The Use and Choosing of Spectacles.

"In order that every person may be enabled to judge for themselves whether their sight may be assisted or preserved by the use of spectacles, an attentive consideration of the following rules will be found sufficient :—

1. When we are obliged to remove small objects to a considerable distance from the eye in order to see them distinctly.

2. If we find it necessary to get more light than formerly; as, for instance, to place the light between the eye and the object.

3. If looking at, and attentively considering a near object it becomes confused, and appears to have a kind of mist before it.

4 When the letters of a book run one into the other, and hence appear double or treble.

5. If the eyes are so fatigued by a little exercise that we are obliged to shut them from time to time, and relieve them by looking at other objects, and especially dark ones.

When all the circumstances occur, or any of them separately take place, it will be necessary to seek assistance from glasses which will now ease the eyes, and in some degree check their tendency to grow flatter; whereas, if they be not assisted, in time the flatness will be considerably increased by the effort the eyes are compelled to exert.

In every part of the world there are persons who sell spectacles as part of their trade, who have neither a knowledge of the anatomy of the eye nor the nature of optical glasses, so that it is no wonder so much injury is done. Thousands have to lament that ever they made use of glasses."

The above is from the Augusta *Chronicle and Sentinel*, communicated by an optician, and is useful information.

The best method of selecting glasses by those who require them is not given; a few words of caution on this head would have been valuable; let us add them :

When about to select a pair of spectacles, let a book of rather small but clear print be used, and such glasses be chosen as will enable it to be read at the same distance and with the same ease as before the eyes were impaired.

This is the only safe rule. No person can select a pair of spectacles for another. A pair that will cause the least pain or uneasiness to the eye in reading should at once be rejected. Some dealers in spectacles recommend persons wishing to purchase to take glasses that are better fitted for older persons, and use the argument, "they will last longer," meaning thereby, that because the wearer must grow older, they will serve him for a greater number of years. The selection of such a pair of spectacles will soon make the vision older. It is better to select a pair adapted for a person rather younger than one who is older.

Another thing to be attended to in looking for spectacles is to ascertain whether the eyes are mates. It is not unusual to find an inequality in the eyes of individuals. Watchmakers and engravers who use a magnifying glass usually with one eye, are frequently obliged to wear spectacles with a glass of different focus for each eye. In order to ascertain this, place the book at the distance at which the print is seen clearly with both eyes at once; then, without moving the head or the book, look with each eye alternately. If the eyes be mates, the print will be seen equally well with each. If the eyes are alike, then prove the glasses of the spectacles in the same way.

Having found the correct focus, observe if the glasses be pure and free from scratches and veins, or defects of any kind. This can be done by holding them from you towards a lamp or the window, when any such defect will be clearly seen.

The frames or bows of the spectacles should be light and elastic; silver and gold frames are the best. They should so fit on the face that the cilia or eye lashes will not touch the glasses; and they should set straight before the eyes, not down on the nose.

The foregoing observation, may be sufficient to enable persons in want of spectacles to make a correct choice; but it will always be most safe to make the purchase in person of an experienced optician.

Those who wish to purchase colored glasses for tender or diseased eyes, or to wear in journeys, exposed to a hot sun on sandy plains, or in exposure to snow and bright sunshine, to protect the eyes from excessive light, should select none but those of a green color. Blue glasses are more mischievous than useful, because they absorb different parts of the spectrum unequally, and transmit the extreme violet and blue rays. Green glasses absorb the extreme violet and blue rays, and transmit the red ray, producing a shorter spectrum, and a more distinct image on the retina of the eye.

We have glasses of various kinds, telescopes, and microscopes, to render objects more distinct during a faint light, or in what is termed *darkness*. Now as there are various animals and fowls—cats and owls—that can see about as well, if not better, during night than day, why may not a pair of spectacles, or some kinds of glasses, be invented to give man the same powers of nightly vision.

It is known that yellow colored glasses may be advantageously employed to excite the retina, and a lens can partially condense the faint light, yet nothing has been done in the optical art worthy of the name in relation to the invention or manufacture of night glasses

[For the Scientific American.]

History of Air Chambers on Pumps.

On page 88, this volume of the SCIENTIFIC AMERICAN, there is an illustrated description of the application of air vessels to the suction of pumps, for which a patent was issued to Messrs. Babbitt, Higbee & Plantz, on October 7th, 1842, and extended for seven years from last October. You add to the description, "this invention has never before been thus made known to the public." I wish to present my experience with air vessels on the suction pipes of pumps.

