

GLASS MAKING AT BUFFALO

TO BE REPRESENTED AT PAN-AMERICAN SHOW.

The Exhibit Will Be Historical in Showing the Different Stages of the Industry and the Various Changes in Method Which Have Taken Place Since the Earlier Days.

Special Correspondence.
Buffalo, Jan. 8.—In the United States and Canada there are 401 glass factories having a combined capacity of 11,001 pots. This importance has developed by slow stages and many costly experiments. Every department of manufacture is represented in this long list from the plate store front to the tiniest and most delicate trinket. In American countries, practical considerations come first, the utilitarian qualities in any line of manufacture properly receiving the greatest attention. Artistic and decorative features follow as time and education create the demand. This is especially noticeable in the first production of glass in America.

Such useful articles as black bottles, tumblers and other common table ware were made in Virginia more than a hundred years ago. These were followed closely by the manufacture of 7x3 window glass and lines of novelties, many of which have since become necessary staples.

Glass and glassware at the Pan-American exposition will be represented historically, carefully illustrated with a view of showing its development along industrial lines from the first crude and clumsy productions to the finest cut glass table ware, delicate fabrics and highly tempered musical glasses. Many interesting processes will be shown and many articles made on the grounds.

AN ANCIENT ART.
Glassware is so common, the general public hardly stops to consider how it is made or where it comes from, and the importance to the country of a business which employs so many men and circulates such volumes of money, is little considered.

The art of glass making is very old, so old that it was known in Egypt in Joseph's time, three thousand five hundred years ago. It has grown in importance, volume and variety with each succeeding century until it has become one of the staple articles of manufacture in every civilized country. Like all extensive lines of manufacture, the business is divided into specialties. Factories are constructed for the manufacture of one specific article in which the machinery is made. A plate glass factory is a large affair covering perhaps twenty acres. Everything about the plant is designed and arranged with a view of facilitating the manufacture of plate glass without regard to any other branch of the business. The process is extremely simple and the machinery ponderous and expensive; so much so that at least half a million dollars appears to be absolutely necessary to operate a plate glass factory successfully.

COMPONENT PARTS.

White sand, soda ash, charcoal and arsenic compose the ingredients, though the exact proportions is a guarded secret, varying somewhat in each factory. When weighed and mixed, a certain amount about five bushels—is placed in a pot, the pot lowered into a furnace where it remains for ten or twelve hours before it is melted and sufficiently homogeneous. It is then carried to an iron table upon which it is poured and rolled out flat, the thickness being determined by strips of iron at the sides of the table. It is then carried to an annealing oven where it is allowed to remain for a day or two, the heat being gradually lowered. When cool, it is trimmed, ground and polished after which it is cut to size and carried to the stock room.

The manufacture of glass mosaics has been maintained by the Italian government for several centuries. The individual artistic character of the workmen enter into this industry to a greater degree than in any other decorative art. In fact, the term fine arts would easily include this production. In the first place the study of color is exceedingly important. The materials of glass are mixed with various coloring materials, which are chiefly metallic oxides, in a manner to form opaque colored enamels. The glass made in this manner is pressed into slabs which are cut into very small cubes or rectangular pieces. Shades and colors to the number of 20,000 are made in this manner which are graded, carefully classified and registered.

ART GLASS.

With these colored tints the picture is built up, being composed or copied as the artist decides, the decision in most cases being determined by the ability and character of the artisan. For copying, a work of one of the fine old Italian masters is usually chosen. The art is handed down in families from father to son, the artistic value of the work depending, of course, upon individual ability.

The picture is compiled by inserting pieces of cubes of glass one by one in a setting of cement which dries to extreme hardness. Each piece is fitted by being ground at a lathe to the exact shape required by the particular tint or color which it is destined to represent in the picture. The process is extremely slow and when completed in the rough, the surface is ground to a true surface and carefully polished.

