forth from the town of Orotava, on the Northern Coast of

Teneriffe, to climb the great mountain, and put to the only true test of actual practice their hopes of getting "above the clouds."

Or this type at 7 feet.

Through long winding pathways between vineyards and cactus plantations, fig trees, and orange groves, they proceeded, always ascending, past cornfields and oat fields, ascending yet higher, and then among natural vegetation, only ferns and heath, and wild laurels.

Or this at 16 feet

And now they are close under the cloud.

These types must be read at the different distances without strain.

If the reader can accomplish the small print at the near distance, but not the large at the far, then short-sight is present; if the reverse, then old or failing sight shows itself—though, of course, in either case Hypermetropia or Astigmatism may be present.

When the eyes begin to fail, they may only fail for the one point, or both. Cases are very common in which the person becomes Presbyopic for reading and Myopic for distance—requiring convex lenses for reading, and concave for walking.

CHAPTER IX.

HEADACHE.

THIS is a subject which has received little, if any, attention; and yet it is marvellous how many people suffer from headache through defective eyesight, but it never enters their thoughts for a moment that their eyes are the cause of it. Amongst authors, professional men, dressmakers, and many others, through having to study closely in their profession or work, headache is a frequent source of worry. They conclude that rest is required, or that they are out of health, and so at once they commence to doctor themselves for nervousness or biliousness, when what they really require is a pair of spectacles; or if they wear glasses, a change from those they have. I have had many instances of this kind, and I may mention two in particular:

The first was that of a young lady who was brought to me by her uncle, suffering from pain in her eyes and dimness of sight. Upon testing her sight, I found not merely a small amount of Astigmatism, but a considerable amount of muscular weakness. The spectacles I made for her gave instant relief, and in

a few weeks the eyes were brought up to a healthy normal condition.

I may add that this young lady's uncle was induced to bring her to me, through my having corrected his Astigmatism some years before, and I still have the care of his eyes to the present day.

The second was that of the Rev. J. L. E. Hooppell, who has kindly given me permission to refer to his case. He had been troubled with headache for some time, and thinking his eyesight had something to do with it, consulted several well-known opticians, who all failed to give him any relief. I tested his sight, and made for him spectacles which have entirely cured his headache. It is a curious fact that all the opticians he had previously consulted had mistaken the direction of his Astigmatism.

In cases where people have to get their living by the needle, spectacles should be taken to, immediately the eyes give the first warning of failure.

Many people when they first find their eyes giving way, will either give up reading for a time, or else borrow a pair of glasses from a friend or neighbour, *just to see how they answer;* but what a mistake this is!—the chances are a thousand to one that the focus of the borrowed spectacles is entirely unfit for the person who is about to try them. Or again, they will go into a shop and ask for a pair of clearers, thinking that as it is their first pair, they must require the first sight; but this is also an erroneous idea,

because most people really allow their defective eyesight to go on until they get beyond the first stage, and consequently I have known many cases in which they have struggled on, spoiling their eyes, until they have had to commence with a pair of spectacles at least ten or fifteen years older than are usually or should be required.

My readers must not suppose that, if they require their first pair of glasses, or those changed which they are using, that their head will begin to ache directly they commence to sew or read, because this is not so, and more especially in cases of Hypermetropia. Frequently headaches in the morning are caused by some strain overnight that has not been felt at the time.

Eyestrain will show itself in a feeling of giddiness, nausea and frontal headache between the eyes, or in neuralgic pains at the back of the eyeball, or in pain at the back of the head just above the neck. Myopic persons who are short sighted to only a small extent, suffer more from headache caused by continually compressing the eyes in order to get clearer vision, and yet eight out of ten of these people with slight myopia would scarcely believe that they were short sighted. Bilious or nervous headache occurs only occasionally, and is easily overcome, but when caused by eyestrain it is of daily occurence, and the longer it is allowed to continue, the more difficult it becomes to correct.

Many opticians will tell you that they have such an enormous stock of spectacles, that they can fit you at once; but I should be very slow to believe it. They can only keep a large stock of simple ordinary sights, and there is not more than one person in four that these ordinary sights will suit; for most eyes have some little irregularity that requires correcting by odd or special lenses, or it may be that the ordinary stock frame is quite unsuitable for the features. These special lenses have no occasion to cost more than others, unless there should be some great peculiarity in their curvature.

CHAPTER X.

UNSYMMETRICAL FEATURES.

It is very probable that few people are aware that a want of symmetry in the features is very general. For example, one eye further away from the nose than the other, or one eye further up in the head than the other. One ear further back in the head, or one side of the face more prominent. In order that spectacles should sit comfortably on the face, all these little pecularities have to be allowed for. In making spectacle-frames to fit each individual case, I have generally had to make some allowance for these things, either in the length of the bridge or of the side, or in the position of the lenses; and yet nearly ninety-nine out of every hundred pairs of spectacles sold are made both sides alike, and where the features are unsymmetrical, one eye is looking through the centre of the lens, and the other is so looking through one side, as to form a prism to that eye and in such a manner as to cause great strain. This is an important point that I always look for, and is one of the reasons why I specially make each frame for each patient. It is really half the battle in getting the spectacles to

be a boon and a comfort, instead of an annoyance, and it shows how utterly impossible it is to get a perfectly fitting frame by selecting them out of the ready-made stock of any optician.

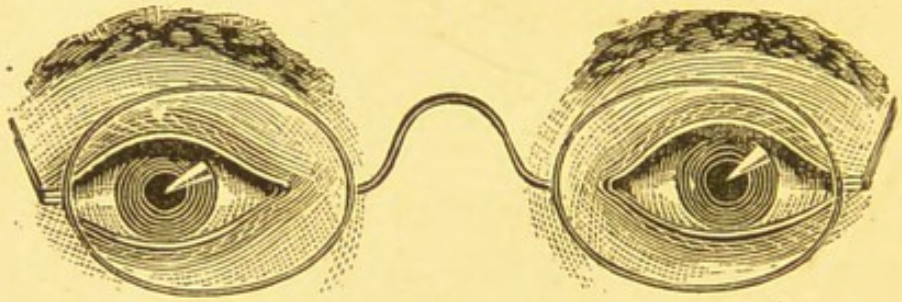


Fig. 14.—SPECTACLE FRAMES TOO NARROW.

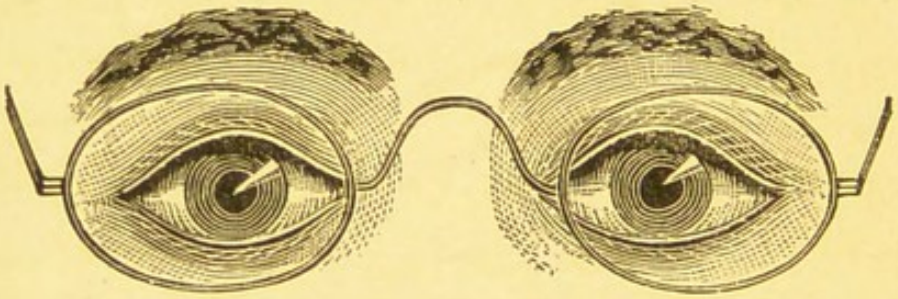


Fig. 15.—SPECTACLE FRAMES TOO WIDE.

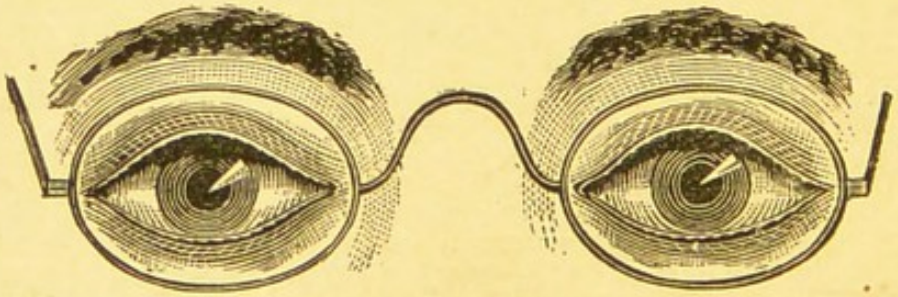


Fig. 16.—SPECTACLE FRAMES AS THEY SHOULD FIT, THE EYES PERFECTLY CENTRAL.

