19

ILLUSTRATED CATALOGUE

—OF—

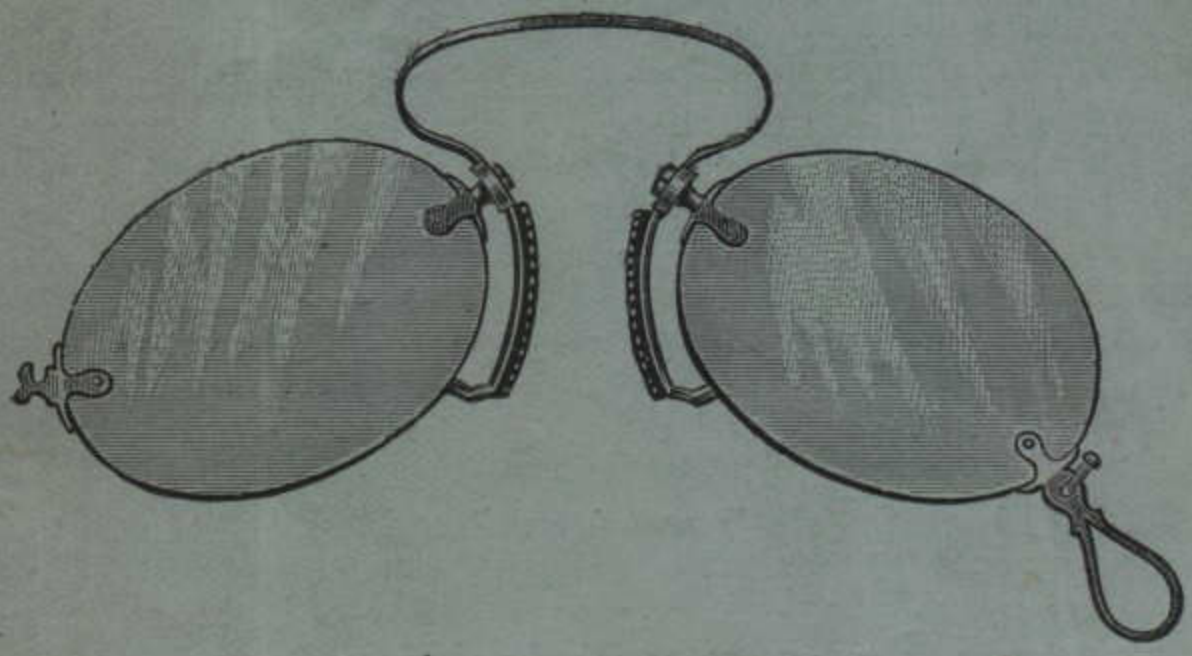
Spectacles,

Opera Glasses,

Ophthalmoscopes

—AND—

Meteorological Instruments.



Manufactured, Imported and Sold, Wholesale and Retail

—BY—

William Y. McAllister,

No. 728 CHESTNUT STREET,

PHILADELPHIA, PA.

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W. Y. McALLISTER,

No. 728 CHESTNUT STREET,

Philadelphia, Pa.

August 1882.

ESTABLISHED, 1783.

A PRICED AND ILLUSTRATED

Catalogue

—OF—

43,102.

OPTICAL INSTRUMENTS,

Spectacles and Eye-Glasses.

ALL KINDS OF

THERMOMETERS,

Aneroid and Mercurial Barometers.

Ophthalmoscopes, Trial Setts, &c., &c.

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IMPORTED, MANUFACTURED AND SOLD, WHOLESALE AND RETAIL,

BY

WILLIAM Y. McALLISTER,

OPTICIAN,

728 Chestnut Street,

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D-6.

A P O R F D Z

This House is a continuance of the business originally commenced by JOHN McALLISTER, Senior, in Market Street, about 1783, and which he in 1796, removed to Chestnut Street, above Second, where it remained until 1854, when it was removed to Chestnut Street, below Eighth, the present location.

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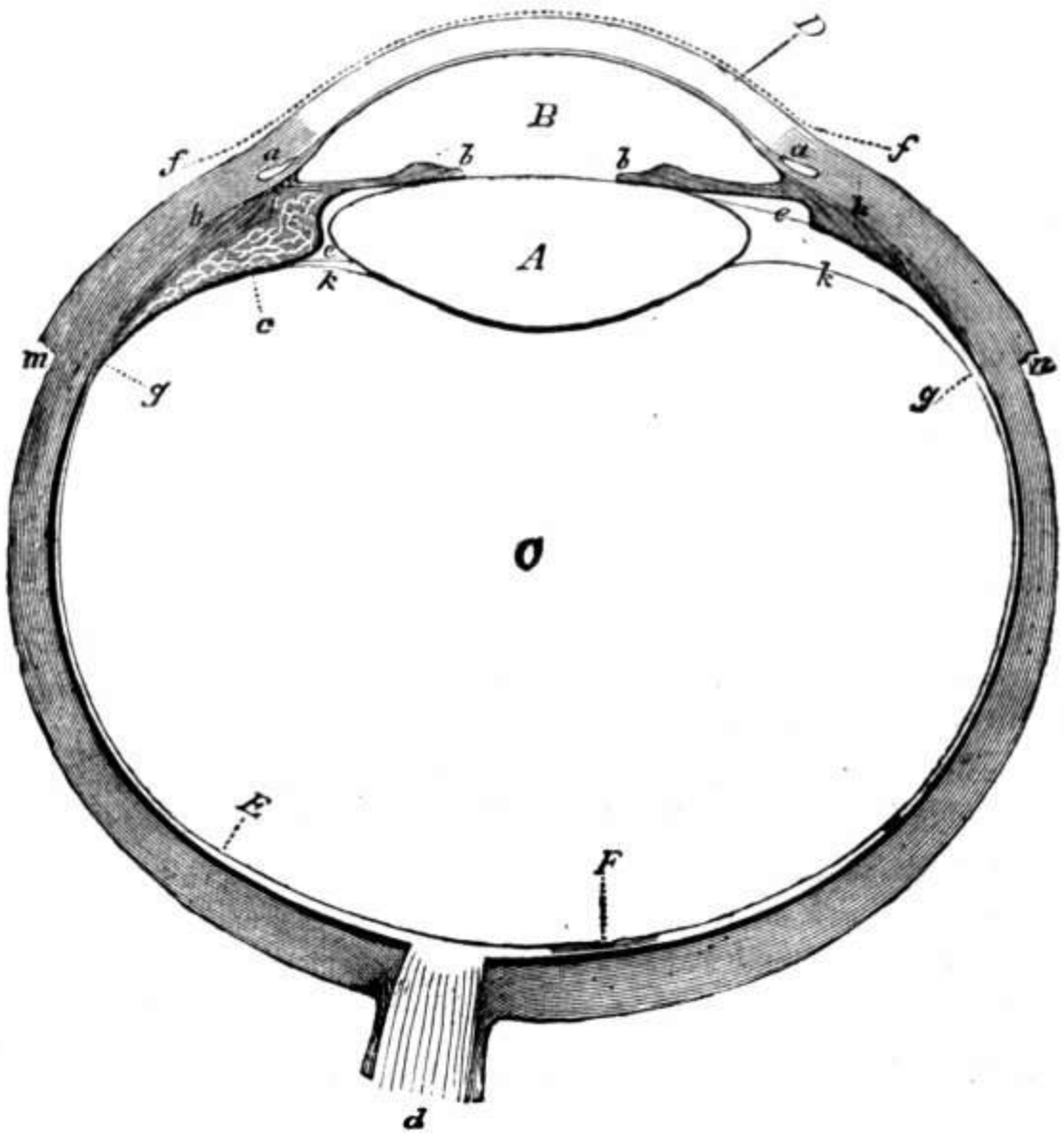
VISION.



A—Crystalline Lens.
B—Anterior Chamber containing the Aqueous Humor.
C—Interior Chamber containing the Vitreous Humor.
D—Cornea.
E—Retina.
F—Macula Lutea.
b-b—Iris.
d—Optic Nerve.
g—Choroid Coat.
h—Ciliary Muscle.
m-n—Sclerotic Coating.

The ball of the eye is nearly spherical, being about one inch in diameter. It is of a very complex structure, consisting of a series of coats, humors and muscles, each of which exercises its peculiar function, while we are enjoying the sense of sight, either of objects that are near or at a distance.

The above illustration represents an enlarged section of the eye, cut through from the centre of the Cornea to the Optic Nerve.

A—The Crystalline Lens is a perfectly transparent, highly refractive body; shaped like a double convex lens. It is about one third of an inch in diameter and one sixth of an inch thick. The light on entering the eye passes through the lens and is brought to a focus on the Retina.

B—The Anterior Chamber is the space between the Cornea and the lens *A*. It is filled with a clear liquid called the Aqueous Humor, which is highly refractive.

C—The Interior Chamber, being the space between the Lens and the Retina, is filled with a colorless substance called the Vitreous Humor, a transparent, gelatinous body; its principal function is to aid in bringing rays of light to an accurate focus on the Retina.

D—The Cornea, is the transparent front portion of the eye-ball. Its shape is similar to a watch crystal. The Cornea is the first part of the refractive system of the Eye.

E—Is the Retina or nerve tissue, covering the whole back part of the eye-ball inside; on it are formed pictures of the objects we look at, and are from it transmitted to the brain by the Optic Nerve.

F—The Macula Lutea, is a very small indentation on the Retina nearly in line with the centre of the Lens and Cornea. It is the most sensitive part of the Retina. Clear, sharp, distinct vision can only be had by turning the eye so that the image of the object may be formed on the spot.

b-b—The Iris, is a delicate colored curtain covering a great portion of the eye; having an opening in the centre. It contracts and expands according to the amount of light reaching the Retina.

d—Is the Optic Nerve, it comes from the brain and enters the back part of the eye-ball a little toward the nose, from the centre. Through it, impressions made on the Retina are conveyed to the brain.

g—The Choroid Coat, is a dark colored membrane, enclosing the entire inside of the eye-ball, outside of the Retina. It is intended to absorb all superfluous rays not focussed on the Retina.

h—Is the Ciliary Muscle, it is a circle of muscular fibre situated around the lens; by contracting it makes the lens become more convex, to enable the eye to view near objects.

m-n—The Sclerotic Coating is the external covering of the eye-ball. It is of a whitish color, very hard, tough and elastic, it is well formed to give support and protection to the delicate parts within.

On the outside of the eye-ball of each eye, there are several muscles by which it is moved inward and outward or up and down. as the position of the object to be seen distinctly may require.

PERFECT SIGHT.

(EMMETROPIA.)

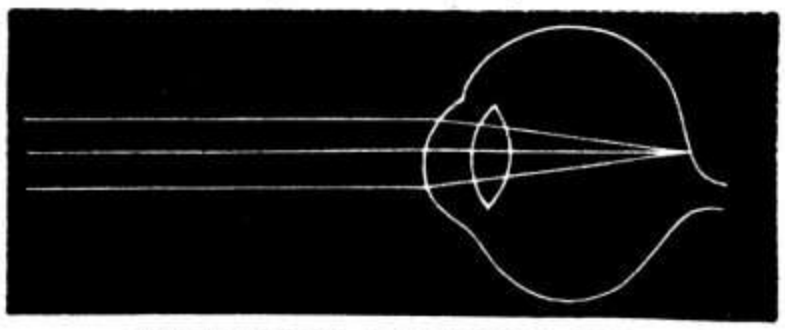


DIAGRAM OF A PERFECT EYE.

Our two eyes are absolutely necessary for a proper comprehension, by sight of size, form and distance. No correct idea can be obtained by one eye.

Rays of light coming from any object, are in reality divergent, since only rays coming from an infinite distance are parallel; practically however, all rays coming from objects 20 feet or more away, are considered parallel, and those from objects nearer than 20 feet are divergent.

From an optical stand-point, the eye is simply a camera obscura or dark chamber. The refractive media of the eye, cornea, aqueous humor, crystalline lens, and vitreous body form the lens of the camera, the iris, the diaphram, the interior of the eye, the camera itself, and the retina, the plate upon which the image is formed.

Parallel rays coming from some distant object, fall on the cornea, pass through the lens and in doing so are bent from their course and converge to a focus on the retina, at the point marked *F* on the cut, page 3, where a distinct image is formed, and the visual impression is then conveyed to the brain by the optic nerve.

It is evident, that rays coming from an object 20 feet distant, and those from a distance of 12 inches cannot be brought to a focus at the same point, by the same lens; and so it would be with our eyes, had we not the power of increasing or diminishing the convexity of our lenses by means of the ciliary muscles, which expand and contract the lens of the eye at pleasure. This change is constantly taking place without our knowledge.

This power of changing the form of the lens, by the action of the ciliary muscle which entirely surrounds the circumference of the lens, is called by Oculists the power of "accommodation" and varies greatly in different individuals, being very active, and instantaneous in action in children, and diminishing constantly with advancing age, until in old age the muscles gradually lose their power, and there is consequently little or no accommodation.

The rays of light after having passed through the lens are brought to a focus on the retina, which is due to "refraction."

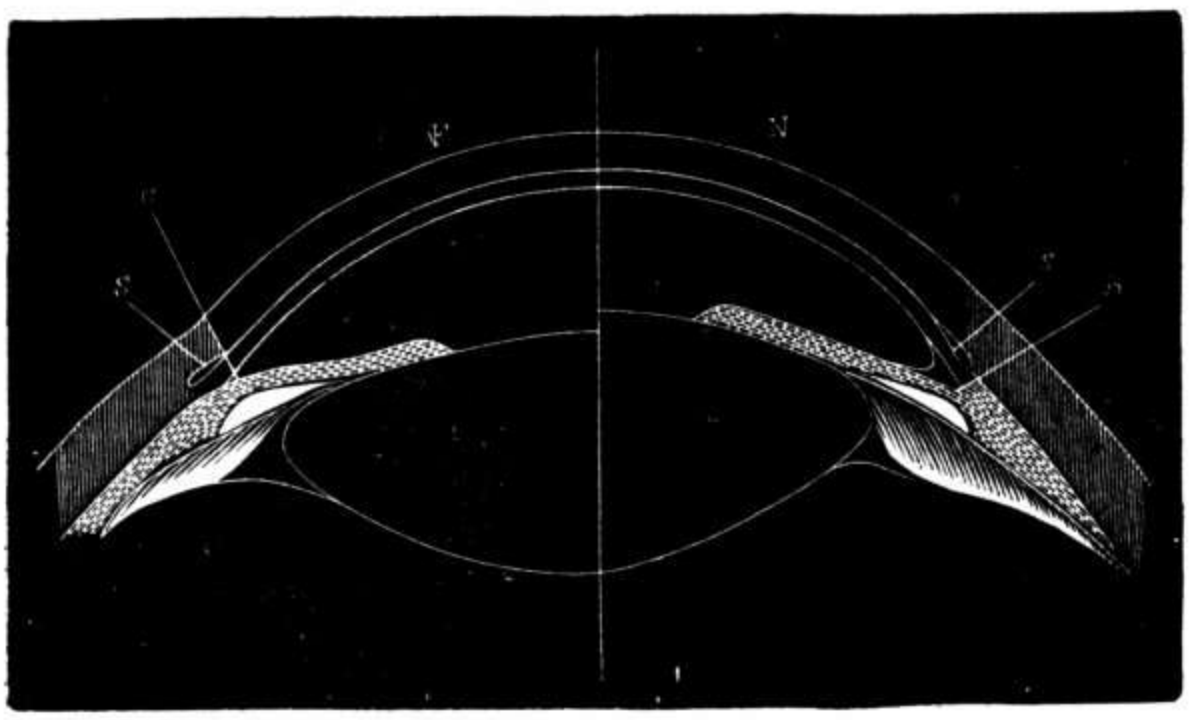


DIAGRAM SHOWING THE LENS.

The above cut, which represents a horizontal section of the Anterior part of an eye, shows very clearly the alteration in the curvature of the lens, the left half of the figure represents the eye when looking at distant objects, the right half, when the eye is adjusted for small print held as close as possible.

In the normal eye, the rays are brought to a focus exactly in the proper spot on the retina, producing a clear, distinct and sharp image, without any artificial aid.

In order to ascertain whether the eye has perfect sight, various tests are employed; an emmetropic or perfect eye, should be able to read this large type at a distance of 20 feet.

D=1.

A P O R F

and the same eye should be able to read this small type at from six to fourteen inches from the eye.

D=0.5.

Excepting climbing the mountains for those who had the will and the power — taking more modest walks in the valleys and along the winding way of the lake-side road for those who had not lungs or muscles for the hills — or rowing on the lake, which, perhaps, was the favorite pastime of all for the young people — life was at a stand-still at Veronica so far as amusement went. It was the dullest or the most restful place in the world, according as the visitors craved excitement or prized quiet; but the former sort generally left after a few days' experience of the clouds without and the rough simplicity of the life within, and only those who assimilated with each other and could bear the material conditions remained. All the same, it was not a very lively kind of existence; and when the rain came down with a persistency that kept every one in-doors for days on days together, and made open-air diversions impossible, each individual was thrown back on his own resources or the community, and the young people were reduced to that never-failing occupation, which has lasted since the world began, and will last till it ends, of finding out each other's manifold imperfections. Our Professor, Ulrich Leinfelder, was the one whose perfections or imperfections were the most generally discussed among the women: the one, too, who gave himself most trouble in finding out their characteristics in return. He was in all things the life of our little mountain home, and would have been a noticable man anywhere. Full of information, he was also full of fun: and whether discussing politics and science with the elders, or devising games or pleasant pastimes for the youngsters, he was equally at home, and always the foremost man of the group. About thirty-two, he had passed his first youth, which, by all accounts, had been somewhat stormy but never dishonorable; but he had "ranged" himself now; was a Professor in a University; an Inspector of Schools; a man with a position and character to lose; and, if not puritanically severe, he was both honorable and respectable. He was called handsome by some, plain by others, as these looked at the intellect in his face and those objected to the form. Half Italian, half German, he had the passionate veracity of the one nation, and the solid education and tenacity of character of the other; but he was purely Italian in appearance, and it was strange to hear him spoken of as a German, and bearing a German name. That keen, dark, sharply-cut Florentine face; those, bright, burning, passionate eyes; the black hair cropped close to his head, like a velvet brush; the long, fine, nervous hands, and the unconscious grace of his figure and his gestures — all were of his mother's race, pur sang — and all the very antipodes of the German blood, which yet he claimed with pride. He was our "stand-by" in the way of a young unmarried man. There were others at Veronica truly, but they were mostly boys just budding into manhood and responsibilities, brought by their parents for a summer month's holiday among the mountains, and did not count in any serious sense. They were good to climb crags, row on the lake, take a part in the evening singing, and fancy themselves now in love, and now ill-used because they were not loved in return; but no life-histories were to be made out of them, and a mere catalogue of their names would be tiresome. The same may be said of the girls. There were about half a dozen in all, but the

Whenever this cannot be done, the eye is Abnormal and is either physically or optically weak, or out of order. We only deal with the Optical defects of vision caused by imperfect refraction or accommodation; that is, the causes which prevent the cornea, lens, and vitreous humor, from forming clear images upon the retina.

PRESBYOPIA

IMPAIRED VISION RESULTING FROM AGE, PHYSICAL WEAKNESS, OR OTHER CAUSES.

By far the most common cause of failing eyesight, is what is commonly called "Old Sight" or "Far Sight," and is a physiological defect caused by advancing age, overwork, or illness, and is due to a hardening of the lens of the eye and a decrease in power of the ciliary muscle so that it can no longer change its shape with the facility it used to do. This change begins quite early in life, so much so that a child of ten years, can read fine print at a distance of 2½ inches. This gradually recedes until at about 40 to 45 years of age, it becomes impossible to longer see the eye of a fine cambric needle, or to read fine print at an ordinary distance. Although this process is constantly going on, no inconvenience is felt until about this age. The first symptoms usually felt, are an inability to see at night, a disposition to hold the print further off, and the letters are frequently described as blurring or running together.

Whenever this is the case (contrary to the usually popular but very erroneous impression) glasses should be at once resorted to; the longer it is put off the greater the injury to the eye, and a much stronger glass will have to be used; the office of the glass is to supply the refracting power of the lens, which it has lost from the above causes, and by this means restore the eye to its former power; this is best accomplished by the use of a weak convex glass, which assists the eye by again enabling the rays to focus sharply upon the retina, thus relieving the ciliary muscle from all strain or tension. At first a No. 0.50–D Convex glass should be used—and in most cases it will be necessary at night only. In one or two years it will have to be increased to No. 0.75–D or stronger. As a general rule the glasses will have to be changed every two or three years—this depends a great deal however on the general health. If there has been much sickness, nursing at night, or overwork, where there is too much strain on the nervous system, also those subject to headaches and neuralgia, will require more frequent change than others.

We frequently find persons who are able to read fine print until a much later period of life than 45 or 50 years of age, such persons having always been slightly near-sighted, though they may never have been aware of it. In one case a few months since, a gentleman came to us who was then 74 years of age, and was still able to read our smallest test-type, No. 0.5–D, at twelve inches from the eye, without glasses, but complained that he could no longer see a squirrel on the top of a tree. We tested his sight, and found that with a weak Myopic or near-sighted glass, he was enabled to again see perfectly at a distance. He had been near-sighted all his life without knowing it.

In the Hypermetropic and Astigmatic eye, Presbyopia begins at a much earlier age.

Presbyopia continues to increase with advancing age, until at about 60 years of age, persons are no longer able to see at a distance, and the eye then becomes Hypermetropic as well as Presbyopic, and a weak convex glass must be used for distant vision, and a stronger one for reading. In such cases it will be found very convenient to have the two glasses set in one frame, as shown in engraving No. 26, such Spectacles are called either Franklin Glasses, (because they were invented by Benjamin Franklin,) Divided Glasses or Double Focus Glasses, they will be found very convenient, as saving the annoyance and inconvenience of having two pairs of Spectacles.

All persons must use glasses sooner or later, and those who put off the evil day, cause themselves serious inconvenience, and with great risk of permanent injury, especially where the eyes are imperfectly formed.

HYPERMETROPIA.

(OVER-SIGHT.)

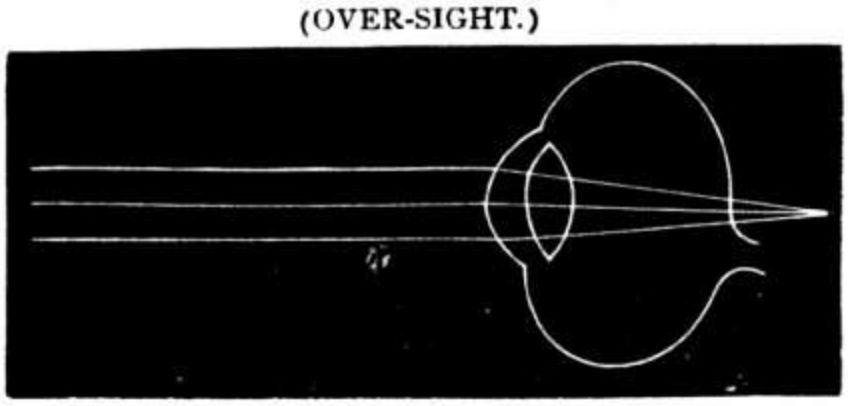


DIAGRAM OF A HYPERMETROPIC EYE.

Hypermetropia, or Oversight is caused by a defective construction of the Eye-balls which is too short, that is, the distance from the lens to the retina is less than it should be

and consequently, the rays of light coming from distant objects are not brought to a focus on the retina, and the image is confused, and the focus would be some distance behind the retina, hence the name, Oversight. The eye-ball of a normal eye is nearly spherical, while the Hypermetropic eye-ball is shaped like a flattened sphere on edge, which is very clearly shown in the engraving.

Hypermetropia is generally present at birth, it is also hereditary, although it may be produced by various causes, which will be explained later. This defect may exist for years unsuspected, especially where it is slight, in persons doing a large amount of work with the eyes and yet without the aid of glasses.

In children this defect is not generally noticed until they go to School, and complaints are received from their instructors that they cannot see the figures on the blackboard, and *it will also be found that they hold their books very near the eyes, and from this cause are frequently thought to be near-sighted, the mere fact of their being able to see only when the book is held close to the eye, is not at all evidence of Myopia*, but is caused by the convexity of the lenses of their eyes, by which they are enabled to see only when in that position. When any of the above symptoms are noticed in a child, they should at once be taken to an Optician, or to a skillful Oculist, and have their eyes examined, and thus be saved years of suffering, discomfort and annoyance.

One of the most frequent causes of weak eyes, sick headaches and neuralgia, is *Hypermetropia*. Persons having such eyes are however enabled to see, by being able at pleasure to make their crystalline lens stronger, making it more convex and shortening its focal length, so that the focus is brought forward, on to the retina and they see distinctly for the time being. This is done by means of the ciliary muscles which are situated near the circumference of the lens within the eye-ball, but as this is a great effort, the muscles of accommodation being in a constant state of tension, they soon become exhausted, and give up, or contract spasmodically, causing blurred or indistinct vision, and finally causing pain in the eyes, forehead and temples, and frequently resulting in Asthenopia. The headaches and pain over the eyes may however, be due to Astigmatism. Hypermetropia can generally be entirely corrected by the use of Convex Glasses, properly adjusted, which cause the rays of light to come to the proper focus on the retina, and thus relieve the ciliary muscles from all strain. The proper plan is to apply the remedy as soon as the defect is discovered, whether in childhood, youth, or old age, *and when glasses of the proper foci are obtained, they should generally be worn constantly*, because whether the eye is looking at distant or near objects, the muscles of accommodation are always on a strain.

In the higher degrees of Hypermetropia, it is often impossible for individuals to see fine print, or to do fine sewing, and in many cases it is extremely difficult for us to select the proper glasses, owing to the eye being able to overcome this defective state of vision temporarily, and to mark the difficulty, by enabling them to see with convex glasses which are not of the proper focus, for the convex lens which most improves distant vision, will only correct a portion of the Hypermetropia which is manifest, and frequently the patient may reject all Convex glasses as failing to improve his vision, and yet be Hypermetropic to a considerable degree; it then becomes necessary to develop it, which is done by giving the patient a convex glass that will most improve distant vision, and in six months increase the convexity of the glasses, frequently taking two or three years before the eye is able to bear the proper glasses. Where great difficulty is experienced in getting glasses, an experienced Oculist should be consulted, who will cause the accommodative power of the

eye to be temporarily suspended, by putting the ciliary muscle at rest, by means of a solution of Atropia, when the entire defect becomes apparent, and may be carefully measured.

MYOPIA.

(NEAR-SIGHTEDNESS.)

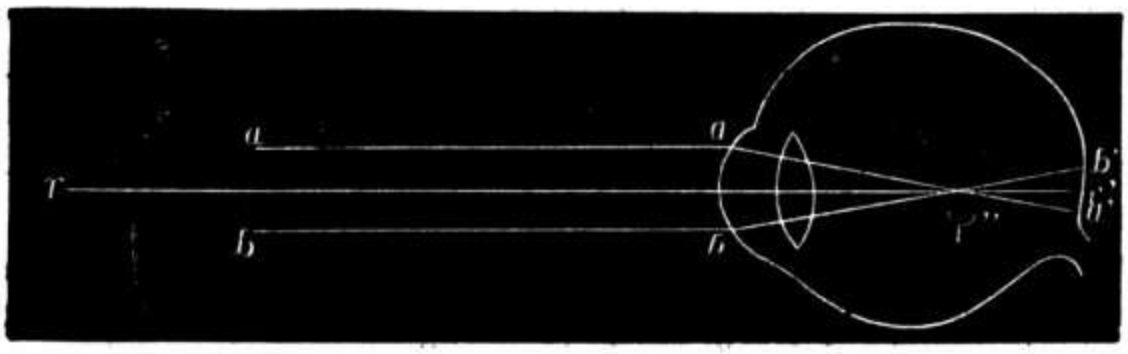


DIAGRAM OF A MYOPIC EYE.

This defect of vision is caused by the eye-ball being too long, and in this respect is just the reverse of Hypermetropia. The distance from the lens to the retina is too great, and the rays of light coming from distant objects are brought to a focus, before reaching the retina, and form confused and blurred images.

Myopia is generally hereditary, although it may be, and is, frequently produced by various causes, such as long continued reading, writing, or sewing, especially in a stooping position, preventing a free circulation of the blood and causing congestion of the eyes.

Myopia is of three different grades, namely:

1st. STATIONARY MYOPIA, or that which remains about the same until the 45th or 50th year of age, when it decreases.

2d. TEMPORARILY PROGRESSIVE MYOPIA, where the Myopia continues to increase until the 15th or 20th year of age, when it becomes stationary.

3d. PROGRESSIVE MYOPIA, where the Myopia is constantly increasing. The great majority of near-sighted persons belong to this class.

Myopic or near-sighted eyes are generally larger and more prominent than the normal eye, and the pupil is larger and more dilated.

The popular belief that near-sighted eyes are strong ones, is not only absolutely incorrect, but also most mischievous, since there is no state of the eye which more urgently demands the use of proper glasses than does Myopia. Such eyes, instead of being strong, are not only absolutely weak, but they are sick eyes, and if the defect be of a high degree, liable to the most serious accidents, which may result in loss of sight. The danger lies not in the imperfect vision, but in the interocular changes which accompany the defect in its higher grades.

When the Myopia is of a low degree, glasses need only be worn for seeing distant objects, but when the number exceeds —3.5 D. for distant vision, another pair of glasses of a lower power should be used for reading and sewing. It is always considered best to use glasses a little weaker than those actually required, so as to retard or delay any tendency towards Progressive Myopia. Where the Myopia exceeds —12 D., Oculists do not consider it advisable to order stronger glasses, and such persons will have to be content with the best sight that that No. will give; using stronger glasses would be likely to cause inflammation of the retina.

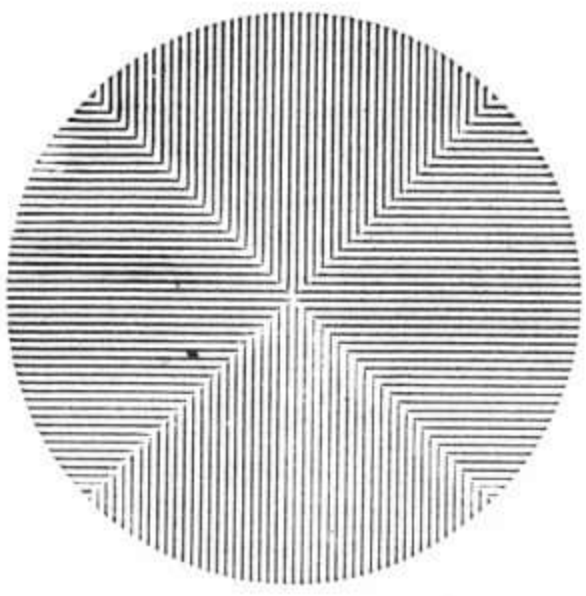
Myopia is an accompaniment of civilization and is unknown among the savage tribes. It is rare among the poorer classes, and those accustomed to manual labor, but is very common among the more intellectual and studious classes. Inhabitants of cities are from the nature of their occupations, more liable to contract Myopia than those of the country, and statistics show that the percentage of Myopia increases in proportion to intellectual development, and that while it may be quite small in the lowest grades of Schools, it steadily gains in numbers as the course of study becomes higher.

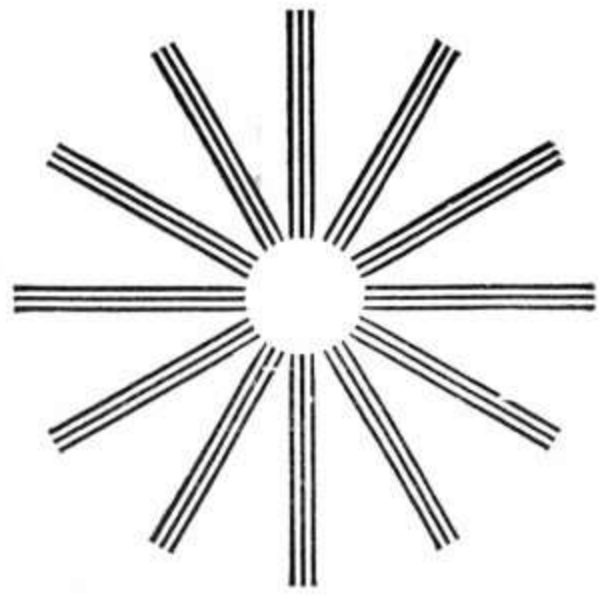
Near-sighted people who have inherited this defect, generally grow less near-sighted as they advance in life, and where the number of the glasses used has been about —2.5 D. or —3 D. upon reaching 45 or 50 years of age, they are often enabled to see at a distance without glasses.

The treatment of Myopia consists in the use of proper concave glasses, by means of which we attain two objects; the rays of light are brought to a focus on the retina, and distinct vision is assured and the ciliary muscles are relieved from all strain, and by wearing the proper glasses, the disease may usually be arrested. When the proper glasses are obtained, they should be worn constantly.

ASTIGMATISM

Astigmatism.—This word is derived from the Greek, and signifies that "rays coming from one point do not again unite in one point." In the Emmetropic (normal) Eye, the Cornea is nearly the segment of a sphere; *i. e.* its surface is of equal curvature. It frequently happens however, that the Cornea is of defective conformation, and, instead of being the segment of a sphere, it is more Convex and more highly curved in one portion of its surface than in the other. In consequence of this defect, objects are seen more clearly in one direction than in another, this latter generally at right angles to the meridian of greatest clearness. For instance, an eye may see perfectly, objects lying in a perpendicular plane, and yet be very defective for viewing objects in a horizontal direction. Where this defect exists, the type, in reading, presents a "blurred" and indistinct appearance, because the lines composing the letters are not seen in all directions with uniform clearness.





Astigmatic persons generally hold objects close to the eyes, in order to render them clearer, and in consequence, are often thought to be near, or short-sighted, and they are surprised to find that they are unable to see with near-sighted (concave) glasses.

Children troubled with Astigmatism have great difficulty in learning to read, and are often accused of stupidity when they are really unable to see the letters distinctly. This is particularly the case where the Astigmatism is of a high degree.

The eye may be Hypermetropic and Astigmatic (Compound Hypermetropic Astigmatism,) or it may be Myopic and Astigmatic, (Compound Myopic Astigmatism,) or it may be Myopic in one meridian and Hypermetropic in another meridian, forming what we call Mixed Astigmatism.

To correct Astigmatism, a lens, one surface of which is a segment of a cylinder must be used; this glass, by its convexity or concavity, when placed in the proper position, will correct the defective curvature of the Cornea.

Generally speaking, Astigmatism can be entirely remedied by the use of cylindrical glasses, ground to the proper axis, after accurate measurement of the defect by an experienced Oculist

STRABISMUS.

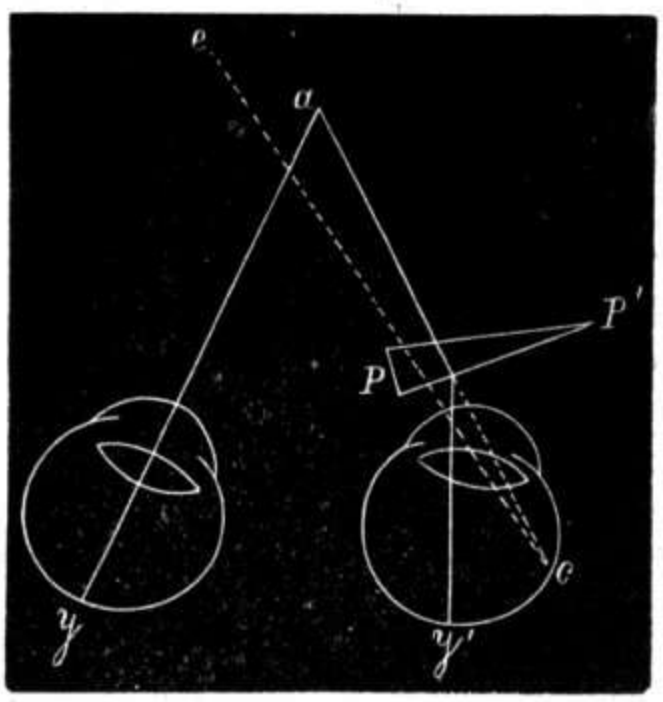
Strabismus, or Squint:—By this term we mean an inability to bring both visual lines to bear simultaneously upon one point, the one always deviating in a certain direction from the object. If the squinting eye turns inwards, it is called convergent strabismus; on the other hand, if the eye turns outwards, it is called divergent strabismus.