Another process which has been but little used for a century or more consisted of building a complete picture on each surface of the finished glass. The process consisted of building up on each side of a centre web, by means of colored glass fibres which were fitted together with the utmost exactness and cemented by fusion into a solid mass. This was afterwards surfaced by hand. The process probably comprised the most intricate and painstaking mode of building a picture that the ingenuity of man has ever devised.

GLASS PAPER.

The term glass paper applies to a polishing or smoothing paper for use on wooden surfaces, and is generally referred to and known as sand paper, though in this particular form the surface is covered with glass instead of sand. The fragments of broken bottles

and coarse waste, after being carefully washed to remove all grease and dirt, is crushed under a revolving stone and sifted into six sizes. The sifting is done by means of revolving cylinders of wire cloth having from 18 to 90 wires to the inch. A surface of thin glue is spread on the paper and the sifted glass dusted over it with a sieve. One patent process consists of coating cloth in this manner instead of paper, two applications of glue and sifted glass being applied.

The process of soldering glass is not very common, and the fact of ever resorting to a soldering process for the purpose of uniting two pieces of glass would hardly be thought of outside of the business.

In Vienna, a process is worked which makes curled or frizzled yarn from glass. The composition of the glass is peculiar and it is kept a careful secret. The material costs but little and the yarn is made rapidly. It is woven into fabrics, which are used for many different purposes, such as carpets, table linen, shawls, etc. A dress made for the Hawaiian princess, Lilliokealani, was written and talked about some years ago, though the material has not become fashionable. A cloth is made having a warp of silk with a glass wool, which is very lustrous and pretty.

It would be impossible to enumerate the extent or give an adequate idea of the scope of the glass exhibit at the Pan-American. Such a thorough history of glass, its usefulness and its ornamental value was never before attempted. Besides the exhibit proper, a glass factory will be in operation showing the process of manufacture in a great variety of articles from the crude materials to the finished product.

Herbert Shearer.

MODERN MAP MAKING.

Some Idea of the Immense and Costly Labor Involved.

G. C. Adams, in The World's Work.

The text-books which our school children used one hundred years ago told them nothing of the Rocky Mountains or the ranges of the Pacific slope. The exploration of three-fourths of our vast domain has been the work of our government and private citizens. In a broad sense it has been well done; and in the past twenty-one years it has been succeeded by detailed studies and surveys which should be specially mentioned, for they are a phase of exploration which have been carried out on a large scale only in the nineteenth century, and which is essential to the production of the most accurate maps. No topographic feature or town or the distribution of economic resources can be mapped with the greatest attainable accuracy till these surveys are made. They involve, first, the preparation of a topographic map showing the relief or inequalities of the surface, the drainage, and the works of man, such as roads, railroads, boundaries, and towns; second, the geologic mapping, in colors upon the topographic base map, showing the distribution of the rock formations, soils, useful minerals, arctician fauna, etc.

These surveys and the resulting maps are one of the most scientific developments of geographic research in this century. They have been completed in all countries of Europe except in Norway, Spain, Turkey, and some of the Balkan States. The great survey of India is one of the monuments of cartography, and similar surveys are far advanced in Algeria and Tunis. The topographic work has been carried by our general government, with the assistance of a few states, into all the states and territories, and nearly a third of our entire area has been completely surveyed. The labor is enormous and costly and many years will elapse before the whole country can be mapped with the refinement and accuracy that characterize the map sheets of the most of Europe.

PRESIDENT HAYS.

Man Who Receives Highest Salary of Any Railroad Executive.

From the Saturday Evening Post.

Only twelve years ago Charles C. Hays, the new president of the Southern Pacific railroad, held a clerical position. Now he receives the highest salary paid to any railroad president in America—probably in the world. This is said to be \$55,000, or \$5,000 more than is paid to the president of the United States. Then comes the salary of Mr. Hays' mental equipment which enables him to command this splendid income is well illustrated by a certain branch of old letters reposing in the pigeon-hole of the desk of an official who was a subordinate to Mr. Hays when the latter was general manager of the Wabash system. Then comes the criticism which he has met and which is held to be the secret of his phenomenal success.