Many people will think that a frame made in this way will look strange on the face, but it is not so; the reverse is the case, because if the features are uneven the frames should also be in accordance, so that when on the face they correspond to the defect, and make both appear perfect.

TINTED LENSES.

When the eyes are weak or inflamed, coloured glasses will be found very beneficial, but it is important that they should be worked perfectly plane, and made from what is commonly called pot metal, that is coloured right through, though they are necessarily more expensive. Some of the cheaper tinted glasses sold by watchmakers and jewellers are made of flashed glass, that is, a thin coating of colour run on to a common green glass foundation. They are generally full of specks and bubbles; the surface is uneven, and everything looked at is distorted. The person wearing these common glasses is not always conscious of the defect, because the eye is a good servant, and will put up with a great deal before complaining. But the mischief is going on all the same, and when the eyes do break down it becomes a difficult matter to put them right.

Another fault with these cheap spectacles is, that being iron frames instead of good tempered steel,

they soon loose their elasticity, and become a source of worry and trouble, even if they do not cause a skin eruption or erysipelas.

The tints most beneficial are, for *day-use*, neutral grey, and for *night-use* by artificial light, neutral blue.

Visitors to the sea-side should always go prepared with a pair of neutral grey folders or spectacles, as considerable mischief is done to the eyes by walking about in bright sunshine, especially where the roads are white, as is the case in Kent and in the Isle of Wight.

CHAPTER XI.

INEQUALITY OF VISION.

VERY few people have the foci of their two eyes exactly alike, although the difference in most cases is so trifling that it may be ignored; but again, there are many cases in which the difference is very great, so much so as to make one eye do all the work. When this is the case, a great deal of the beauty of nature is lost. We have two eyes, not only that we may be provided against accidents, but also to enable us to see forms, and judge distances more correctly.

We can get no stereoscopic vision with one eye alone. Objects, instead of standing out in front of one another, appear flat as in a picture.

Some people will not discover this inequality until something happens to the good eye, which has been doing all the work. Then they discover how differently they see with the other eye. It is easy for anyone to test for themselves, whether they have eyes of equal foci. Let them place an ordinary book fourteen inches from the eyes, and by covering up first one and then the other, notice whether they can see equally well with both eyes. If not, it should be

looked to at once, for they may be sure of one thing, namely, the best and strongest eye will assume the mastery, and do all the work, the other eye remaining inactive, goes to the bad, and if not pulled up will lose all power of vision.

I could call to my mind, at once, without reference to my register, at least a dozen cases in which I have been successful in bringing the two eyes to work together where there has been great inequality of vision, because I may tell my readers that where the two eyes are widely different in focus, it is impossible, at once, to get them to work together; each eye can be made to work independently, but directly they are used together, the strain is too great, and the result is failure. It is only by judiciously working up the bad eye, to the standard of the good eye, that working in unison can be accomplished.

Two cases I had to deal with I may here mention. One, a young lady living in the North of London, whose left eye was useless when she came to me, and turned outwards, and the muscles of accommodation were so fixed as to cause apparent Presbyopic Astigmatism. I made her a pair of spectacles, with a black piece of ebonite in the right (or good) eye, to shut out the vision, and so compel the left eye to work; and accordingly, I made a lens of peculiar construction for the left eye. These adapted spectacles she used every day for three weeks, when I altered them by reducing the curves. I again altered

them twice in the next four weeks, and before three months were over, the two eyes were working perfectly, with a plain glass in the right eye, and a low power convex lens in the left.

It is a remarkable fact that this defect existed right through the family. I afterwards tested the sight, and successfully adapted Spectacles for the father, mother, and two brothers.

The second case was that of a Mr. Flegg, whose left eye was in a similar condition, except that it was in a very much worse state, and he was older than the previous patient; but I succeeded in bringing the eye round in his case, and giving him perfect vision in seven months. In these cases, the younger the age at which the remedy is taken the better; because the lens and muscles of the eye are softer and more easily acted upon; for, at fifteen years of age more can be done in two or three weeks, than six or twelve months' process will do at the age of forty.

In referring to the foregoing, I am of course not alluding to simple cases of inequality of vision, but to difficult ones where the bad eye has been given up as useless, inasmuch as ordinary cases of inequality are of daily occurence to me.

Since writing this chapter in the *First* Edition, I have had a very large number of Clients with extreme difference of foci in the two eyes. An especially interesting case was that of a lady residing at Maida Vale. The left eye was quite useless, and

so on the 17th February, 1893, I made her a pair of suitable spectacles for the purpose of exercising that eye. With three alterations to the lenses, in a little under two years the eye was working perfectly, and the vision was not only restored, but actually came back to the same focus as that of the right eye, so that the eyes became a good pair and equal alike in power of vision.

Many people may be content if they have one good eye, but then they must remember the fact that they have no reserve if the good eye should meet with an accident.

CHAPTER XII.

THE CARE OF CHILDREN'S EYESIGHT.

Too much importance cannot possibly be given to this subject; whether by the mother, nurse, or any other person who has the care of children, the eyesight of the little folks should be carefully watched. Infants, will, very frequently a short time after birth, catch cold in one or both eyes; the eye will become red and swollen, and unless the cold is a very slight one, a white matter will collect in the eye, and prevent it from being opened. Upon the first symptoms of anything of the kind shewing itself, the person having the care of the child should keep it out of any draught, and bathe the eye with a little warm water or with milk and water. Unless it passes off very quickly, the advice of a medical man should be sought.

Parents are apt to take no notice of what they consider *only a slight cold*, but if it is not attended to, the inflammation will affect the eyeball, and the sight will become totally destroyed—it is useless to leave it until the mischief is beyond remedy.

Small pimples on the white of the eye are very frequent in young children, and cause them to

become restless and peevish. When this is the case, a little tonic medicine, with good diet, is the best remedy, and to bathe the eye with a little of the lotion, (mentioned in the Chapter on "How to Preserve the Eyes,") only diluted according to the age of the child.

When children are old enough to go to school, great care should be exercised that their sight is not over-taxed. Schools as a rule, especially private schools, are, some of them, not only ill-ventilated, but also badly lighted. Teachers should see that children are not allowed to keep their eyes fixed on a book for any length of time, nor should they be allowed to do home-lessons in a badly-lighted room. One means of causing serious mischief to children's eyesight, is to make them write out the same lessons twenty or a thirty times as a punishment; yet we fear that still a large proportion of teachers do this.

When children are reading or playing music, they should occasionally be watched to see if they are reading at a correct distance. A child should not have to hold a book nearer than ten, or further than twelve inches from the eyes, and it is as well to try children's eyes separately to see if they are reading equally well with both,

When a child is learning music, and has to play for any length of time daily, the light should be good and the condition of the eyesight carefully observed.

I may mention a case in point. My eldest daughter, when seventeen years of age, had been studying music for twelve years. While watching her at the piano, I noticed a peculiar look about the left eye. I asked her to close the right eye and go on playing. With the right eye closed she could not see a single note. I then carefully tested her sight, and found that the right eye was perfect, but the left was extremely astigmatic, and was doing no work at all. Had I not discovered this, and made her a pair of spectacles to correct the defect, she would undoubtedly have entirely lost the sight of one eye. I then tested the eyes of my other five children, and found three perfect and two imperfect.

CHAPTER XIII.

HOW TO PRESERVE THE EYES.

A few hints to my readers on the importance of preserving their eyesight, and how to do it, may be acceptable.