The vast majority of cases of convergent strabismus are due to long, or far sight, (Hypermetropia,) while in cases of divergent strabismus, short sight (Myopia) is often found.

In some of these cases appropriate glasses will improve the vision, and keep the eyes straight; in other cases an operation is required, (division of one of the muscles of the eyeball) in addition to the constant wearing of the proper glasses.

Persons so affected should seek advice immediately, as the vision declines and the eyes grow worse with time.

DIPLOPIA.



This word comes from the Greek and means "to see double." It is that condition in which an object appears multiplied to the eye, although his reason tells him there is only

one object. When the rays of light from an object pass into the eye, if they do not fall upon corresponding parts of the retina of each eye, the result is a blurring of the object, or an appearance as if it were doubled or multiplied.

It may exist when the eyes are used separately (Monocular Diplopia,) but in most instances it is observed when the eyes are used together.

DIPLOPIA may be caused by constitutional disease, but usually is induced by a defect, or by disease in the eyes themselves; for instance, cross or squint eye (Convergent Strabismus,) is accompanied by double vision, because the eyes do not work together.

This annoying symptom can often be remedied entirely, by the adjustment of appropriate glasses.

CATARACT.

Is a condition of the eye, caused by the lens of the eye becoming cloudy, or turbid and is caused sometimes by disease, injury, or natural causes. It is sometimes twenty-five or thirty years in forming, and in other cases, only a few months. At the proper time, after vision is entirely gone, an operation is performed, the lens of the eye is removed by an oculist, and sight is again restored by the use of strong convex lenses.

There are many other causes of defective sight, arising from a diseased condition of the retina, or other portions of the eye, and, which are beyond our province as Opticians, requiring medical treatment.

HOW TO SELECT SPECTACLES.

For the benefit of persons living at a distance, and who are unable to see a competent optician, or to consult an oculist, we append the following remarks, by which, except in a few cases, (where there is Astigmatism) almost any one can order a pair of Spectacles of the proper focus.

FOR PRESBYOPIA; OR, OLD-SIGHT.

The first test will be to see if Test-type No. 0.5 D. can be read without glasses, at a distance of twelve inches from the eye, if it can be read with difficulty, we then bring the book 2 or 3 inches closer to the eye, and if the person is then unable to read it, we know that Presbyopia or old sight is the trouble, and that Convex glasses No. 60 will restore clear vision; if on the contrary, they are unable to read No. 0.5, but can read No. 1 D. we know that Convex glasses, No. 36, will be required, and so on, through all the various tests of type, until if No. 1.75 D. is the only one that can be read without glasses at that distance from the eye, (12 inches), we know that Convex glasses No. 12 will be required. If, on the contrary, the tests can only be read when held closer, we know the defect is not Presbyopia, but some other defect of vision.

In making the above trials, be careful that the book is held at the uniform distance of twelve inches from the eye.

After having selected the glasses according to the above directions, that pair should be selected which will give the wearer the most ease and comfort, and also afford a range of vision of four or five inches. There are exceptions however, to every rule, and one or two numbers stronger, and the same weaker, should also be tried.

At about 60 years of age, Presbyopics also become Hypermetropic, and require a weak convex glass to restore distant vision; to determine the number required, the Test-type

printed on pages ii, and iii. should be fastened to the wall, at the distance of 20 feet, and should be in a good clear light, so as to be distinctly seen, and those glasses should be selected which will enable the person to see Test-type No. 6 D., at the above distance. As a general rule, persons using convex glasses weaker than No. 14, do not require glasses for distance, and those using No. 12, would generally require either Nos. 48 or 36, those using No. 10 would need No. 30 for distance, and so on; but in other cases, much stronger glasses would be required to gain distant vision, where the above numbers are used for reading.

In order to enable persons at a distance to select proper glasses, on receipt of a Post Office Money Order, for Five Dollars, ($5.00) we will send five (5) pair of Blue Steel Spectacles, No. 23, fitted with first quality convex glasses, on trial, at our risk, and if one pair suit, or if none suit, all to be returned to us within one week after receipt, and we will remit the balance by P. O. Money Order, less amount due for postage and money order. Price of the above Spectacles, $1.00 per pair.

In writing for the above, please reply to the following questions, answer them and return to us:—

1st. What is the greatest distance in feet and inches, at which you can read Test-types No. 0.5 D., No. 1 D., No. 1.5 D. and No. 1.75 D.?

2d. What is the nearest distance in feet and inches, at which you can read Test-types No. 0.5 D., No. 1 D., No. 1.5 D. and No. 1.75 D.?

3d. Have you ever used glasses before?

4th. If so, did they make your eyes ache?

5th. Are the Spectacles required for Reading, or Distance.

6th. What is the distance from the centre of one pupil, to the centre of the other? (Measure with a tape or rule, across the nose)?

7th. Is the bridge of the nose prominent, or not?

8th. Each eye to be tested separately.

FOR HYPERMETROPIA; OR, OVER-SIGHT.

It is very difficult, almost impossible to determine, without the patient being here, exactly what glasses will be required, and in some cases, owing to remote causes, no glasses may be found to remedy the defect entirely. If, on examining the Test-types, it is found impossible to read No. 0.5 D. at a greater distance than 8 inches, while at the same time they are able to read the large Test-type, No. 24 D, or No. 18 D. at the distance of 20 feet, we should pronounce the patient to be Hypermetropic, and we would begin by trying convex glasses No. 60, No. 48, No. 36, &c., until we found a pair that would enable the person to see No. 6 D., at the above distance; ifsuccessful, we then try the same number for reading, and if No. 0.5 D. can be read at a greater distance than before—say 10 or 12 inches—would advise the patient to take that pair and wear them constantly; if, on the contrary, we are unable to obtain a pair of glasses that will enable the patient to see No. 6 D., we would conclude that there was some other defect, and would test for Astigmatism. (See pages 8 and 18.)

In some cases of Hypermetropia, it will be necessary to use stronger glasses for reading, that will have to be determined by each individual, for themselves, and in many cases the Hypermetropia may have to be developed, which is done by increasing the number of glasses, every few months until the proper focus can be used; this latter however, ought only to be done under the advice of an experienced Oculist.

Persons who have Hypermetropic eyes, after selecting spectacles as above may still find that they do not give entire relief, although they are enabled to see for a much longer time, without experiencing as much weariness and headache as before, yet they may still have some annoyance of that kind.

This is due to the fact, that with the trial we have made, and the glasses we have fitted them with, we do not correct the whole trouble, on account of the constant over activity of the ciliary muscle, which conceals a portion of this defect; this over activity is still kept up, though not as much as formerly, and it is the effort to do this which causes the headache and weariness.

FOR MYOPIA; OR, NEAR-SIGHT.

Use the same Test-type, and see where No. 0.5 D. can be read with the greatest ease and comfort, if it is found to be nearer than 12 inches—say about six or eight inches, or less—and at the same time they are unable to see No. 24 D, at the distance of 20 feet, we should at once pronounce the person to be Myopic, and would begin by testing the sight for distant objects; no rule can be laid down to determine what glasses will be required, other than by actual trial; if the person can just read No. 24 D. and cannot see No. 18 D. or No. 12 D., concave glasses No. 36 will most likely be required; if they cannot see No. 9 D. stronger glasses will be required; those having but a slight degree of Myopia can easily be fitted, while those having a high degree of Myopia will require a great deal of time and patience, and where the number required is greater than −4, we do not think it advisable to give anything stronger, and it is now considered best by Oculists, that as a rule, persons should confine themselves to that number, and be deprived of part of their distant vision.

If, after a thorough trial, no glasses can be found which will enable the person to see No. 9 D. or No. 6 D., we would suspect Astigmatism and would test for it. (See pages 8 and 18.)

It is, however, very essential that a Myopic, or near-sighted person should be properly fitted with the correct glasses, for Myopia is a disease, and, unless properly treated, may give serious trouble; for the above reasons, no near sighted persons should ever buy glasses from Watchmakers, Travelers, or Pedlers, or indeed, from anyone, but an experienced Oculist, or Optician.

FOR ASTIGMATISM.

If, after having tested the eye for Myopia, Hypermetropia and Presbyopia, according to the directions heretofore given, and finding no glasses to suit, or without the glasses, finding that there is something more the matter, which the patient cannot exactly define, we would try the tests for Astigmatism, on pages 8 and 18. If Myopic glasses enable the person to see the Test-types No. 24 or 18 plainer, and yet not be able to see No. 12 or 9, the patient most likely has Myopic Astigmatism, and we would then direct them to look at the diagrams on page 14 at a distance of 20 feet; if they are unable to see either the vertical or horizontal lines clearly, that is, if one can be seen distinctly and the other looks like one blurred or confused line, the person unquestionably has Astigmatism. And, testing in the same way with Convex glasses—finding they improve the vision somewhat, but not entirely, we would conclude that that person had Hypermetropic Astigmatism. When Astigmatism or defect of the Cornea is found to exist, an experienced Oculist should be at once consulted, and he will then give a formula by which we can grind the proper glasses.

FOR CATARACT.

All persons who have had the operation for Cataract performed, and the lens of the eye removed, will require two pairs of Spectacles, one for distant vision and one for reading, or close work. We generally find that Convex glasses of 2¼ or 2½ inches will give the best sight for reading, and from 3¼ to 4 inches for distant vision. Numbers both stronger and weaker, however, should be tried, and that pair selected which will give the best result. Those living at a distance, and unable to procure Cataract glasses, can have them sent on selection, on complying with our terms on page 11.

TO PHYSICIANS.

Having been established in business nearly one hundred years, (1783), we have always made the manufacture and sale of Spectacles and Eye-Glasses a specialty, and have devoted a great deal of time and attention to the proper fitting and grinding of Spectacle Glasses to suit the various defects of Vision,—and it is our house that has the credit of fitting the first pair of Spectacles with the proper cylindrical glasses, for the cure of Astigmatism.—In the year 1828, Mr. John McAllister, jr., fitted up a pair of Spectacles, with plain cylindrical glasses for Mr. C. E. Goodrich, of Princeton, N. J.

Oculists in writing prescriptions will please give us the following particulars, especially when sending orders from a distance, and when we cannot see the patient, viz:—the exact distance between the centres of pupils of both eyes—and state whether the nose is prominent or has very little bridge, and if the eyes are prominent or not—and particularly to state whether the glasses are to be worn constantly, or for distant or close sight.

Particular attention is paid to the fitting of Spectacles or Eye Glasses for Astigmatism, Diplopia or compound lenses of any kind. In order to get the axis entirely correct, we place upon the nose of the patient whatever eye glass frames they may have selected, and with a camel's hair pencil and India ink, we draw a horizontal line across the glass, before each eye, from the inner to the outer canthus, across the centre of each eye. It is only necessary to do this with Eye-glasses, and in order that oculists residing at a distance may select frames to please their patients, we will send by mail, whenever requested to do so, several pairs of either Eye-glasses, or Spectacles, so that they may be properly fitted, and any irregularity of the nose or face provided for. If such glasses should be selected, that pair which is chosen should have the horizontal axis marked on it, as above; we can then be sure that the glasses will be properly inserted, and any alterations made that may be needed.

We are prepared to furnish Spectacles and Eye-glasses correctly ground, from formulas in either of the following Measures, viz: Dioptric, Metric, French Inches, or English Inches. We prefer the Dioptric system for many reasons.

We will furnish to Physicians or any who may require them, Prescription Blanks bound in book form and containing 100 Double Prescriptions, so that one may be sent to us, and the other retained by the Physician for reference. A prescription should be written thus,

R. Eye, +1 D. (.) —2.5 D. cyl. Axis 45°
L. " +0.75 D. (.) —3 D. cyl. " 180°

which we understand to be for a patient who had Hypermetropic Astigmatism, and the price of the above lenses, fitted in Spectacle Frames, No. 19, Bronze Steel Riding Spectacles, would be $5.50.

Table of the different systems of numbering Spherical Convex or Concave Glasses, showing the equivalent in English Inches, of the Dioptric System, the Metric System, and the French Inch, especially arranged for the convenience of those who are not familiar with the new systems.

Dioptric System.	French Inches.	Metric System.	English Inches.
0.25	144	4	158½
0.50	72	2	78¾
0.75	48	1.33	52⅜
1	36	1	39⅜
1.25	30	80	31⅛
1.50	24½	66	26
1.75	21	57	22½
2	18½	50	19⅝
2.25	17	44	17⅓
2.50	15	40	15¾
2.75	13½	36	14
3	12	33	13
3.50	10½	28	11
4	9¼	25	9⅞
4.50	8¼	22	8⅝
5	7½	20	7⅞
5.50	6⅘	18	7
6	6	16	6¼
7	5¼	14	5½
8	4½	12	4⅜
9	4	11	4 5/16
10	3½	10	4
11	3⅛	09	3½
12	3	08	3⅛
13	2⅚	.075	2 5/16
14	2½	07	2¾
15	2¾	.065	2 9/16
16	2⅓	06	2⅜
18	2	.055	2⅛
20	1¾	05	2

Every Physician in general practice, should have at least, a set of Trial Glasses similar to No. 144, which contains 13 pair each of Convex and Concave Glasses, and 1 pair ot Trial Frames, all enclosed in a neat Case—of course a larger case will do much better, but a small case like this will enable a physician readily to diagnose a case of either Myopia, Hypermetropia or Presbyopia. Price, $12.00.

TEST TYPES.

D = 0.5.

Excepting climbing the mountains for those who had the will and the power — taking more modest walks in the valleys and along the winding way of the lake-side road for those who had not lungs or muscles for the hills — or rowing on the lake, which, perhaps, was the favorite pastime of all for the young people — life was at a stand-still at Veronica so far as amusement went. It was the dullest or the most restful place in the world, according as the visitors craved excitement or prized quiet; but the former sort generally left after a few days' experience of the clouds without and the rough simplicity of the life within, and only those who assimilated with each other and could bear the material conditions remained. All the same, it was not a very lively kind of existence: and when the rain came down with a persistency that kept every one in-doors for days on days together, and made open-air diversions impossible, each individual was thrown back on his own resources or the community, and the young people were reduced to that never-failing occupation, which has lasted since the world began, and will last till it ends, of finding out each other's manifold imperfections. Our Professor, Ulrich Leinfelder, was the one whose perfections or imperfections were the most generally discussed among the women: the one, too, who gave himself most trouble in finding out their characteristics in return. He was in all things the life of our little mountain home, and would have been a noticeable man anywhere. Full of information, he was also full of fun; and whether discussing politics and science with the elders, or devising games or pleasant pastimes for the youngsters, he was equally at home, and always the foremost man of the group. About thirty-two, he had passed his first youth, which, by all accounts, had been somewhat stormy but never dishonorable; but he had "ranged" himself now: was a Professor in a University; an Inspector of Schools: a man with a position and character to lose: and, if not puritanically severe, he was both honorable and respectable. He was called handsome by some, plain by others, as those looked at the intellect in his face and those objected to the form. Half Italian, half German, he had the passionate vivacity of the one nation, and the solid education and tenacity of character of the other; but he was purely Italian in appearance, and it was strange to hear him spoken of as a German, and bearing a German name. That keen, dark, sharply-cut Florentine face; those, bright, burning, passionate eyes; the black hair cropped close to his head, like a velvet brush; the long, fine, nervous hands, and the unconscious grace of his figure and his gestures — all were of his mother's race, pur sang — and all the very antipodes of the German blood, which yet he claimed with pride. He was our "stand-by" in the way of a young unmarried man. There were others at Veronica truly, but they were mostly boys just budding into manhood and responsibilities, brought by their parents for a summer month's holiday among the mountains, and did not count in any serious sense. They were good to climb crags, row on the lake, take a part in the evening singing, and fancy themselves now in love, and now ill-used because they were not loved in return; but no life-histories were to be made out of them, and a mere catalogue of their names would be tiresome. The same may be said of the girls. There were about half a dozen in all, but the

D = 0.6.

She was as dark and rich in coloring as Hildegarde was fair and waxen; with evidently a dash of Eastern blood in her —however come by, but proved by her dark brown curling hair, the red gold on the edges making it, when the sun shone on it, pure auburn — by her large, dark, soft eyes, with the long lashes lying on her cheek; by the brilliant crimson of her cheeks and lips — by a certain languid, lazy grace that seemed almost out of place with the simple, energetic, homely habits of her German birthplace. She had a natural talent, too, for dress, and a passion for color; and it would have been easy for her to have passed as a gypsy. Such as they were, however, Hildegarde was the typical lily, Nina the damask rose, and by very force of contrast the two girls were soon bosom friends; and our Professor, Ulrich Leinfelder, was the constant attendant on both. In places like Veronica, where people are all cooped up together very much as if on board ship, and where all life is transacted in public, there is naturally an immense amount of gossip — ill-natured or friendly, as it may chance — and, as a necessity going before gossip, an immense amount of observation. Hildegarde von Cranach, Nina Sternhold, and Ulrich Leinfelder were the centre of general observation, as might be expected; and no one was weary of specalating on present conditions or probable results — some thinking it was the lily, and others the rose; while many said he would get neither, and that either was too good for him. He was merely a poor Professor at the best, and both of the girls had the right to look higher. Hildegarde von Cranach was a young Baroness and a Von; and if Nina Sternhold had not much money to expect from her mother, the Professor could not have more to give, and in any case she was too young, and her chances in life might be better than this. So they talked and speculated: and meantime the three friends went on with their affairs as if no one but themselves lived on the balcony at Veronica, or talked across the dinner-table in the Speisezimmer. One day the rain was coming down in torrents; the soft color of the lake — that indefinite green-blue peacock hue which is often seen in the Mediterranean, and is as beautiful as the most brilliant azure — was lost in the fret and lash of the driving rain; the clouds hung

D = 1.

low on the mountains, and blotted out the living pine-woods and the barren crags alike; the later snow-fields left in the ravines, and which had been growing daily less under the heavy rains, poured down their turbid streams over the mountain-sides. It was cold and wet and dreary everywhere; and the elders shivered, and the youngers grumbled, and all declared that never since the world began had there been such a dreadful season at Veronica, and not on the whole face of the globe could there be found such a dreadful place. The three friends, however, neither shivered nor grumbled. Wrapped in their cloaks and shawls, they sat safely sheltered from the rain under the hanging roof of the veranda, the girls working, while the Professor read aloud. The Baroness von Cranach and Madame Sternhold, the two mothers, were a few feet to the side; talking together with the good-feeling and friendliness of two gentle-mannered, gentle-natured, women thrown on each other for companionship. It was a novel that the Professor was reading. To what else, indeed, would the girls have cared to listen? — unless it had been poetry, which

D=1.25.

would have been yet more dangerously suggestive. The story was one setting forth the trials and sufferings of a faithful pair of lovers, where he was poor and she was noble, and birth and poverty stood like angels with flaming swords against the gates of the Eden of Love. As he read—and he read with true dramatic instinct—Hildegarde's fair face flushed to the roots of her hair, and her large blue eyes were fain to keep themselves fastened on her embroidery; she did not wish either the Professor or Nina to see what was in them; but Nina's lips were quivering, and her eyes were soft and moist as she raised them frankly to the lecturer, and thought it no shame to show how much the story moved her. He, in his turn, looked from each to each, his mobile face full of a strange expression which no one could have interpreted. Could he himself? His eyes were softened, sympathetic, ad-

D=1.5.

Hildegarde flushed again. Was there a meaning in his voice? She dared not look up to ask by her eyes and be answered by his. All that she knew was that his face was turned to her, and that she was trembling, self-convicted, and betraying what it was almost her life's worth to keep hidden. But the moment passed without more of this kind of unspoken revelation which so few people ever read aright; and in a short time the rusty old bell clanged out the sacred hour of one; the Mädchen's feet were heard hurrying up the wooden stairs; the odors of roast Kalbfleisch and Knödel-soup came through

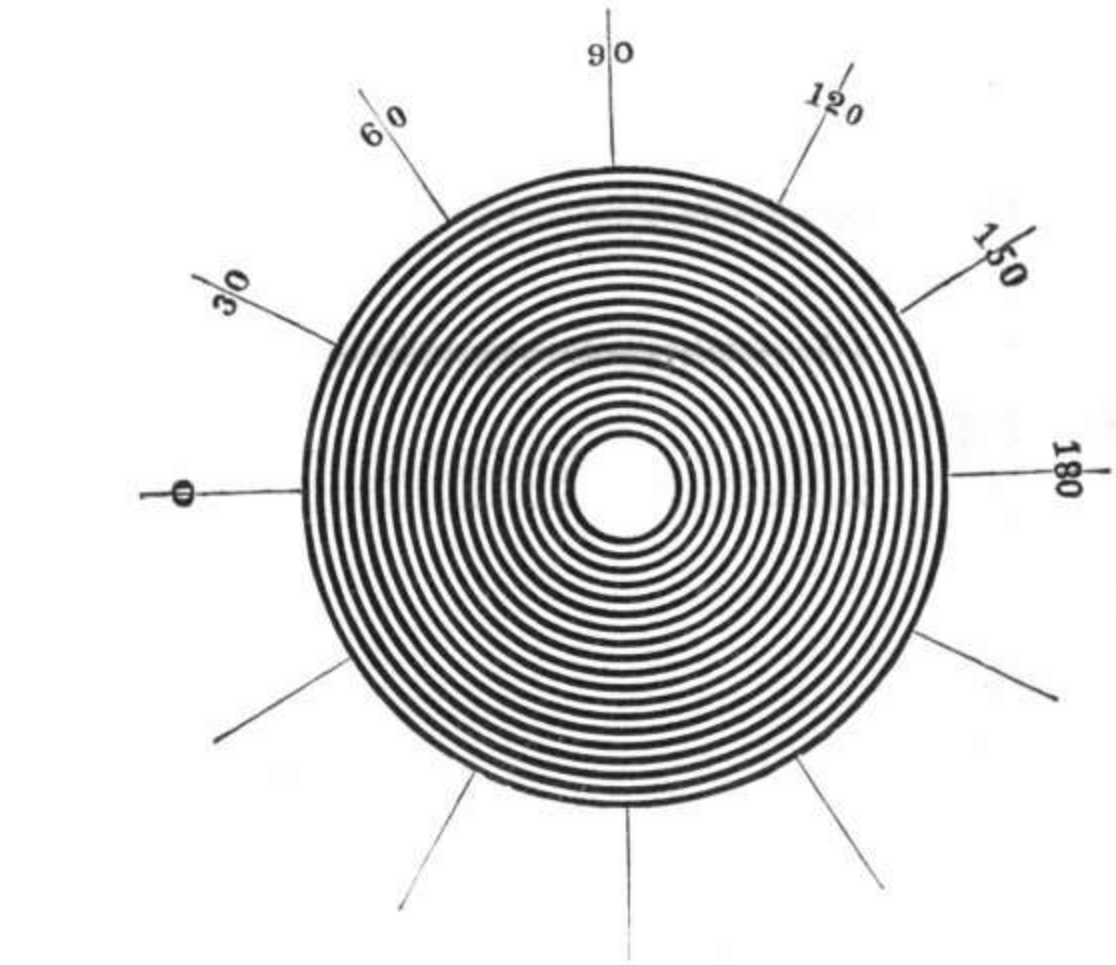
D=1.75.

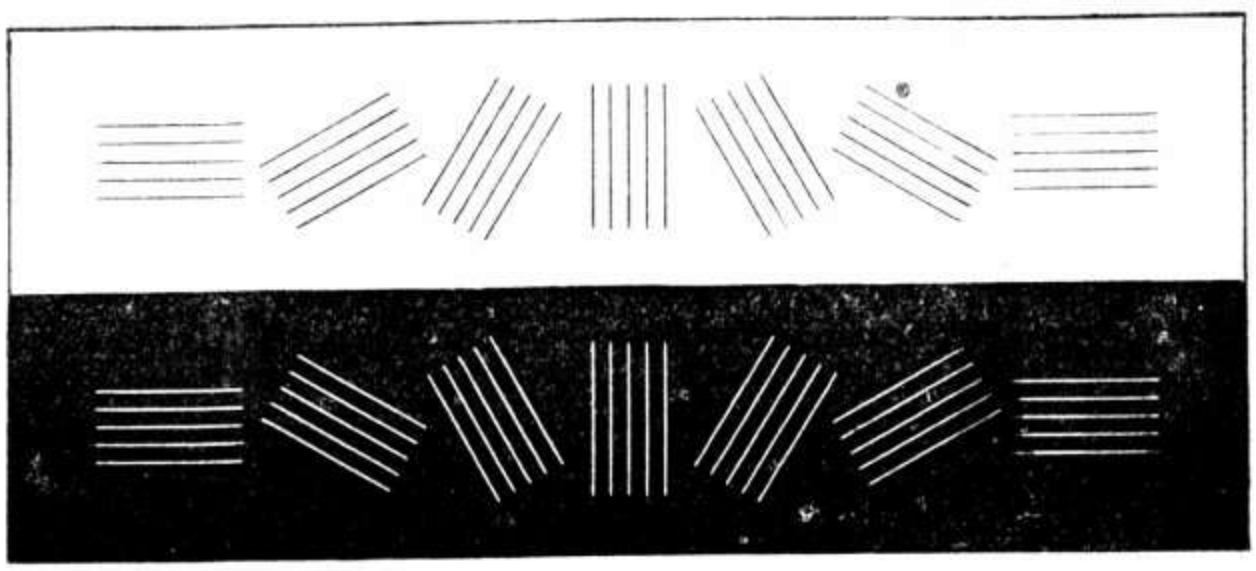
During the whole of that day the rain continued, and no one could venture outside the shelter of the house and the veranda; but the trio, which had read and worked and looked and lifted the corners of veils in the morning, no longer came together in the afternoon. Hildegarde was occupied in her own room, she said; and Nina's mother took possession of her. The gossips said

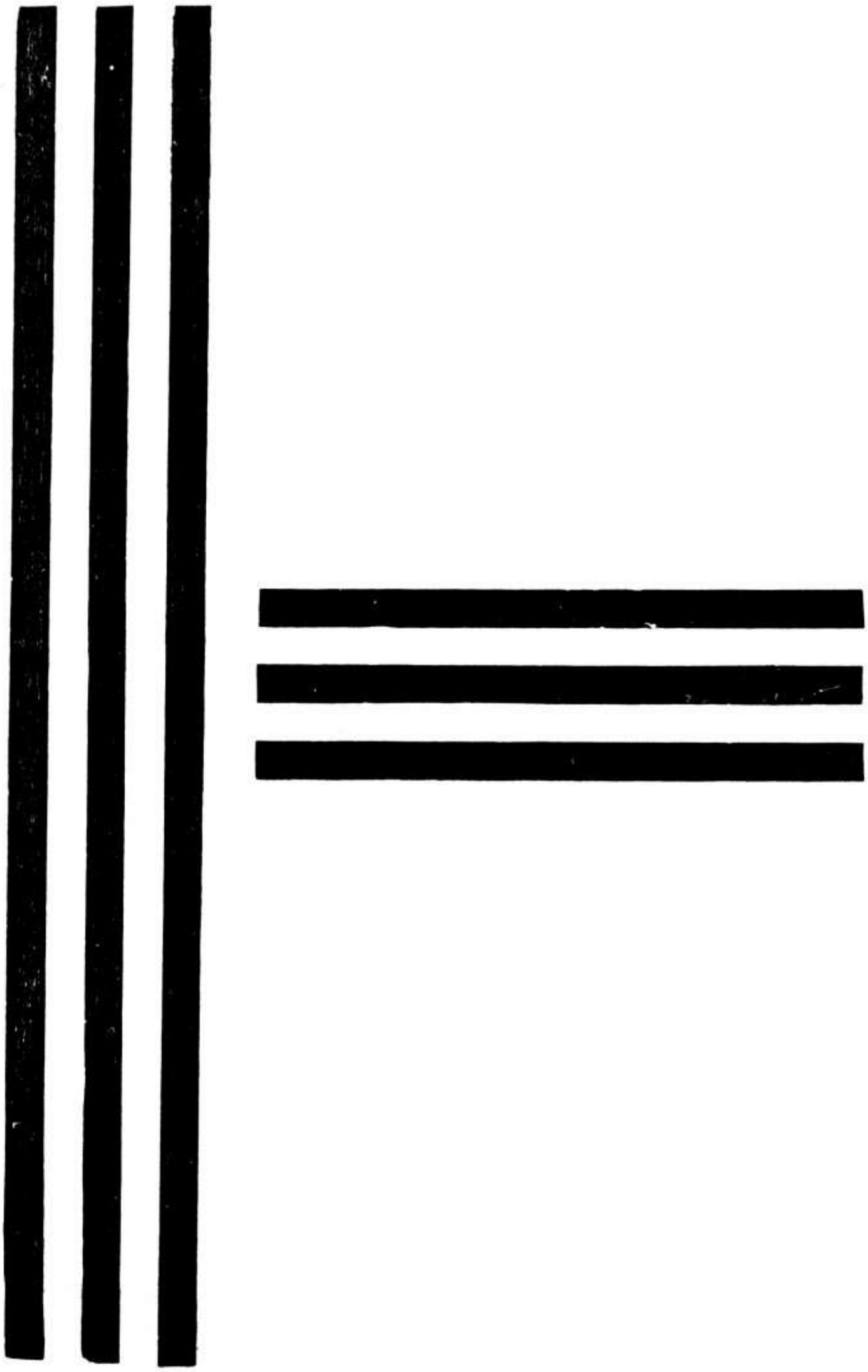
D=2.25.

it was to keep her out of the Professor's way, and applauded her warmly. Things were going fast, they said one to another, and she and her beautiful daughter might find themselves overwelmed before they knew where they were, if they did not look out. Yes, it was very well indeed

TESTS FOR ASTIGMATISM.





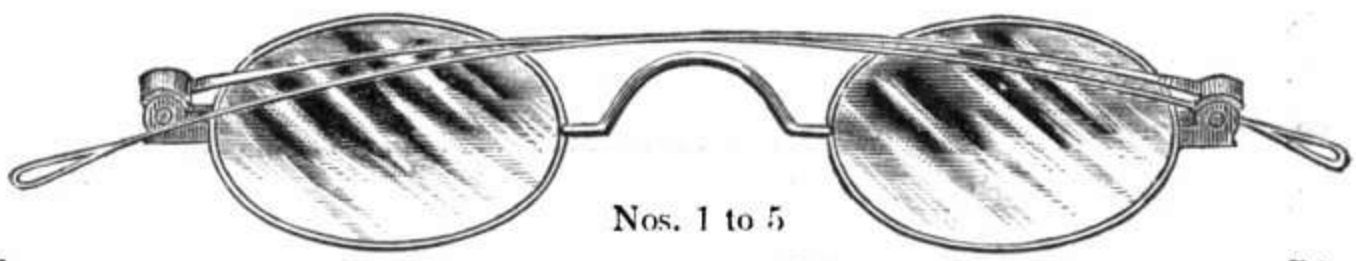


Illustrated Catalogue

—of—

Optical & Meteorological Instruments.

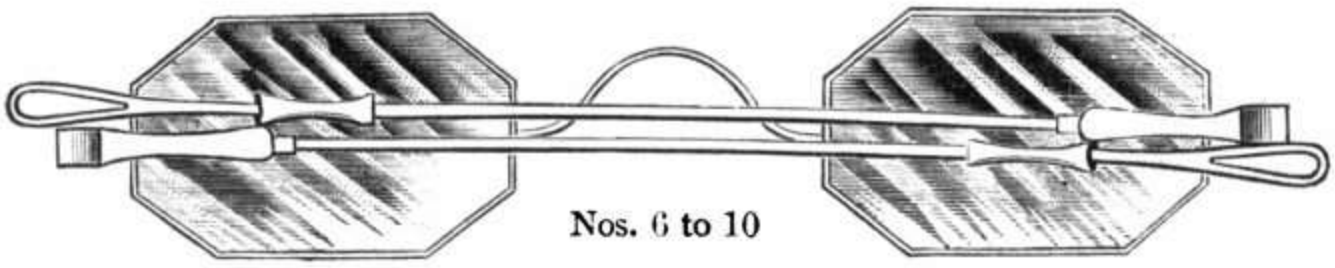
SINGLE JOINT GOLD SPECTACLES.



Nos. 1 to 5

No.					Price.
1.	10 Karat,	Ladies'	Pattern		$5 00 to $9 00
2.	12 "	"	"		7 50 to 12 00
3.	14 "	"	"		8 00 to 13 00
4.	16 "	"	"		10 00 to 14 00
5.	18 "	"	"		13 50 to 15 00

SLIDING GOLD SPECTACLES.

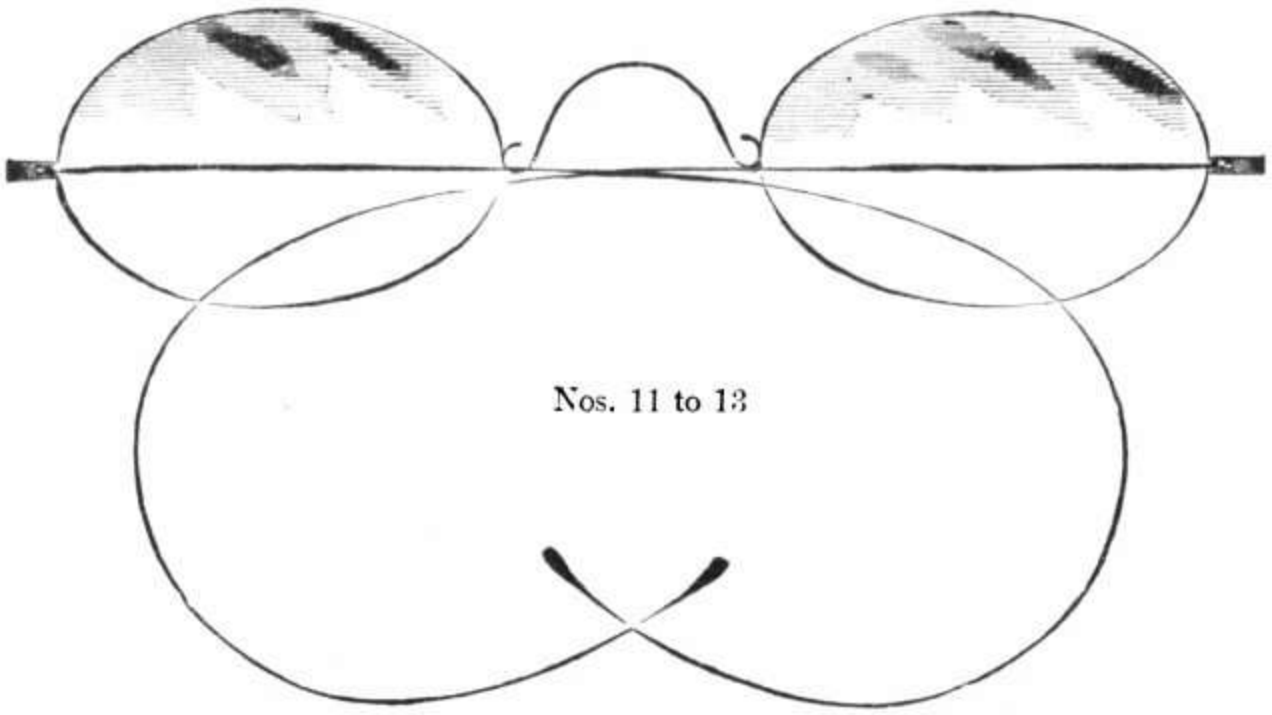


Nos. 6 to 10

6.	10 Karat,	Gentlemen's	Pattern		9 00 to 12 00
7.	12 "	"	"		10 00 to 15 00
8.	14 "	"	"		11 00 to 16 00
9.	16 "	"	"		12 00 to 17 00
10.	18 "	"	"		14 00 to 19 00

Exclusively of our own manufacture. They can be furnished with Oval, Octagon or Oblong shaped eyes, and are fitted with the Best Quality Double or Periscopic Convex or Concave, Plain Blue or Smoke Lenses.