About the year 1831 the subscriber made the following experiment with a copper pump of 4-inch. bore, and a leaden pipe from 8 to 10 rods long, and 1 1-2 inch bore. By computations based on actual experiments, and a consideration of the fact that the time naturally expended by a single stroke of the pump handle was insufficient to allow the water to pass that distance and supply the vacuum with a steady and constant stream of water, I was led to devise the following contrivance to keep up a constant supply, and obviate the jerk of the pump handle. I used a piece of 3-inch leaden pipe, from five to six feet long, closed both ends air-tight, and bored a hole one inch in diameter near the center of its length, also a hole of the same size in the upper side of the 1 1-2 inch pipe as it lay in the trench, a few feet from the bottom of the pump, and connected the apertures of these two pipes by another piece of leaden pipe of one inch bore and about three inches long, so that when completed in the trench the axis of the larger pipe laid horizontally with, and perpendicularly over the axis of the feed pipe. It produced the desired effect; and when circumstances required the experiment was repeated.

In March, 1832, I used for the same purpose a cylindrical leaden vessel containing about two gallons. The feed pipe from the well entered the side near the bottom of the air vessel, and the pipe leading from the pump entered the top, and extended downward into the vessel, to about two inches from the bottom. In this case the distance and elevation were such that the owner was happily surprised at the successful result. Up to December 1832 I had oft repeated the last named, and made other like experiments, with uniform and complete success. I thenceforward recommended the air vessel to all my customers, where the elevation of the pump exceeded that of the fountain 15 feet, or the horizontal distance exceeded 30 feet, varying the relative size, form, and position of the several parts as experience and circumstances seemed to require. Sometimes I used a globe or spheroid, attached to the pipe like the 2-inch pipe before described, and sometimes in and around the axial line of the pipe, making an aperture in the pipe within the spheroid. It was found by these experiments, as I had pre-supposed, that the area, and consequently the cost of the pipe and the weight of the column of water leading from the fountain might be reduced, and since that time I have used 1-inch pipe leading from near the top of the air vessel or cylinder, and about 1 1-4 inch pipe from near the bottom of the vessel to the pump; or if 1 1-4 inch pipe were used for the supply, 1 1-2 inch pipe was used from the air vessel to the pump, and so on.

I used a dozen or more of air vessels in this manner before the winter of 1833, by which time my customers decided in favor of the last described arrangements. In the climate of Massachusetts and New Hampshire air vessels need to be thus constructed, and being set in the ground below, or otherwise protected from the frost, will always remain filled, when, to avoid frost in the pump, the water is discharged. A few strokes of the piston starts the water from the contiguous air vessel, lubricates and fills the pump and pipe without resort to other means. Again, if it be required to supply two or more pumps from the same single supply pipe, by this form of air vessel the main branch will remain filled and supply two or more branches leading from it, even if the pumps are placed at unequal elevations. In the latter case it is the best way to use a larger air vessel than those with a single pump. I have constructed pumps of metals, wood, and soapstone in various forms, for which the United States granted me a patent in 1834.

I have made pumps of soapstone with the air vessel constructed by boring an 8 or 9-inch hole horizontally into an L-shaped block; the barrel for the piston and lower box being bored into the upright portion of the L connecting the two apertures with a smaller hole. A follower or flange of soapstone connects with the feed pipe, and being packed and bolted to the end of the horizontal portion it produces a pump barrel and air vessel in one block. In truth, my time and your space will fail me to describe the many and various methods I have pursued in the structure and application of this useful article to pumps, engines, aqueducts, syphons, and air bellows, especially in the years 1833–'34, and '35. I applied it to the forcing pump of my own steam engine in the year 1833 in Groton, Mass., and used it there until the year 1842. I also used one in my steam bucket factory in Hingham, Mass., which was destroyed by fire about a year ago; and I have often recommended its use in connection with a forcing pump, and have seen it subsequently applied in repeated instances.

I prepared an application for a patent for the air vessel to pumps, but it was accidentally destroyed by fire in 1833, and some pump makers were prone to speak ill of it, until the public demand for the article enforced strong convictions of its utility. In 1834 '35 and 1840 I exhibited in the various lyceums and other public gatherings a working model glass pump and pipe with and without the air vessel of glass connected, also with glass syphons.