Never neglect a cold in the eyes. Slight inflammation, if attended to at once, is easily cured. This may be done by toasting a piece of bread, soaking it in cold water, making a poultice of it, and placing it over the eyes (closed of course). Or mix a dessert spoonful of pale French brandy with four of water, and bathe the eyes with it.

If you find your eyesight failing, never attempt to use any other person's glasses, as by doing so you will not only age the sight considerably, but also do it permanent injury.

When reading, do not hold your print nearer than eleven inches, nor further off than fourteen to fifteen inches; if you cannot read comfortably within these distances, then your sight requires some attention, as you can only be reading under strain.

Never look at a bright light, or sit thinking with your eyes fixed on the fire.

In reading, always sit with your back to the light, so that the light may fall over your shoulder on to the book.

Do not read by firelight; and never attempt to read in a railway carriage or omnibus. If you have hitherto done so, give up that practice.

Any one who has tried to read in an omnibus, must have noticed how the print jumped and looked doubled. This causes irritation and confusion, and is a frequent source of headache.

If you read in bed, you had better have your back to the light and lie as much over upon your chest as possible.

Where the eyes are weak, bathe them in cold weak tea. The water should not be too cold—not below 45 deg. Fahr.

Bathing in cold water, is *sometimes* to be recommended, but as there are certain conditions of the eye—such as congestion, &c., when cold water is harmful, if not postively dangerous—I would advise cold water bathing to be left alone, except under advice.

Never wear a pair of spectacles that are too narrow, or too wide, as the lenses form a prism, and are liable to cause double vision.

Do not use a flickering light for reading or writing, and do not sit in such a position as to cause all the light to be on one side of you.

If a particle of grit or other foreign substance is blown into the eye, first try to get it out by lifting the top eyelid over the bottom. If this is not successful, get a friend to look carefully for it by turning the eyelid back, and taking it out with a thin twisted piece of soft paper, or with a camel hair brush. Afterwards bathe the eye with warm water, and keep it closed by tying a handkerchief across it for an hour. If the eyeball is inflamed, use a lotion composed of two drachms of Sulard's Extract and two drachms of Sweet Spirits of Nitre, in a pint of cold water.

Never go up or down stairs with your reading spectacles on, for you are very likely to miss your distance, and meet with a serious accident.

Do not wear a pair of spectacles with a broken or cracked lens, the mischief this causes is not noticed at first, but the image gets impressed upon the retina, and causes permanent confusion of the vision.

It is not advisable to look out of a railway carriage in the direction in which the train is going, as a sudden cold in the eyes is likely to be caught by so doing.

When riding on an omnibus, facing a cold wind, do not keep the eyes closed for any length of time, because when they are opened they are likely to get a chill. It is better to keep them open and blink them occasionally.

When riding or driving, a pair of spectacles should be worn, of plain white glass and with perforated wire

gauze sides. They are light, and a perfect protection against wind or dust.

If the eye gets a severe blow, keep it quiet and closed, and lay a cold wet rag upon it. Do not go to a chemist for any eye-lotion; but if the blow causes any apparent injury, at once seek medical advice.

Should a portion of a needle fly from a sewing machine into the eye, or a piece of steel of any kind, the quickest way to get it out, is to obtain from the nearest toy-shop or ironmonger's, as powerful a magnet as possible, with which it may be withdrawn. If the eye is inflamed, bathe with a solution composed of eight grains of Sulphate of Copper and half-a-pint of water.

If lime gets into the eye, and the remedy can be taken *instantly*, bathe with warm vinegar and water—three tablespoonsfuls of vinegar to half-a-pint of water, but if any time has been allowed to elapse. then it will be better to use an emollient oil.

When at the sea-side, never purchase or use any of the cheap coloured glasses sold there at from sixpence to a shilling, as the lenses are very imperfect, and will do mischief, even if worn only for a few days. I have seen numbers of cases amongst Post Office and School Board employés, where harm has been done in this way.

Never on any account use pink, red, or green glass to protect the eyes from light, neutral grey or spectrum

blue are the only correct tints that may be used beneficially.

Do not *under any circumstances* use any eye-lotion, salve, or ointment, under the advice of a friend, simply because it has done them good, *their* complaint may differ from *yours* and their remedy may do you considerable mischief.

In using Belladonna Lotions to brighten the eyes, remember you are destroying your eye-sight.

When the eyes are fatigued from over-work, the following will be found a good stimulating eye-wash : dissolve one scruple of White Vitriol in eight ounces of water; then add one drachm of Spirits of Camphor, and strain.

FOR CHILDREN, the best possible tonic eye-wash, is that composed of twelve grains of White Vitriol dissolved in eight ounces of Rosewater.

CHAPTER XIV.

TESTING THE EYESIGHT.

THE method adopted by many opticians and stores in testing the sight, would be very amusing were it not injurious. The most common practice with the seller, is to first ascertain what quality of spectacles the customer intends to pay for, and then to lay out a number of pairs for him to select from. The customer naturally takes the pair which magnifies most, and is almost sure to choose them too strong, and the result is that, finding they do not suit, they are exchanged for another pair quite as useless, after trying which the customer will perhaps discard these and endeavour to do without any, and so go on ruining the sight.

I have often seen in shop windows, a notice to the following effect—"The Sight scientifically tested by the Optometer." Now an optometer, or a visometer, is all very well in skilled hands, but there is no instrument yet made, and no rule, by which the sight can be accurately tested by an unskilled person.

The eyes are not optical instruments only, but very delicate physiological organs as well, and the optician

must bring his knowledge of optics into play, to assist him in determining what lenses are necessary. The optometer only gives the rough commencement. You might just as well place a surgical instrument in the hands of a blacksmith, and expect him to perform a surgical operation, as to give a novice an optometer and expect him to test the sight.

I have spent some years in devising and perfecting an optometer, which enables me to check each particular case, and prove whether the curves I have decided upon are the right ones. My plan is first to test the sight for the spherical curve, and then for the cylindrical. When I have determined these, I place the lenses in the optometer, and by a mechanical arrangement each eye in turn is shut off. I can by this means get the lenses to such perfection, that the patient cannot possibly tell the slightest difference between the two eyes; and I have a double means of proving that I have gauged the exact curves required.

Many people wonder at the care and trouble I take in testing their sight, but then I know the importance of it, and most opticians do not. The general optician hurries through the process, partly because it is usual with him to serve his customer as quickly as possible, and partly because he is ignorant of the necessity for very careful testing. Moreover, persons are very apt to mislead the optician in their replies to his questions. They tell him what they think, and what they believe to be the truth, but owing to nervousness

or some defect of accommodation, their eyes deceive them, and then it is that the optician's practical knowledge comes to his aid, and so by repeated tests he is able to tell when and in what respect the person is misleading him.

Some few months ago, a gentleman—a well known London physician—came to me for suitable glasses. His sight was very peculiar, and I spent an hour and a half in testing it. After procuring such perfect vision for him that he was able to see with ease and comfort, he told me he was much struck with my mode of procedure, and expressed surprise at my knowledge in dealing with the eyesight, and he has since recommended me to several of his patients.

I have frequently been asked, why it is that so very few opticians, really understand how to test the eyesight. The answer to this is, that many so-called opticians are merely spectacle vendors, and have no optical knowledge; and even in many of the well known London houses, the business is conducted by assistants, who have no surgical or anatomical knowledge of the structure of the eye, and as they have no means of learning the use of the ophthalmoscope, there are few of them who can even discriminate between a case of Myopia, and a case of Hypermetropia in a child: How are they therefore, to determine, whether the patient's defective eyesight is caused by want of accommodation, by malformation, or by disease?

I have had a case in point, while I have been revising this book. A gentleman came to me who had been under a London optician for some months, and had been having different glasses made to restore the sight of his right eye, but without success. Upon examining the eye, I found a de-tachment of the retina, and no lens can possibly alter this, or improve the sight.

I am perhaps fortunate, in the fact, that several of my relatives have been and are physicians and surgeons, and I myself should have been a member of that profession had I not found, during my studies, that I had a very strong objection to operations; I therefore devoted the whole of my time, to the study of the best method of assisting the eyesight optically.