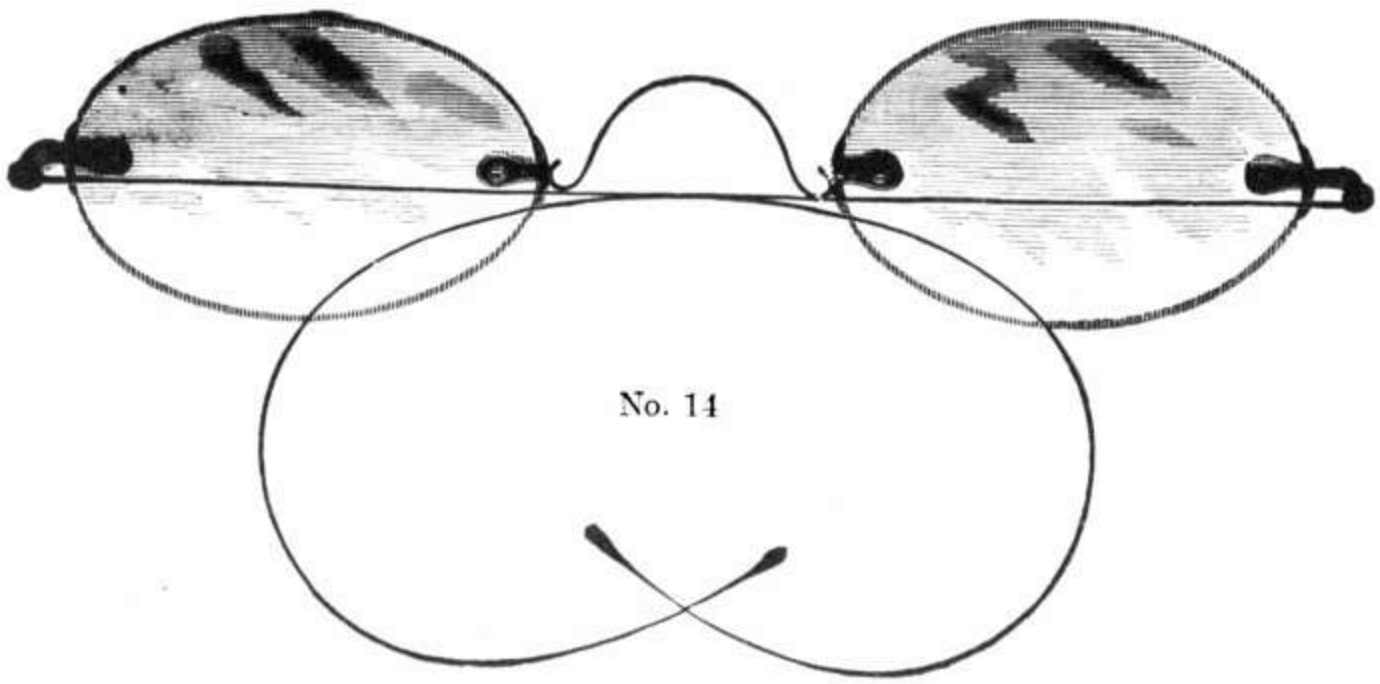
GOLD RIDING SPECTACLES.



Nos. 11 to 13

No.		Price.
11.	10 Karat, very light frames	$5 00 to $7 00
12.	14 " " " "	6 00 to 9 00
13.	14 " stout frames	7 00 to 12 00

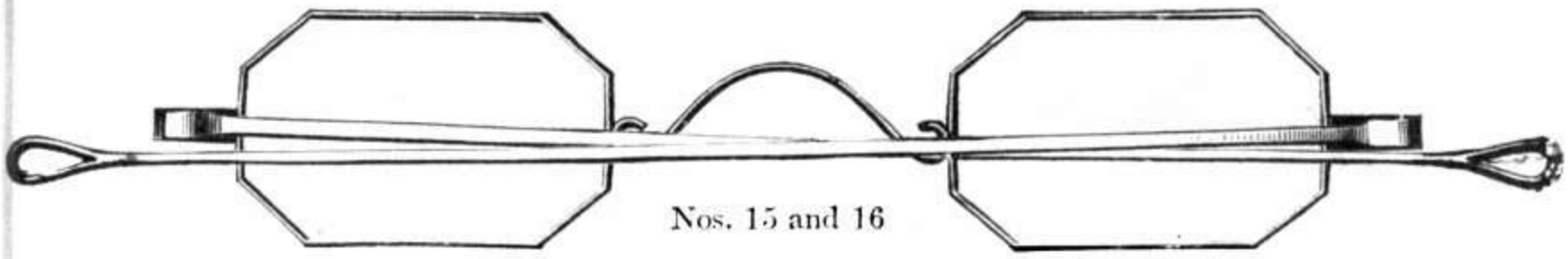
GOLD FRAMELESS SPECTACLES.



No. 14

14. 14 Karat, Frameless Spectacles, with Gold Hook Sides.....$6.00

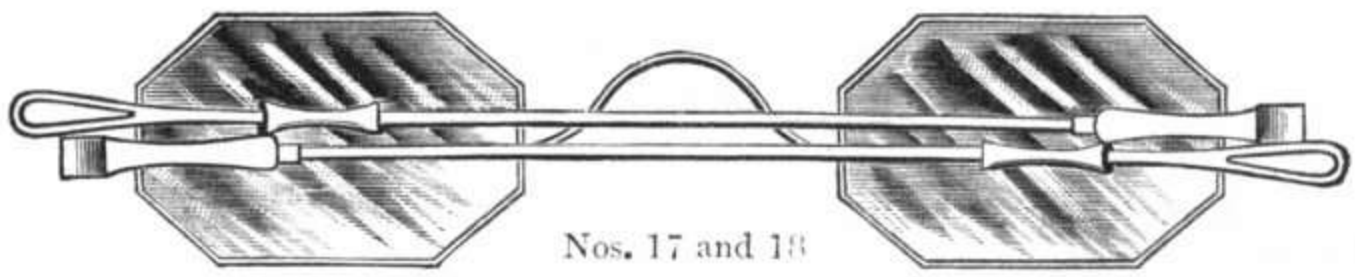
SILVER SPECTACLES.



Nos. 15 and 16

No.		Price.
15.	Ladies' Pattern	$2 50
16.	" " for near and distant view combined	3 50

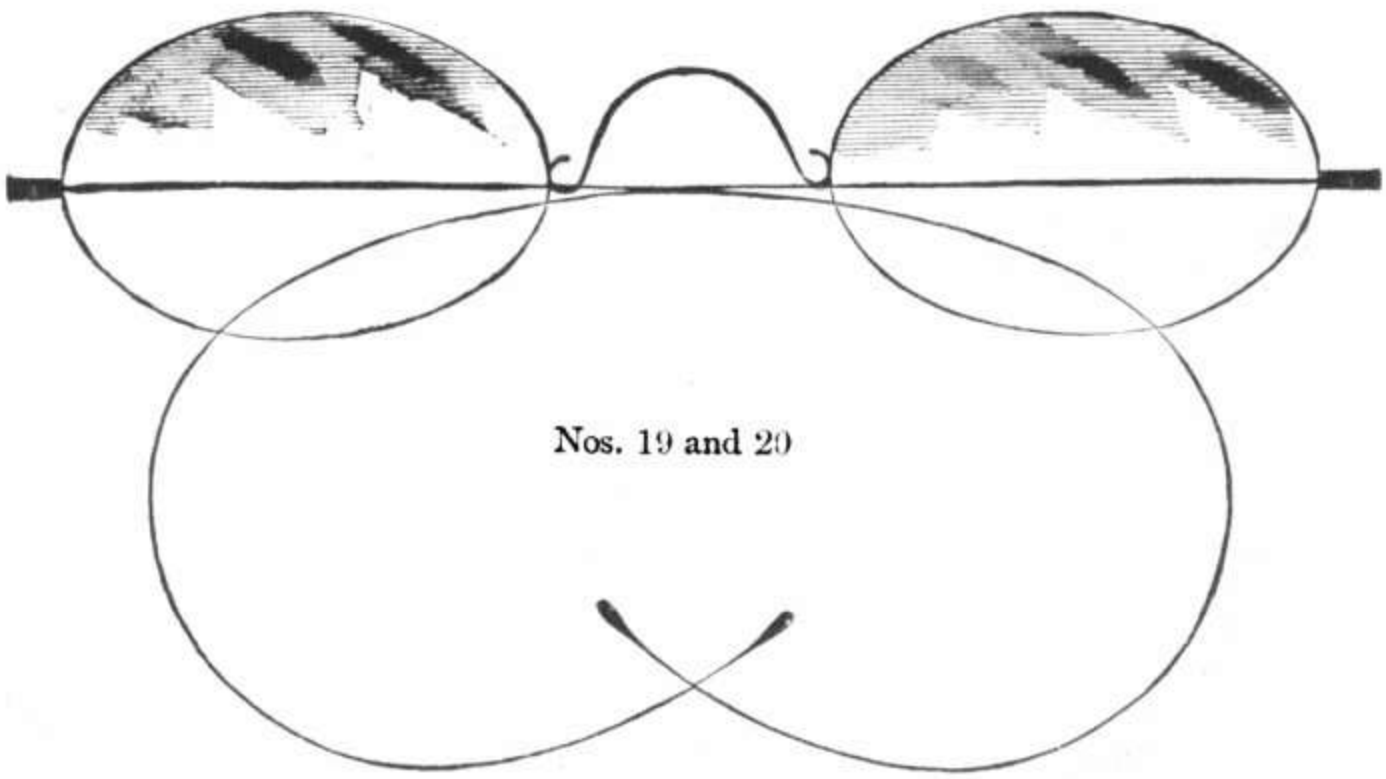
SLIDING SILVER SPECTACLES.



Nos. 17 and 18

17.	Gentlemen's Pattern	$2 75
18.	" " for near and distant view combined	4 00

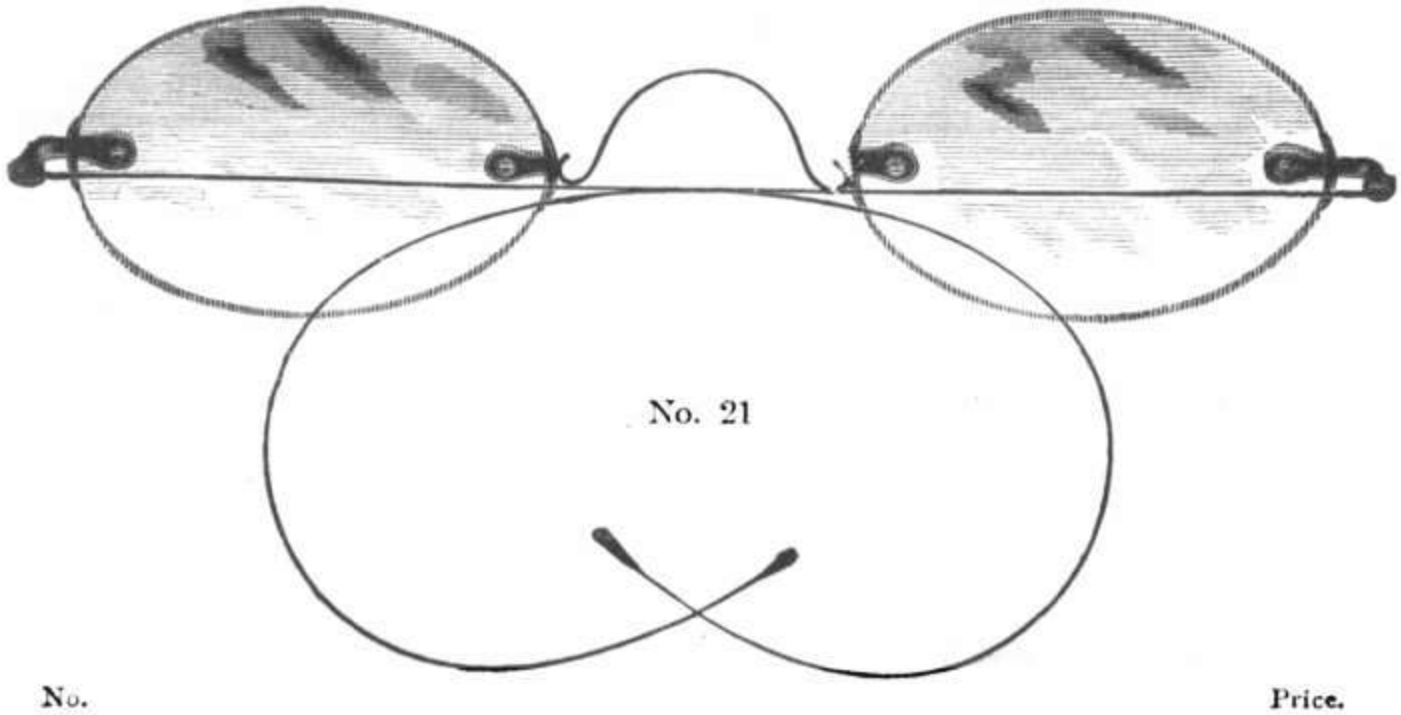
STEEL RIDING SPECTACLES.



Nos. 19 and 20

19.	Steel Riding Spectacles, glasses not grooved	$2 00
20.	" " " with the frame set in glasses so that they are almost invisible	2 00

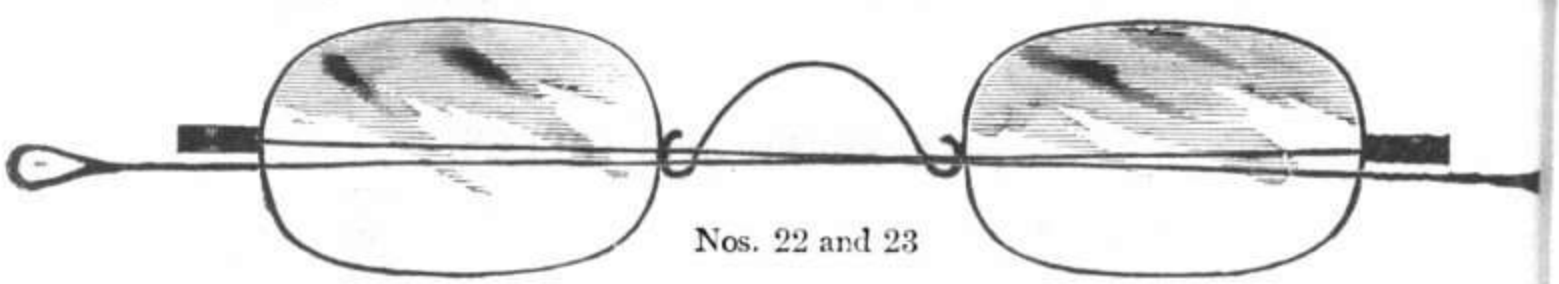
FRAMELESS SPECTACLES.



No. 21

No.		Price.
21.	Frameless Spectacles, German Silver Mountings, with Steel Hook Sides.....	$2 50

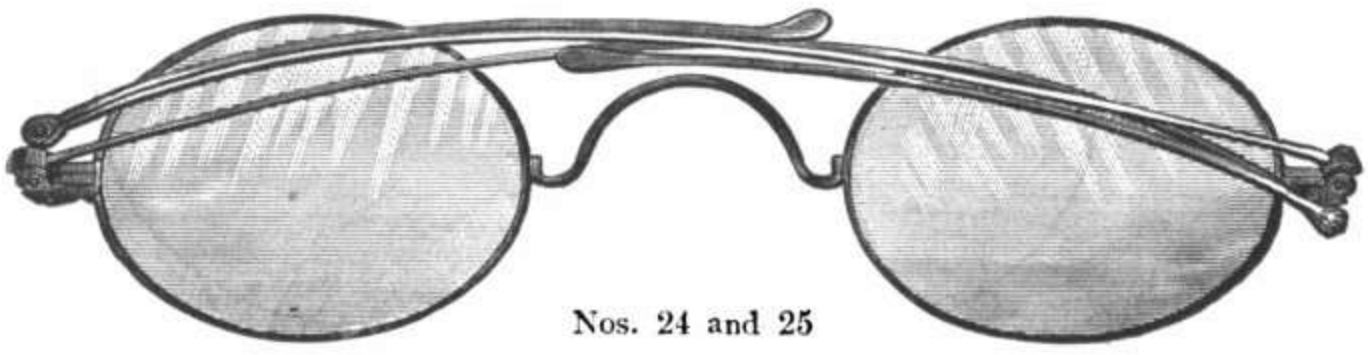
STEEL SPECTACLES.



Nos. 22 and 23

Ladies' Pattern.

22.	Extra, finely finished, very light, single joint.....	$2 00
23.	Fine finish, single joint.....	1 25

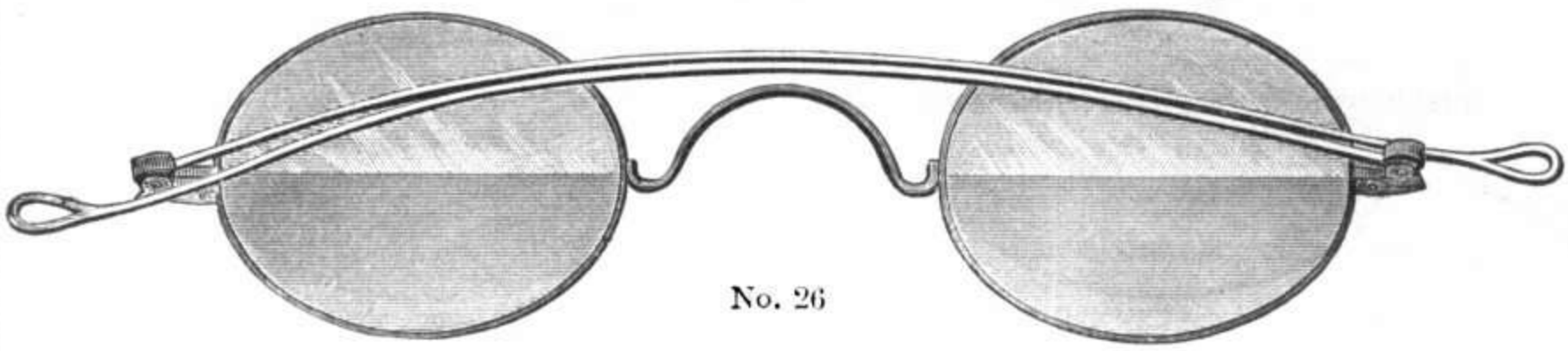


Nos. 24 and 25

Gentlemen's Pattern.

24.	Fine finish, with oval or oblong eyes—Turn-pin Sides.....	$1 50
25.	Extra fine finish, " " " " "	2 00

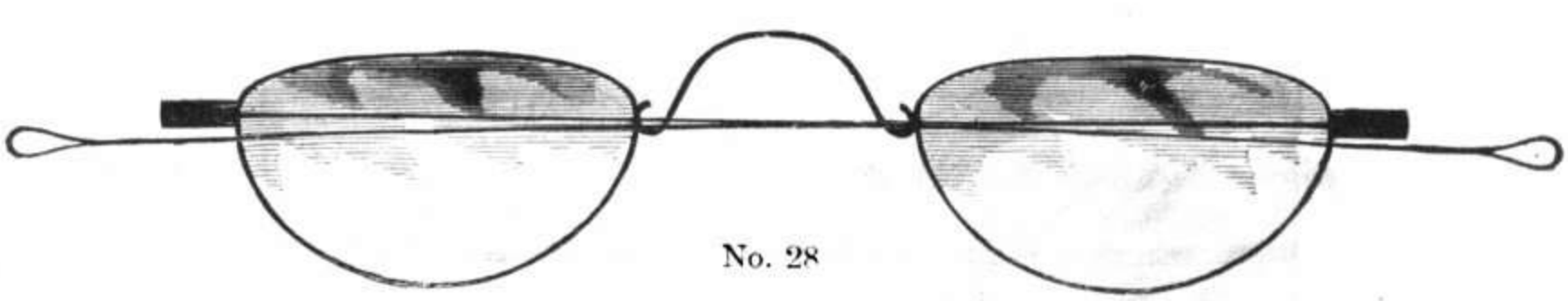
FAR AND NEAR VIEW STEEL SPECTACLES.



No. 26

No.		Price.
26.	Ladies' Pattern	$1 75
27.	Gentlemen's Pattern—Turn-pin Sides	2 00

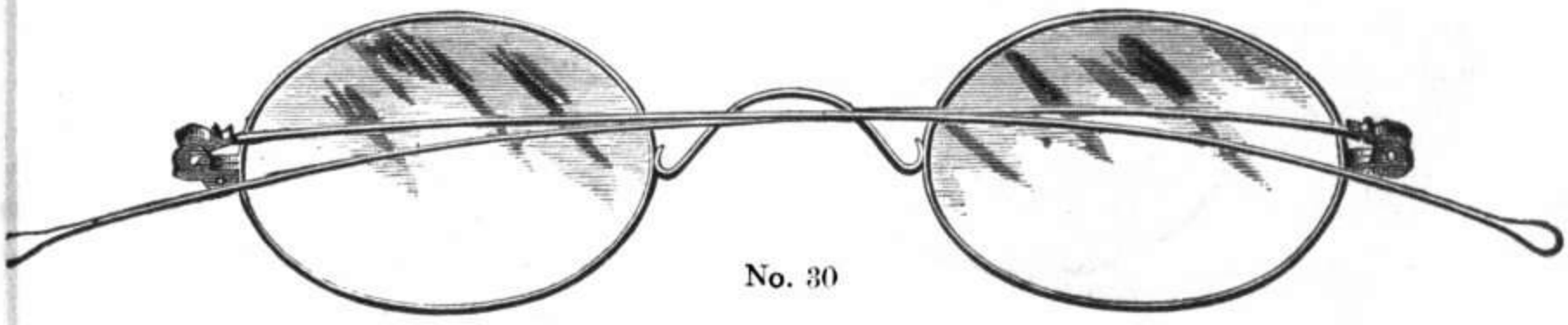
PULPIT SPECTACLES.



No. 28

28.	Pulpit Spectacles, Single Temple—Ladies' Pattern	$1 25
29.	" " Turn-pin Sides—Gentlemen's Pattern	1 50

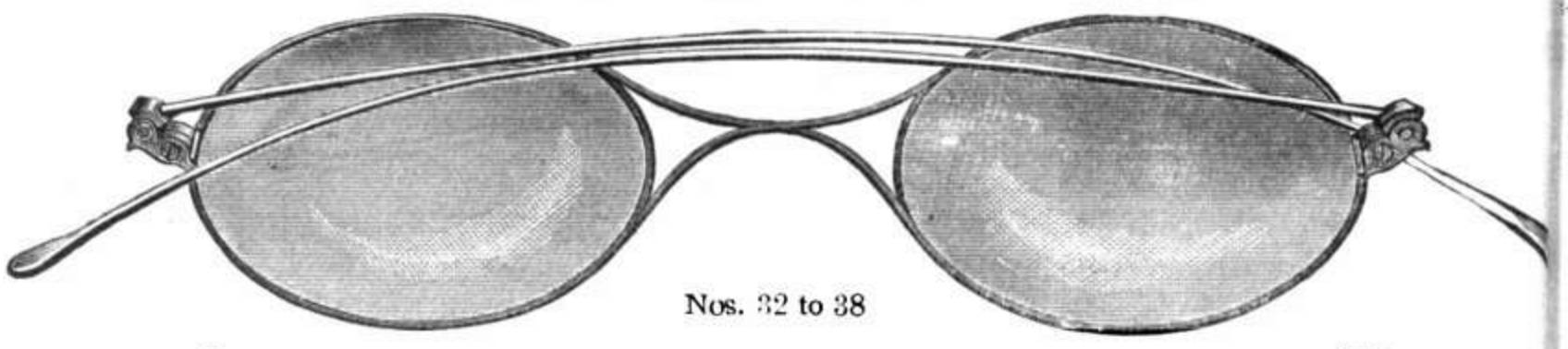
CATARACT SPECTACLES.



No. 30

30.	Ladies' Pattern—Stout Steel Frames	$2 00
31.	Gentlemen's Pattern " " Turn-pin Sides	2 50

COLORED COQUILLE SPECTACLES.

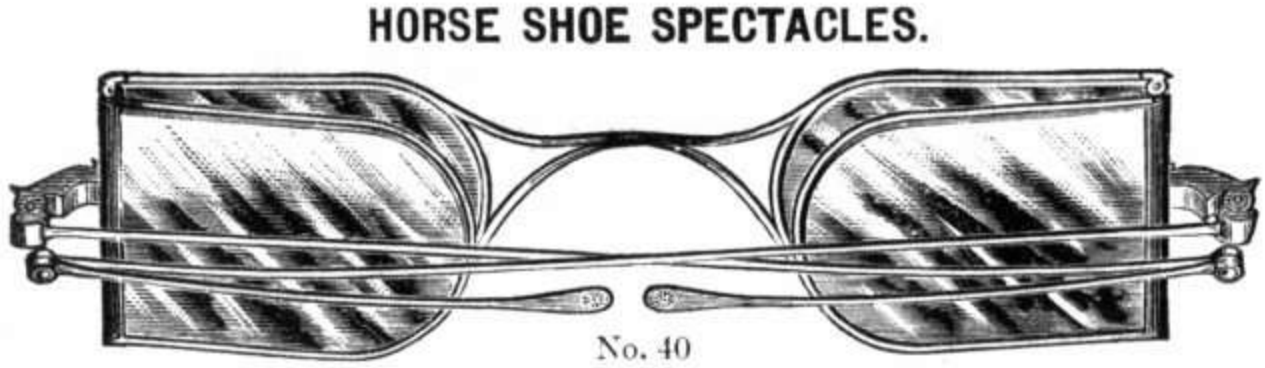


Nos. 32 to 38

No.						Price.
32.	Coquille Spectacles—	Ladies' Pattern—		Fine finish		$2 00
33.	"	"	"	"	Medium finish	1 25
34.	"	"	"	"	Common "	50
35.	"	"	Gentlemen's Pattern—		Fine " Turn pin sides	2 00
36.	"	"	"	"	Medium finish " "	1 25
37.	"	"	"	"	Common " " "	75
38.	"	"	Riding	"	Fine " Very Light Frames.	1 50

Coquille Glasses are large hollow glasses, the same shape as a watch crystal, and are the best glasses for protecting the eyes from the glare of the sun or snow. They can be furnished in either Blue or Smoke Tints.

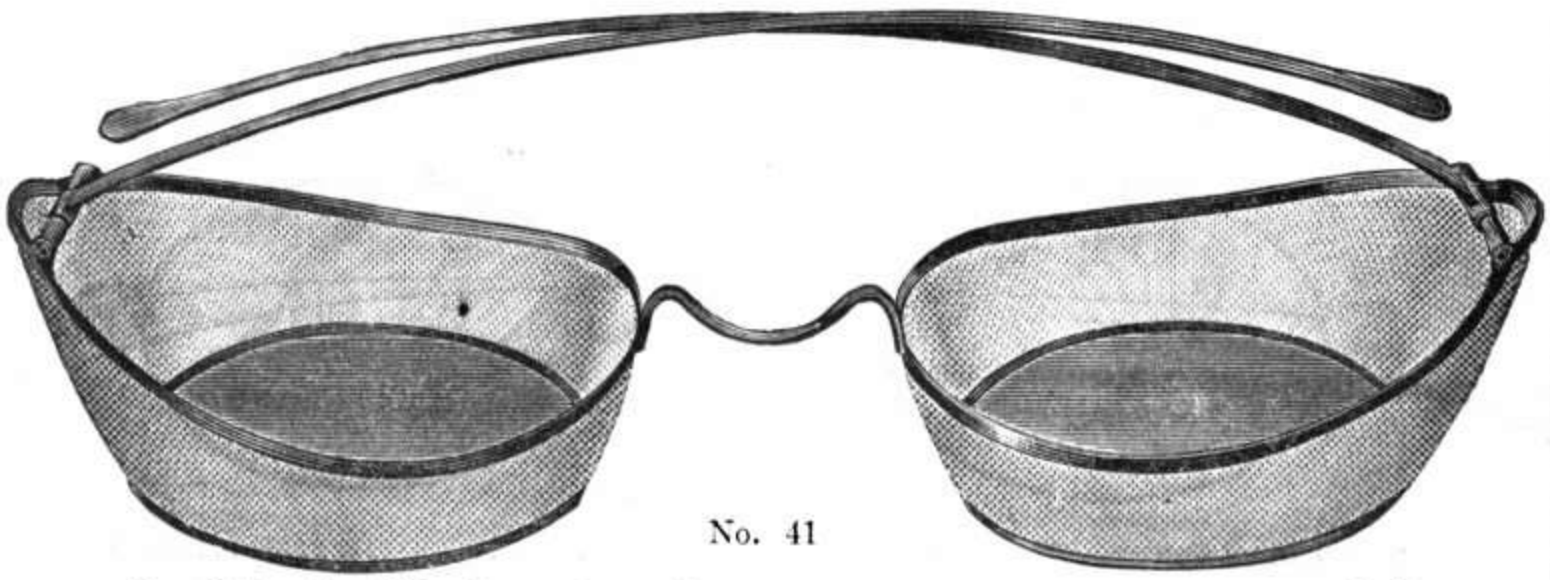
HORSE SHOE SPECTACLES.



No. 40

39. Horse Shoe Spectacles, Ladies' Pattern.....$1 50
40. " " " Gentlemen's Pattern—Turn-pin Sides 1 50

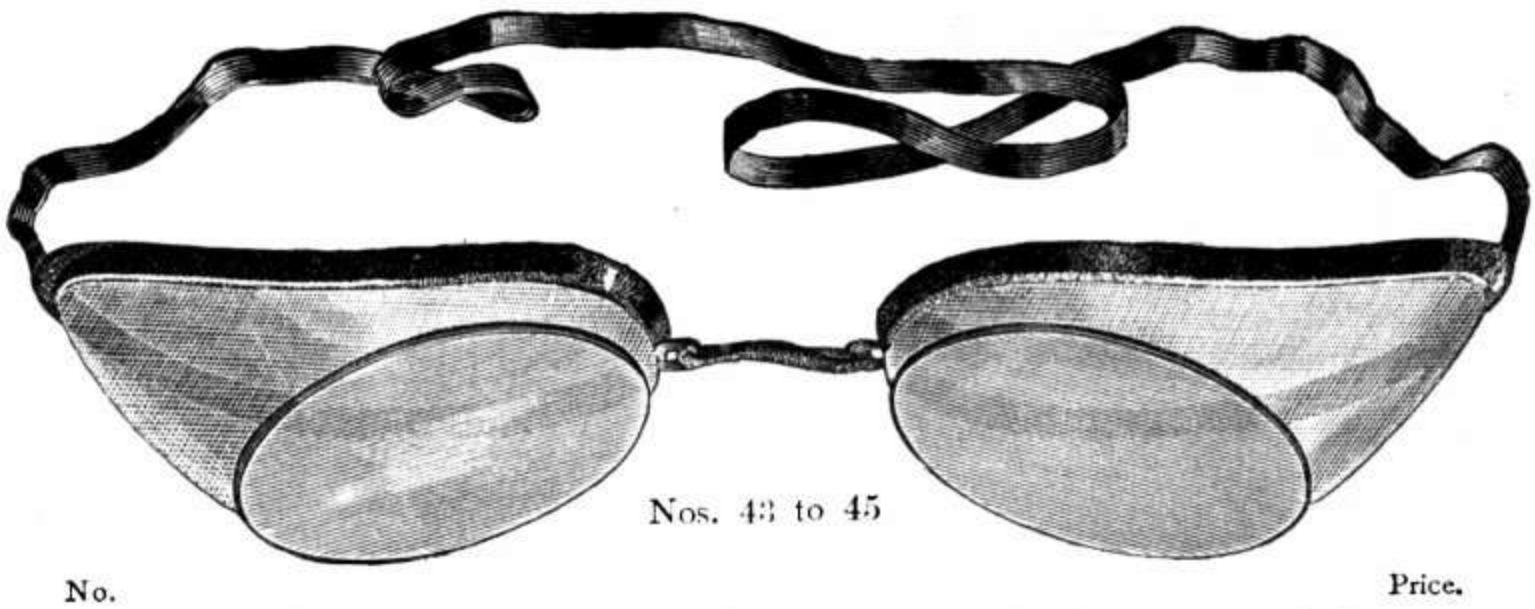
RAILROAD OR WIRE GAUZE SPECTACLES.



No. 41

41. Railroad or Wire Gauze Spectacles.....$1 50
42. " " " " Velvet Edges..... 2 00

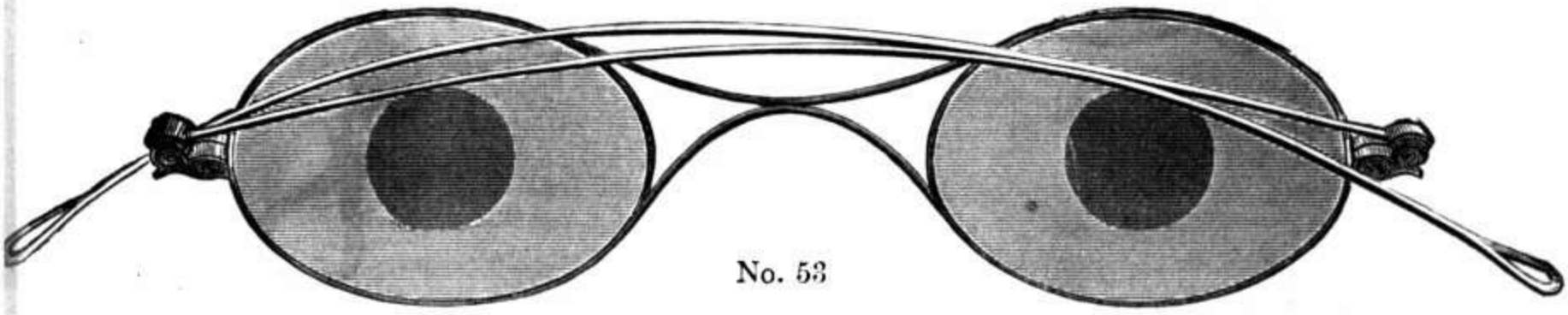
GOGGLES OR WIRE GAUZE PROTECTORS.



Nos. 43 to 45

No.		Price.
43.	Goggles, or Wire Gauze Eye Protectors, with elastic band to go around the head, with White, Smoke, Blue or Green Glasses	25
44.	" " " " Medium	50
45.	" " " Fine finish, edges covered with velvet,	70
46.	Eye Shades for both eyes—Silk	60
47.	" " " Cotton	40
48.	" " " Boston	25
49.	" " " Rubber	40 and 75
50.	" " " Skull	25 and 60
51.	" " one eye—Silk	25
52.	" " " Cotton	20

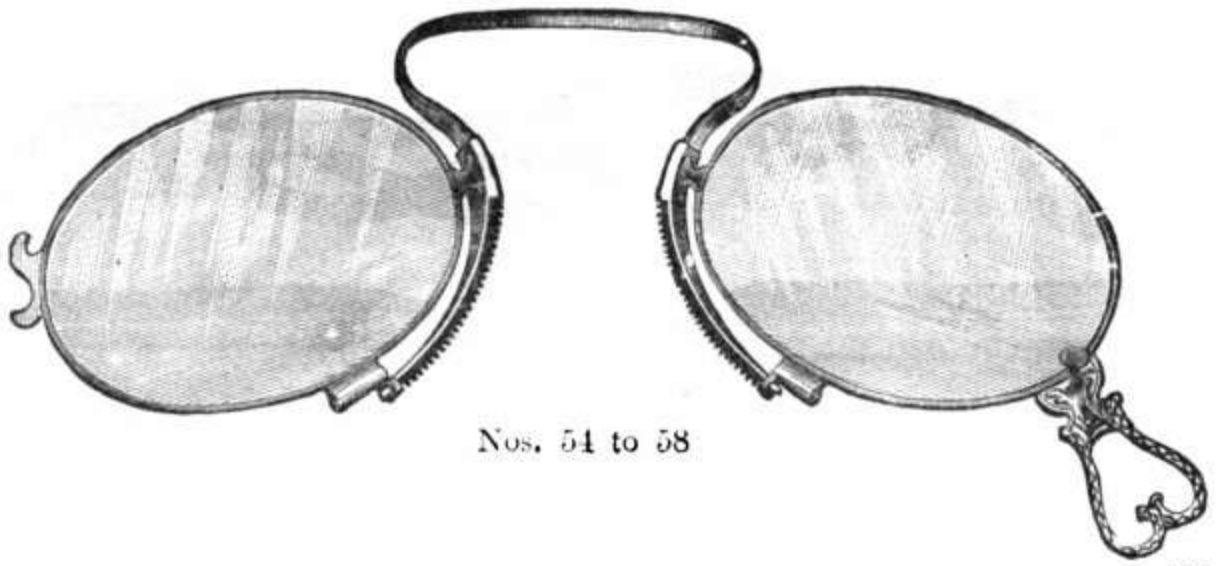
SHOOTING SPECTACLES.