In 1840 the venders of these articles were equalled in number only by the ostensible inventors, both in Massachusetts and New Hampshire, and thus gave me occasion to give a lecture, and state the fact that those who had once denounced the article as worthless were the irresponsible parties who now claimed the discovery.

I have not been engaged in the pump business since 1835. My memory fails, but I can, if required, give the names and residences of more than seventy persons in Massachusetts and New Hampshire for whom I set pumps, with air vessels on, more than seven years previous to the date of Messrs. Babbitt, Higbee & Plantz's patent, and probably a majority of them have been in constant use to this day. It is believed that others have since the year 1835 made and sold cart-loads of the article.

ELIJAH WHITON.

South Hingham, Mass., Feb., 1857.

Foreign Summary.

Bramble's automatic grain scale, an American invention, exhibited in our Crystal Palace two years ago, has just been patented in Great Britain. The peculiarity consists in nearly shutting the stream of grain from the scale just before the proper quantity is received, and finishing with a very delicate stream, to avoid the effect of momentum.

The smaller wooden vessels of the British Navy are being hauled up on slips under cover, the better to insure their preservation. A tract of land at Hasler, near Gosport, Eng., has been selected to receive two hundred vessels, and the arrangements have been so far proceeded with that the first vessel, the *Gnat*, was hauled up about the 1st of January. The "gun boat and mortar boat flotilla" consists of five classes of vessels, gun vessels, gun boats, mortar vessels, mortar floats, and floating batteries. The three first-named are of wood, and the two last iron, and all but the mortar vessels and mortar floats are propelled by steam.

Seventy experiments published in a new number of *Weale's Series* on the form of ships, give results against hollow or wave-lined bows, in favor of rounded water-lines at the sides and at every point, and in favor of placing the greatest breadth of a vessel a little forward rather than aft of the center.

Richard's Snow-Plow, a Philadelphia invention, which has been tested with great success in this country during the past winter, has just been patented and illustrated in Great Britain. The principle is that of elevating the snow by a horizontal wedge to the hight of several feet before deflecting it sidewise, and also changing the deflectors so that it can be thrown both ways from a single track, or all in one direction from a double track, so as to avoid throwing the snow from one track upon the other, as with the common styles. It is an invention of importance, and has enabled trains to progress continuously through drifts from six to ten feet deep.

One of the Royal Engineers has patented a method of changing common lime into hydraulic cement, by heating it in a closed chamber with burning sulphur. The lime is to be spread on perforated floors of brick, in lumps of any size up to that of a cocoa-nut, and about one pound of sulphur is reported to be a fair allowance for each bushel of lime. The time required is not stated.

[Clay, flint, and magnesia have each their advocates as giving to mortars the property of hardening under water; but this use of sulphur, or of sulphurous acid (as would be developed by this process) is, we think, unheard of for this purpose.]

Tubes for conveying orders from deck to deck, or from or to aloft, are reported to have answered so well in the British Navy that the patentee, W. W. Bonney, has fitted similar tubes to the new 84-gun steamship *Retnizan*, of the Russian Navy. All the ships of the Russian Navy lying at Cronstadt are to be fitted with similar tubes in the spring.

G. Forster has arranged double doors at suitable distances apart in the workings or passages in mines, and connects them by iron rods, so that when one is opened the other is closed, to prevent a draft of air where it is not desired.

Albert Delfosse has invented an "Anti-Garrotte Boot Bayonet," a valuable attachment for those accustomed to kicking backwards—it being secured to the heel of the boot.

Captain Hubert, of the French Navy has patented the employment simply of tubes, and a fan-blower turned by hand, for ventilating vessels.

The ship-building yards of Great Britain are only partially employed, in consequence of the monetary pressure during the latter part of the war, and since the peace. Some new ship yards are springing up, however.

Marine engineers and mechanics, says the London *Artizan*, must look to Russia and other European states mainly for orders during 1857. There will be plenty of work to be done, it continues; and notwithstanding the temporary dislike entertained by the Russians, the bulk of the orders for their marine engines and machinery *must* come to Great Britain from whomsoever they may obtain their ships.

The new iron screw steamship *Nubia* of 2,250 tuns burthen, has recently run 4,500 miles, at an average rate of 11 9-10 knots an hour, and returned at the same speed—the greatest average ever made by a screw vessel on a long cruise.

Fish are common in the seas of Surinam with four eyes—two of them on horns which grow on the top of their heads.