Many people, and frequently wealthy ones, go to the hospital to have their sight tested, thinking to get the best advice there; but it is a mistake, as, in the first place, there is no time to properly test everyone who goes, and many have to wait as long as four or five hours, besides which a large number of the patients have their sight tested by the students, who fail lamentably in their knowledge of optics.

The hospital is a place for diseases of the eye, but the ophthalmic optician is the proper person to test the sight for spectacles, and if he thinks surgical advice necessary, he will so advise.

CHAPTER XV.

DISEASES AND COMPLAINTS OF THE EYE.

GLAUCOMA.

THIS complaint is most common after fifty years of age, although it may take place earlier. Generally it gives ample notice of its presence, but sometimes comes on very suddenly. The eyeball becomes very hard and insensitive to the touch; the field or vision gradually becomes more limited, and in looking at a gas light or candle flame, there is a circle of rainbow colours. Glaucoma is generally brought on by strain, and spectacles are of the utmost importance. Ready-made spectacles bought anyhow are most dangerous, but carefully adjusted spectacles may be the means of saving the eyesight. Glaucoma in its earliest stage will show itself by intense pain in the eyeball, the sufferer having to change his glasses constantly for a stronger power.

IRITIS.

This complaint generally begins by the eyes becoming red and watering, and very sensitive

to light. It is really inflammation of the iris or coloured portion of the eye. It is a most dangerous complaint. The inflammation envelopes the iris and extends to the crystalline lens. Unless it is taken in time, the lens of the eye becomes glued to the iris, and vision is permanently destroyed. Directly Iritis presents itself, the advice of a skilled ophthalmic surgeon should be obtained. Spectacles are of no use whatever until the convalescent stage has been reached, and plane neutral grey tinted spectacles are then required to subdue the light until the eyes become strong.

CATARACT.

This disease is two-fold—the hard and the soft. The soft can be easily removed by operation, or by absorption, but the latter is a longer process, though a safer one. The hard cataract comes on gradually and can only be removed by operation. Glasses are of little use except in the way of temporary assistance, and have to be frequently changed until an operation has been performed, when strong convex glasses are required, and these really act as the lens of the eye, because in operations for cataract, the lens of the eye is sometimes removed altogether.

Cataract is due to the gradual depositing of Oxalate of lime in the substance of the crystalline

lens, at first in small spots, and then gradually increasing until it covers the whole lens.

It is seldom that cataract shews itself, before the age of fifty, and usually gives ample notice of its presence. The patient finds that in reading, the print has to be brought much closer than formerly, and a continual change to stronger glasses necessary, and even then clear vision is not obtained.

Up to quite recent years, operations for cataract, were not always attended with success, but of late years great strides have been made, by our Ophthalmic Surgeons, and a case of failure is now very rare.

There are several other diseases of the eye, such as Granulation of the Retina, Atrophy of the Disc, Inflamation of the Optic Nerve, &c., but it is not necessary for me to speak of them, as the optician's art is of no use whatever in their case; they are essentially cases for an ophthalmic surgeon.

COLOUR BLINDNESS.

This complaint is much more common than is generally supposed, and does not receive the attention it deserves; more particularly is it of consequence to railway signalmen, engine drivers, and guards.

I believe the Companies now put the men through a test examination before engaging them, but there is no doubt that many railway accidents have been due

to colour blindness—the drivers mistaking the colours of the signals.

Parents or guardians before allowing boys to commence their studies for the Navy, should have their eyes tested for colour blindness, as it may be the means of saving a great waste of time and money. I have known several instances in which young men, after nearly completing their studies, have been found to be colour blind, and have had to seek some other profession.

CHAPTER XVI.

THE QUALITY OF LENSES.

PEBBLES VERSUS *GLASS.*

THIS subject deserves a special chapter, because so much depends upon the quality of the material, and the accuracy of the curvature when worked.

All the cheap lenses that are sold are made from common glass, and have a greenish tint, and are most imperfect on their surfaces. These defects are not immediately apparent to the eye unless looked for, but their effect on the retina is very decided. An imperfect lens, instead of having its optical axis in the centre, will have it on one side. There will also be fine scratches and specks on the surface. These lenses are rejected by first-class opticians, but they are made up in Birmingham and Wolverhampton in cheap frames, and are sold at a low price by small shopkeepers and at Stores.

Even the very finest crown glass lenses have the disadvantage, that after a time they become scratched, and this reveals one of the real advantages of pebble or rock crystal; moreover, pebble being

harder, will not break so easily. But here again, we can have the perfect and the imperfect. A good glass lens is to be preferred to an imperfect pebble, but when a pebble is cut correctly *it is the most perfect aid the eyes can have.* A perfect pebble lens should be cut strictly at right angles to the axis of the crystal, but it is an expensive mode of cutting them, and considerably increases the cost of the spectacles. When cut correctly, a pebble under the polarescope, should show a perfectly clear centre, with concentric rings of colour round; but an imperfect pebble will show under the same conditions bands of colour striking across the lens, but of course they are not visible to the naked eye. A pebble cut the wrong way, will cause light to be refracted in two different directions, and give a double image. The eye is conscious of this double image and rebels, but the brain is only conscious that something is worrying the eye.

Taking a piece of rock crystal of a given size, where four perfect lenses could be cut from it, at least a dozen imperfect ones could be made.

Unfortunately, for the sake of cheapness, this country is flooded with imperfect pebble spectacles, and these are largely sold at watchmakers, jewellers, and stores—and why? Because their only means of doing business is to sell cheap. If a customer had to pay 15/- to 21/- to these people, for a pair of perfect pebble spectacles, they would not deal there.

Many opticians advertise good pebble spectacles *from* 5/- per pair, but when you go to them, if they keep *axis cut* pebble spectacles (which is very unlikely), they generally require a guinea per pair for them. It is not possible *to make*,—to say nothing of selling,—a pair of perfect pebbles, even without the frame, for 5/-; the rubbish which is sold at this price is worse than glass; for it is cut from waste pieces of pebble, and sooner or later must do mischief.

I have always made it a rule not to supply any than perfect pebbles, and never to advise the use of any but those cut strictly at right angles to the axis of the crystal, and I never allow a lens to go out until I have personally tested it under a polariscope. If my patients are unable or unwilling to go to the expense of perfect pebbles, I then, of course advise them to have the best crown glass lenses.

I have often been asked which form of lens is the best. THE DOUBLE CONVEX, *i.e.*, the convex curve equally divided between the two surfaces; or the PERISCOPIC, *i.e.*, a lens made with all the convexity on one side, and a slight concavity on the other side? Many people think the latter is the best, because it takes more after the form of the front of the eye, and I must say, that there are some cases, in which this form of lens gives the greatest ease; but as a rule, the double convex lens is much to be preferred, because, having two surfaces at which the angle of light is deflected, the rays enter the eye more evenly,

whereas in the periscopic lens, the rays of light receive a great twist upon entering the first surface of the lens, and on meeting the second surface they are bent in an opposite direction.

In speaking of a periscopic lens being generally slightly inferior to a double convex, I mean the *really* Periscopic, and not the Plano-Convex, because the latter are frequently sold in place of the former in all cheap spectacles. The public do not know the difference, but they suffer from the effect. All the cheap German and French spectacles are made Plano-Convex for cheapness, as they have all the magnifying power worked upon one side, the other side being flat, or at least, intended to be flat.

CHAPTER XVII.

DIFFERENT FORMS OF SPECTACLES & FOLDERS.

I HAVE mentioned in one of my previous chapters, how necessary it is that the frame should fit the face, as well as the lenses suit the eyes. No one who has once had a pair of spectacles made for them, would ever think of buying a pair by haphazard again.