His complete demonstration of remarkable abilities for harmonizing conflicting interests and attracting a large, popular and loyal following was made a year or two ago when he was general manager of the Grand Trunk line. Here he encountered a deep-seated prejudice against his Yankee origin and American methods. From flagman to directors the road was staunchly British. Red tape and officialism were highly developed in the service. There was not, it is said, a typewriting machine in any office of the system.

One of the first orders issued by Mr. Hays was for a force of stenographers and typewriters, and an equipment of machines for the entire system. But the most revolutionary practice which he carried into effect on the big Canadian road was the "open door" policy. Not only did Mr. Hays keep his own door open to all who had legitimate and important business, but he also saw to it that the doors of the officials were opened to the public. Mr. Hays is only forty-four years of age and was born in Rock Island, Illinois.

Deafness Cannot Be Cured by local applications as they cannot reach the diseased portion of the ear. There is only one way to cure deafness, and that is by constitutional remedies. Deafness is caused by an inflamed condition of the mucous lining of the Eustachian Tube. When this tube is inflamed you have a rumbling sound or imperfect hearing, and when it is entirely closed, deafness is the result, and unless the inflammation can be taken out and this tube restored to its normal condition, hearing will be destroyed forever; nine cases out of ten are caused by Catarrh, which is nothing but an inflamed condition of the mucous surface.

We will give One Hundred Dollars for any case of Deafness (caused by catarrh) that cannot be cured by Hall's Catarrh Cure. Send for circulars, free.

F. J. CHENEY & CO., Toledo, O. Sold by Druggists, 7c. Hall's Family Pills are the best.

The White Sale

Jonas Long's Sons.

The White Sale

THE WHITE SALE

BEGINS TODAY.

The store is a veritable city of white. Windows, aisles, rotunda, counters and shelves peep forth in nature's purest tint. It is a pretty sight—one you are sure to enjoy—the merchandise and the prices will interest you beyond anything of the kind ever held in Scranton.

One of the chief events of the year in the Jonas Long's Sons' Stores is the annual sale of white goods. Important because its success is firmly established due to similar sales of three years past. It is not a hurried sale; it commands extreme preparation and utmost care. The undermuslins have been making for many months—perfectly finished garments await you. These are not ordinary sales, where quality is cheapened in order to lessen the price. The broad scope of the store gives you the best there is or that can be made for the money—a policy that is only possible in a store where quantities are sufficient to regulate the price.

Corset Covers
Ladies' fine quality Muslin Corset Covers, made from an improved pattern and perfectly finished, with felled seams—for the Great January White Sale at only
5c
Not More Than Two to a Customer.

Muslin Gowns
Fine muslin in three styles, some Empire trimmed with embroidery, others with V and square yokes elaborately trimmed. For the Great January White Sale only
39c
Not More Than Two to a Customer.

Muslin Chemise
Very fine quality of Muslin Chemise, perfectly made and finished and quite elaborately trimmed with torchon lace. For the Great January White Sale at only
19c
Not More Than Two to a Customer.

Muslin Gowns
Splendid quality of muslin, made with tucked yoke and embroidery. Good width. For the great January White Sale....
49c
Two to a Buyer.



Corset Covers
Made up from very fine cambric, French style, some of them with square yokes. For the great January White Sale....
19c
Two to a Buyer.

Cambric Gowns
Best quality of cambric, made with fine embroidered tucked yoke; full width and length. For the great January White Sale....
69c
Two to a Buyer.

Cambric Drawers
Very fine Cambric Drawers, made extra wide and finely trimmed with lace and inserting. For the great January White Sale....
19c
Two to a Buyer.

Cambric Drawers
Ladies' Superb Quality Cambric Drawers, cut very full and finished with hemstitched ruffles and yoke band; superior to any ever offered at 35c. For the great January White Sale at only
19c
Not More Than Two to a Customer.

