The Optical Industry.

Probably no industry bears so close a relation to our intellectual life or has added so much to our accumulation of knowledge as the manufacture of lenses. Lenses in their many varieties and combinations are the basis of all our optical instruments. By their aid through the medium of the microscope and telescope we have brought within the range of our human vision two new worlds, the world of the infinitely small and the world of the infinitely great. In the one case they have made possible the science of bacteriology with all its resultant benefits to the human race; in the other they have enabled us to construct the science of astronomy with all its marvels and its revelations of worlds other than our own.

In point of antiquity lenses as aids to imperfect vision lead all others, and it seems fittingly so, for so widespread is their use, so great the relief they give, so real the ills they remedy, that we cannot conceive of a spectacle-less world. And still they are comparatively modern for although we have no authentic records, the consensus of opinion seems to place the invention of spectacles in the 13th or 14th century. They received their first great impetus when the invention of printing made the making and reading of books more common. Our modern life with its greater confinement and closer application has been the cause of rendering necessary artificial aids to vision.

Spectacles, however, made their way into favor slowly, their use meeting with considerable prejudice. They were long regarded as magical, and as the physicians of the time dissuaded people against them, the task of fitting them was left largely in the hands of quacks and charlatans. At that period nothing was known of the refraction of the eye or the action of lenses. It was not until two hundred years later that the discovery of the laws of optics revealed to us the action of glass lenses and enabled us to give scientific precision to an invention which had hitherto been purely empirical.

About the beginning of the 17th century we find lenses used for microscopic and telescopic purposes. The invention of these instruments were the direct result of the experiments of the spectacle makers and those engaged in the polishing of glass lenses. The investigations of later scientists as Newton, Dollond, and others into the nature of light revealed new facts and suggested new improvements and a new impetus was thus imparted. About the middle of the 19th century the first immersion lenses were produced, first the water and later the oil. The well-known work of Professor Abbe, Carl Zeiss and Dr. Schott has resulted in bringing the modern microscope to its present state of perfection. The history of the development of the telescope consists not in new optical discoveries but in utilizing new appliances for figuring and polishing, improved material for lenses, more exact methods of testing, and convenient methods of mounting.

The science of photography had its inception in 1839 when Daguerre and his contemporaries brought out the first successful method of fixing the image by chemical means. This science has provided a new field for the employment of lenses. Modern developments in glass making and the prosecution of mathematical investigations so necessary for the production of new formulae have resulted in the application of more effective lens systems and the perfecting of photographic objectives.

The history of the optical industry in America is practically limited to the past half century. Fifty years ago the optical trade of the world was practically in its infancy. Eyeglasses and spectacles while they had been in use for many years, were crude affairs with horn, gold, or German silver frames. The lenses were of indifferent accuracy, ground mostly by hand and with comparatively few foci at the disposal of opticians. The rimless eyeglass was unknown. Even the nosepiece which to-day seems so indispensable was lacking.

There were no lenses made in America and but few spectacle or eyeglass frames. Microscopes were still regarded largely as toys and were not generally used in the scientific work of our educational institutions as they are to-day, in fact there were no science courses to employ them. The same can be said of the microtome, the projection lantern, and many other appliances which are now used in large quantities. Photography was in its infancy, and the amateur picture making outfits which are so common a feature of to-day were undreamed of. It is needless to say photographic lenses or shutters were not made in this country at this time except perhaps in an experimental way. The manufacture of field glasses in America is of so recent a date that it hardly needs mention.

To-day Rochester is the centre of the optical industry in America and is the home of one of the largest manufacturing concerns in the world in the line of optical goods.

Indeed nowhere else in the world can there be found an establishment in which are manufactured as the chief product lenses of all kinds from the tiny 1-12-inch oil immersion microscope lenses no larger than a pinhead to the larger naval searchlight mirrors (36 inches in diameter) used on government vessels. In fact the history of the optical industry in America is almost identical with the history of the Bausch & Lomb Optical Company which has been so closely identified with it. The company have demonstrated their ability to make American lenses which are in every respect equal to the highest class European product. The growth of their business since its inception 54 years ago in a small store in the Arcade on Main Street to its present colossal factory on St. Paul Street has been truly phenomenal and the intervening years have been years of constant development and progressive adaptability to modern requirements. One of the most important events in the company's career and also in the history of the industry in America was their alliance in 1890 with the famous Carl Zeiss Optical Works of Jena (Germany) which name stands for supreme technical skill in applied optics no less than knowledge of theoretical optics.

Michael Doyle & Co.

This firm has made for many years a specialty of evaporated fruits. Their business is well known in all the leading markets of the world in which these goods are used. Rochester is the center of the industry and more of this kind of fruit is made in Western New York than perhaps in any other part of the United States, in fact New York State produces fully seventy-five per cent of the entire production of this country. The evaporated fruits produced in Western New York are regarded as the finest made on account of their superior flavor and high quality. The business shows a steady growth. From a small beginning in 1870, it has assumed very large proportions until there are fully two thousand factories in the state of New York engaged in evaporated fruit industry. It has proved a great boon to the fruit growers of the state and has stimulated the planting and caring of the orchards in a very large measure.