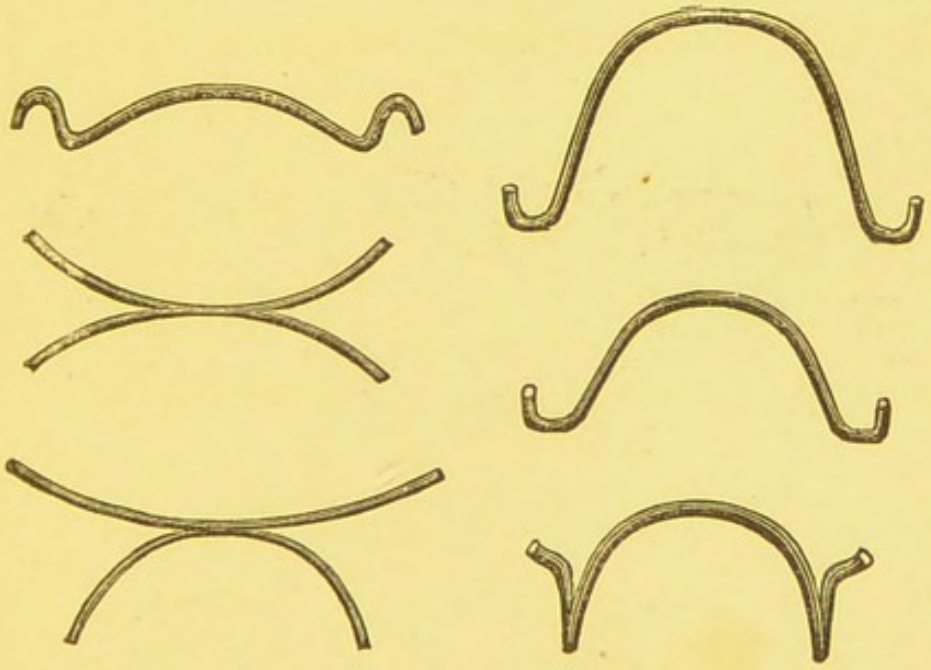
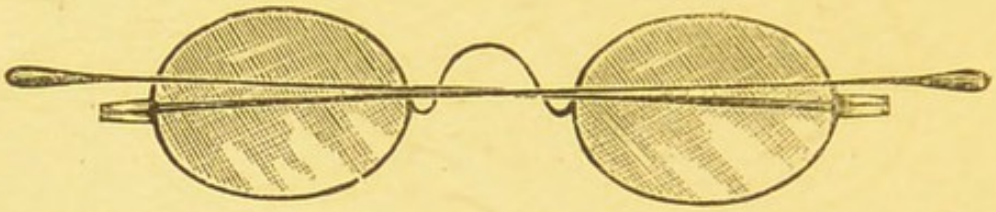


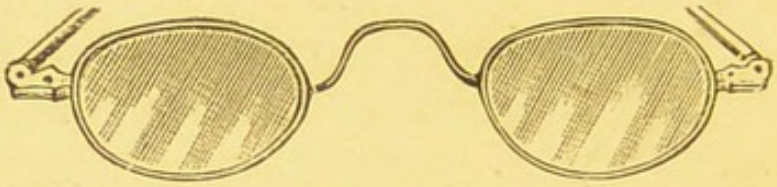
Fig. 17.—DIFFERENT FORMS OF SPECTACLE BRIDGES.

To be able to fit a person properly, an optician requires many patterns. I think my readers will agree with me, that nothing looks more unbecoming

Bluett's Patterns of Spectacles.



THE ORDINARY FRAME.



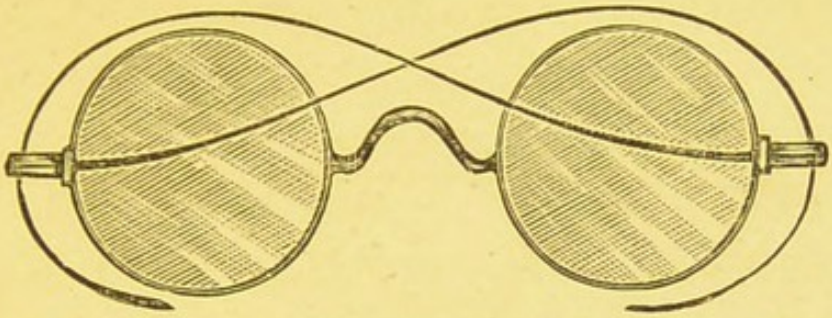
THE PANTOSCOPIC OR READING FRAME.

THE ARTIST'S OR PULPIT FRAME (*Old Sight*).

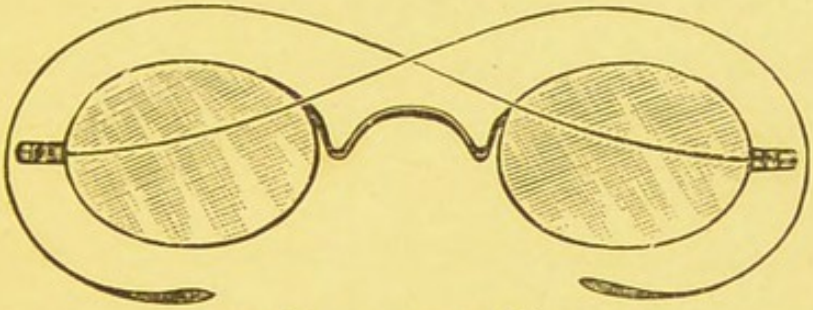
THE ARTIST'S OR PULPIT FRAME (*Short Sight*).

F. J. BLUETT, OPHTHALMIC OPTICIAN,

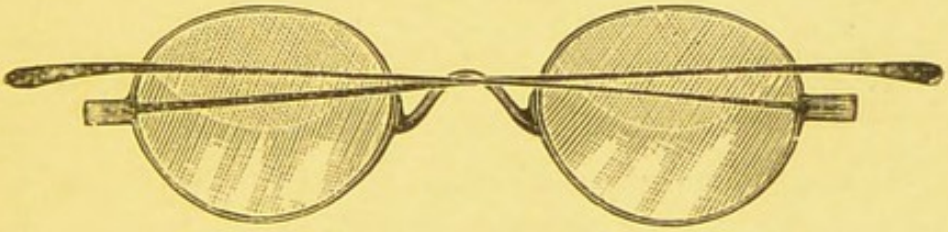
Bluett's Patterns of Spectacles.



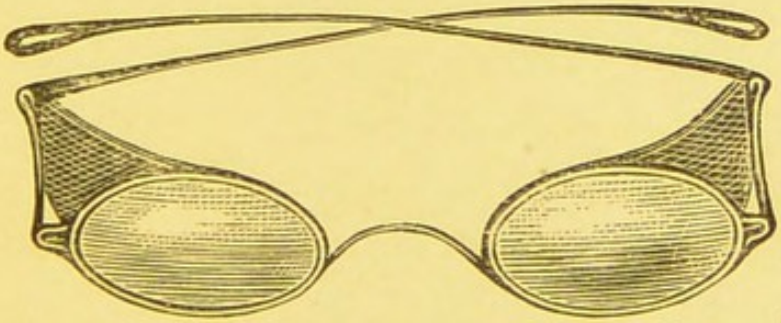
THE SHOOTING, RIDING, OR CRICKET FRAME.



THE INVISIBLE FRAME.



THE FRANKLIN FRAME.



THE GLOBULAR OR CUP-SHAPED FRAME.

8A, GREAT PORTLAND STREET, LONDON, W.

and unsuitable, than for a person who has a thin nose, to wear a pair of spectacles with a wide arch bridge; or, on the other hand, a person with a broad nose, to wear spectacles with so narrow a bridge, that a large gap is seen between the top of the nose, and bridge of the spectacles.

PANTOSCOPIC SPECTACLES, or those with the frame made flat on the top, should be worn when reading, so that the reader, if spoken to, may at once look *up*, and *over* them. It is very injurious to look across a room *through* reading lenses.