No. 53

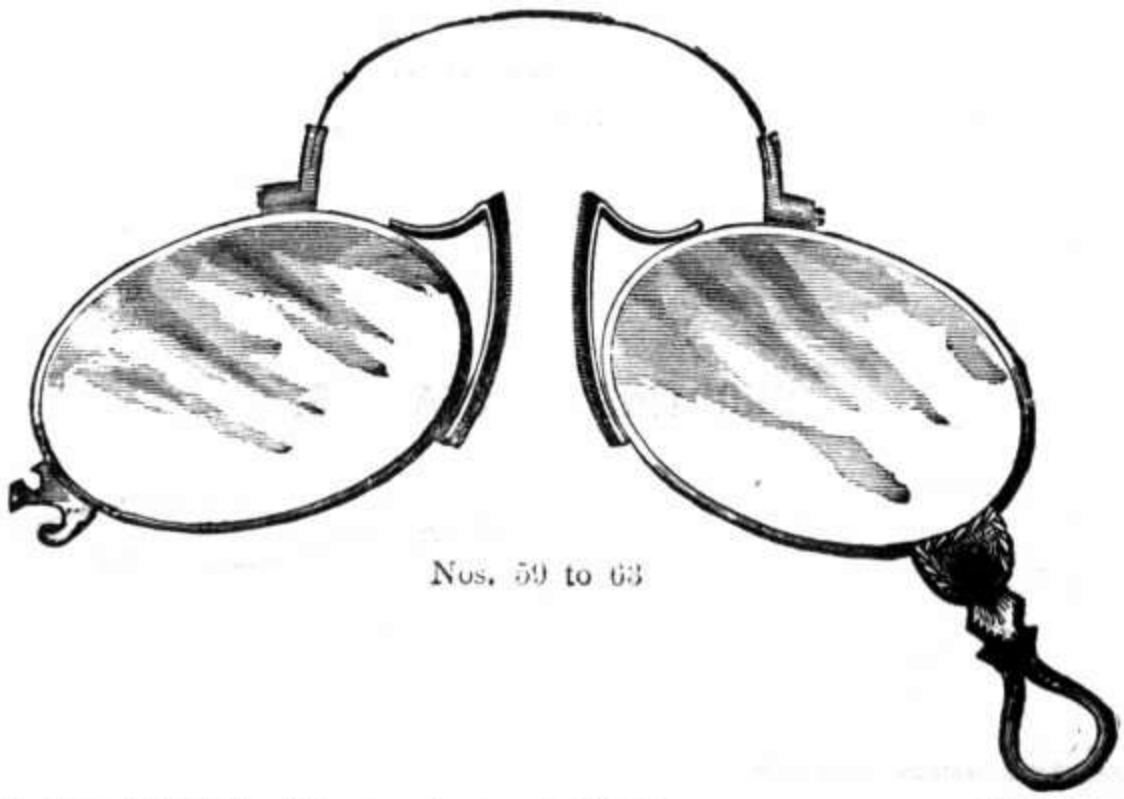
53.	Shooting Spectacles, designed for Gunners, to relieve the eye from the reflection of the barrel	60

GOLD EYE GLASSES.



Nos. 54 to 58

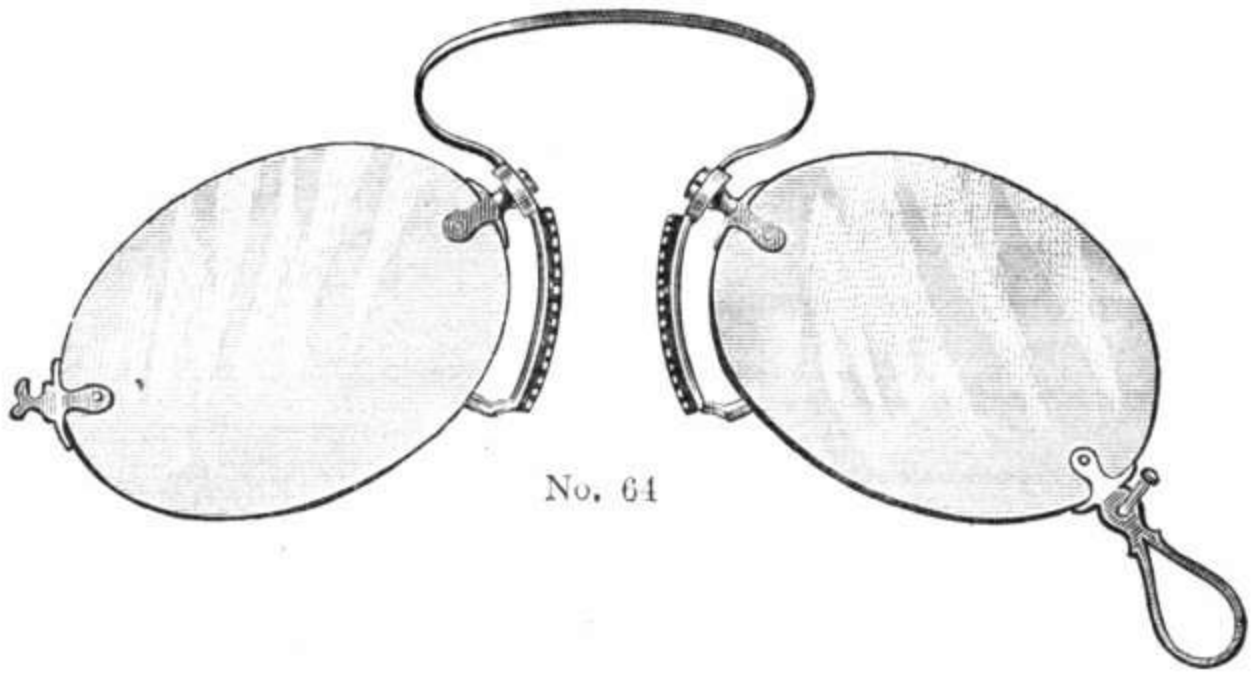
No.								Price.
54.	10	Karat	Gold	Eye	Glasses,	with	Shell covered Nose piece.....	$5 00 to $7 50
55.	12	"	"	"	"	"	"	6 50 to 8 00
56.	14	"	"	"	"	"	"	7 00 to 10 00
57.	16	"	"	"	"	"	"	8 00 to 11 00
58.	18	"	"	"	"	"	"	12 00 to 14 00



Nos. 59 to 63

59.	10	Karat	Gold	Eye	Glasses—Anatomical	Pattern.....	$5 00 to $7 50	
60.	12	"	"	"	"	"	.....	6 50 to 8 00
61.	14	"	"	"	"	"	.....	7 00 to 10 00
62.	16	"	"	"	"	"	.....	8 00 to 11 00
63.	18	"	"	"	"	"	.....	12 00 to 14 00

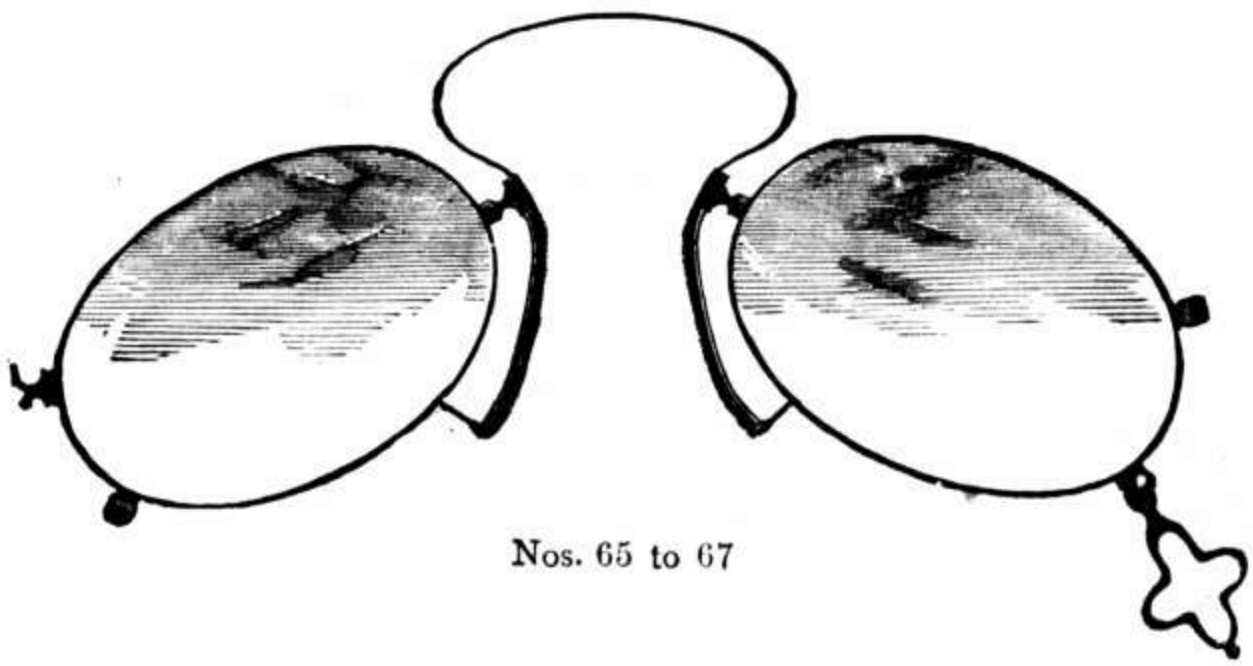
GOLD EYE GLASSES.



No. 64

No.		Price.
64.	Frameless Gold Eye Glasses, with 14 Karat mountings, either with or without the handle and catch	$5 00

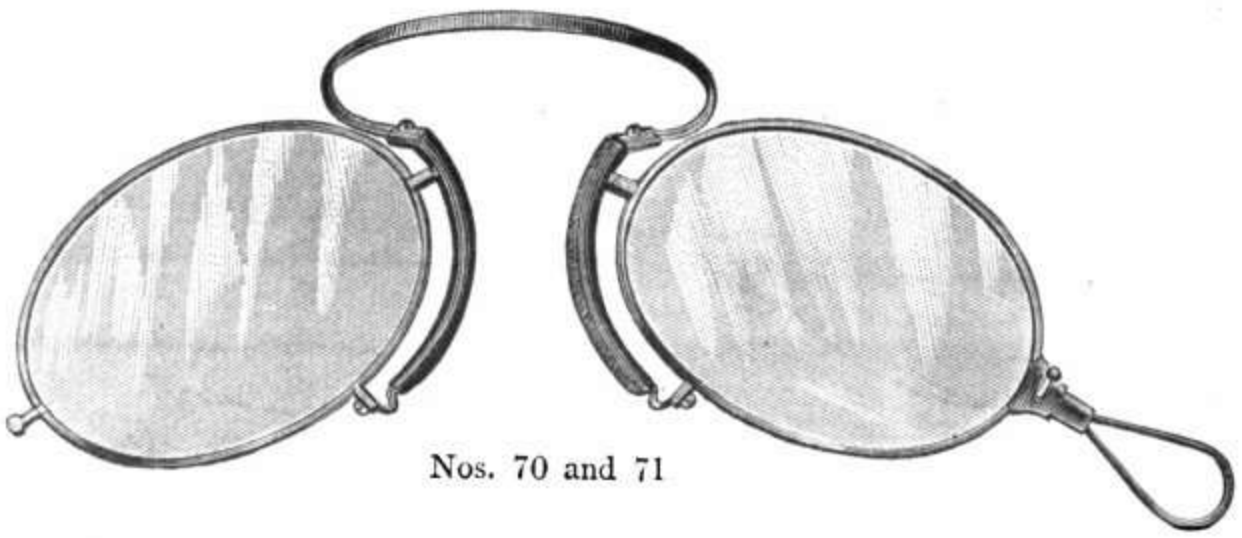
STEEL EYE GLASSES.



Nos. 65 to 67

65.	Steel Eye Glasses—Common finish	$1 00
66.	" " Medium "	1 50
67.	" " Fine "	2 00
68.	Barber's Patent Adjustable Nose Piece	2 00
69.	Steel Eye Glasses—Extra fine finish—Centennial Pattern	3 00

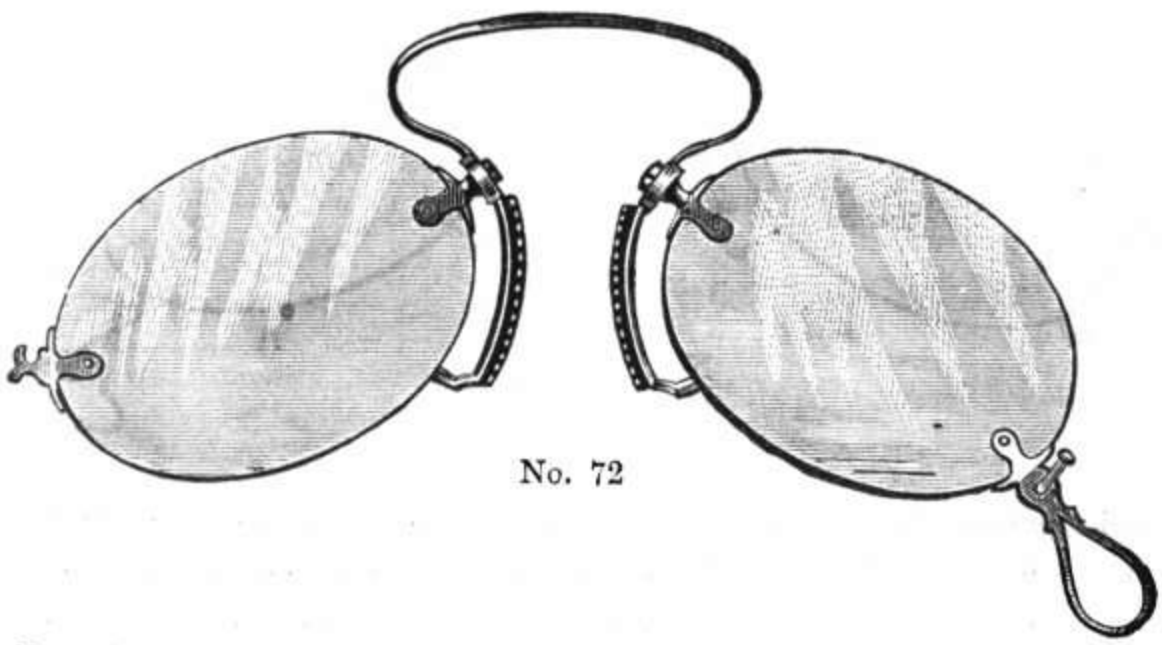
STEEL EYE GLASSES.



Nos. 70 and 71

No.		Price.
70.	Steel Eye Glasses—New style Rubber Nose Piece	$1 50
71.	" " " Shell "	2 00

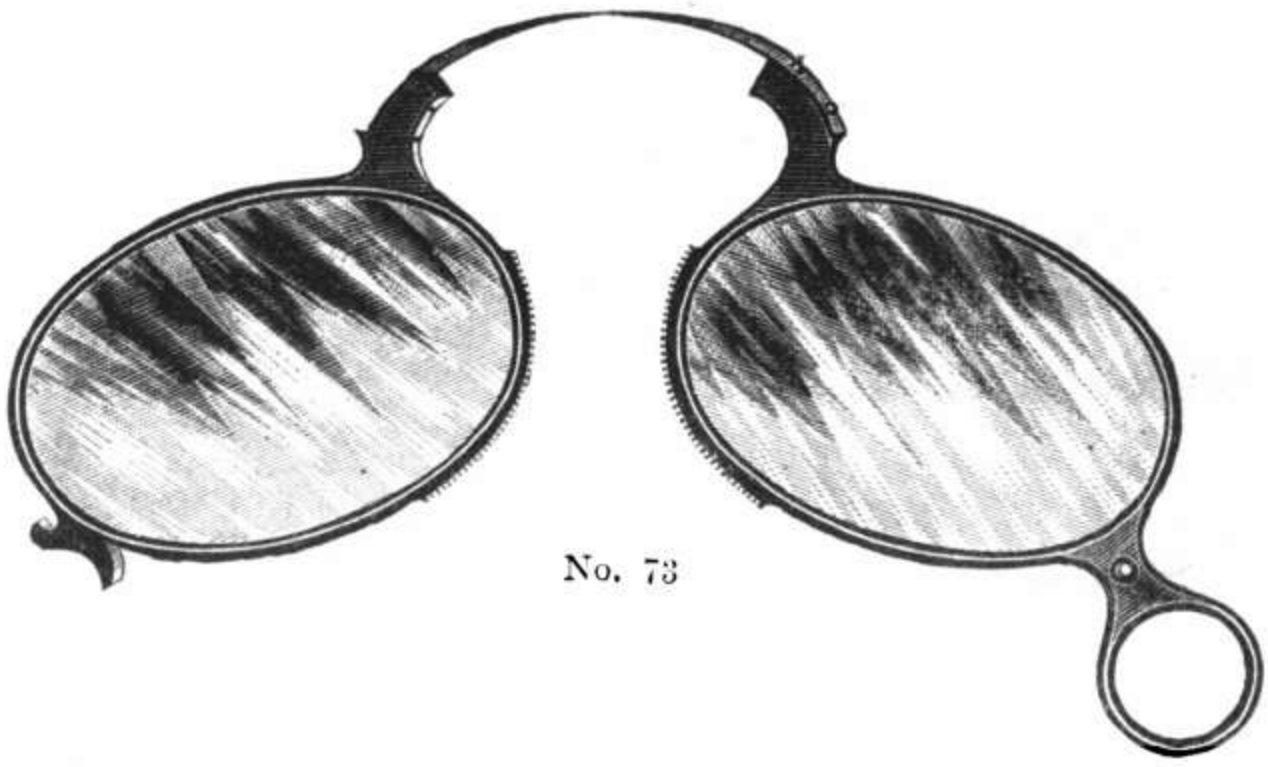
FRAMELESS EYE GLASSES.



No. 72

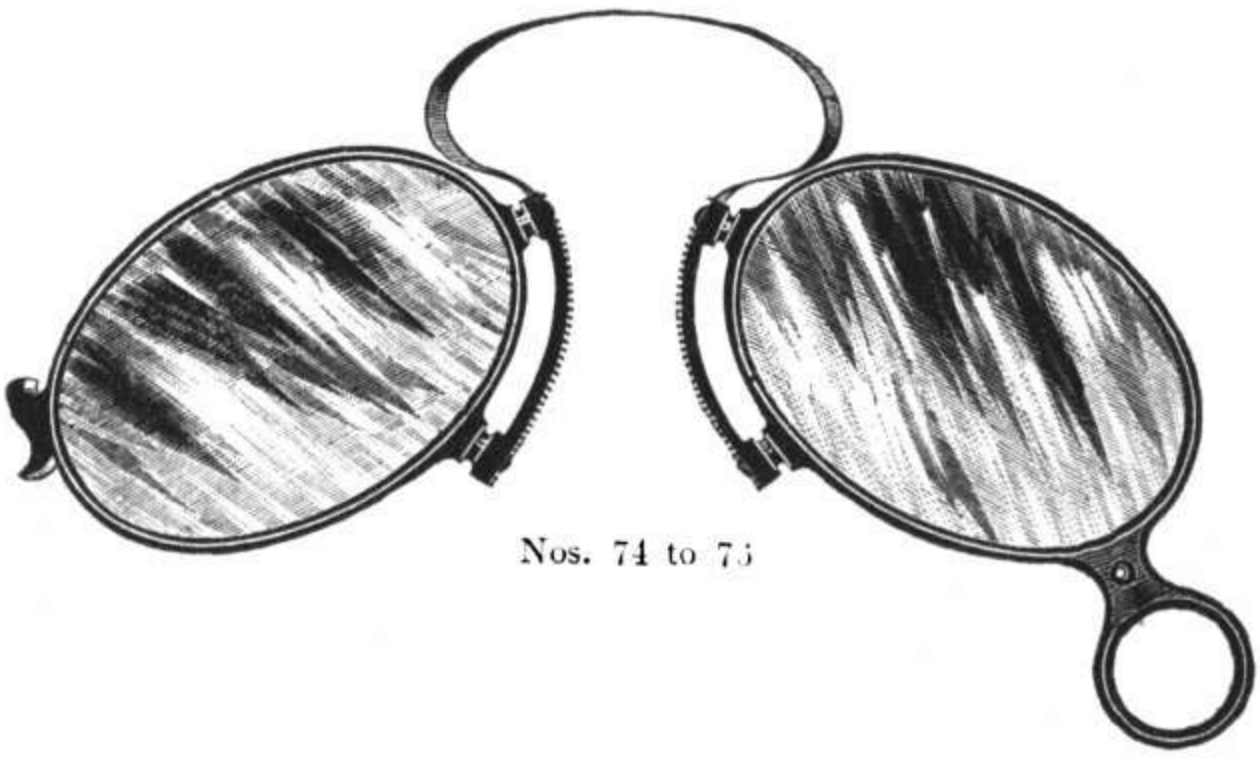
72.	Frameless Eye Glasses—Steel Spring and German Silver Mountings	$1 50
73.	" " Burbank pattern	2 50

SHELL, CELLULOID AND VULCANITE EYE CLASSES.



No. 73

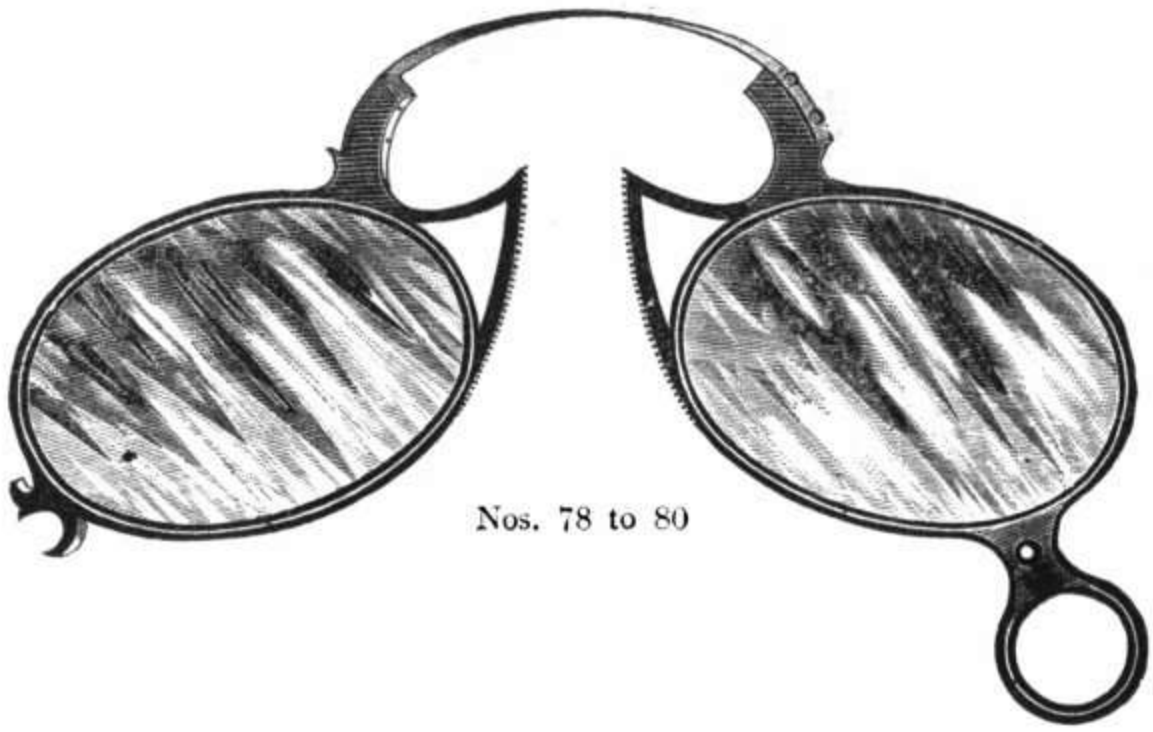
No.		Price.
74.	Vulcanite Eye Glasses.....	75



Nos. 74 to 75

75.	**Shell Eye Glasses**.....	**$2 50**
76.	**Celluloid Eye Glasses**.....	**2 00**
77.	**Vulcanite "**	**1 00**

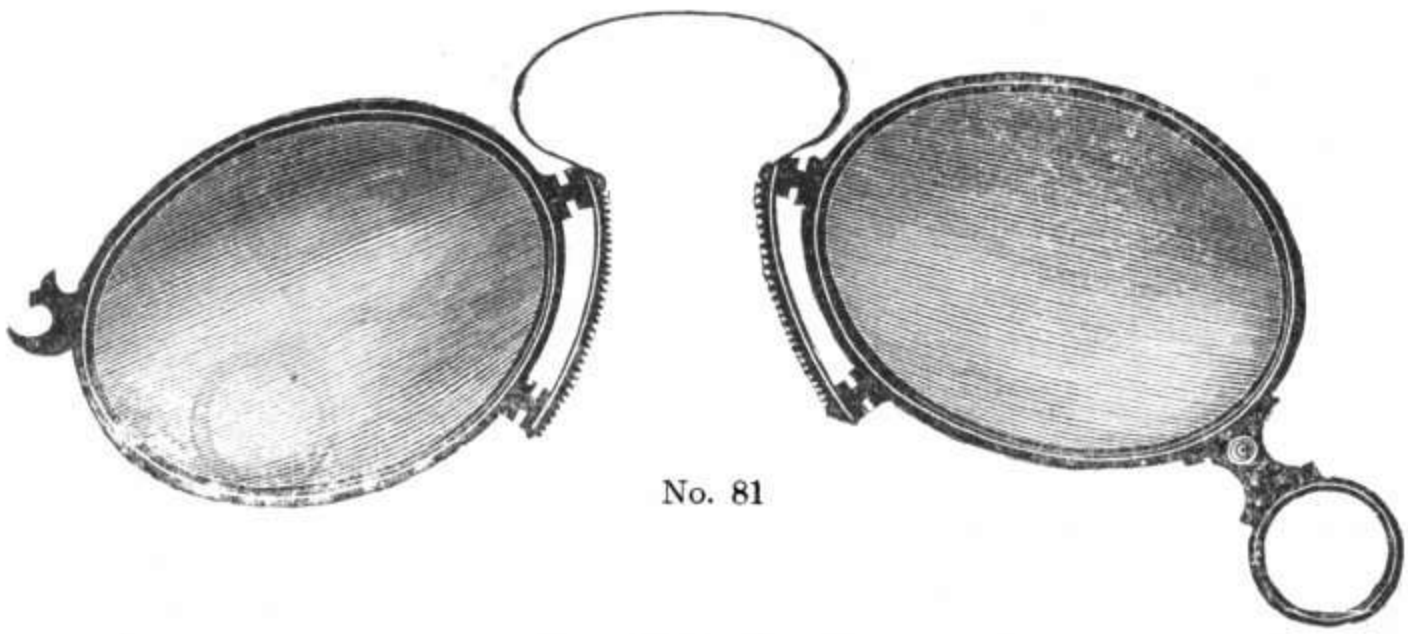
SHELL, CELLULOID AND VULCANITE EYE GLASSES.



Nos. 78 to 80

No.		Price.
78.	Shell Eye Glasses	$2 50
79.	Celluloid Eye Glasses	2 00
80.	Vulcanite "	1 00

COQUILLE EYE GLASSES.



No. 81

81. Coquille Eye Glasses, Vulcanite Frame, with Blue or Smoke Glasses..... $1 25

PRICE OF SPECTACLE LENSES.

Spherical Lenses.

No.		Price per pair.
82.	Double Convex or Concave White Lenses, from 5 to 72 inch focus	$0 75
83.	Periscopic Convex or Concave White Lenses, from 5 to 72 inch focus	75
84.	Periscopic or Double Convex or Concave White Lenses, from 2 to 4¾ in. focus	1 25
85.	Double Convex White Lenses, 2 foci on same glass, for far and near view	1 50
86.	Periscopic or Double Convex or Concave—Blue, Green or Smoke Lenses	1 50
87.	Plain, Blue, Green or Smoke Lenses	75

Cylindrical Lenses.

		Per pair.	Single Lens.
88. 89.	Plano Cylindrical Convex or Concave White Lenses	$2 00	$1 25
90. 91.	" " " " Blue or Smoke Lenses	3 00	2 00
92. 93.	Sphero Convex or Concave Cylindrical White Lenses	4 00	2 25
94. 95.	" " " " Blue or Smoke Lenses,	5 00	3 00
96. 97.	Plano Convex or Concave Cylindrical Prismatic White Lenses,	4 00	2 25
98. 99.	" " " " Blue or Smoke Lenses,	5 00	3 00
100. 101.	Sphero Convex or Concave Cylindrical Prismatic Lenses	5 50	3 00
102. 103.	" " " " " Blue or Smoke	7 50	4 00
104. 105.	Cross or Double Cylindrical Lenses, Convex or Concave	6 00	3 00

Prismatic Lenses.

		Per pair.	Single Lens.
106. 107.	Plain Prismatic Lenses, White	$2 00	$1 25
108. 109.	" " " Blue or Smoke	3 00	2 00
110. 111.	Plano Convex or Concave and Prismatic White Lenses	4 00	2 25
112. 113.	Sphero Prismatic Lenses, White	3 50	2 00

Pebbles, or Rock Crystal Lenses.

		Per pair.
114.	Double Convex or Concave Pebbles	$2 00
115.	Periscopic Convex or Concave Pebbles	2 00

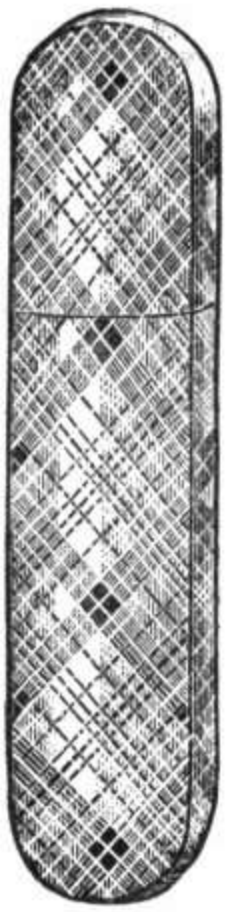
These prices are for lenses when they are set in the frame. When the frame is set in a groove in the lenses an additional charge of 75 cents per pair is made.

SPECTACLES, EYE GLASS CASES, ETC.

No. 116

No. 117

No. 122



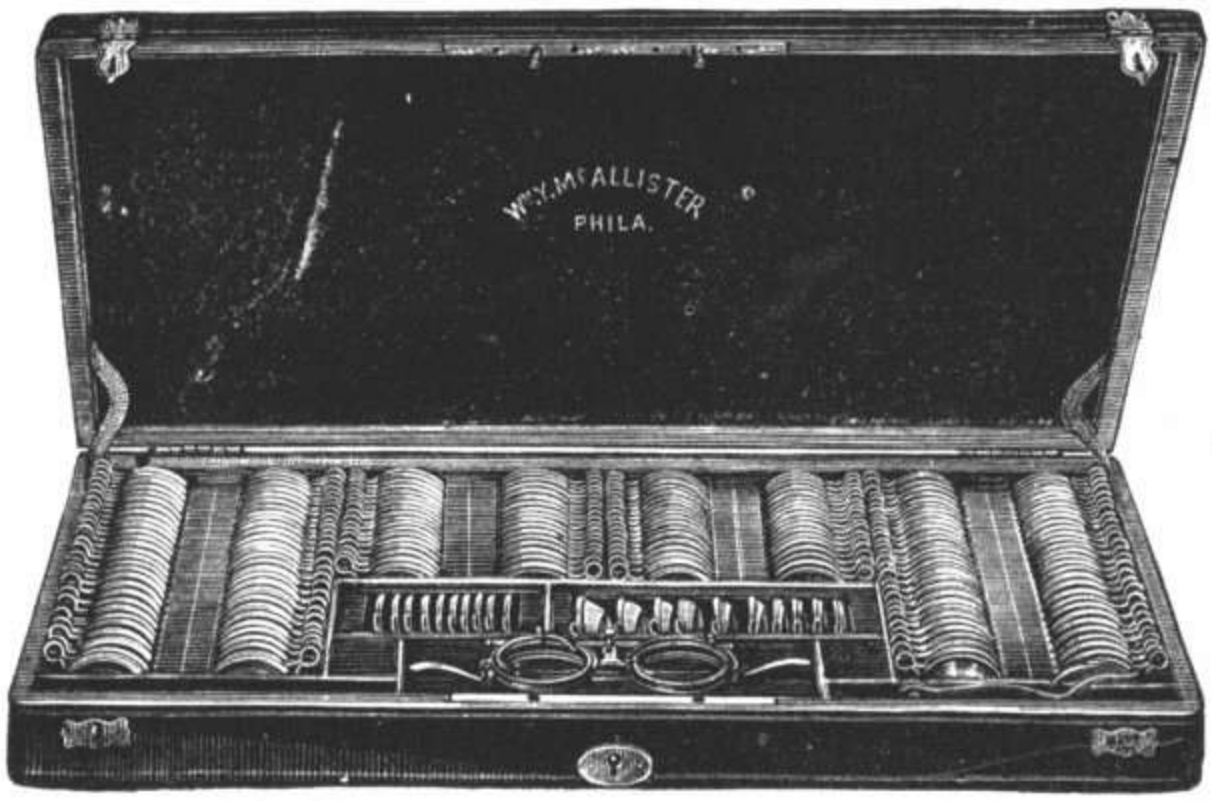
No. 119

No. 123

No. 127

No.		Price.
116.	Spectacle Case, Morocco, with Tuck	$0 25
117.	" " " Open end	25
118.	" " Sewed English Leather	75
119.	" " Scotch Plaid, Fish Mouth	50 cts. to 1 50
120.	" " Planished Tin, (3 sizes)	each, 25
121.	" " German Silver Plated, (3 sizes)	$1 00 to 1 75
122.	" " Fancy Velvet Chatelaine	1 00 to 3 50
123.	Eye Glass Case, Morocco	10
124.	" " Sewed English Leather	50
125.	" " Nickle Plated	10
126.	" Hooks, Japanned	15
127.	" " Plated and Gilt	25 cts. to 1 25
128.	" " Rubber	25
129.	" " Shell	75
130.	" " 14 Karat, Gold	$2 00 to 5 00
131.	" Chains, Gold, with hook and catch	$3 00 to 12 00
132.	" Guards, Automatic	25
133.	" " Silk, with hook and pin	15
134.	" " Silk	10
135.	" " Catgut—very strong	10

NACHET'S SETS OF TRIAL LENSES.



Nos. 136 to 140

No.		Price.
136.	Nachet's Set of Trial Lenses, in a Rosewood Case—*complete*—containing 30 pair Spherical Convex Lenses. 30 " " Concave " 18 " Cylindrical Convex " 18 " " Concave " 10 Prismatic Lenses. 1 Metal Disc, 1 Metal Disc with hole in centre, 2 Metal Discs with Stenopaic slits, 1 Half Ground Glass, 1 Plain Glass, 4 Colored Glasses, 1 Adjustable Trial Frame graduated for Cylindrical Lenses, 1 Trial Frame for Single Lenses.....	$110 00
137.	Nachet's Set of Trial Lenses, same as No. 136, with Morocco Case.....	100 00
138.	Nachet's Set of Trial Lenses, in a Morocco Case—containing 23 pair Spherical Convex Lenses. 23 " " Concave " 12 " Cylindrical Convex " 12 " " Concave " 6 Prismatic Lenses from 2° to 10° 2 Discs, 1 Plain Metal and 1 Stenopaic slit, 2 Colored Glasses and 1 Ground Glass Disc, 1 Graduated Trial Frame, 1 Rubber Hand Trial Frame.....	75 00
139.	Nachet's Set of Trial Lenses, in Morocco Case, same as No. 138, with the exception that the Cylindrical Lenses are not in pairs, there being only one of each number (Concave and Convex.).....	70 00
140.	Nachet's Set of Trial Lenses, in a Morocco Case—containing 38 Spherical Convex Lenses. 38 " Concave " Mounted in frames. The Lenses are assorted from 2 to 72 inch focus..	30 00

ROULOT'S SETS OF TRIAL LENSES.