The goods are shipped to all the leading markets of the world. The European countries take the largest quantities but shipments are made every year to South Africa, India, Australia, China and Japan, and the demand for these fruits in this form grows every year.

The firm of Michael Doyle & Company is largely interested also in the canning business, their specialty being the manufacture of condensed milk. They have five factories at the present time, two in the Mohawk Valley, two in Pennsylvania and one in Colorado, and their brands of which perhaps the Red Cross is one of the best known, are sold in all of the markets of this country and in many of the markets abroad. The firm receives on an average of over one hundred thousand quarts of milk daily in their business at their different factories, which is perhaps more than the entire daily supply of the city of Rochester. This business which was started about fifteen years ago is conducted under the name of the Mohawk Condensed Milk Company, the largest factories of the company being located in the Mohawk Valley of this state.

Multi progressari, pluris non constabit.

(It costs much to be progressive, more not to be).

A. T. Hagen Co.

The above is the most appropriate motto of the manufacturing house of A. T. Hagen Co., now the largest manufacturers in the United States and, it may be added, in the world, of laundry machinery. Their history is a record of progressive development, of constant adaptability to the ever increasing requirements of our modern commercial life. The year 1883 saw the beginning of their business career in very modest fashion under the partnership name of Hagen & Myers. At that time their machines were built for them in a small shop over which they had no control. To-day a commodious foundry and two large machine shops, one for the manufacture of the heavier machines and one for lighter machines, occupying space of 80,000 square feet and giving employment to over 350 skilled mechanics, constitute the mill for grinding out the Hagen product.

Capable management, the practical application of progressive ideas, the strictest integrity in all their business dealings have been the factors which have contributed to their signal success.

Mechanical perfection combined with the greatest degree of efficiency are the characteristics of the Hagen products which have gained for them the high reputation they now enjoy not only throughout America but in all parts of the world where their machines are in use.

The business was incorporated under its present title in 1899 the executive consisting of A. T. Hagen, president; D. M. Cooper, vice president, and E. F. Underhill, secretary and treasurer, their offices having always been at the same location number 55 North Street. The volume of business now transacted by the company amounts to upwards of a million dollars annually.

Composite Brick.

Composite brick is a building material which has within the last few years come rapidly into prominence in this country. It has been used in Europe, especially in Germany, for many years, and a large number of municipal and state buildings, churches, schools and residences have been constructed of this material. In every case, composite brick has been found to withstand the action of the weather better than clay brick and to grow harder and stronger with age.

Composite brick is made from sand as a base and no clay or shale enters into its composition. The process of manufacture follows nature's method of forming sandstone and composite brick may be called artificial sandstone, with the difference that it is entirely homogeneous throughout and contains no cracks, layers nor seams.

Composite brick is not only more durable than clay brick, but is stronger and more dense, therefore, it absorbs very little moisture and never makes a damp wall. It is fireproof and very poor conductor of heat and cold. There is no efflorescence nor other discoloration after it has been in the wall for a time. Very cold weather and the action of atmospheric gases have no deteriorating effect.

The Rochester Composite Brick Company is a stock company organized under the laws of the state of New York, with a capitalization of $125,000, and numbers among its stockholders many members of the diocese of Rochester. Mr. Augustus L. McKittrick is a member of its board of directors. The president is Mr. Homer Knapp, and Mr. R. W. Holden is secretary and treasurer. At their factory at Brighton they are making several grades of face and wall brick. The natural color is a pleasing gray, but they are made in buff, brown, black and various shades of red. A building constructed of these bricks never has to be painted and always gives a bright, fresh appearance. Their brick are uniform in size, shape and color and for that reason are much easier to lay in the wall and make a better appearance when laid.

Their cost is but little more than the cheapest of soft clay brick, while in every respect they are the equal or superior to the most expensive clay brick on the market.

This company is also making hydraulic stone building blocks, sills, lintels, caps, etc., by the Ferguson Two-piece System. This system furnishes the strongest wall construction possible in a concrete building block and in addition provides a perfect circulation of air by means of both horizontal and vertical air passages. Very artistic effects can be obtained by the use of this kind of blocks.

The Rochester Composite Brick Company is also sales agent for "Agalite" Sanitary Flooring, Wainscoting, Floor Tiling, Enameled Brick and other builders' supplies.

Samples may be seen and prices obtained at their office, Nos. 419, 420 and 421 Exchange Place Building, 16 State Street, Rochester.

Charles S. Gibbs.

An old established concern doing an extensive and high class trade in harness and horse furnishing goods is that of Charles S. Gibbs, 93 State Street. The business was originally founded by A. V. Smith in 1859, and Mr. Gibbs was connected with it as an employee from its commencement. In 1897 Mr. Gibbs succeeded Mr. Smith and has consistently maintained the high reputation of the house for quality of material and expert workmanship.

Everything pertaining to the necessary equipment of the horse in the line of harness and furnishing goods is manufactured and Mr. Gibbs' aim to place upon the market only the highest class goods has met with the response of a steadily increasing and satisfied patronage. Mr. Gibbs makes a specialty of hand harness and attends also to repairing. The business is retail in character, selling direct to individual customers.