PULPIT OR ARTISTS' SPECTACLES are made with the lenses cut in half, lengthways, and fitted into frames, so that in short-sight the wearer looks *through* the lenses at a distance, and *under* them for reading or drawing, and in old or long-sight looks *over* them at a distance, and *through* the lenses for reading or drawing. My new form of FRANKLIN SPECTACLES are exceedingly useful, where the eyes fail for both the near and distant vision.

Spectacles for riding, driving, billiards, cricket, or tennis, should be made with large round lenses, and flexible curled sides to go round behind the ears. The flexible side is much more pleasant to wear, than the old form of curled side. It is much softer, and if pulled off suddenly does not cut the flesh.

FRANKLIN SPECTACLES.—This form of spectacle is made to carry lenses of different foci, to see near and distant objects equally well, without having to

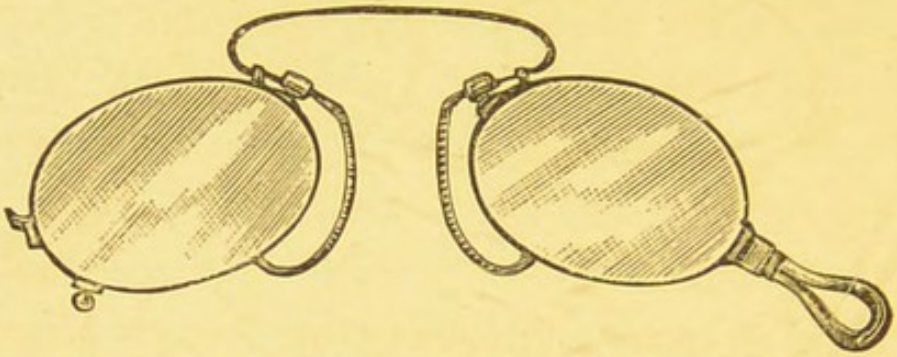
take the spectacles off the face. The old form was made by having the lenses divided in the centre in two halves; but the division across the middle is a great annoyance, and causes irritation to the eyes, hence they are not so much worn as they used to be. However, I have devised a pattern frame, and a means of working the lenses in such a manner, so that the two sights are worked on one lens, thereby giving a better appearance, and all the comfort and convenience of the old FRANKLIN SPECTACLES without their disadvantages.

Great improvements have been made in Folders or Pince-Nez during the last few years, and the old style of Oval Tortoise-shell or Round Pivot Folders has quite gone out of fashion. A great stir was made some time ago about the Canadian Folder, which has movable cork nose pieces, but it is really a very old pattern revived, and the springs easily break owing to their being held only by the small screw which goes through the end of the spring.

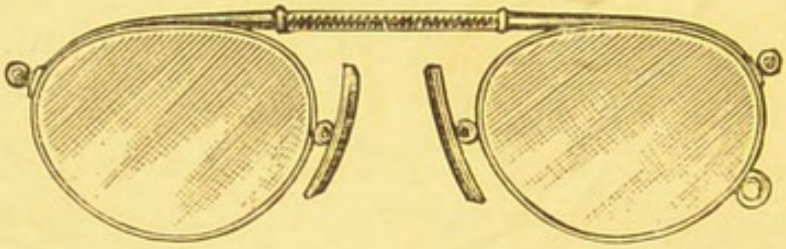
My Improved Canadian will be found the perfection of a Folder. The spring is tied so as to prevent breakage. The lenses stand out horizontally, bringing the eyes in the exact centre of the lenses, and will be found to give the maximum of comfort, with the minimum of pressure.

I have often been asked the question, when a person is purchasing his first pair of glasses; Which are best, spectacles or folders? Well, that is rather a difficult

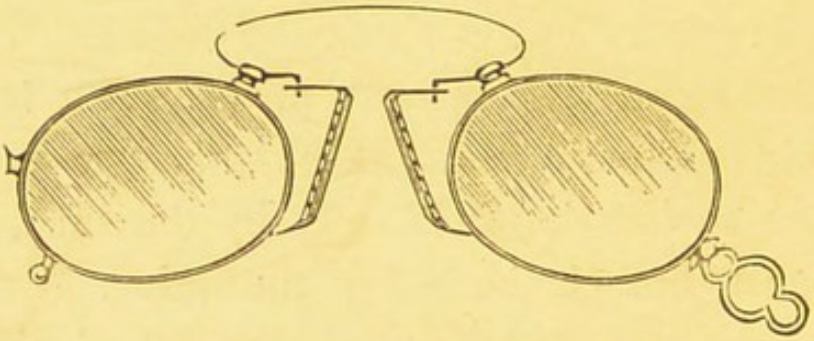
Bluett's Patterns of



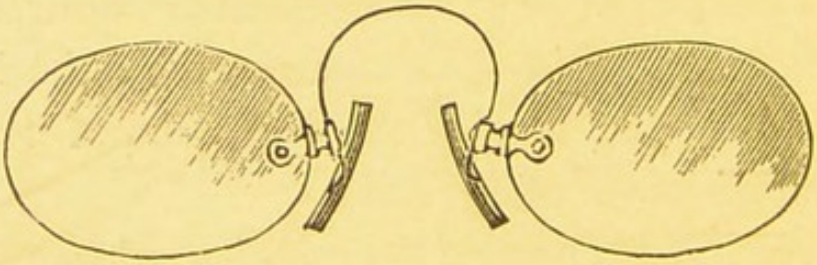
THE BROAD PLAQUET FOR THIN NOSE.



THE ASTIGMATIC NON-FOLDING PINCE-NEZ.



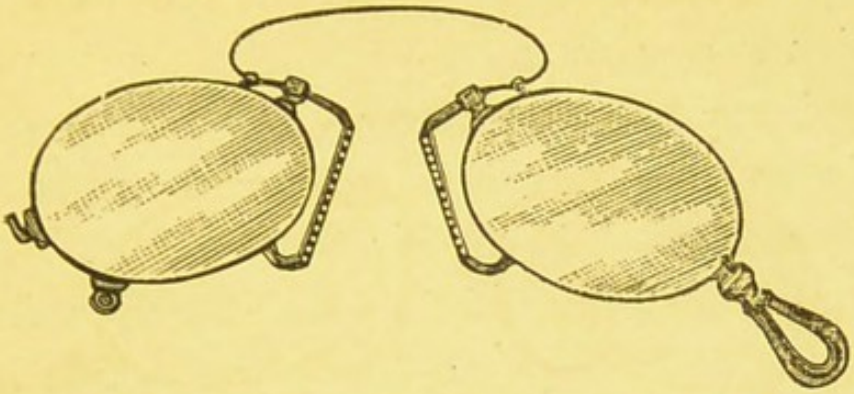
THE CANADIAN, WITH CORK PLAQUET.



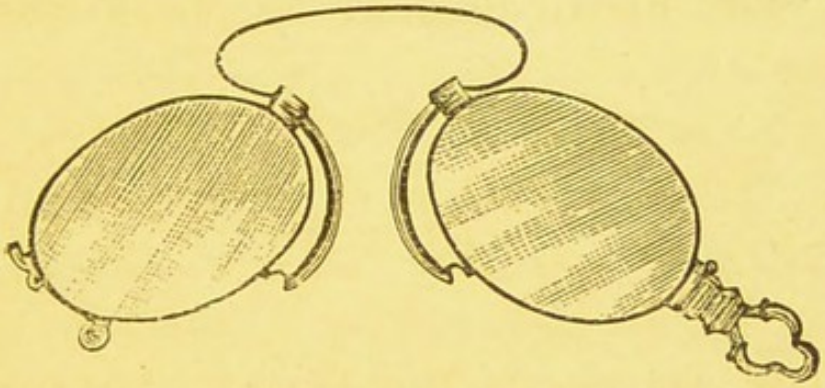
FRAMELESS NON-FOLDING PINCE-NEZ.