No. Price.

141. Roulot's Set of Trial Lenses, in a Rosewood Case—containing

30 pair Spherical Concave Lenses.
30 " " Convex "
18 Cylindrical " "
18 " Concave "
10 Prismatic Lenses.
1 Graduated Trial Frame.
4 Colored Glasses.
1 Single Glass Holder.
8 Accessories, and 1 Metric Tape Measure..... $80 00

142. Roulot's Set of Trial Lenses, in a Rosewood Case—containing

25 pair Spherical Concave Lenses.
25 " " Convex "
12 Cylindrical " "
12 " Concave "
8 Prismatic Lenses.
1 Graduated Trial Frame.
4 Colored Glasses.
4 Accessories, and 1 Metric Tape Measure..... 65 00

143. Roulot's Set of Trial Lenses, in a Morocco Case—containing

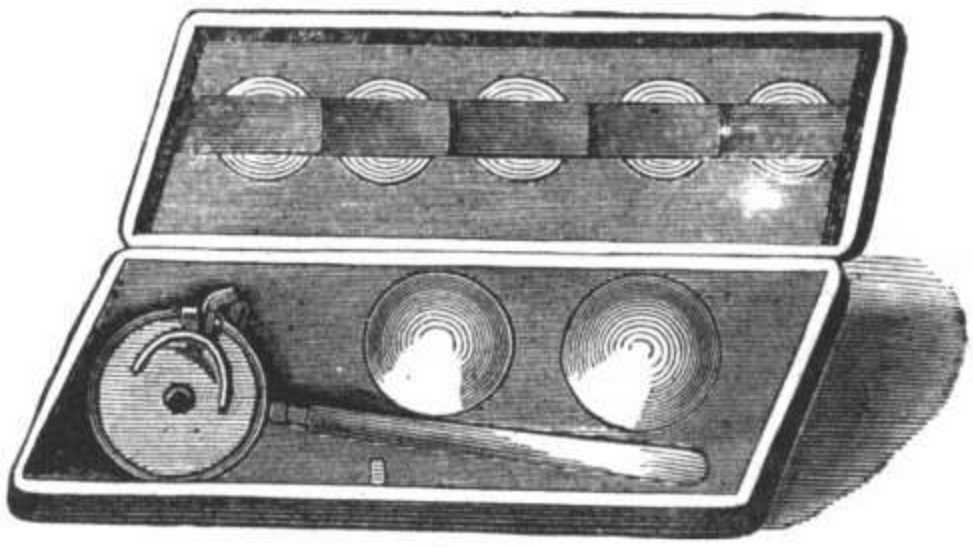
23 pair Spherical Concave Lenses.
23 " " Convex "
8 Cylindrical " "
8 " Concave "
6 Prismatic Lenses.
1 Graduated Trial Frame.
4 Colored Glasses.
6 Accessories, and 1 Metric Tape Measure..... 55 00

144. McAllister's Set of Trial Lenses, for Phyicians in general practice, in a Morocco Case—containing

13 pair Spherical Concave Lenses.
13 " " Convex "
1 single Trial Frame..... 12 00

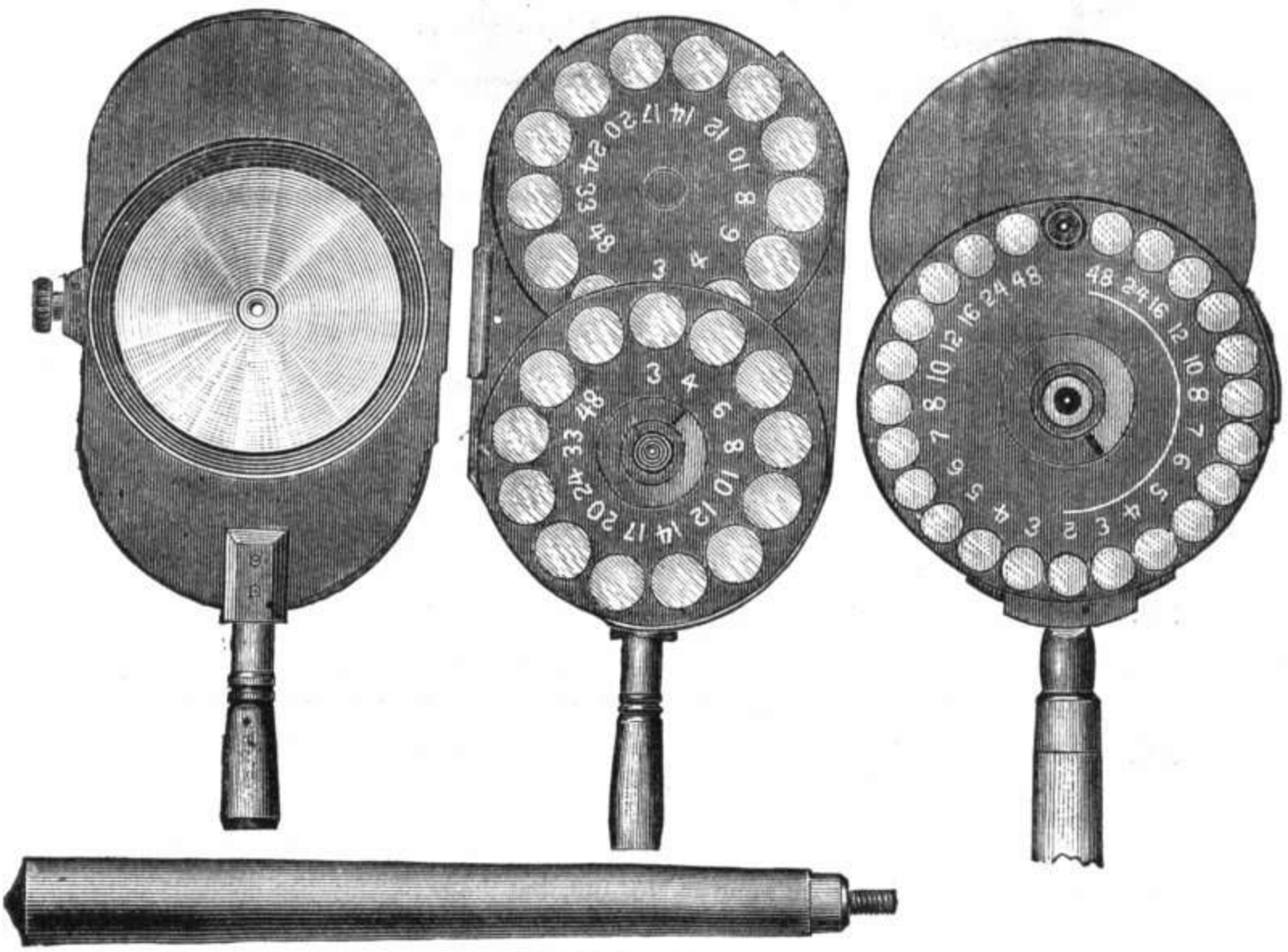
All the lenses of the above sets are marked in either the Dioptric or Inch system of measuring. The lenses are mounted in Gilt and Silvered Rings.

OPHTHALMOSCOPES, ETC.



No. 145

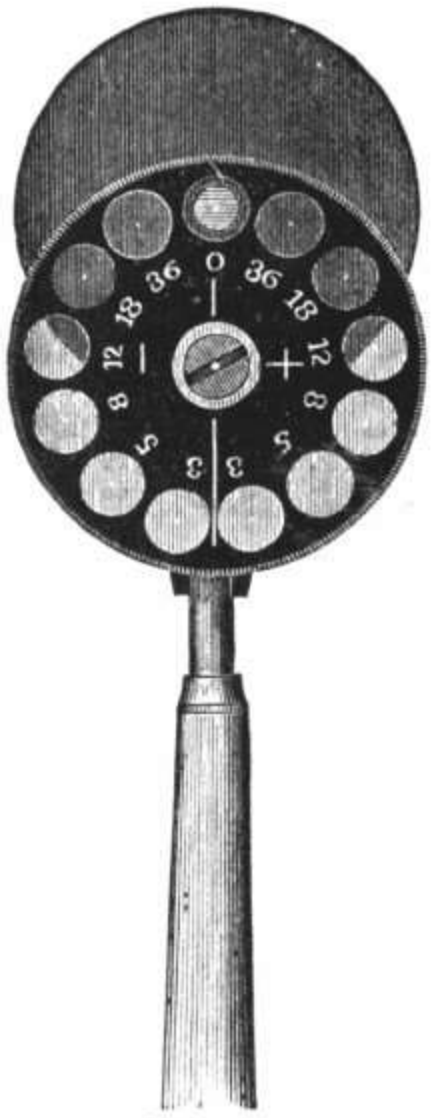
No.		Price.
145.	Liebrich's Ophthalmoscope, with two bi-convex condensing lenses, 1¾ and 2 inches focus, and a series of five lenses of various foci, fitting on an arm behind the perforated mirror, in Morocco case.....	$5 00



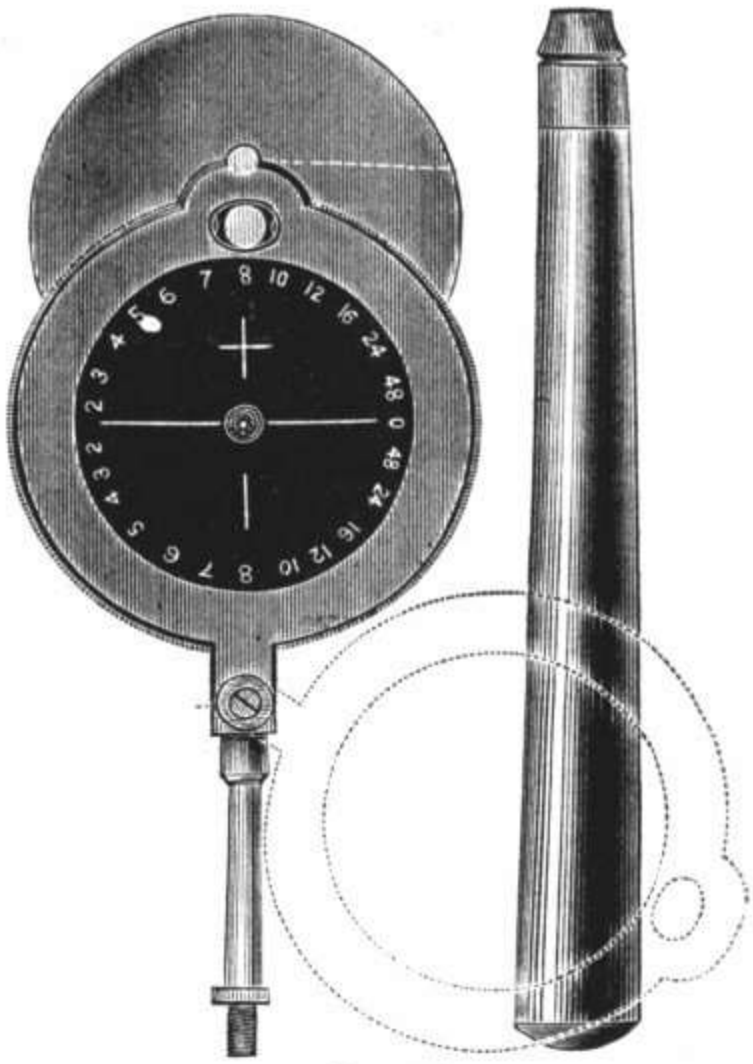
Nos. 146 and 147

146.	Dr. Knapp's Ophthalmoscope, mirror 1½ inches diameter, revolving disc back of mirror containing twelve lenses each convex and concave, revolving beneath a metal cover for protecting the lenses from injury and being soiled, two condensing lenses 1½ inches in diameter, all packed in a Morocco case.....	$22 00

No.		Price.
147.	Dr. Knapp's Ophthalmoscope, double disc	$40 00
148.	Dr. Landolt's Ophthalmoscope, mirror $1\frac{3}{16}$ inches in diameter, double disc containing eleven lenses, which by their combinations produce 20 convex and 21 concave numbers, in Morocco case	20 00

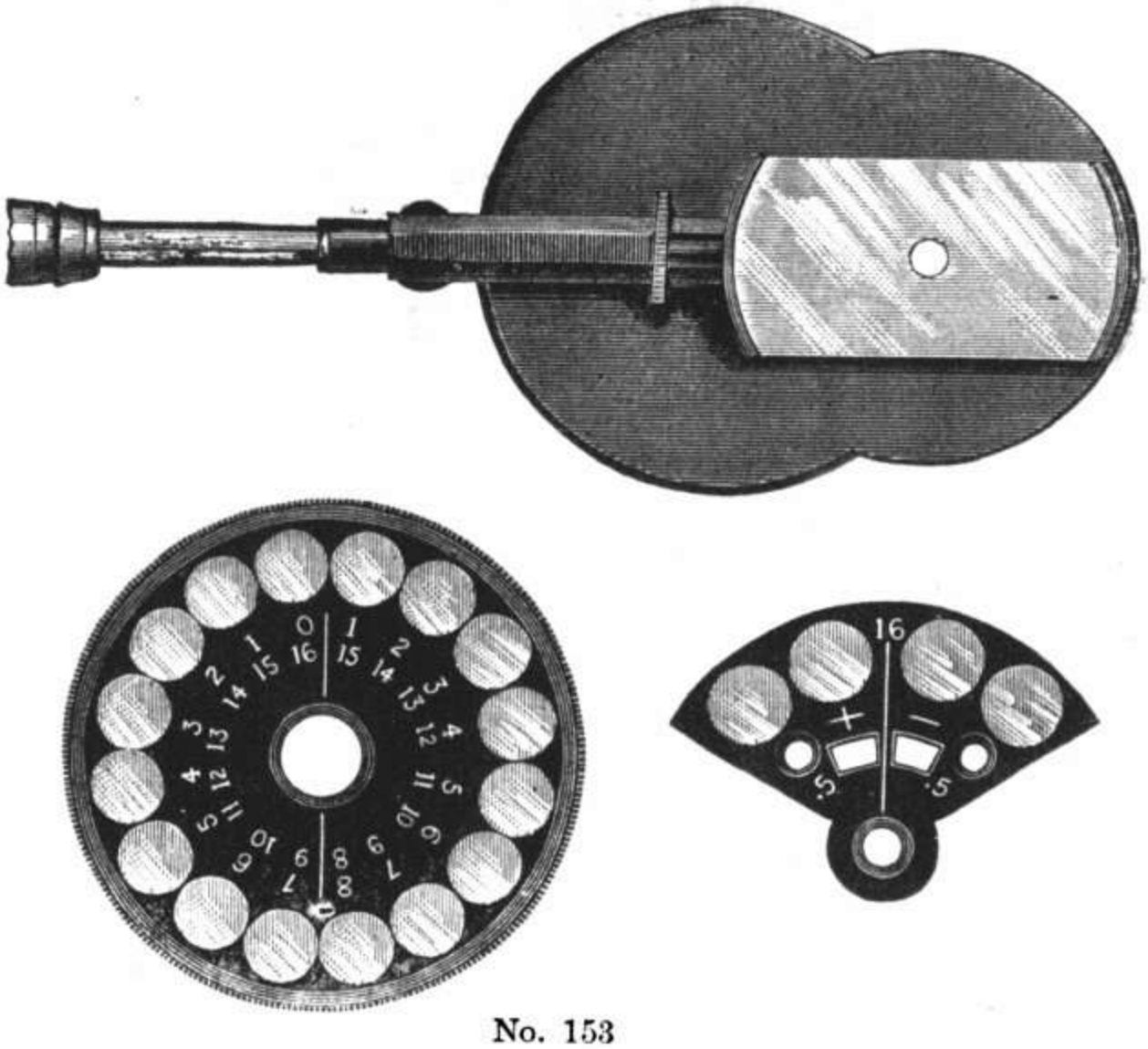


No. 150



No. 152

149.	Loring's Ophthalmoscope, mirror $1\frac{1}{4}$ inches diameter, revolving disc at back of mirror containing lenses of —3, —6, —12, —24, +8, +12, +24 inches focus, double convex condensing lenses $1\frac{1}{2}$ inches diameter, all packed in Morocco case	$8 00
150.	Loring's Ophthalmoscope, mirror $1\frac{1}{4}$ inches diameter, revolving disc at back of mirror containing lenses 3, 5, 8, 12, 18, 36 inches focus, both concave and convex, double convex condensing lenses $1\frac{1}{2}$ inches diameter, all packed in Morocco case	14 00
151.	Loring's Ophthalmoscope, same as No. 149, but the revolving disc contains fifteen lenses, seven convex and eight concave, numbered inches and dioptrics, packed in a Morocco box	18 00
152.	Loring's Ophthalmoscope same as No 149, revolving disc containing twenty-four lenses, twelve convex and twelve concave, and revolving beneath a shield or cover by which the lenses are protected from injury and being soiled, packed in a Morocco case	30 00



No. 153

No.		Price.
153.	Loring's New Ophthalmoscope, in Morocco case.....	$35 00

This instrument consists of a disc, and a quadrant of a disc carrying the lenses. The single disc contains sixteen glasses on the metric system, the plus being numbered in white, and the minus in red. The first row of numbers, or that just beneath the glass, shows the real value of the glass; the second or inner row shows the result of the combinations when the quadrant is in position. The quadrant rotates immediately over the disc and around the same centre, and contains four glasses, —5,—16, and +5, +16. When it is not used the quadrant is beneath its cover. The instrument then represents a simple Opthalmoscope with sixteen perforations, the series running with an interval of 1 D, and extending from 1 to 7 plus, and 1 to 8 minus. This is ample for all ordinary work, as the interval of 1 D, is as close as even an expert usually desires, and can, with a little experience, be used for even very minute discrepancies. For if in a given case the fundus is seen distinctly with 1 D and a little to spare, while 2 D blurs the picture, we know at once that the refraction must be between the two, or 1.5 D. If, however, for any reason we wish to prove this conclusion, we can bring up 0.5 D. From this glass we get successive half-dioptric from 1 to 8 plus, and from 1 to 9 minus. In this way we have, so to speak, a fine and coarse adjustment, as in the microscope. If the higher numbers are desired, these are obtained by combinations with those of the quadrant. These progress regularly up to 16 D, every dioptric being marked upon the disc; above this, up to +23 D and —24 D, we have to simply add the glass, which comes beneath the 16 D, turning always in the same direction.

The mirror shown in the drawing is the "tilting" form. If preferred the common circular mirror can be employed.

OPTOMETERS, TRIAL FRAMES, TEST DIAGRAMS, ETC.

No. 154

No. | Price.

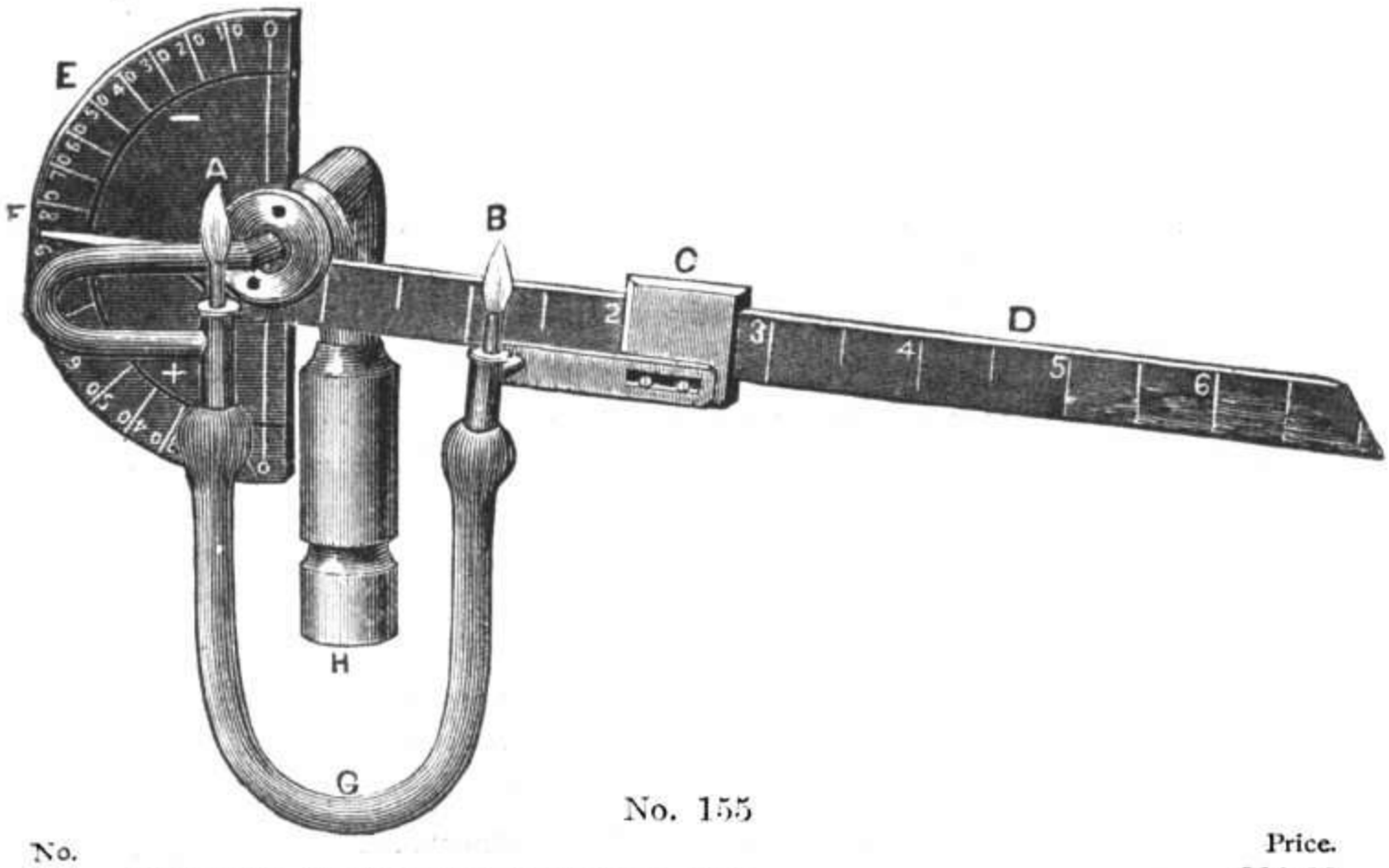
154. Dr. Risley's New Optometer, with 16 various printed test-types, 8 printed diagrams, and 6 metal discs, having a great variety of perforations and slits for testing astigmatism, 1 metal stenopaic disc, etc..... $56 00

This instrument was devised by Dr. S. D. Risley, of this city, for the detection and measurement of *Astigmatism*, and with its aid the Oculist can arrive at more accurate determinations of the defects of refraction, with much less expenditure of time, and with less fatigue both to himself and his patient, than by any other means.

The instrument consists of a stand, with solid base, on the top of which is fixed a pair of semicircles, with their concavity upward, for the reception of trial glasses, stenopaic slit, etc. They are graduated to correspond with the Nachet trial-frames. In front of the holders is a square horizontal bar, 20″ long, graduated in fractions of an inch. Upon this bar is adjusted a freely-moving carrier, designed to bear a series of cards containing the test-types of Snellen and Jaeger, and a large number of test-figures for Astigmatism, among which is the system of radiating lines of Dr. Green, of St. Louis. The whole set is intended for use at 12″ instead of 20″.

Many of the tests are cut in thin brass discs, and are to be used over an illuminated background, which is furnished by a plate of ground glass. There is a plate fitting the carrier with central opening, designed to receive these discs, and to permit their free ro-

tation over a graduated scale corresponding to that upon the holders. One of the most valuable of this series, of test-objects is a wire *Optometer*, consisting of a brass rim, with two groups, each containing five wires, stretched one millimetre apart, the two groups crossing the centre at right angles. There is also an adjustible *Perimeter*, which can be readily removed when not in use.



No. 155

No.		Price.
155.	Thomson's Ametrometer, in Morocco Case	$11 00

A practical and rapid method, with an instrument, for the diagnosis of the refraction, by Wm. Thomson, M. D., Emeritus Surgeon, Wills' Oph. Hospital, Lecturer on Diseases of the Eye, Jefferson College, Philadelphia.

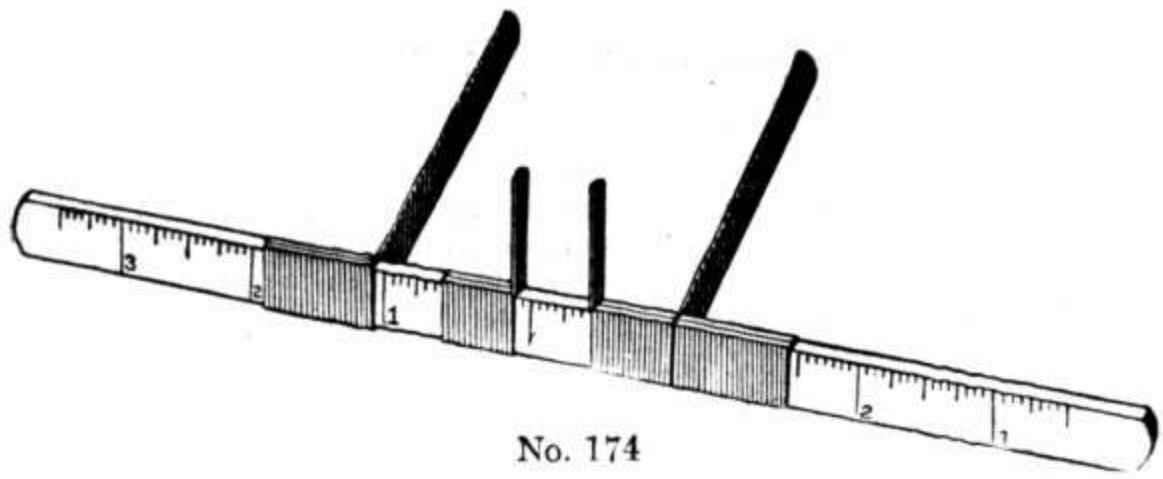
The instrument is shown in the above wood-cut, and consists of a small fixed gas-jet A. a second one B, attached to a box C, which slides upon a bar D, the jets connected by a flexible rubber tube G; the end of the bar F forms a pointer, which, by elevating or depressing the other end of the bar, can be placed at any part of the graduated half-circle E, which is fixed firmly to the thimble H, by which means the entire instrument can be attached to a common gas-burner, and the lights regulated by its stop-cock.

The jets having been lighted and turned down into two small flames about 5 millimetres in diameter, the patient, placed 5 metres away, is directed to observe the flames, and to say whether he sees them as small points of light separated, or as diffused, enlarged circles which can be made to come in contact at their margins by sliding movements of the box on the bar, by the hand of the surgeon; bearing in mind that an emmetropic or corrected ametropic eye will resolve the lights into two until they pass one behind the other and become fused, whilst in ametropia the circles will seem to touch; whilst a distance, depending upon the degree of ametropia, remains between the small light points. To determine the kind of ametropia, the patient is directed to pass slowly in front of the eye under examination a slip of red glass in such a manner as to color half of each diffused circle, and if the red half seems to be on the same side with the red glass, myopia is recognized, and if on the opposite side, hypermetropia; this may be as well done by passing before the eye a card or paper in such a manner as to exclude from view one-half of each circle.

To determine the degree of ametropia, the bar has been divided on one side into spaces of 2.5 cm. with a half space between, and on the other into English inch and half inches, and it will be found that each space of 2.5 cm. will indicate an ametropia of one dioptric metric system, and each inch $\frac{1}{40}$ of the old system. The cut represents the two flames as apart 2–D , and they would appear to a person having M. or H. of 2–D. or $\frac{1}{20}$ as two circles of light, with their margins in contact at one point, separating on the removal of light B, and overlapping when it is placed nearer to light A.

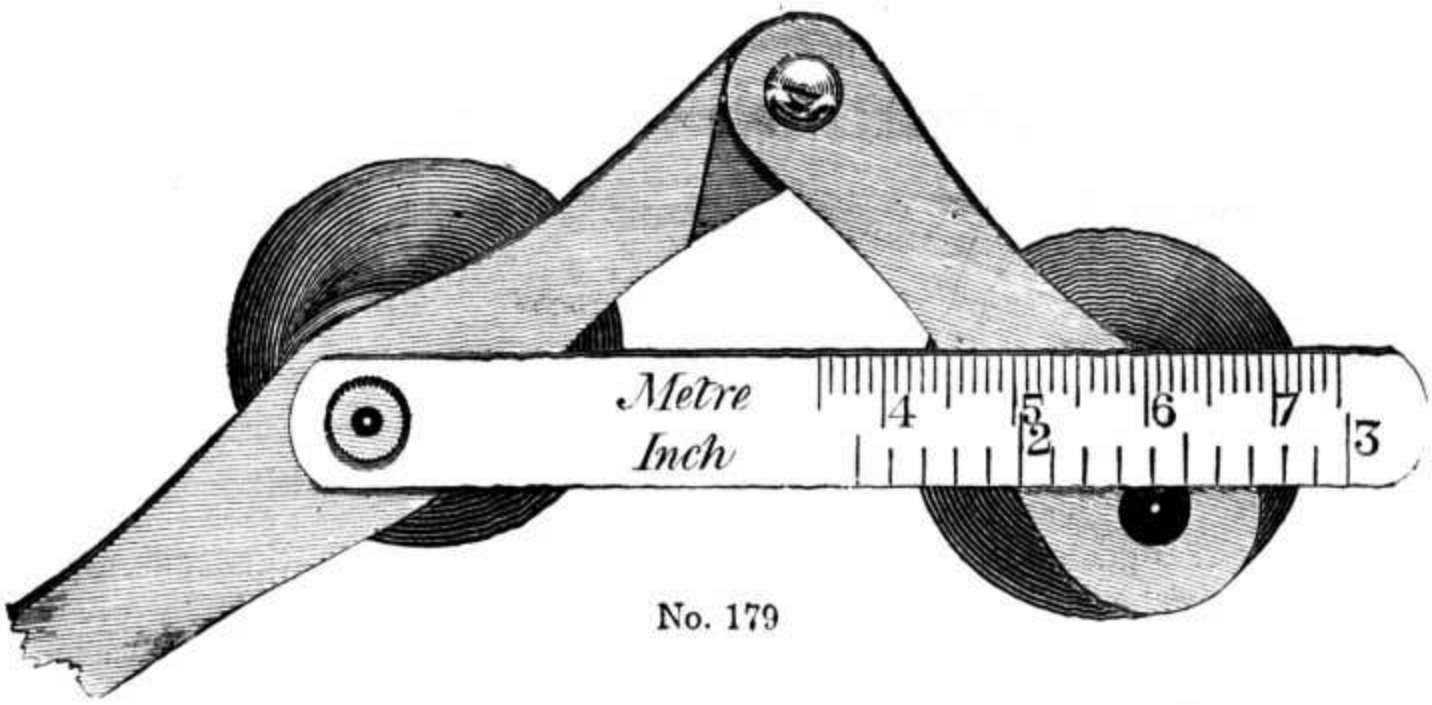
ASTIGMATIC TESTS, ETC.

No.		Price
156.	Green's Set of Test Diagrams, for detecting astigmatic eyes. This set consists of a pasteboard dial 12 inches in diameter, divided into 12 parts as a clock dial. To this a series of 14 diagrams of lines and circles can be attached separately at pleasure, and made to revolve against the face of the dial.....	$5 00
157.	Astigmatic Dial. A conicular disc of tin japanned white and divided on the margin of one side to every 5 degrees and numbered; over this another but smaller disc revolves, having two series of black lines on it which are at right angles, though not crossing one another. The lines are adjusted for 20 feet test of astigmatism (No. 20), Snellen's.....	2 50
158.	Grafe's Wire Optometer for detecting astigmatism, with tape measure attachment.....	7 00
159.	Dr. Pray's series of astigmatic letters, on stiff card-board for hanging. These letters are made up of black lines and white spaces, the white and black spaces being all ruled at one angle in each letter, this angle being varied in every letter. There are 12 letters and the angles of the lines are 15°, 30°, 45°, 60°, 75°, 90°, 105°, 120°, 135°, 150°, 165° and 180°.....	50
160.	Snellen's Test-types, bound in paper.....	2 00
161.	Snellen's Test-types, bound in ½ leather.....	2 75
162.	Jaeger's Test-types, Nos. 1 to 14, bound in paper.....	75
163.	Jaeger's Test-types, Nos. 1 to 14, bound in ½ leather.....	1 00
164.	Snellen's Test-types, C–D, to 60–D, on heavy card-board 9½ x 22½ in.....	25
165.	Set of Snellen's Test-types, 0.5, 0.6, 1.0, 1.25, 1.50, 1.75 and 2.25 Dioptric, on card-board 5¼ x 6¾ inches.....	25
166.	McAllister's Optometer, made of a maple rod 1 metre long, graduated to millimetres on one side and on the other to inches and eighths. On this rod slides a frame, arranged to carry a set of six cards, consisting of six diagrams for testing astigmatism and six test-types from 0.5 to 1.75–D..	3 00
167.	Dr. Otto Becker's set of four diagrams, for detecting and measuring astigmatism.....	3 00
168.	Dr. Burkhardt's series of dots and lines for determining and measuring the degree of Myopia, Hypermetropia, Presbyopia and Astigmatism. A set of four cards.....	4 00
169.	Dr. Thompson's Metal Discs with perforations for determining the degree of Ametropia. This instrument consists of four metal discs; No. 1 has 1 perforation, 1 millimetre in diameter; No. 2 has 12 perforations ½ millimetre apart; No. 3 has 3 perforations 3 millimetres apart and ½ millimetre diameter; No. 4 has 2 perforations 4 millimetres, apart and ½ millimetre diameter.....	4 00
170.	Stenopaic Slit.....	1 00
171.	Simple Optometer, Nickle plated, on stand.....	5 00
172.	" " Nickle plated.....	2 00
173.	" " Brass.....	1 50



No. 174

No.		Price.
174.	Dr. Keyser's "Prosoponometer," for measuring the width of face, pupillary distance and depth of bridge for spectacles	$4 00
175.	Strabismometer of Ivory	1 50
176.	Boxwood Metric Measure, 1 metre long, divided on one side into centimetres and millimetres, on the other to inches and eighths, 10 folds, folding into a very small space	50
177.	Ivory Metric Measure, 1 metre long, divided into millimetres on one side, and inches and eighths on the other, 10 folds same as No. 176, for measuring pupillary distance	1 50
178.	Boxwood Metric Measure	50

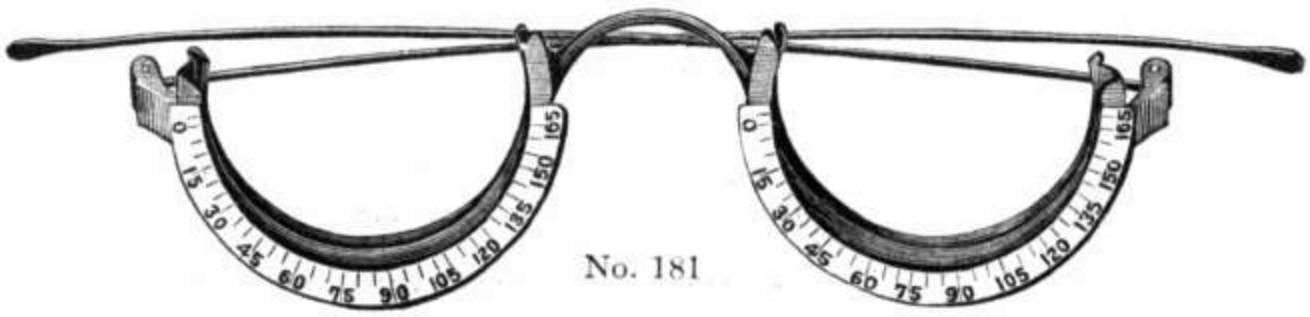


No. 179

179. Adjusting Cone, for Measuring the Distance between the Eyes. Holding the instrument in the right hand, a *distant* object should be looked at with the right eye, through the hole in the right hand cone; the other cone, fixed to an adjusting arm, should be moved backwards and forwards until the left eye sees the same object through the aperture in the left cone, and the two holes appear as one. The distance between the eyes is then indicated on the cross bar, one side of which is divided into inches and tenths, the other into millimetres $5 00

No. Price.