Muslin Skirts
Ladies' fine grade of Muslin Skirts, made with very deep umbrella flouncing and trimmed with several rows of fine plaiting; splendidly finished. For the great January White Sale at only
49c
Not More Than Two to a Customer.

Muslin Skirts
Extra quality of Heavy Muslin Skirts, made with very deep umbrella frames and elaborately trimmed with fine lace, little narrow plaits, etc. For the great January White Sale at only
98c
Not More Than Two to a Customer.

White Fur Rugs
Exquisite floor coverings, real fur rugs, full 27x60 inches in size, heavily lined with felt and finished in the best manner. For the Great January White Sale at only
\$2.63

Laces
Five thousand yards of finest machine-made Torchon Laces, in both edgings and designs. All new patterns of exquisite design and workmanship, and in different widths up to 2 1/2 inches. January White Sale.
3c

Handkerchiefs
Ladies' Fine Swiss and Cambric Handkerchiefs with hemstitched borders and scalloped edges; others with lace and drawn work corners. Big variety of styles and worth up to 25c. January White Sale, each
12 1/2c

Curtain Swiss
Full yard wide, uncommonly good quality; January white sale.....
11c

Swiss Curtains
Ruffled Swiss Curtains, full width and length. January White Sale, pair.....
79c

Dinner Sets
One hundred piece Dinner Sets of finest English porcelain, decorated in the newest floral designs. Positively worth 11.00. January White Sale.....
6.98

Embroideries
Twenty-two hundred and fifty yards of Fine Swiss book edgings and insertings, most exquisite patterns and of the very newest designs, every yard worth easily 15c to 20c. January White Sale.
10c

Aprons
Ladies' White Aprons, made up from a superior quality of fine lawn, cut full length and finished with deep hem. As good as most aprons sold at 25c and never before offered at the price attached to them during this sale. January White Sale.
15c

Tray Cloths
And Stand Covers of fine lined, stamped ready to work; some drawn work. January White Sale.....
45c

Kid Slippers
Finest white kid, in new toe shapes, ribbon bows and straps, with pretty buckle on top.
90c

White Lawn
Fine in quality, full 40 in. wide; worth 15c. January White Sale...
9c

Table Linen
Full bleached all linen Table Damask, worth 59 cents. January White Sale.....
45c

Fine Towels
Best all Linen Towels, full 40 inches long, worth 15c. January White Sale.....
8c

White Groceries

Sugar, fine granulated, 18 lbs.	1.00
Flour, Jonas Long's Sons' Best, barrel	4.50
Soap, "White Cloud", large bar, 7 for	25c
Codfish, Cream of Codfish, 3 pkgs. for	25c
Lard, Swift's Best, per pound	9c
Rice, fancy Carolina, 6 pounds for	25c
Corn, fancy N. Y. cream, 3 cans for	25c
Starch, large lump, laundry, 6 lbs. for	25c
Salt, diamond crystal, fine, package	8c
Baking Powder, J. L. S., pure, per pound	18c
Baking Powder, Royal, 1/2 lb. can	10c
Apples, evaporated, N. Y. State, lb.	7c
Crackers; Hitchner's tid bits, package	7c
Condensed Milk, Dr. Hand's, ball brand, 3 for	25c
Scouring Compound, Army and Navy, pkg.	5c
Cocoanut, Schepp's improved, 1/2 lb. pkg.	10c

Men's White Shirts
The great annual sale, consisting of 500 dozen. Made up from genuine New York mills muslin, unlaundersed, linen bosoms in both long and short lengths, reinforced back and front, full length. For the Great January White Sale at only
42c

Boys' Waists
White laundered, plaited front and back, cuffs attached, all sizes from 7 to 12 yrs
44c

White China Silk
An exceptional bargain in white China silk; superior quality and extra wide—full 23 inches all, pure silk and very cheap for the great January White Sale, yard,
39c

The White Sale

Jonas Long's Sons.

The White Sale