F. J. BLUETT, OPHTHALMIC OPTICIAN,

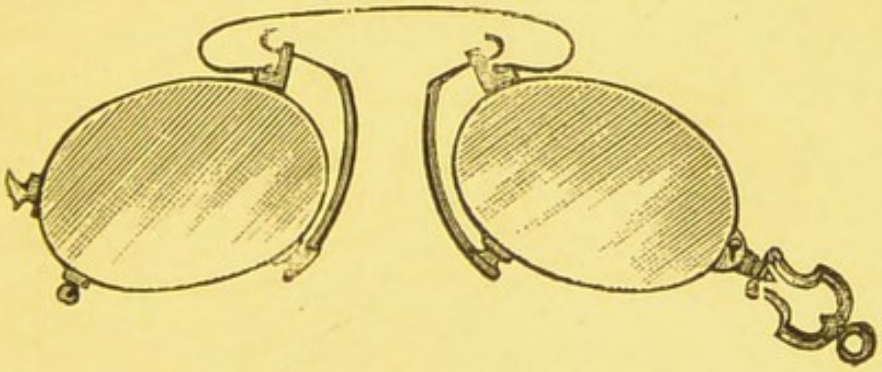
Folders and Pince-Nez.



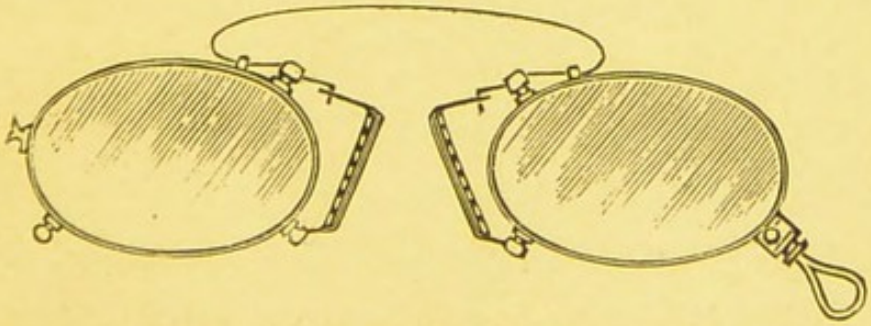
THE NARROW PLAQUET FOR BROAD NOSE.



THE JAPANESE, OR FIXED PLAQUET.



THE NON-PRESSURE.



BLUETT'S IMPROVED CANADIAN.

8A, GREAT PORTLAND STREET, LONDON, W.

question to answer, and depends very much upon the convenience and taste of the wearer; because most people have an objection to wearing spectacles at the commencement. However, spectacles are certainly to be preferred, because if folders are worn for any length of time, they press upon the double integument of the nose and cause headache. But then, again, with spectacles it generally happens that when they are wanted quickly they are in some other part of the house; whereas folders, if held by a cord round the neck, can always be at hand. Really, the best and most convenient plan, is to have a pair of each, so that the spectacles can be worn for reading or sewing, and the folders for occasional use when required.

CHAPTER XVIII.

TESTING THE SIGHT BY CORRESPONDENCE.

THOSE of my readers who are unable to travel to London to see me will be glad to know that, after spending a considerable time and thought upon the subject, I have devised a means whereby they can be suited with spectacles by correspondence, and I can guarantee the spectacles will be accurately adapted to their requirements, providing that there is no complication of astigmatism. I shall be pleased to give particulars post free, but as I find so many people call themselves short-sighted, when they are the reverse, I must ask my correspondents, either to send me an old lens, such as they have worn in their spectacles, or give me some definite information that I may know whether I am to send a test for long or short-sight — and also to answer the following questions: Age?

Does the eyesight fail for near or distant objects?

Have you worn spectacles? If so, how long?

Do you require the spectacles for reading, or for walking?

CONCLUSION.

And now in conclusion let me refer briefly to the title of my book "DEFECTIVE VISION: ITS CAUSE AND CURE." The subject is certainly well worth the study of everyone. It will enable those who have good

sight to know how to preserve it, and as for those with bad sight, they may learn how to restore it : for, blindness is a terrible calamity, but largely preventable.

Defective Vision may be put down to four causes. *Firstly*, hereditary ; *Secondly*, accident ; *Thirdly*, neglect in infancy and *Fourthly*, want of attention to eye-strain when the muscles are being overtaxed. It matters little to which of these four causes any particular case of defective eyesight may be attributed, but the fact remains that in the first three causes, a great deal can be done with lenses carefully adapted, and in the fourth case, the eyes can be restored to their normal condition.

Then as to the Cure. I need scarcely add much here, as my book gives the fullest information upon this point, but two remarks I may make ; never allow your children to stoop over lessons or music, because of any objections you have to their wearing glasses, nor should you overtax your own eyesight, simply because you do not particularly like to begin the use of spectacles.

If any of my readers are unable to get spectacles or folders that are comfortable and suitable to their sight, I shall be pleased indeed if they will favour me with a call. My consultations are entirely *free*. I will endeavour to overcome their visual difficulties, and even where there is organic disease, I may be able to procure them better, if not perfect vision.

WELLCOME LIBRARY INSTITUTE

Revised Price List of Spectacles.

Manufactured under Mr. Bluett's own personal supervision and by best London Workmen only.

Good Steel Frames with Best Glass Lenses	2/6
Ditto ditto with Best Optically worked Crown Glass Lenses	4/6
Finest Light Amber Steel Frames, specially made to order, with Best Optically worked Crown Glass Lenses	7/6
Very Fine Nickle Steel Frames, with curl or hook sides and Grooved Lenses	10/6
Light Amber Steel Frames with Brazilian Pebble Lenses	10/6
Ditto ditto with Axis Cut Pebble Lenses. Each Lens carefully examined and tested separately under the Polariscope and guaranteed 'Perfection'	15/0
Ditto ditto in Finest Light Amber Steel Frames, (usual West End price 21/0 to 30/0) ..	18/6
Best Light Amber Steel or Nickel Frames with Best Crown Lenses for Cataract, extra deep Myopia, or Astigmatism, according to depth of curvature,	12/6 to 21/0
Good Steel Frames with Neutral Tinted Lenses, worked Optically Plane, for protection from excess of wind, light, and dust	2/6 & 3/6
Ditto ditto Finest Quality	5/0 & 7/6
Ditto ditto globular, with crescented gauze sides to exclude all light	8/6 & 10/6

Gold Spectacles—

10 carat, according to weight of frame	..		18/6 to 30/0
12	ditto	ditto	25/0 to 40/0
15	ditto	ditto	35/0 to 50/0
18	ditto	ditto	40/0 to 65/0

F. J. BLUETT, Ophthalmic Optician,

8a., Great Portland Street, London, W.

Price List of Folders and Pince-Nez.

Good Steel Frames with Best Glass Lenses	2/6
Best Steel Frames with Best Optically worked Crown Glass Lenses	4/6
Ditto, ditto, Nickelised to prevent rusting. Best Patterns, fitted with the Finest Glass Lenses ..	7/6
Good Nickel Steel Frames with Best Brazilian Pebble Lenses	10/6
Good Nickel Steel Frames with Axis Cut Pebbles, each Lens carefully examined and tested separately under the Polariscope, and guaranteed perfection	15/0
Ditto, ditto, in the very Finest Nickel Steel Frames of any pattern (usual West End price 21/0 to 25/0)	18/6
Ditto, ditto, Nickelised and Fitted with Lenses for Astigmatism or Extreme Peculiarities of Vision. Best Optical Crown Lenses	12/6 to 21/0
Good Steel Frames, with Neutral Tint Lenses worked Optically Plane, for protection from wind, light, and dust	2/6 & 3/6
Ditto, ditto, Finest Quality	5/0 & 7/6
Best Nickel Astigmatic Pince-Nez with Tinted Lenses worked Optically Plane	10/6
Gold Folders and Pince-Nez— 10 carat, according to weight of frame ..	18/6 to 30/0
12 ditto ditto	25/0 to 40/0
15 ditto ditto	35/0 to 50/0
18 ditto ditto	40/0 to 65/0

F. J. BLUETT, Ophthalmic Optician,

8a., Great Portland Street, London, W.