180. NACHET'S TRIAL FRAME.—This is formed of a graduated bar, 4 inches long, to which are fixed the eyes, so they may be placed to correspond with the pupillary distance,—on this bar is placed an adjustable bridge, which can be raised or lowered. The eyes are complete circles, the lenses are kept in place by springs, the front part revolves, by which means cylindrical lenses can be more accurately adjusted than in any other frame. Ordinary steel sides are used which are connected to the side of each eye..... $12 00

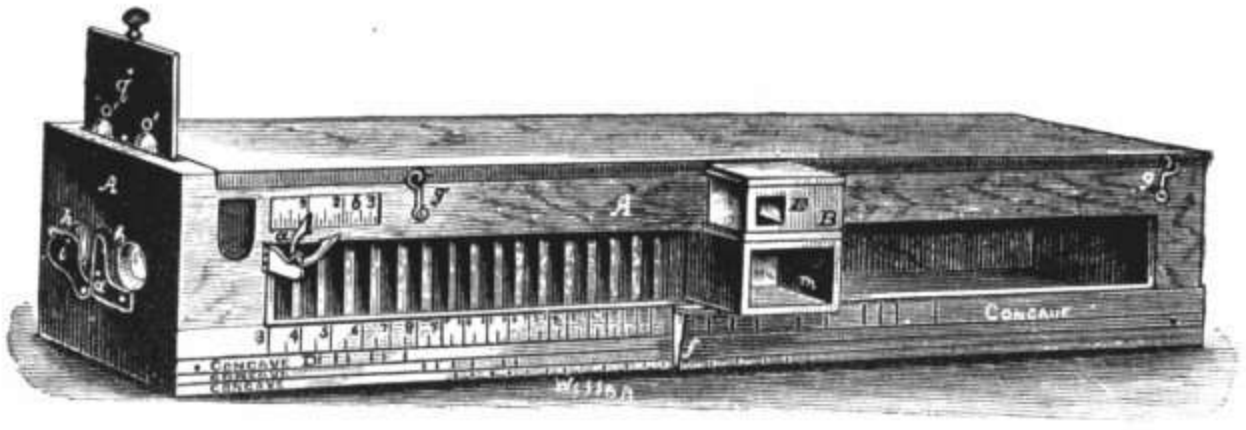


No. 181

181. TRIAL FRAME. Each eye has a graduated arc and double grooves, so that any desired combination of Spherical and Cylindrical Lenses can be made in the frame..... $5 00

182. TRIAL GLASSES, Rubber Frames, 5 to 48 inch focus, convex..... 12 00

183. TRIAL GLASSES, Rubber Frames, 5 to 48 inch focus, concave—French.... 13 00

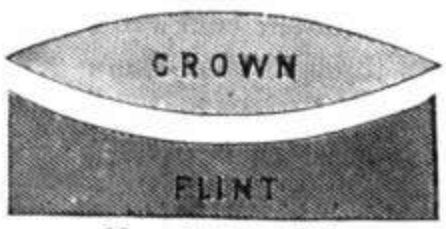


No. 184

184. MEASURING BOX FOR OPTICAL LENSES. Patented, October 9, 1877..... $10 00

This is an instrument for the measurement of the focal distances of optical lenses. It consists of a camera, from which all light is excluded, except what passes through the lens or lenses which are being measured. The apparatus can therefore be used in a light room. Scales graduated for the exact distance of the measuring object from the measuring instrument, and for the measurement of concave as well as convex lenses, accompany each instrument. The graduation of these scales is based upon one common and universal standard, namely, the measurement of lenses by direct rays of the sun.

ACHROMATIC LENSES.

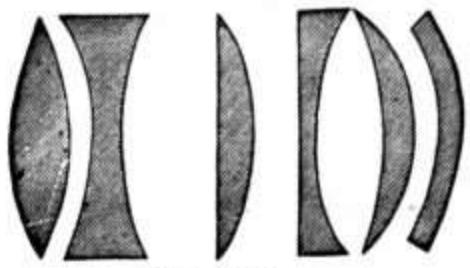


Nos. 185 to 192.

Achromatic Lenses are formed by combination of a Double Convex Lens of Crown Glass and a Plano Concave or Concave Meniscus Lens of Flint Glass. The advantages of a Lens formed in this manner are freedom from spherical aberration.

Achromatic Object Glasses for Spy Glasses and Telescopes.

No.							Price.
185.	Achromatic Object Glass, 1½ inches diameter, 4, 6½, 8, 10, 12, 13, 14, 15 and 16 inch focus.						$2 00
186.	"	"	"	1¾	"	" 9, 10, 16, 24, 30, and 36 "	3 50
187.	"	"	"	2	"	" 18 to 30 inch focus.....	4 50
188.	"	"	"	Extra fine quality, 2 inch diameter, 36 inch focus			6 00
189.	"	"	"	"		" 2½ " " 44 "	10 00
190.	"	"	"	"		" 3 " " 48 "	25 00
191.	"	"	"	"		" 3½ " " 54 "	50 00
192.	"	"	"	"		" 4 " " 60 "	75 00



No. 193

193. Demonstration Lenses—a set of six, 1½ inches diameter, showing the various forms, viz: Double Convex, Double Concave, Plano Convex, Plano Concave, Meniscus Convex and Meniscus Concave.....per set, 2 50

MICROSCOPE AND TELESCOPE LENSES.

194.	Double or Plano Convex—1 inch diameter, 2 inches focus.....							75
195.	"	"	"	¾	"	1½	"	75
196.	"	"	"	⅝	"	1¼	"	75
197.	"	"	"	½	"	1	"	75
198.	"	"	"	⅜	"	¾	"	75
199.	"	"	"	¼	"	½	"	75
200.	"	"	"	1/16	"	¼	"	75
201.	"	"	"	⅛	"	⅛	"	75

Object Glasses, first quality, Mounted in Brass Cells.

202.	Object Glass, 1 1/10	inches diameter,	Focal length,	9 inches.....		4 00
203.	"	1 6/10	"	"	1 foot 6 inches.....	6 00
204.	"	1 8/10	"	"	2 feet.....	10 00
205.	"	2¼	"	"	3 "	20 00
206.	"	2¾	"	"	3 " 6 inches.....	50 00
207.	"	3½	"	"	4 "	100 00
208.	"	4½	"	"	5 " 6 inches.....	240 00
209.	"	5	"	"	6 " 6 "	320 00
210.	"	6	"	"	7 " 6 "	550 00

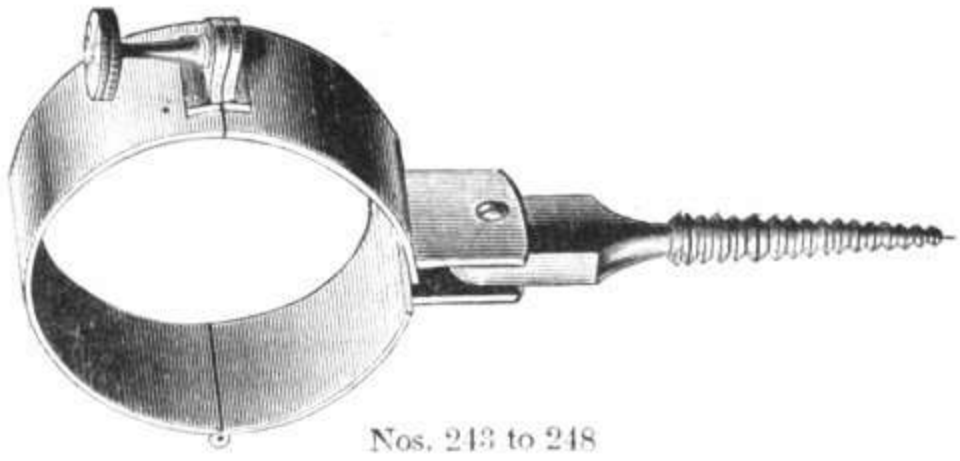
COSMORAMA LENSES.

211.	Double or Plano Convex Lens, 1¼	inch diameter—	any focus from 5 to 72 in.				50
212.	"	"	"	2	"	" " 5 to 36 in.	60
213.	"	"	"	3	"	" " 6 to 36 in.	75
214.	"	"	"	4	"	" " 12 to 72 in.	1 25
215.	"	"	"	5	"	of either 18, 20, 24, 30, 36, 48, 60 or 72 in. focus.	1 75
216.	"	"	"	6	"	of either 20, 24, 30, 36, 48, 60, or 72 inch focus.	2 25
217.	"	"	"	7	"	of either 30, 36, 48, 60 or 72 inch focus.....	3 00
218.	"	"	"	8	"	of either 30, 36, 48, or 72 inch focus.....	4 00

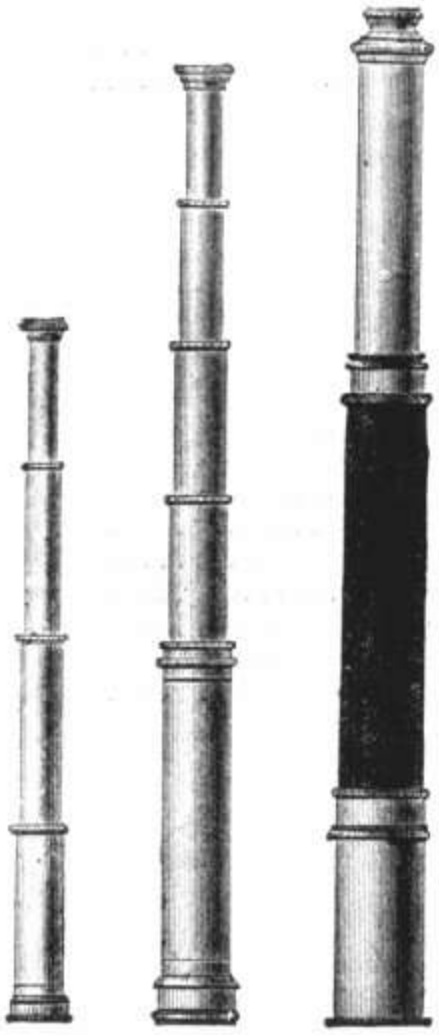
PRISMS.

No.		Price.
219.	Solid Flint Glass Prism, 3 inches long	$0 50
220.	" " 4 "	60
221.	" " 5 "	75
222.	" " 6 "	1 00
223.	" " 7 "	1 25
224.	" " 8 "	1 50
225.	POLYPRISM—an amusing optical toy, making many images of one object	25

ACHROMATIC SPY GLASSES.



Nos. 243 to 248



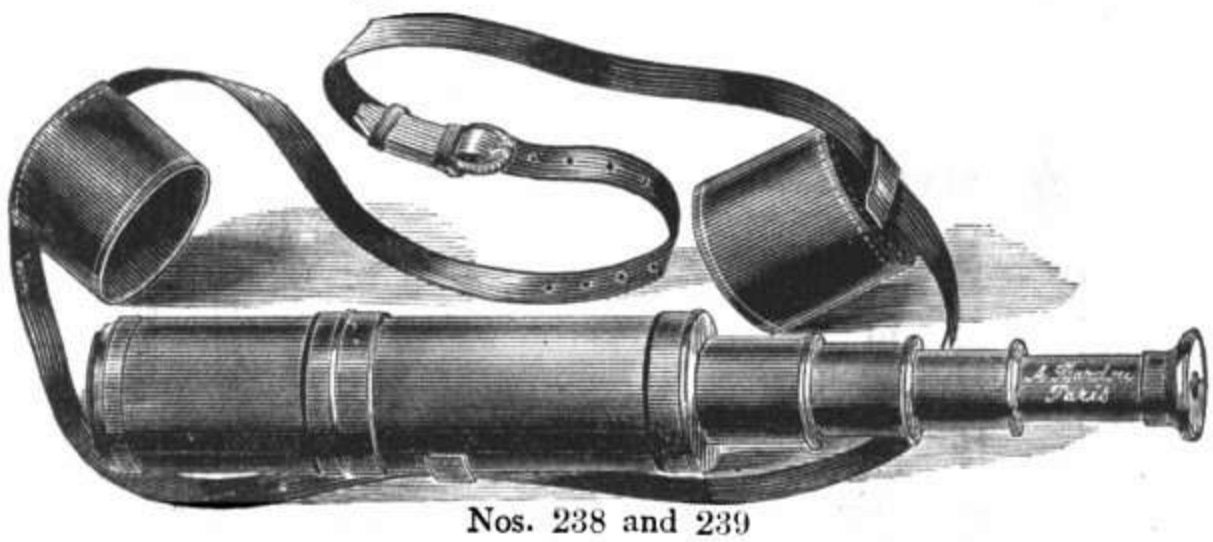
226 230 229

240

250

226. Achromatic Spy Glass, wood body, 3 draws, 15 inches long when drawn out, 6 inches long when closed. Object Glass 1 inch diameter. Power 15 times $2 50

No.		Price.
227.	Achromatic Spy Glass, wood body, 3 draws, 24 inches long when drawn out, 8 inches long when closed. Object Glass $1\frac{3}{16}$ inches diameter. Power 25 times	$4 00
228.	Achromatic Spy Glass, wood body, 3 draws, 30 inches long when drawn out, $9\frac{3}{4}$ inches long when closed. Object Glass $1\frac{5}{8}$ inches diameter. Power 30 times	6 00
229.	Achromatic Spy Glass, wood body, 3 draws, 32 in. long when drawn out, 10 in. long when closed. Object Glass $1\frac{5}{8}$ inches diameter. Power 30 times.	7 00
230.	Achromatic Ship Spy Glass, leather covered body, 35 inches long when drawn out, 20 inches long when closed. Object Glass 1¾ inches diameter, 1 draw and sun-shade. Power 20 times. This is a day or night glass	7 00
231.	Achromatic Spy Glass, 37 inches long when drawn out, 11 inches long when closed, wood body, 4 draws. Object Glass $1\frac{7}{8}$ inches in diameter. Power 35 times. This is a very superior Terrestial Glass, and can readily be held in the hands, although it is better to have a rest for it	12 00
232.	The same as No. 231, with Sun Glass	14 00
233.	Achromatic Spy Glass, $33\frac{1}{3}$ inches long when drawn out, $10\frac{1}{2}$ inches long when closed, wood body, 4 draws. Object Glass $1\frac{5}{8}$ inches diameter, sun glass. Power 20 to 40 times. This glass has an extension Eye-piece by which can be obtained a high or low power, by moving it in or out	15 00
234.	Achromatic Spy Glass, 42 inches long when drawn out, $11\frac{1}{2}$ inches long when closed, wood body, 4 draws. Object Glass $2\frac{1}{8}$ inches diameter. Power 40 times	20 00
235.	The same as No. 234, with Sun Glass	22 50
236.	Achromatic Spy Glass, 45 inches long when drawn out, $13\frac{1}{2}$ inches long when closed, wood body, 4 draws. Object Glass $2\frac{3}{8}$ inches diameter. Power 50 times	22 50
237.	The same as No. 236, with Sun Glass	25 00



Nos. 238 and 239

238.	Bardou's Achromatic U. S. Army Signal Telescope, $34\frac{1}{2}$ inches long when drawn out, 1 $\frac{1}{2}$ inches long when closed, body covered with leather, with Caps and Strap. Object Glass $1\frac{3}{4}$ inches diameter. Power 30 times.	25 00
239.	Bardou's Achromatic U. S. Navy Signal Telescope, $34\frac{1}{2}$ inches long when drawn out, 1 $\frac{1}{2}$ inches long when closed, body covered with leather, with Caps and Strap. Object Glass $1\frac{3}{4}$ inches diameter. Power 30 times. This is a very good day and night glass	25 00
240.	Rifle Spy Glass, $10\frac{3}{4}$ inches long, leather body. Object Glass $\frac{1}{2}$ inch diameter. Power 20 times	2 50
241.	Tripod Stand, a very firm and cheap stand, suitable for any of the above glasses	4 50
242.	Tripod Stand. White wood, open legs	7 50
243.	Tripod Stand. Black Walnut, " "	30 00

Brass Spy Glass Clamps, with Gimlet Screw.

No.		Price.
244.	Brass Spy Glass Clamp, with screw $\frac{13}{16}$ inches diameter.....	$1 50
245.	" " " $1\frac{3}{16}$ "	2 50
246.	" " " $1\frac{3}{8}$ "	3 00
247.	" " " $1\frac{11}{16}$ "	3 50
248.	" " " 2 "	4 00
249.	" " covered screw, 1 "	2 00

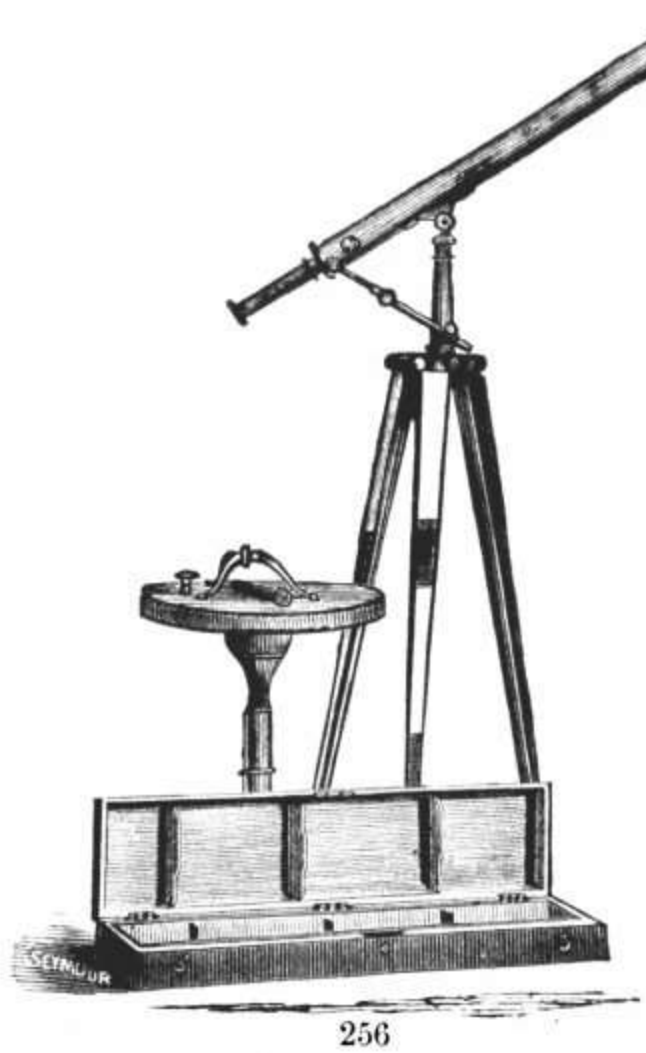
ASTRONOMICAL TELESCOPES.

250. Achromatic Telescope, Mahogany body, 44 inches long, with 1 Terrestrial Eye-piece having a power of 50 times, 1 Celestial Eye-piece having a power of 100 times. Sun Glass, Rack movement for focus. It will show one Ring of Saturn and companion of Polaris. Object Glass 3 inches diameter..... 60 00

251. No. 250 with stand No. 242..... 65 00

252. No. 250 " No. 243..... 90 00

253



256

253. Astronomical Telescope—body and movements all brass, with Rack adjustment for focus. Object Glass 2¼ inches diameter. 1 Terrestrial and 1 Celestial Eye piece and Sun Glass. Packed in strong Walnut case, with lock and key. The body is mounted upon a firm Tripod stand of Mahogany, affording every facility for observation..... $60 00

254. The same as No. 253, with Object Glass 3 inches diameter..... 110 00

255. The same as No. 253, with Object Glass 4 inches diameter..... 250 00

No.		Price.
256.	Astronomical Telescope—body and movement all brass, with Rack adjustment for focus and ditto for vertical movement of body. Mounted on a Brass Tripod, and in addition has a fine tripod stand of Mahogany for out-door use. Object Glass 3 inches diameter. 2 Terrestrial and 1 Celestial Eye-piece and Sun Glass. In a strong Walnut case with lock and key	$150 00
257.	The same as No. 256, with Object Glass 4 inches diameter and 3 Celestial Eye-pieces	325 00

I can have manufactured to order, by a maker of reputation, the following Astronomical Telescopes, which we will guarantee to be good working instruments.

258. A—1.	Astronomical Telescope. Brass or Wood Body; 3¼ inch Achromatic Object Glass; focus 45 inches; four Celestial Eye-pieces of powers of 45, 75, 110 and 222 diameters; one Terrestrial Eye-piece of a power of 30; a Prismatic Eye-piece; Sun Glass; Rack motion for focus, with endless screw movement for declination; the whole mounted Equatorially on a wooden tripod, well finished, strong and firm. It packs in a Walnut case, with lock and handles	250 00
259. A—2.	Astronomical Telescope. Brass or Wood Body; 3½ inch Achromatic Object Glass; 48 inch focus; five Celestial-Eye pieces, with powers of 33, 48, 80, 120 and 240 diameters; one Terrestrial Eye-piece of a power of 30; a Pirsmatic Eye-piece; Sun Glass; Rack, Screw and Equatorial motion, &c., &c. Same as No. 1	300 00
260. A—3.	Astronomical Telescope. Achromatic Object Glass clear 4 inches diameter and 60 inches focus; Mahogany body; five Celestial Eye-pieces of 30, 60, 100, 150 and 300 diameters; one Terrestrial, Eye-piece, of a power of 40 diameters; a Prismatic Eye-piece; Sun Glass; Rack motion for focus; endless screw motion for declination; the whole Equatorially mounted in a stronger and heavier manner than either Nos. 1 or 2	400 00
261. A—4.	Astronomical Telescope. Achromatic Object Glass clear 5 inches diameter; 84 inches focus; Mahogany body; five Celestial Eye-pieces of a power of 42, 84, 130, 210 and 420 diameters; one Terrestrial Eye-piece, of a power of 40 diameters; a Prismatic Eye-piece and Sun Glass; Rack, Screw and Equatorial motion same as No. 3	600 00
262. A—5.	Astronomical Telescope. Achromatic Object Glass clear 6 inches diameter and 96 inches focus; five Celestial Eye-pieces of powers of 48, 96, 150, 240 and 480 diameters; a Prismatic Eye-piece and Sun Glass; no Terrestrial Eye-piece; Rack and Screw movement and Equatorially mounted. Same as No. 3	825 00
263.	Astronomical Eye Pieces	10 00
264.	Terrestrial Eye Pieces	15 00
265.	Prismatic Eye Pieces	15 00
266.	Finders for any of the above Telescopes	25 00
267.	Equatorial Movement for A—1 and 2	75 00
268.	Equatorial Movement and Stand for A—1 and 2	100 00
269.	Equatorial Movement for A—3, 4 and 5	100 00
270.	Equatorial Movement and Stand for A—3, 4 and 5	125 00
271.	Achromatic Object Glasses, 3 in. diameter, 3½ feet focus, (carefully made and corrected.)	40 00
272.	" " 4 " 5 " " "	100 00
273.	" " 5 " 7 " " "	200 00
274.	" " 6 " 8 " " "	350 00
275.	" " 7 " 9 " " "	600 00
276.	" " 10 " 14 " " "	1800 00
277.	" " 12 " 17 " " "	3200 00

OPERA GLASSES.

The sizes of Opera Glasses are measured by the diameter of the Object Glass, in French lines. Opera Glasses are generally constructed with six, eight or twelve lenses.

12 lines equal	. .	1 inch.		19 lines equal	. .	$1\frac{7}{12}$ inches.	
13 "	. .	$1\frac{1}{12}$ inches.		21 "	. .	$1\frac{9}{12}$ "	
15 "	. .	$1\frac{1}{4}$ "		24 "	. .	2 "	
17 "	. .	$1\frac{5}{12}$ "		26 "	. .	$2\frac{1}{6}$ "	

No. 278

No.		Price.
278.	Lemaire's Plain Black Body and Tubes, High Tops. 6 Achromatic Lenses.	
	Object Glass, 15 lines in diameter	$5 00
	" 17 " "	6 00
	" 19 " "	7 00
	" 21 " "	8 00
	" 24 " "	9 00
	" 26 " "	10 00
279.	Lemaire's Achromatic Opera Glass, Plain Black Body, Gilt Tubes. 6 Lenses.	
	Object Glass, 15 lines in diameter	5 50
	" 17 " "	6 50
	" 19 " "	7 50

No. 280

No.		Price.
280.	Lemaire's Achromatic Opera Glass, Plain Black Body. Rock Crystal Lenses. The advantages of having these Lenses are, that they do not scratch easily. This Glass is also very powerful and can be used equally well in the Field or at the Theatre.	
	Object Glass, 11 lines in diameter	$11 00
	" 13 " "	14 00
281.	Opera Glass, Morocco covered body, curved cross bar. Object Glass 17 lines in diameter. The Eye-pieces are so arranged that the lenses can be adjusted to suit either near or far-sighted persons	15 00

FIG. 1.

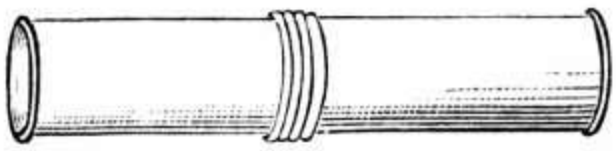


FIG. 2.

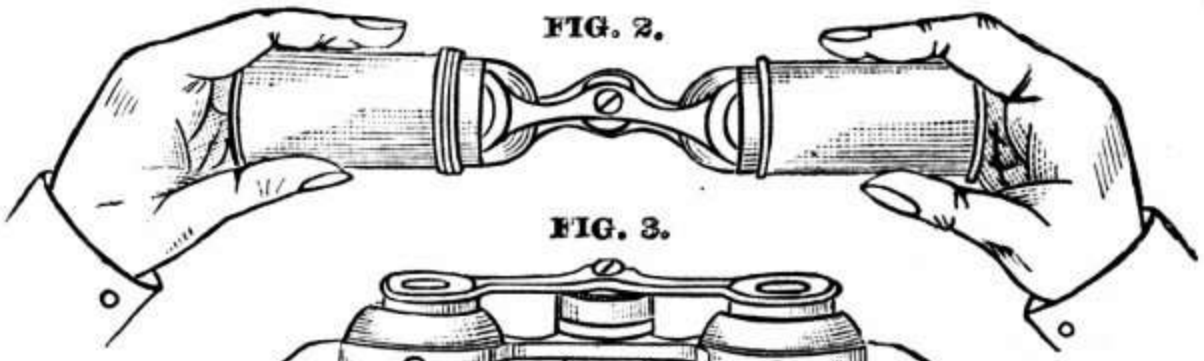
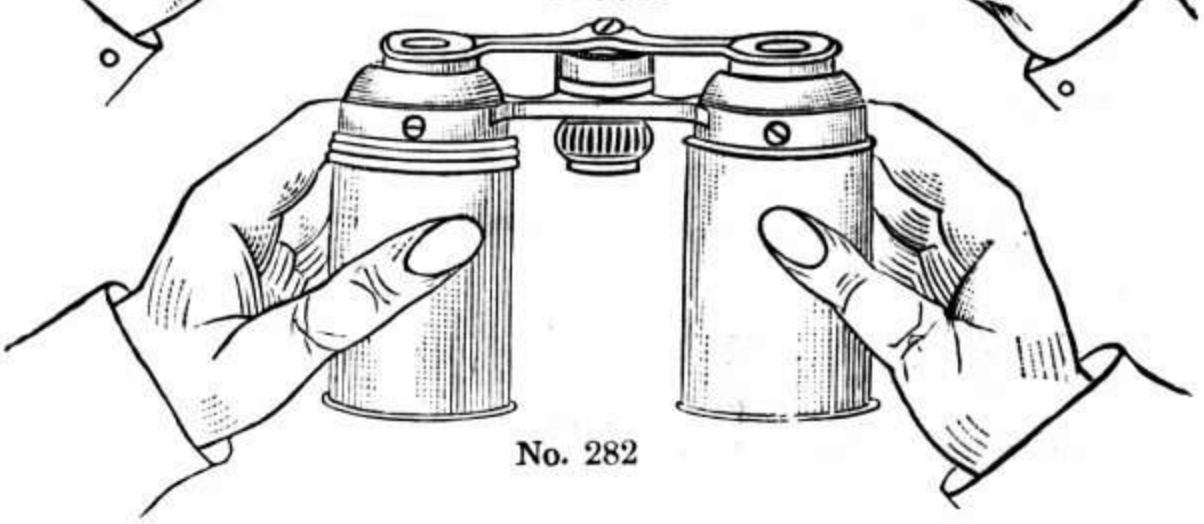
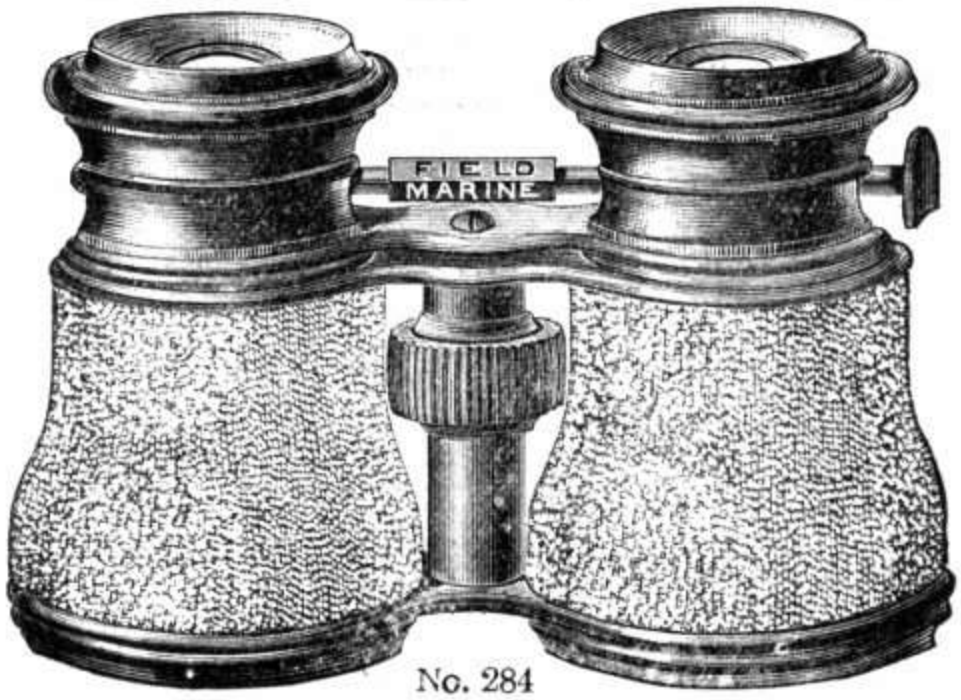


FIG. 3.



No. 282

282.	Articulated Pocket Opera Glass, Morocco covered body, Nickel plated. Object Glass $1\frac{3}{16}$ lines in diameter; in Morocco case. Fig. 1 is the Glass closed. Fig. 2 shows it half open. Fig. 3 represents it ready for use	9 00
283.	Lemaire's Pocket Opera Glass, Morocco covered body, curved cross bar, Object Glass 7 lines in diameter	7 00



No. 284

No. Price.

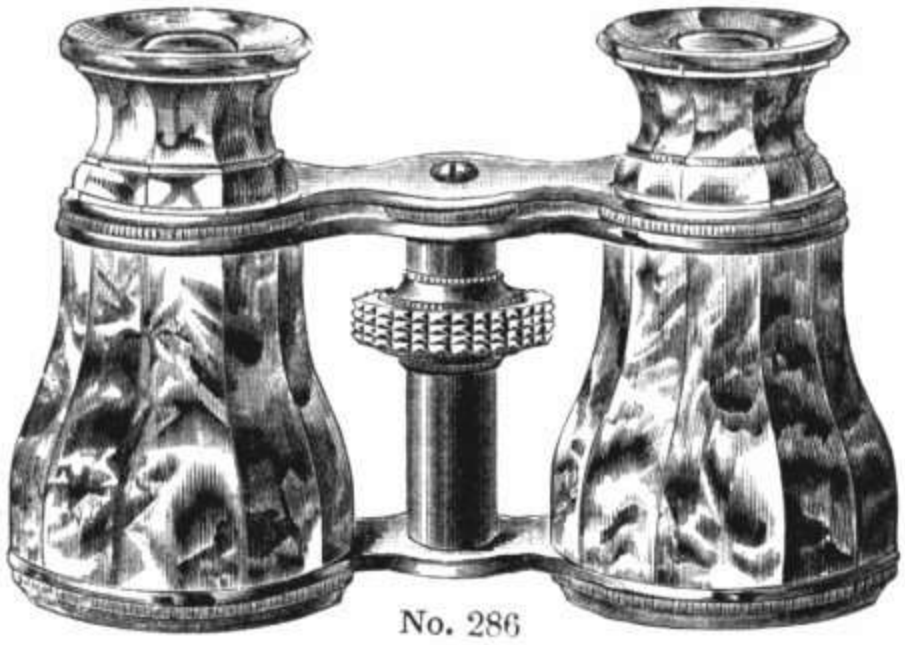
284. Lemaire's Achromatic Opera, Marine and Field Glass. By a neat arrangement of the Lenses in the Eye-piece it can readily be changed into any of the above mentioned powers.

Object Glass, 19 lines in diameter..... $16 00

285. Lemaire's Achromatic Opera Glass, metal body, covered with colored Morocco, curved gilt cross bar, gilt tubes, six lenses; in Morocco case.

Object Glass, 15 lines in diameter..... 6 50
" 17 " " 7 50
" 19 " " 9 00

PEARL OPERA GLASSES.



No. 286

286. Lemaire's Achromatic Opera Glass, White Pearl body, raised Eye-pieces, gilt tubes and cross bar, six lenses; in Morocco case.

Object Glass 11 lines in diameter..... 12 00
" 13 " " 13 00
" 15 " " 14 00
" 17 " " 17 00
" 19 " " 19 00

287. Lemaire's Achromatic Opera Glass, White Pearl body, low Eye-pieces, gilt tubes and cross bar, six lenses; in Morocco case.

Object Glass 11 lines in diameter..... 9 00
" 13 " " 10 00
" 15 " " 11 00
" 17 " " 13 00
" 19 " " 17 00

288. Lemaire's Achromatic Opera Glass, Oriental Pearl body, low Eye-pieces, gilt tubes and cross bar, six lenses; in Morocco case.

Object Glass 11 lines in diameter..... 9 00
" 13 " " 10 00
" 15 " " 11 00
" 17 " " 13 00
" 19 " " 17 00

289. Lemaire's Achromatic Opera Glass, Smoked Pearl body, low Eye-pieces, gilt tubes and black cross bar, six lenses; in Morocco case.

Object Glass 11 lines in diameter..... 9 00
" 13 " " 10 00
" 15 " " 11 00
" 17 " " 13 00
" 19 " " 17 00

ALUMINIUM OPERA GLASSES.

No. | Price.