TESTIMONIALS.

The following are Extracts from a few letters, out of a very large number, received from Patients with Difficult Cases of Eyesight, who have been successfully suited with glasses by Mr. BLUETT.

THE REV. J. L. E. HOOPPELL (*Curate of Kentish Town*), 6, *Gordon House Road, N., writes March 2nd*, 1891—

"It is with great pleasure and gratitude I write to tell you that the spectacles you made for me, have proved to be an unqualified success.

As you know I have had them some months and I have never had the headache since, from which I constantly suffered for nearly a year previously."

MR. J. R. GRIFFITHS, 2A, *Lorn Road, Brixton, writes October 28th*, 1895—

"I was very glad to hear my uncle had put himself in your hands, he was very pleased with the result of my mother's visit to you. Personally, it is a great pleasure to send anyone to you, that they may experience the same relief and comfort, as did yours faithfully.

MISS A. E. FUTCHER, 60, *St. Thomas Street, Portsmouth, writes November 8th*, 1895—

"As soon as I commenced working I used the glasses, not taking them off except to go out, each day have found great relief, the aching being so very much less, they have been a boon."

MRS. MARIA NICHOLLS, 6, *St. Thomas' Road, Finsbury Park, London, N., writes January 20th*, 1891—

"After giving a good trial to the spectacles you supplied me with, I am very pleased to say they are a perfect success. I am now able to read in comfort, which I have not been able to do for a very long time."

A Case of Muscular Paralysis (Cured in Eighteen Months)

Mr. S. G. Henniker, 2, *Gordon Villas, New Malden, writes January 11th*, 1896—

"The new lens suits me capitally, and I cannot help but thank you for the way in which you have, by your glasses, brought my right eye into use, which as you know was practically useless before I consulted you; I hope to bring my wife next Saturday, when I trust you will be able to benefit her also."

Difficult Case of Compound Myopic Astigmatism.

Also February 1st, 1896—

"I am glad to say that the glasses suit my wife splendidly, and she is now able to enjoy nature in a way she has never done before, which will be a great source of joy I can assure you."

A very Difficult Case of Diplopia, combined with Myopia and Astigmatism.

Mr. W. Cary-Bliss, *Romsey, Hampshire, writes May 20th*, 1890—

"It is with much pleasure that I write to you of the success of my spectacles. Both in the pair for reading and walking I find a great benefit. They are a source of relief and comfort, and life seems to have a new interest."

December 4th, 1890—

"After wearing the glasses you made for me since last May, I feel I must write to tell you of the great benefit which I have received from them, and that the double vision has much improved. I may be in London sometime next month when I hope to call and see you."

And five years later, May 9th, 1895—

"I am pleased to say my sight still continues to improve. The spectacles you have just made for me suit admirably, I hope that others may receive the same benefit from you that I have.

Mr. F. E. Coe, *Lyndale, East Finchley, writes June 28th,* 1893--

"The Astigmatic Lenses have given perfect satisfaction, my eyes are stronger, clearer, and have a more healthy appearance than they have possessed for a very long time past. My only regret is not to have known you, and benefited by your skill, two or three years earlier."

A Case of extremely deep Compound Myopic Astigmatism.

Mr. F. W. F———, *King William Street, E.C., writes March 6th,* 1891—

"Through absence I have been prevented from writing you earlier. I am much indebted to you for your painstaking attention in connection with suiting my sight, and I shall go to no one else while your services are to be secured. It will be a pleasure to give your name to my friends."

The above gentleman has been to me once or twice every year since the above date, and as late as October 16th, 1895, his sight—which was of very little service to him in 1890—has been completely restored to health for the last two or three years, and with the aid of his glasses he gets perfect vision for all distances.

Mr. James Hatfield, *The Portsmouth and Southsea Army and Navy Stores, Southsea, writes March 8th,* 1893—

"I duly received the spectacles, and am pleased to say they are a decided success. I was highly gratified with the capable and painstaking way, in which you overcame the Visual difficulties with which I was troubled."

Mr. T. L. Rundle, 114, *Fortess Road, N.W., writes November 8th,* 1893—

"Spectacles are most satisfactory, I suffered with headache a considerable time before I applied to you. I have a feeling of refreshment and ease directly I put them on."

Miss E. Ashton, 29, *Colebrooke Row, Islington, writes October 17th,* 1893—

"The glasses reached me this morning, they are a great comfort. I return you my sincere thanks for the great trouble you have taken with them."

A very difficult case of Conical Cornea.

MRS. PEARCE, 39, *Bignold Road, Forest Gate, E., writes October 25th*, 1892—

"You have effected a marvellous improvement in my sight and have worked wonders. I can now see as I have never done before, although I have worn glasses for years."

(The above lady came to me a few weeks ago, October 18th, 1895, when I found her sight greatly improved, and the Myopia decreasing.)

THE REV. G. COOKE ROBINSON, M.A., *Senior Curate of St. Marks, North Audley Street, London, W., writes August 22nd*, 1892—

"After nine months trial of the Pince-Nez and Music Spectacles which you supplied to me, I have the satisfaction to state I have received much benefit from both."

MRS. IDLE, 32, *Cicada Road, Wandsworth Common, writes September 4th*, 1893—

"I have unfortunately cracked the right eye of the splendid pair of Pince-Nez you made for me . . . . . I have *never* had glasses before so admirably suitable in every way, if one may judge by feelings."

MISS M. S. PECKHAM, *Worplesdon, Guildford, writes May 23rd*, 1893—

"Miss M. S. Peckham has safely received the Spectacles. They suit her sight exactly in every respect. Nothing could be more successful."

MISS A. PACKHAM, *Woodlands, Denmark Hill, writes March 2nd*, 1892—

"I have much pleasure in writing and thanking you for the glasses and spectacles received quite safely. I find them most beneficial, it is quite a treat to see everything so clearly, and I find a most delightful change."

A very difficult Case of Irregular Mixed Astigmatism and Defective Sight of many years standing.

MISS A. EVEREST, *Holtyre Common, Near Edenbridge, Kent, writes July 8th*, 1892—

"The spectacles reached me safely and I think they will be very successful. With thanks for your kind attention."

MR. T. FORSKUT, *Thornhill, Sunny Gardens, Hendon, writes July 13th*, 1891—

"Very many thanks for the glasses which reached us safely, Mrs. Reading's suit her admirably. My folders are also splendid, as I can see with 'such comfort.'

MISS W. E. BARROW, 52, *Lower Sloane Street, London, W., writes April 27th*, 1891—

"I shall have much pleasure in recommending you to any of my friends who may need your help. My own sight has benefited greatly from your care."

MR. JAMES E. FLEGG, 39, *Acton Street, W.C., writes December 4th*, 1890—

"I take this opportunity of thanking you for the care and attention you have paid to me, for it seems hardly possible for so great a change to take place in so short a time, that in about seven months I can see to read small print with an eye that was but of little use to me when I came to you, as I could not see to read with it at all."

THE BISHOP OF ANTIGUNA, *Fulbrook House, Ealing, W., writes March 7th*, 1891—

"I have never been *so entirely* well suited with glasses as with the pair I obtained from you a year ago, after your testing my sight."

DR. F. J. BUCKELL, M.D., 32, *Cannonbury Square, N., writes March 4th*, 1891—

"I am so much pleased with the capable way, in which you dealt with my visual difficulties, that I shall be pleased to recommend any of my patients to you."

Baylis & Lambert, Printers, 135, *Junction Road, N.*

THE

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THEATRE OR FIELD.

This glass is specially devised for High Power, large field of view, and portability.

Four inches high, 1⅝ object glasses, covered in Calf, Morocco, or Russian Leather, with Japanned sun or spray shades, and fitted in a best solid leather sling case.

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,, both eyes	each 2/0
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