290. Lemaire's Achromatic Opera Glass, Aluminium body, covered with black Morocco, six lenses; in Morocco case.

Object Glass 13 lines in diameter	.....	$16 00
" 15 " "	.....	18 00
" 17 " "	.....	21 00
" 19 " "	.....	23 00

291. Lemaire's Achromatic Opera Glass, Aluminium, White Pearl body, six lenses; in Morocco case.

Object Glass 13 lines in diameter	.....	22 00
" 15 " "	.....	25 00
" 17 " "	.....	28 00
" 19 " "	.....	30 00

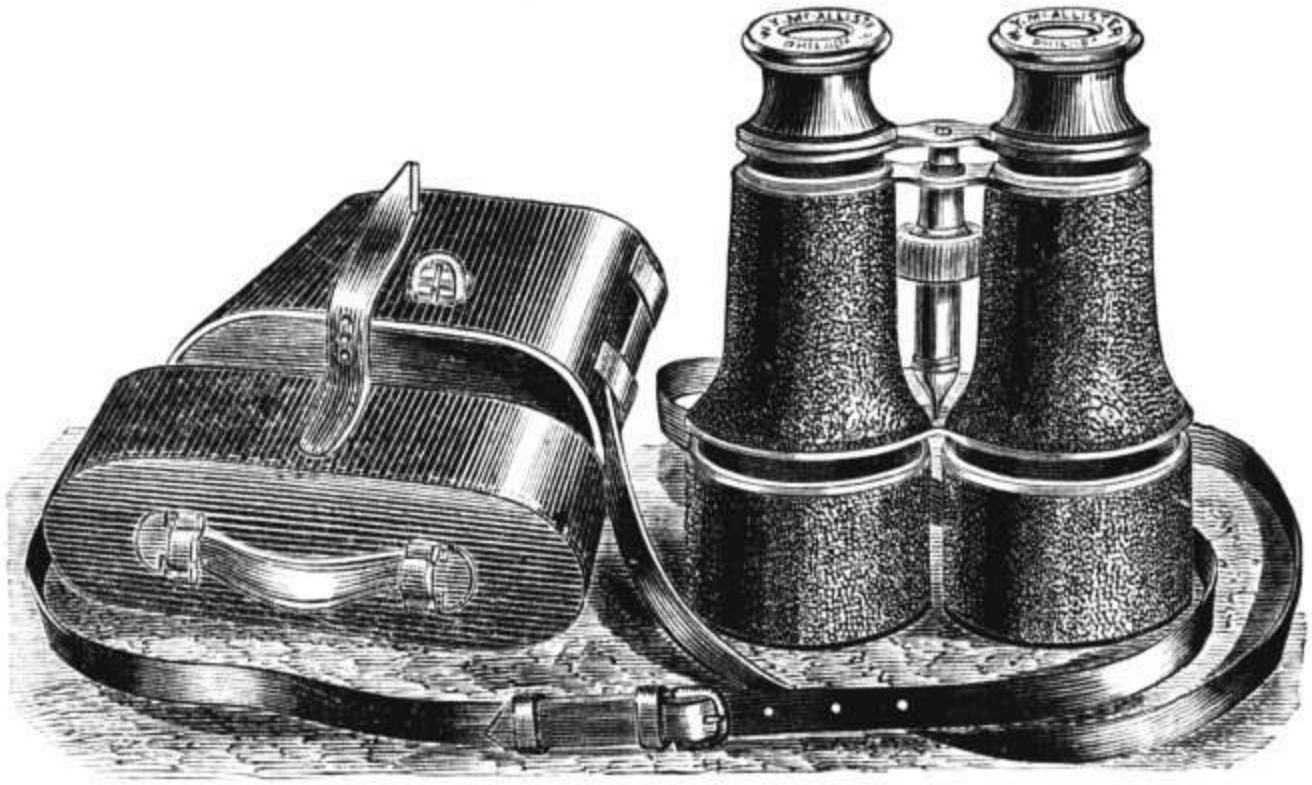
292. Lemaire's Achromatic Opera Glass, Aluminium, Oriental Pearl body, six lenses; in Morocco case.

Object Glass 13 lines in diameter	.....	23 00
" 15 " "	.....	26 00
" 17 " "	.....	29 00
" 19 " "	.....	31 00

293. Lemaire's Achromatic Opera Glass, Aluminium body, chased and engraved, six lenses; in Morocco case.

Object Glass 13 lines in diameter	.....	30 00
" 15 " "	.....	35 00
" 17 " "	.....	40 00
" 19 " "	.....	45 00

FIELD AND MARINE GLASSES.



No. 294

294. Lemaire's Field and Marine Achromatic Glass, metal body, covered with Turkey Morocco, Sun Shades to extend over Object Glasses, six lenses; in heavy Leather case, with strap.

Object Glass 21 lines in diameter, $5\frac{3}{8}$ inches high	.....	$13 00
" 24 " " $5\frac{7}{8}$ "	.....	14 00
" 26 " " $6\frac{1}{4}$ "	.....	15 00

No. 295

No.		Price.
295.	Lemaire's Achromatic Marine Glass, three changes, metal body, covered with Turkey Morocco, Sun Shades to extend over the Object Glasses; with Leather case and strap.	
	Object Glass 19 lines in diameter, 4½ inches high	$20 00
	" 21 " " 5½ "	23 50
	" 24 " " 6 "	25 50
	" 26 " " 6⅜ "	30 00
296.	Lemaire's Achromatic Marine Glass. Rock Crystal Lenses, three changes, metal body, covered with Turkey Morocco, Sun Shades, Leather case and strap. Object Glass 19 lines in diameter	25 00

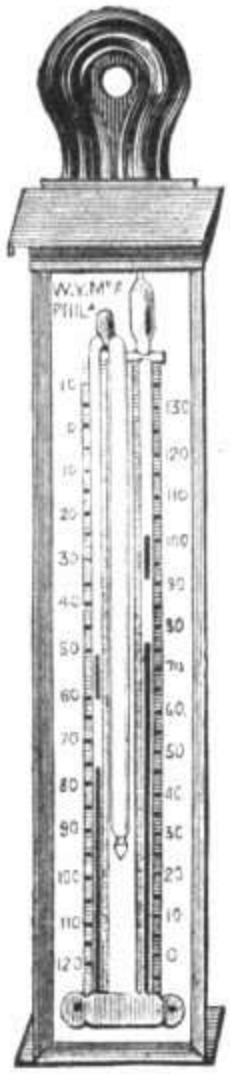
BARDOU'S OPERA GLASSES.

297.	Bardou's Achromatic Opera Glass, metal body, covered with Turkey Morocco, tubes and cross bar japanned, six lenses; in Morocco case.	
	Object Glass 15 lines in diameter	8 00
	" 17 " "	9 00
	" 19 " "	11 00
	" 21 " "	13 00
298.	Bardou's Achromatic Opera Glass, metal body, covered with colored Russia Leather, tubes and cross bar gilt, six lenses; in Morocco case.	
	Object Glass 13 lines in diameter	12 00
	" 15 " "	13 00
	" 17 " "	15 00
	" 19 " "	17 00

BARDOU'S ARMY AND NAVY GLASSES.

299.	Bardou's U. S. Army Signal Glass, Achromatic Object Glass, six lenses, metal body covered with Turkey Morocco, Sun Shade; in strong Leather case with strap.	
	Object Glass 21 lines in diameter	19 00
	" 24 " "	21 00
	" 26 " "	24 00
300.	Bardou's U. S. Navy Signal Glass, Achromatic Object Glass, six lenses, metal body, covered with Turkey Morocco, Sun Shade; in strong Leather case with strap.	
	Object Glass 26 lines in diameter	24 00

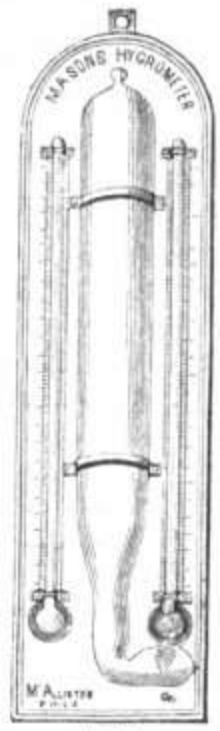
THERMOMETERS AND HYDROMETERS.



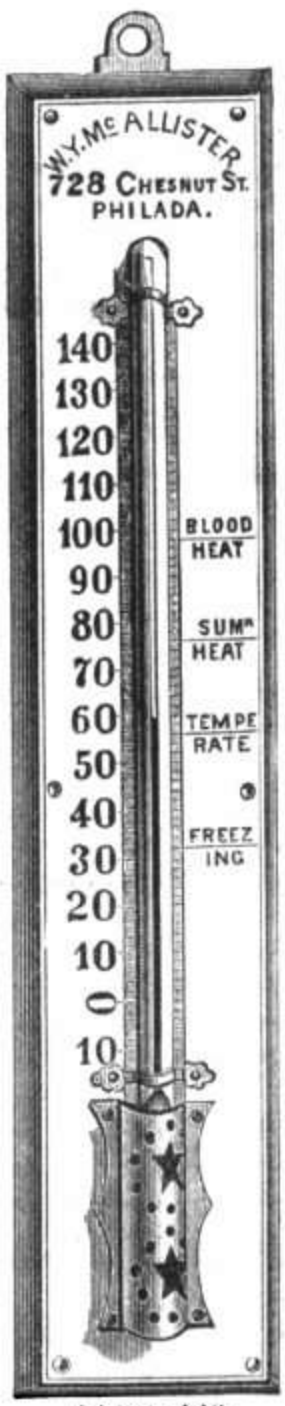
447 to 451

515 and 516

509



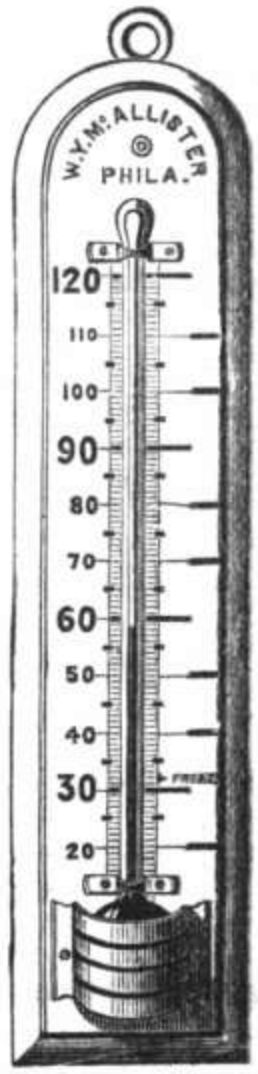
467



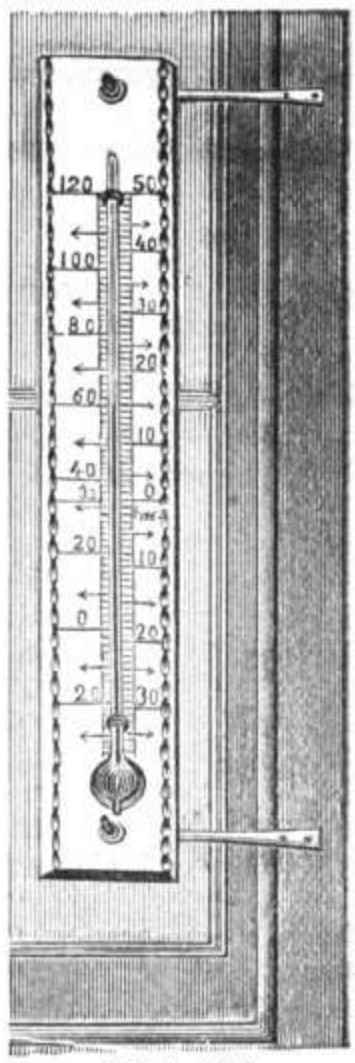
426 to 436

481

494



437 to 441



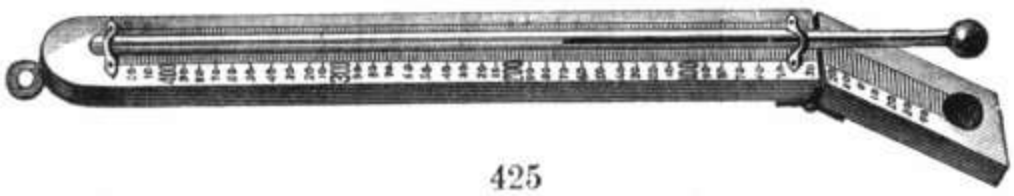
455 to 464

THERMOMETERS.

No.		Price.
400.	Common Thermometer, Tin Case, 7 inches long	$0 20
401.	" " " 8 "	30
402.	" " " 10 "	40
403.	Fine Thermometer, Tin Case, graduated to single degrees, 8 inches long	75
404.	" " " " " " 10 "	1 00
405.	" " " " " " 12 "	1 25
406.	" " " " " " 14 "	1 50
407.	" " " graduated to 400° & 600° 12 "	3 00
408.	Thermometer, Wood back, " " " 12 "	2 00
409.	Brewers' Thermometers, Brass Frame	2 50
410.	" " Iron "	2 50
411.	" " Wood "	2 00
412.	Thermometers, Copper case, 10 inches long	2 50
413.	" " 12 "	3 00
414.	" " 14 "	3 50

No. 415

415.	Thermometers, all Glass, 6 inches long, paper scale, Dairy	50
416.	" " 6 " " to 212 degrees	75
417.	" " 8 " " " "	1 00
418.	" " 10 " " " "	1 25
419.	" " 12 " " " "	1 50
420.	" " 15 " Porcelain scale to 600 degrees	3 00
421.	" " 15 " graduated on tube "	2 50
422.	Bath Thermometer, all Glass, in square wood casing, 8 inches	75
423.	" " " " " 10 "	1 00
424.	" " " " " 12 "	1 50

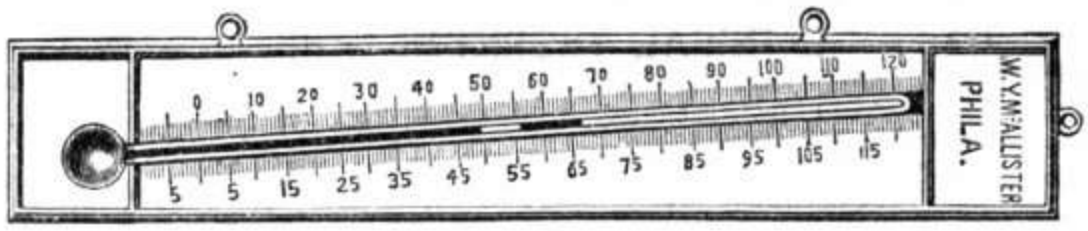


425

425. Hicks' Boxwood Chemical Thermometer, lower part of scale hinged, to protect the bulb 5 00

The following Thermometers have handsomely polished Walnut and Maple backs, metal scales and nickle plated trimmings:

426.	Thermometer, 6 inches long, round bulb	1 00
427.	" 6 " cylindrical bulb	1 25
428.	" 6 " spiral bulb	1 50
429.	" 8 " round "	1 25
430.	" 8 " cylindrical bulb	1 50
431.	" 8 " spiral bulb	1 75
432.	" 10 " round "	1 50
433.	" 10 " cylindrical bulb	1 75
434.	" 10 " spiral bulb	2 00
435.	" 12 " round "	2 00
436.	" 12 " cylindrical bulb	2 50
437.	Boxwood Thermometer, 6 inches long	1 50
438.	" " 8 "	2 00
439.	" " 10 "	2 50
440.	" " 12 "	3 00
441.	" " 14 "	4 00

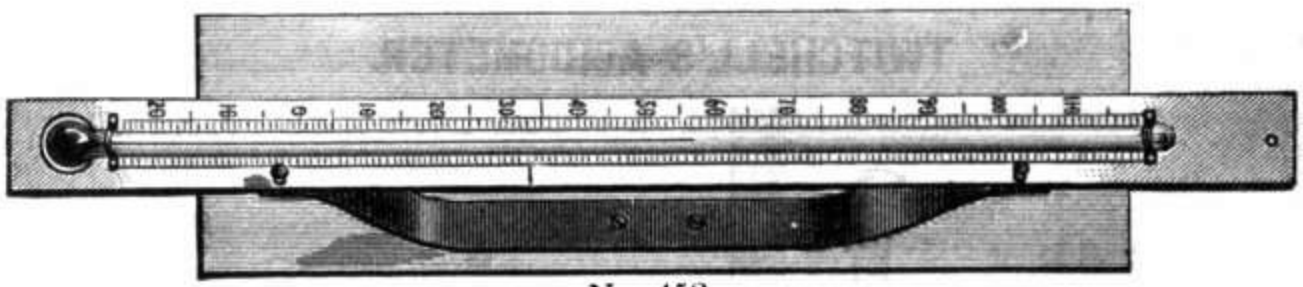


No. 444

No.		Price.
442.	Self-registering Minimum Thermometer, Walnut or Maple back, graduated to 75 degrees below zero.	$5 00
443.	Self-registering Minimum Thermometer, Walnut or Maple back, metal scale.	2 50
444.	Boxwood Self-registering Minimum Thermometer	75
445.	" " " "	3 00
446.	" " Maximum "	5 00

Six's Self-Registering Maximum and Minimum Thermometers.

447.	Japanned,	Tin	case,	Boxwood	scale, 8 inches long	4 50
448.	"	"	"	" 10	"	6 00
449.	Painted	"	Porcelain	" 8	"	8 00
450.	"	"	"	" 10	"	9 00
451.	"	"	"	" 12	"	10 00

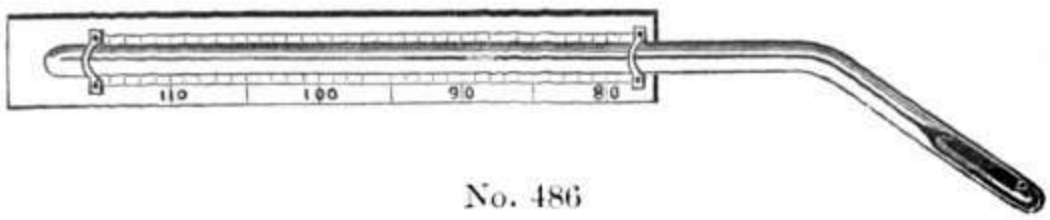


No. 452

452.	U. S. Standard Signal Service Thermometer. This is the most reliable instrument made. 12 inches long	5 00
453.	U. S. Standard Maximum Self-registering Thermometer	8 00
454.	" " Minimum " "	6 00
455.	Plate Glass Thermometer, plain edge, 8 inches long	2 00
456.	" " beveled " 8 "	2 25
457.	" " escaloped " 8 "	2 50
458.	" " plain " 10 "	2 25
459.	" " beveled " 10 "	2 50
460.	" " escaloped " 10 "	3 00
461.	" " plain " 12 "	2 50
462.	" " beveled " 12 "	3 00
463.	" " escaloped " 12 "	3 50
464.	" " fancy " 12 "	4 00
465.	Triangular Window Thermometer, Walnut, 10 inches long	1 00
466.	" " " " 12 "	1 75
467.	Mason's Hygrometer, for showing the humidity of the atmosphere. It consists of two thermometers placed side by side, the bulb of one being kept constantly wet by water from the glass fountain between the thermometers. Very easily managed. With directions and tables	4 50
468.	Edson's Hygrodeik, for showing the humidity of the atmosphere. This is of the same construction as the Mason's Hygrometer, but it does not require any calculation to obtain the humidity of the atmosphere	25 00
469.	Lowe's Graphic Hygrometer or Hygrodeik	15 00
470.	Pocket Thermometer, 6 inch scale, Mahogany Case	2 00
471.	" " " Morocco "	2 00
472.	" " " " "	1 50
473.	" " 4 inch scale, " "	1 50
474.	" " all Glass, paper scale, Metal Case	1 00
475.	" " " porcelain scale, "	1 50
476.	Pool's Storm Glass and Thermometer	70
477.	Lovejoy's Metallic Weather House and Thermometer	1 50

CLINICAL THERMOMETERS.

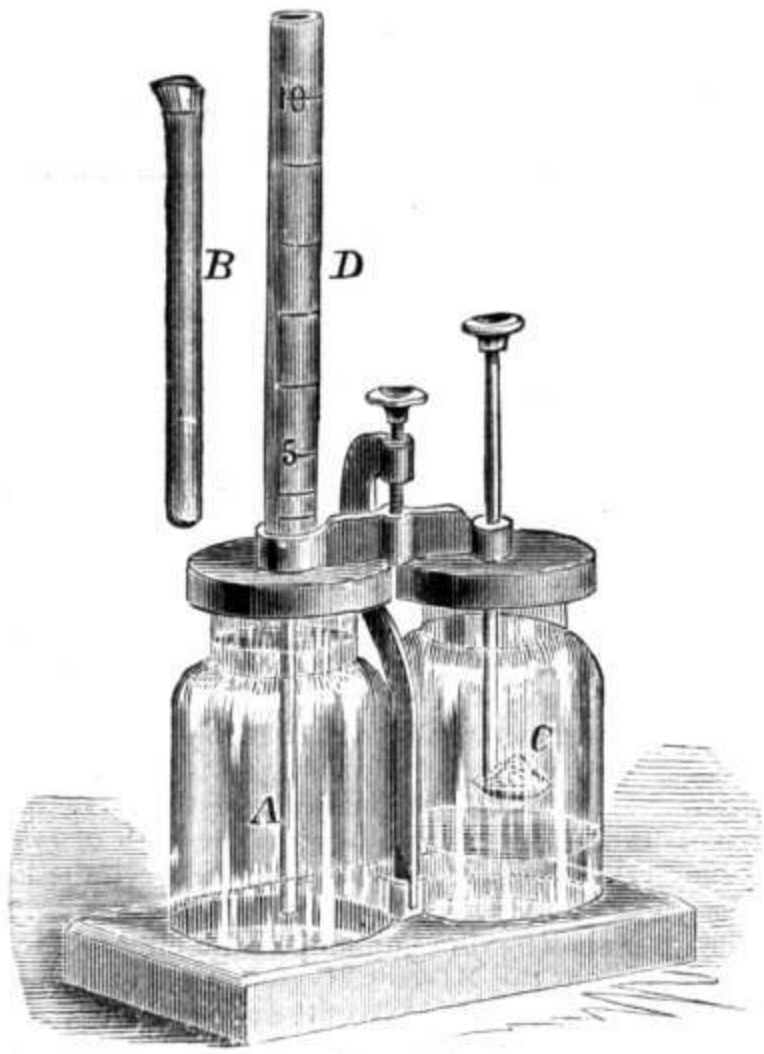
No.		Price.
478.	Hicks' Lense Front, Indestructible Self-registering.—Verified	$3 50
479.	" " " "	3 00
480.	" " Self-registering.—Verified	3 50
481.	" " "	3 00
482.	Self-registering, in Cylindrical Rubber Cases	2 00
483.	" " Metal "	1 50
484.	Set of four Self-registering, in Morocco Case	8 00



No. 486

485.	Self-registering, 4 inch Ivory scale, straight tubes, in Morocco Case	2 50
486.	" " " bent " " "	2 50
487.	" Flat bulb, for the eye	2 75

TWITCHELL'S ACIDOMETER.



No. 488

The want of an instrument to determine the strength of Vinegar has been felt by vinegar dealers, ever since this condiment has been obtained from other processes than the natural or artificial souring of Wines or Cider, the strength of which could be easily ascertained by the use of the Hydrometer; since the introduction, however, of wood chips, sulphuric and other acids as factors of vinegar a test based on specific gravity has become as obsolete as genuine vinegar.

No.		Price.
488.	Twitchell's Acidometer being applicable to all kinds of vinegar supplies this want, and being easily handled and correct, fully deserves the popularity it is acquiring daily with vinegar dealers. In case	$12 00

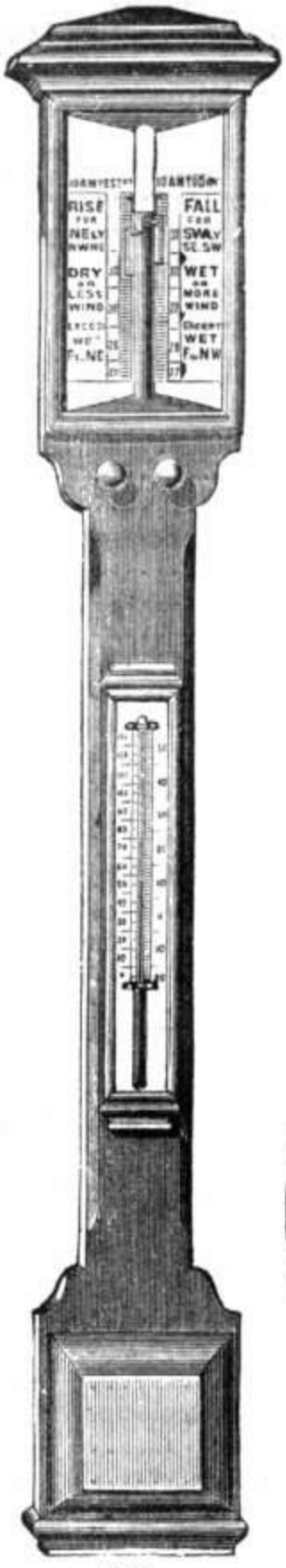
URINOMETERS.

489.	Urinometer, with Jar, in paper case	50
490.	" " "	2 00
491.	" " and Thermometer, in Morocco Case	5 00
492.	Urinary Cabinet, containing Urinometer, Thermometer, graduated test-glass, spirit-lamp, three small bottles, test tubes, pipette and test paper	10 50

HYDROMETERS.

493.	Glass Hydrometer, for Liquor	50
494.	" " Syrup	75
495.	" " Alkali	75
496.	" " Acid	75
497.	" " " with Thermometer attached	2 00
498.	" " Concentrated Acids	1 00
499.	" " Salt	75
500.	" " " for Sea Steamers	1 00
501.	" " Oil	75
502.	" " Coal Oil, N. Y. Petroleum Association Scale	1 00
503.	" " " " " with Thermometer	3 00
504.	" " Beer	75
505.	" " Bark	75
506.	" " Vinegar	75
507.	" " Milk Lactometer, for detecting the quantity of water with which milk, furnished in cities, is frequently adulterated	75
508.	Creamometer, for giving the percentage of Cream in unskimmed Milk	1 00
509.	Glass Hydrometer, Tralles' and Richter's Scales, with Thermometers enclosed for Alcohol	3 00
510.	" Twaddles, for Dyers and Calico Printers, Nos. 1, 2, 3, 4, 5 and 6	75 cts. to 1 00
511.	Chemists' Hydrometer, for all liquids heavier than water, ranging from 0 to 70 Beaume, with Scale of corresponding Specific Gravities (1.000, 0.7000) attached—*very delicate*, warranted correct	2 00
512.	" for all liquids lighter than water, ranging from 10 to 70 Beaume, with scale of corresponding Specific Gravities (1.0069, 1.9333) attached—*very delicate*, warranted correct	2 00
513.	The above Instruments in a handsome Morocco Case, with Thermometer enclosed in Glass, and Glass Jar	8 00
514.	Alcoholometer	75
515.	" for testing the proof of spirits. Consists of a Glass Hydrometer, with N. Y. and Tralles' U. S. Scale. Tin Case and Brass Thermometer, including Book of Calculations, by Prof. McCullough, of the U. S. Revenue Department	3 00
516.	" Same as No. 515, but has Copper Case in place of Tin	5 00
517.	" Extra Thermometers for the above	3 00
518.	U. S. Revenue Alcoholometer, Tralles' Scale	5 00
519.	Same as No. 518, tall Glass Test Jar and book, packed in a neat Mahogany Box	8 00
520.	Tagliabue's Pyrometer, for testing the Explosiveness of Coal Oil. Copper Case, Lamp, Hydrometer and Thermometer	6 00
521.	Same as No. 520, but made of Tin	4 40

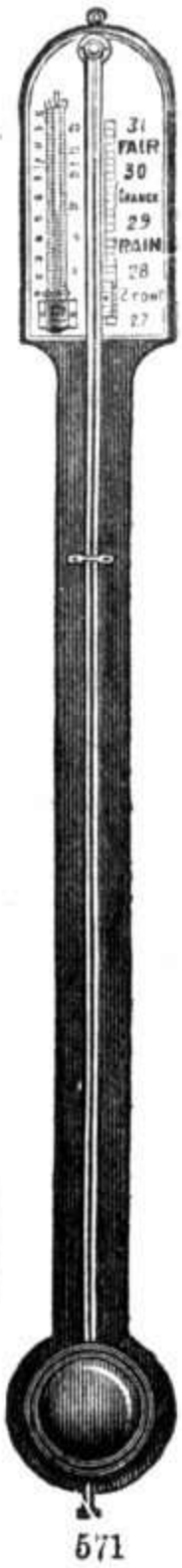
BAROMETERS.



568

557

560



571

Pocket Aneroid Barometers, with Silvered Dials, in Morocco Cases.

No.					Price.
550.	Pocket Aneroid,	open face,	1¼ in. diameter		$15 00
551.	"	"	"	with altitude scale to 9,000 feet	15 00
552.	"	"	1½ in. "		18 00
553.	"	very fine,	1¾ in. "	with altitude scale to 20,000 feet.	20 00
554.	"	"	"	Thermometer, scale " 14,000 "	30 00
555.	"	silver, very fine,	1⅞ in. diameter,	" " 10,000 "	45 00
556.	"	very fine,	1¾ in. diameter,	" " 20,000 "	35 00
557.	"	revolving dial,	2⅛ in. diameter,	" " 5,000 "	15 00

No.		Price.
558.	Aneroid Barometer, 2⅝ in. diameter with altitude scale to 5,000 feet	$30 00
559.	" 2¾ in. " " " to 13,000 feet	30 00
560.	" 2¾ in. " with Thermometer	30 00
561.	" open face, 4 in. diameter, "	25 00
562.	" very fine, 4 in. "	20 00
563.	" open face, 5 in. " with Thermometer	14 00
564.	" " 5 in. "	13 00
565.	" 5 in. diameter	12 00
566.	" Signal Service, U. S. Army, very fine, 5¼ in. diameter, with altitude scale to 15,000 feet	40 00

MERCURIAL BAROMETERS.

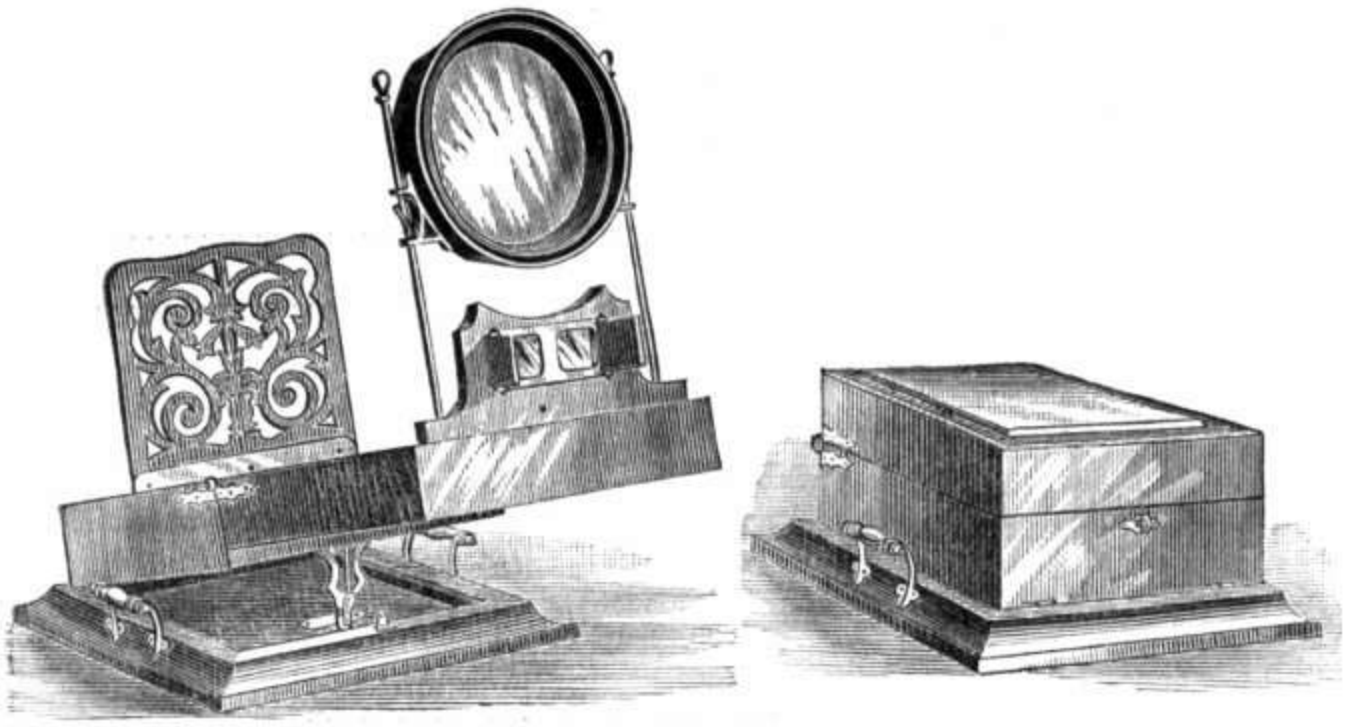
567.	Mercurial Barometer, Standard, vernier reading to 100ths	35 00 to 100 00
568.	" Polished Rosewood Frame, vernier reading to 100ths	20 00
569.	" " Walnut Frame, " " " ..	12 00
570.	" " Maple Cyl. case, " " " ..	10 00
571.	Mercurial Barometer, Plain Walnut back, vernier reading to 100ths	8 00
572.	Hicks' Anemometer, with minute glass stop, reading to 10,000,000 feet	40 00
573.	" " " " " 1,000 feet	35 00
574.	" " ordinary stop, " 10,000,000 feet	35 00
575.	Robinson's "	35 00
576.	Smithsonian Rain Gauge	5 00

BAROMETRIC ALTITUDE TABLE.

From the "Barometer and Weather Guides," by Commodore T. A. Jenkins, U. S. N.

Barometer. Inches.	Height in Feet.	Barometer. Inches.	Height in Feet.	Barometer. Inches.	Height in Feet.	Barometer. Inches.	Height in Feet.
31.0	0	27.9	2,769	24.8	5,869	21.7	9,388
30.9	85	27 8	2,864	24.7	5,976	21.6	9,510
30.8	170	27.7	2,9 9	24.6	6,083	21.5	9,632
30.7	255	27.6	3,054	24.5	6,190	21.4	9,755
30.6	341	27.5	3,149	24.4	6,297	21.3	9,878
30.5	427	27.4	3,245	24.3	6,405	21.2	10,002
30.4	513	27.3	3,341	24.2	6,514	21.1	10,127
30.3	600	27.2	3,438	24.1	6,623	21.0	10,253
30.2	687	27.1	3,535	24.0	6,733	20 9	10,379
30.1	774	27.0	3,633	23.9	6,843	20.8	10,506
30.0	862	26.9	3,731	23.8	6,953	20.7	10,633
29.9	950	26.8	3,829	23.7	7,064	20 6	10,760
29.8	1,038	26.7	3,927	23.6	7,175	20.5	10,889
29.7	1,126	26.6	4,025	23.5	7,287	20.4	11,018
29.6	1,215	26.5	4,124	23.4	7,399	20.3	11,148
29.5	1,304	26.4	4,223	23.3	7,512	20.2	11,278
29.4	1,393	26.3	4,323	23.2	7,625	20.1	11,409
29.3	1,482	26.2	4,423	23.1	7,729	20.0	11,541
29.2	1,572	26.1	4,524	23.0	7,854	19.9	11,673
29.1	1,662	26.0	4,625	22.9	7,969	19.8	11,805
29.0	1,753	25.9	4,726	22.8	8,085	19.7	11,939
28.9	1,844	25.8	4,828	22.7	8,201	19.6	12,074
28.8	1,935	25.7	4,930	22.6	8,317	19.5	12,210
28.7	2,027	25 6	5,033	22.5	8,434	19.4	12,346
28.6	2,119	25.5	5,136	22.4	8,551	19.3	12,483
28.5	2,211	25.4	5,240	22.3	8,669	19 2	12,620
28.4	2,303	25.3	5,344	22.2	8,787	19.1	12,7 7
28.3	2,396	25.2	5,448	22.1	8,906	19.0	12,894
28.2	2,489	25.1	5,553	22.0	9,025	18.9	12,942
28.1	2,582	25.0	5,658	21.9	9,145	18.8	13,080
28.0	2,675	24.9	5,763	21.8	9,266	18.7	13,219

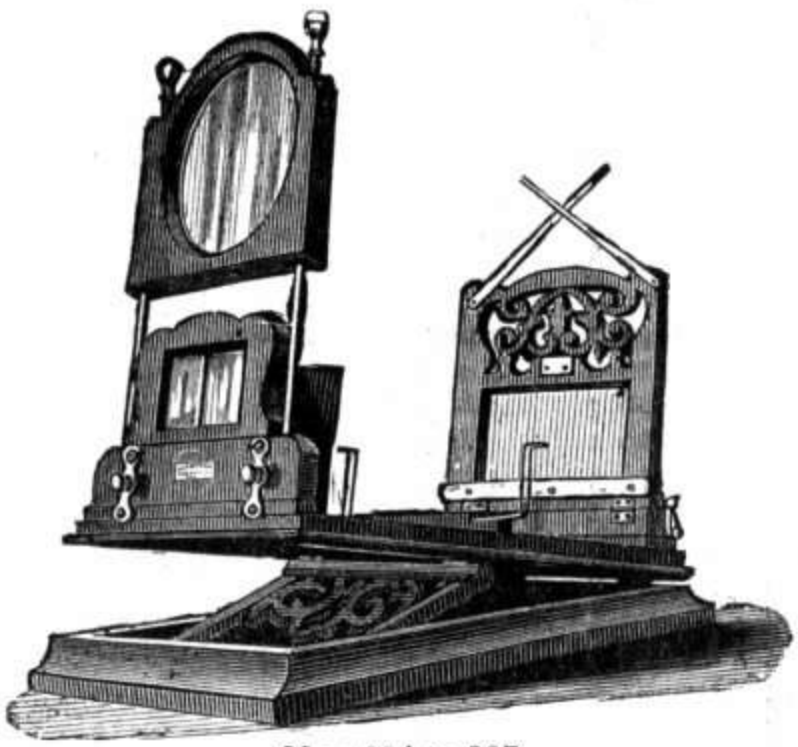
GRAPHOSCOPES, STEREOSCOPES, &c.



OPEN. Nos. 600 to 603 CLOSED.

This new style Graphoscope is handsomely finished in polished Walnut and Blackwood, with Nickel-plated mountings. The whole folds up, making a square case, which can be locked; the lenses, in this manner, are well protected.

No.		Price.
600.	Graphoscope, Polished Walnut, Lens 7 inches in diameter	$50 00
601.	" " " 6 " "	45 00
602.	" " " 5 " "	35 00
603.	" " " 4 " "	25 00

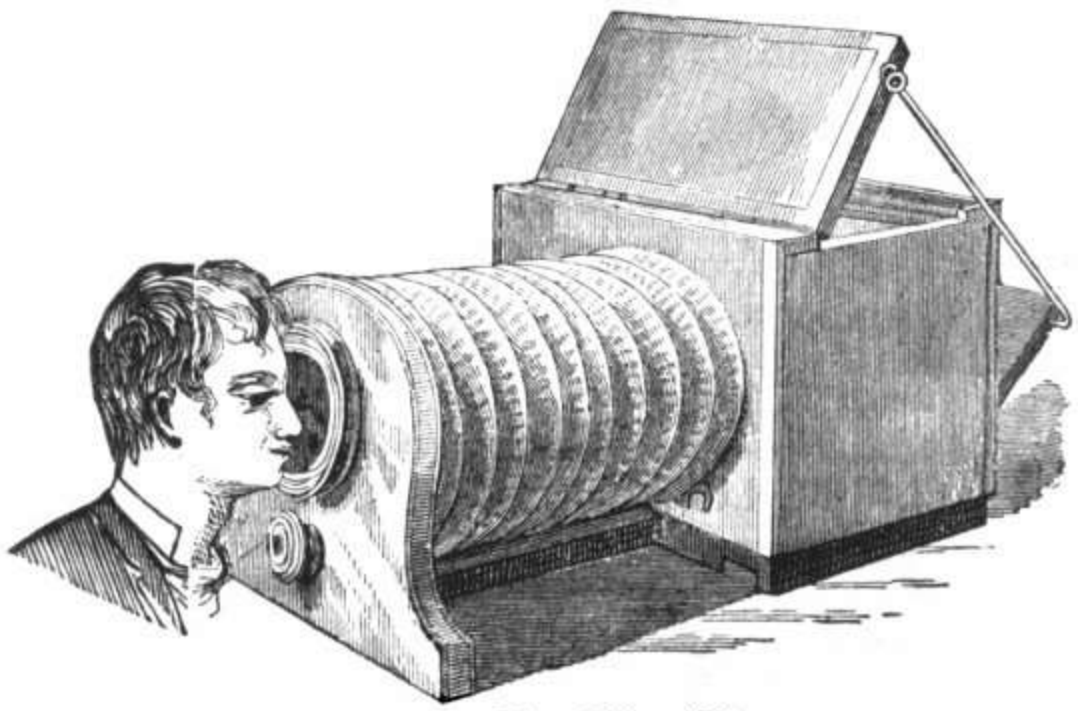


Nos. 604 to 607

604.	Graphoscope, Polished Rosewood, Lens 7 inches in diameter	20 00
605.	" " " " 6 " "	18 00
606.	" " " " 5 " "	16 00
607.	" Walnut, " 4½ " "	12 00

No.		Price.
608.	Graphoscope, Metal, Nickel-plated, Lens 5 inches in diameter	$9 00
609.	" " " " 4½ " "	8 00
610.	" " " " 4 " "	6 00
611.	" and Stereoscope combined, on Stand, Lens, 4 inches in diam.	9 00
612.	Stereoscope, metal, Nickel-plated Stand	5 00
613.	" Polished Mahogany	2 00
614.	" " Rosewood	2 00
615.	" " Tulipwood	2 00
616.	" " Satinwood	2 00
617.	" " Cedar	2 00
618.	" Oiled Walnut	1 50
619.	" Paper Hood	75

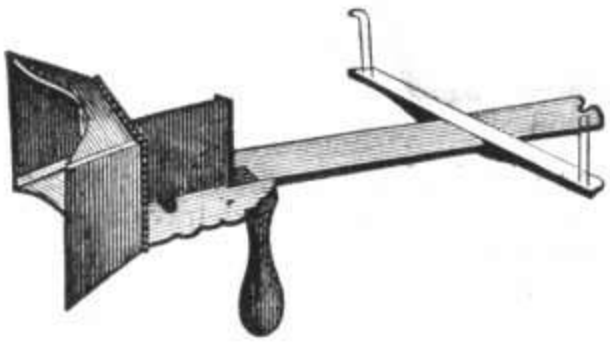
POLYORAMAS AND CAMERA OBSCURAS.



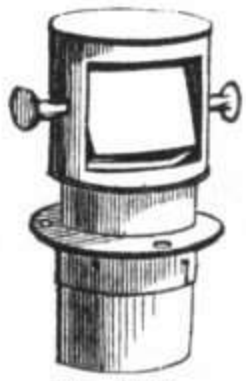
Nos. 620 to 622

Polyorama, an entertaining instrument for the family circle, by which one picture will dissolve into another, or change the view from day to night, by means of reflected or transmitted light.

620.	Polyorama, 6 pictures, size of box 8 x 10 inches	$8 00
621.	" 6 " " 6½ x 8½ "	6 00
622.	" 3 " " 6½ x 8½ "	5 00
623.	Extra sets of six pictures for No. 620, per set	3 00



Nos. 613 to 619



No. 624

624.	Camera Obscura Head, a Prismatic Lens, mounted in Brass, combining both Mirror and Lens, Prism 1⅝ inches long	$5 00
625.	Camera Obscura Head, Prism 1⅞ inches long	7 00
626.	Camera Obscura Box, with No. 624 head, to fold up, so that it can be carried conveniently	12 00

KALEIDOSCOPES, &c.

Nos. 650 and 651

No.		Price.
650.	Parlor Kaleidoscope, Paper Front, on a firm stand	$2 00
651.	" " Brass " " "	2 50
652.	Anamorphoses, Distorted Pictures, which regain their true appearance when the reflection is seen on the pillar. 12 pictures	1 00

CLAUDE LORRAINE MIRRORS.

Nos. 653 to 658

This is a most pleasing Instrument for Viewing Clouds, Landscapes, Streets, &c., and affords constant amusement in the country or at the sea-shore, or when travelling on a steamboat. It is almost invaluable to the Artist, as it condenses views into a very small space, and also giving the correct perspective effects.

653.	Mirror, 6¼ x 5¼ inches, in Morocco Case	5 50
654.	" 7½ x 5¼ " "	6 00
655.	" 7½ x 6¼ " "	7 50
656.	" 8½ x 6¼ " "	9 00
657.	" 8½ x 7½ " "	10 00
658.	" 9½ x 7½ " "	11 00

MAGNIFYING MIRRORS.

No.						Price.
661.	Magnifying Mirror,	3½	inches	in diameter,	Blackwood Frame, with handle..	$1 00
662.	"	4½	"	"	" " ..	1 25
663.	"	5½	"	"	" " ..	1 50
664.	"	6½	"	"	" " ..	2 00
665.	"	3½	"	"	Mahogany Frame, " ..	2 00
666.	"	4½	"	"	" " ..	2 25
667.	"	5½	"	"	" " ..	2 50
668.	"	6½	"	"	" " ..	3 50

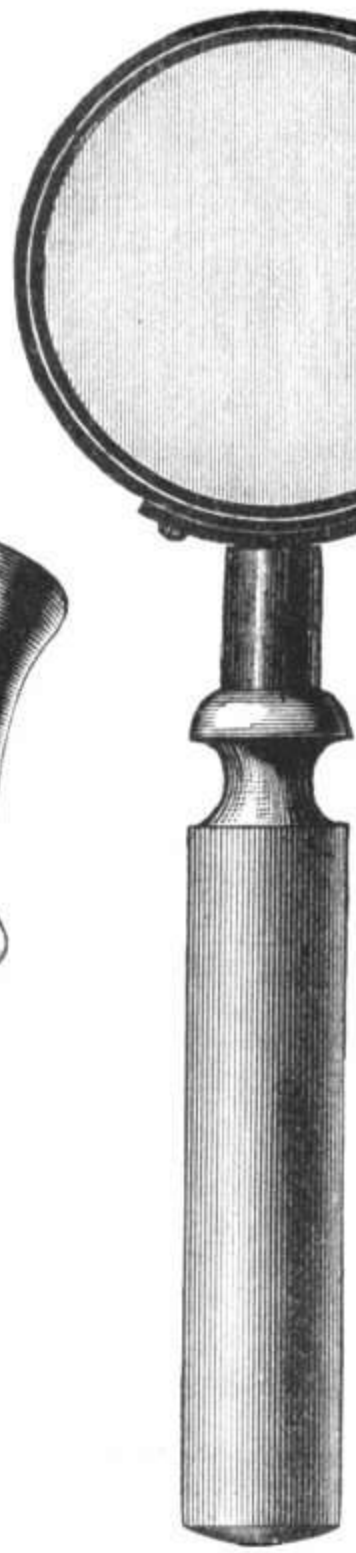
HOUR GLASSES AND EGG BOILERS.

Nos. 669 to 677

669.	Scotch Plaid.	60	minutes.....	$3 00
670.	"	30	"	2 50
671.	"	15	"	2 00
672.	Rosewood.	60	"	2 00
673.	"	30	"	1 50
674.	"	15	"	1 25
675.	Whitewood.	60	"	1 75
676.	"	30	"	1 25
677.	"	15	"	1 00
678.	Scotch Plaid.....	3	minutes.....	50
679.	Rosewood.....	3	"	50
680.	Whitewood.....	3	"	25
681.	Metal Stand to turn over.	3	"	25
682.	Wood Stand, very common.	4	"	20
683.	" "	3	"	20

READING GLASSES.

769



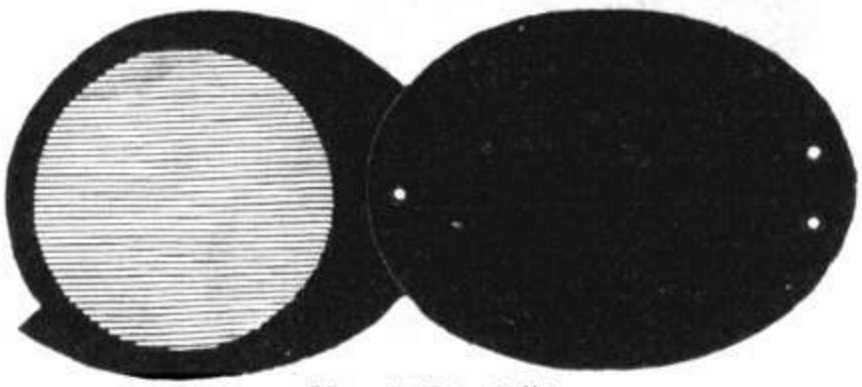
700 to 741

762

No.								Price.
700.	Reading Glass,	Oxidized	Metal	Frame.	Lens 1	inch	in diameter.....	$0 40
701.	"	"	"	"	1 3/8	"	.....	50
702.	"	"	"	"	1 5/8	"	.....	60
703.	"	"	"	"	1 7/8	"	.....	70
704.	"	"	"	"	2 1/8	"	.....	80
705.	"	"	"	"	2 3/8	"	.....	90
706.	"	"	"	"	2 3/4	"	.....	1 00
707.	"	"	"	"	3	"	.....	1 25
708.	"	"	"	"	3 1/4	"	.....	1 50
709.	"	"	"	"	3 1/2	"	.....	1 75
710.	"	"	"	"	3 3/4	"	.....	2 00

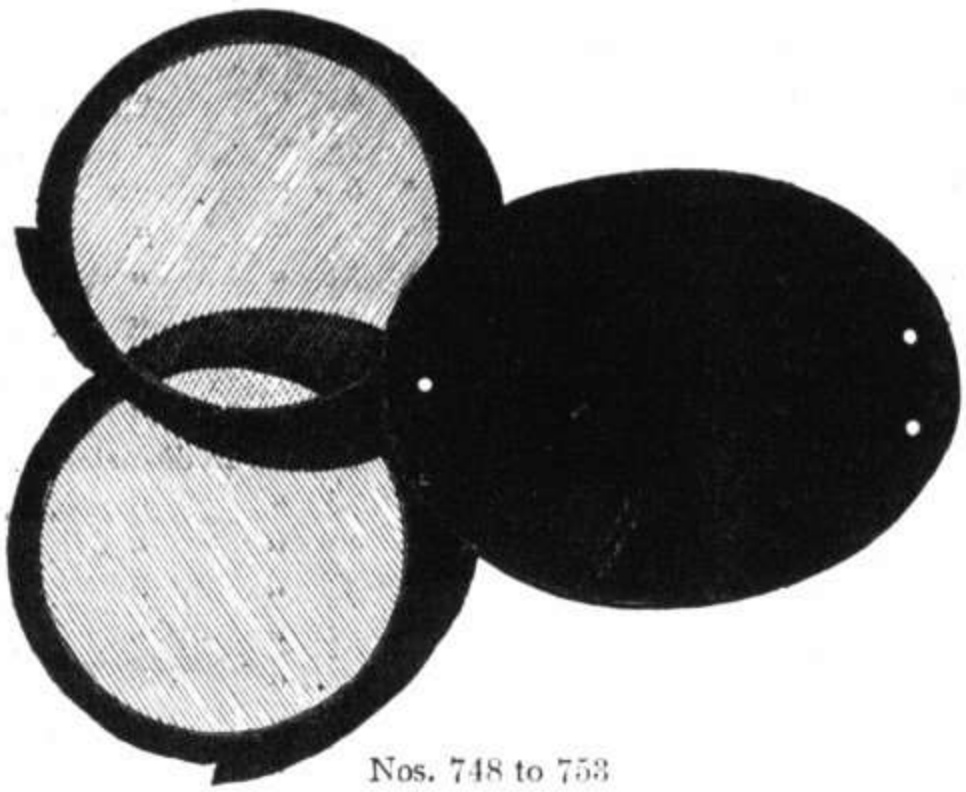
No.								Price.
711.	Reading Glass,	Oxidized	Metal Frame.	Lens 1	inch	in	diameter.....	$2 25
712.	"	"	"	" 4¼	"	"	.....	2 50
713.	"	"	"	" 4½	"	"	.....	3 00
714.	"	"	"	" 4¾	"	"	.....	3 50
715.	"	"	"	" 5	"	"	.....	4 00
716.	"	"	"	" 5¼	"	"	.....	4 50
717.	"	"	"	" 5½	"	"	.....	5 00
718.	"	"	"	" 5¾	"	"	.....	6 00
719.	"	"	"	" 6	"	"	.....	7 00
720.	"	"	"	" 6¼	"	"	.....	8 00
721.	Reading Glass,	German Silver	Frame.	Lens 1	inch	in	diameter.....	50
722.	"	"	"	" 1⅜	"	"	.....	60
723.	"	"	"	" 1⅝	"	"	.....	70
724.	"	"	"	" 1⅞	"	"	.....	80
725.	"	"	"	" 2⅛	"	"	.....	90
726.	"	"	"	" 2⅜	"	"	.....	1 00
727.	"	"	"	" 2¾	"	"	.....	1 25
728.	"	"	"	" 3	"	"	.....	1 50
729.	"	"	"	" 3¼	"	"	.....	1 75
730.	"	"	"	" 3½	"	"	.....	2 00
731.	"	"	"	" 3¾	"	"	.....	2 25
732.	"	"	"	" 4	"	"	.....	2 50
733.	"	"	"	" 4¼	"	"	.....	2 75
734.	"	"	"	" 4½	"	"	.....	3 50
735.	"	"	"	" 4¾	"	"	.....	4 00
736.	"	"	"	" 5	"	"	.....	4 50
737.	"	"	"	" 5¼	"	"	.....	5 00
738.	"	"	"	" 5½	"	"	.....	6 00
739.	"	"	"	" 5¾	"	"	.....	7 00
740.	"	"	"	" 6	"	"	.....	8 00
741.	"	"	"	" 6¼	"	"	.....	9 00

VULCANITE POCKET MICROSCOPES.



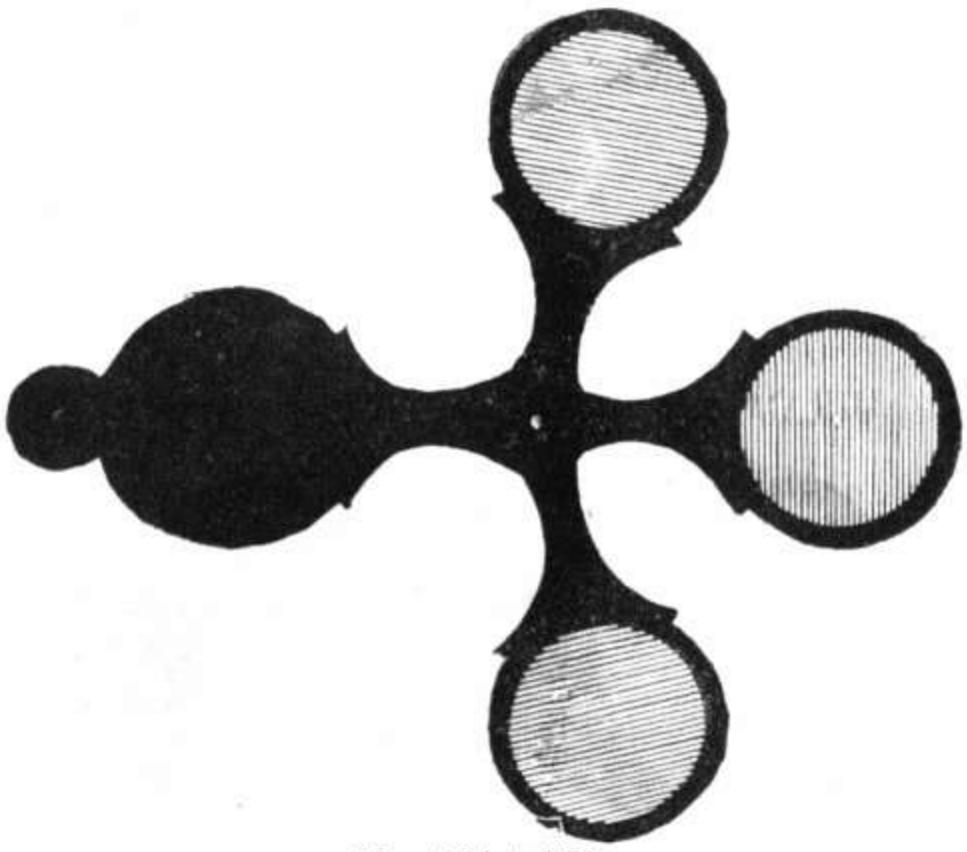
Nos. 742 to 747

742.	Vulcanite Pocket	Folding	Microscope.	1 Lens,	¾	inches	diameter.....	$0 30
743.	"	"	"	1 "	1	"	.....	40
744.	"	"	"	1 "	1¼	"	.....	60
745.	"	"	"	1 "	1½	"	.....	70
746.	"	"	"	1 "	1¾	"	.....	80
747.	"	"	"	1 "	2	"	.....	1 00



Nos. 748 to 753

No.									Price.
748.	Vulcanite	Pocket	Folding	Microscope.	2	Lenses,	$\frac{3}{4}$	inches diameter.....	$0 70
749.	"	"	"		2	"	1	"	80
750.	"	"	"		2	"	$1\frac{1}{4}$	"	90
751.	"	"	"		2	"	$1\frac{1}{2}$	"	1 00
752.	"	"	"		2	"	$1\frac{3}{4}$	"	1 25
753.	"	"	"		2	"	2	"	1 50



Nos. 754 to 759

754.	Vulcanite	Pocket	Folding	Microscope.	1	Lens,	$\frac{5}{8}$	inch diameter.....	35 cts.
755.	"	"	"		1	"	$\frac{3}{4}$	"	40 "
756.	"	"	"		2	"	$\frac{5}{8}$	"	50 "
757.	"	"	"		2	"	$\frac{3}{4}$	"	65 "
758.	"	"	"		3	"	$\frac{5}{8}$	"	70 "
759.	"	"	"		3	"	$\frac{3}{4}$	"	90 "

WATCHMAKER'S GLASSES.

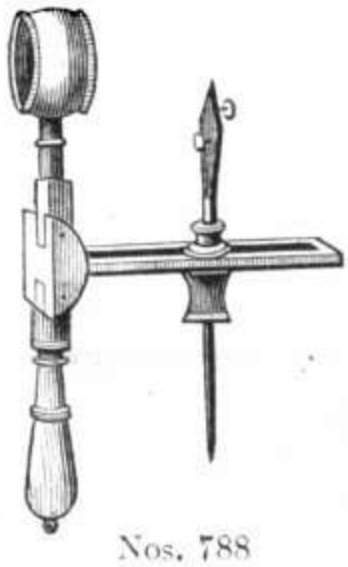
No.			Price.
760.	Watchmaker's Glass.	Lens, ½ inch diameter	$0 50
761.	"	" 1 "	50
762.	"	2 Lenses, ½ inch diameter	75

LINEN PROVERS.

763.	Vulcanite Linen Prover.	⅛ x ⅛ inch opening	50
764.	" "	⅛ x ¼ " "	50
765.	" "	¼ x ½ " "	50
766.	" "	½ x ½ " "	50
767.	" "	1 " "	1 50
768.	Brass "	¼ x ¼ " "	50
769.	" "	¼ x ½ " "	50
770.	" "	½ x ½ " "	50
771.	" "	1 " "	2 00
772.	" Cashmere Glass.	French, ¼ of an inch	50

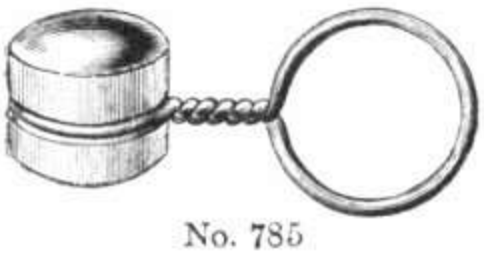
POCKET MAGNIFYERS.

No. 781

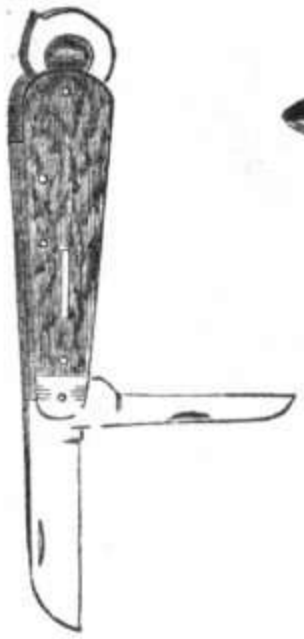


Nos. 788

No. 782



No. 785



No. 789

No. 773

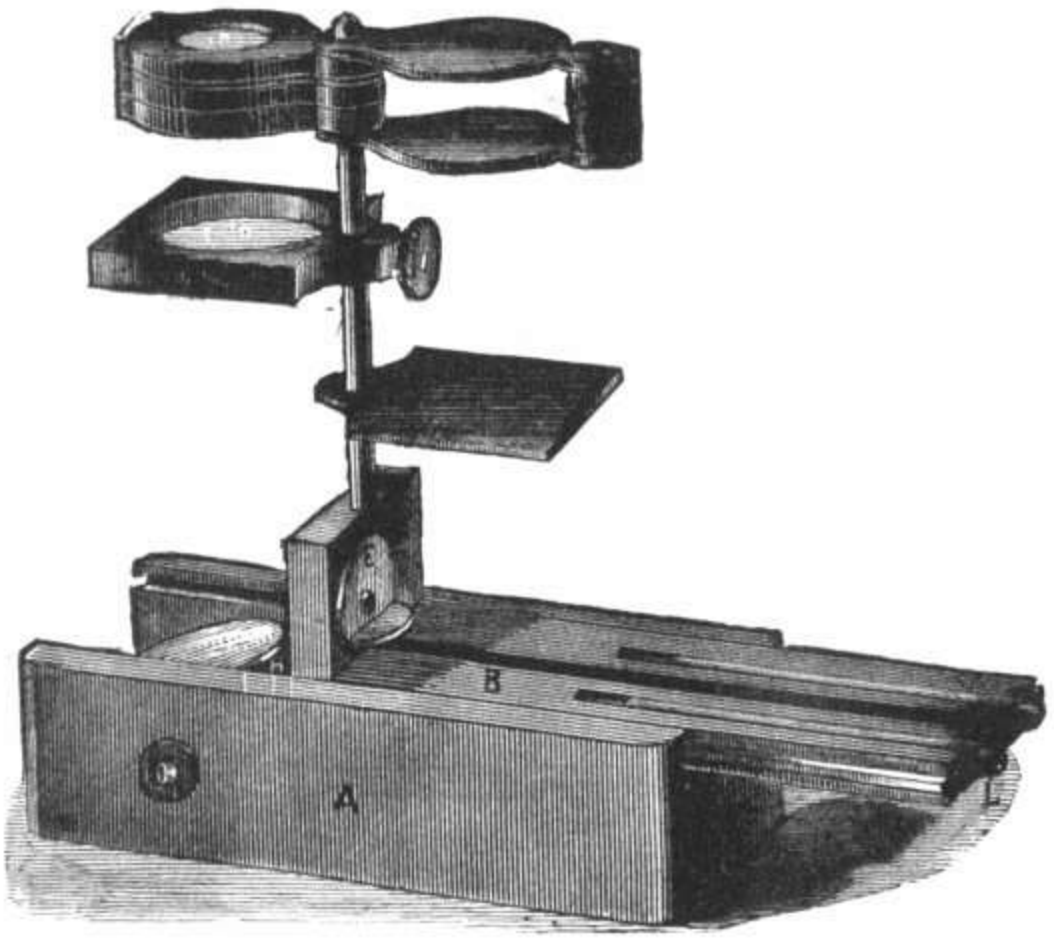
Nos. 779 and 780

Nos. 763 to 772

773.	Coddington Lens, Brass Frame,	Lens, $\frac{9}{16}$ inch in diameter,		1 00
774.	"	" 1 "	"	1 50
775.	"	" $1\frac{3}{8}$ "	"	2 00

No.		Price.
776.	Coddington Lens, Nickel-plated. Lens, $\frac{3}{16}$ inch in diameter	1 50
777.	" " " 1 " "	2 00
778.	" " " $1\frac{3}{8}$ " "	2 50
779.	" Silver-plated Case	4 00
780.	" " engraved	5 00
781.	Three Legged Microscope, Oxidized	75
782.	Brass Three Legged Microscope	75
783.	Oxidized " "	75
784.	Nickel-plated "	1 00
785.	Engraver's Glass, Vulcanite, with 2 plano-convex lenses $1\frac{3}{8}$ inch in diameter.	1 50
786.	" " " 2 " " $1\frac{5}{8}$ " "	2 00
787.	" " " 2 " " $1\frac{7}{8}$ " "	2 50
788.	" " " 2 " " $2\frac{1}{8}$ " "	3 00
789.	Stanhope Lenses, various sizes	1 50 to 2 50
790.	Seed Microscope, Brass, small	35
791.	" " medium	50
792.	" " large	75
793.	Botanical Microscope, in neat Morocco Case	2 25
794.	" Pocket Knife with Magnifying Lens	1 50

EXCELSIOR POCKET AND DISSECTING MICROSCOPE.



(J. J. BAUSCH'S PATENT.)

The construction and method of using this Microscope is very simple, and will be readily understood from an inspection of the engraving. It consists primarily of a small

wooden case, about one-third larger than that shown in the illustration. To one end of the lid of this case is attached one of the ends of the box; and when the lid is reversed and turned upside down, it may be slid into the groove of the case, and then forms a stand for the lenses and glass stage, as is shown in the cut. The lenses and stage are supported by a steel rod D, the lower end of which is hinged to the lid, so that it may be turned down and lie in a groove provided for it. When raised into the position shown in the figure, it is held very securely in place by means of the button E; and this button also serves to retain it in the groove when it is turned down. The glass stage G, which is fitted into a frame of hard rubber, slides easily on the stem D, so as to be readily adjustable for focus, while, at the same time, it may be firmly fixed by means of a set-screw, at any desired height, and will then serve as a stage for dissecting purposes. The frame which holds the lenses, fits on to the top of the stem. A mirror H, is fitted into the case, and is readily adjustable, by means of the button shown on the outside, so that light may be reflected up through the stage when the objects to be examined are transparent, and when they are to be viewed by reflected light, there is a dark ground of hard rubber N, which is also carried by the stem D, and may be turned under the stage, so as to cut off all transmitted light. Dissecting needles (K and L,) with neat handles, fit into appropriate grooves.

As a Dissecting Microscope for botanical, entomological and physiological work, this instrument is very efficient and convenient. The glass plate is fitted into the stage, so as to form a cell capable of holding water, so that dissections may be carried on under that liquid, or aquatic animals may be kept alive and examined at leisure. The stage may also be turned so that the flat side will be up when so desired. When the lenses and stage are removed, they are readily packed in the case, and the whole thing packed into a compass which readily admits of its being carried in the vest pocket.

The lenses may be used either singly or together; are well made, and are provided with a proper diaphragm, which secures distinctness of definition. They give a range of power of from five to thirty diameters, (twenty-five to nine hundred times the surface,) the first being admirably adapted to the examination of minerals, textile fabrics, the larger parts of flowers, insects, &c., while the latter is sufficiently powerful to enable the student to dissect flowers, and examine their more minute structure with great efficiency. Under good management this microscope shows the individual corpuscles in the blood of the frog, and will exhibit very clearly and beautifully the circulation in the foot of this animal.

No.		Price.
795.	With three lenses	$2 75
796.	With two lenses	2 50
797.	Set of three hard rubber slides, with openings of different kinds to serve as linen provers	25

BOOKS ON THE EYE.

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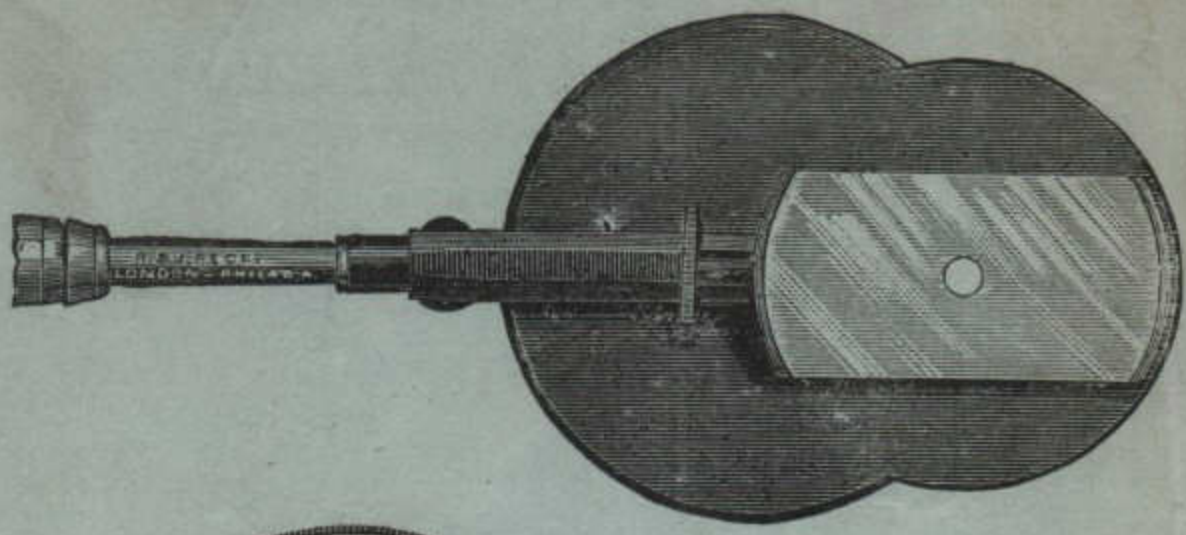

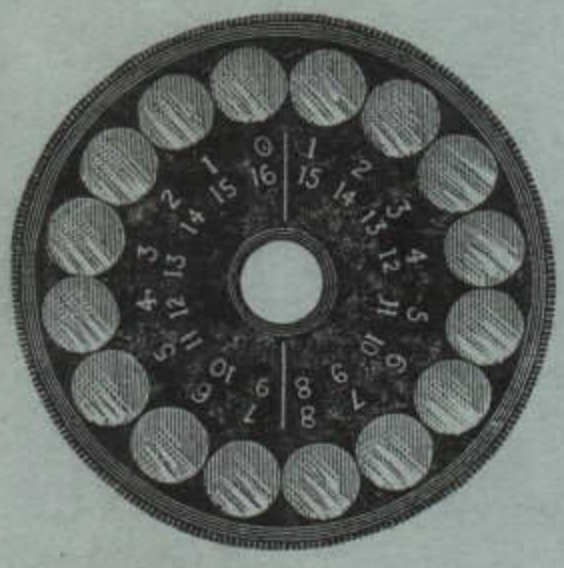

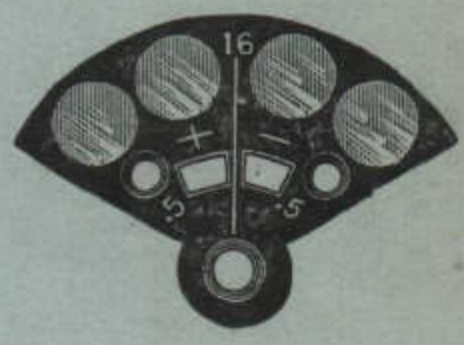

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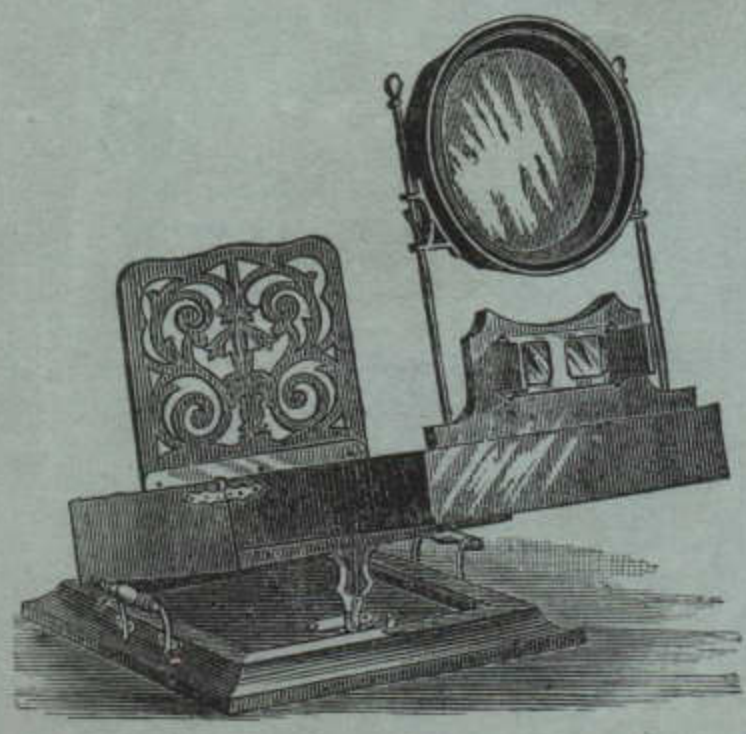

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