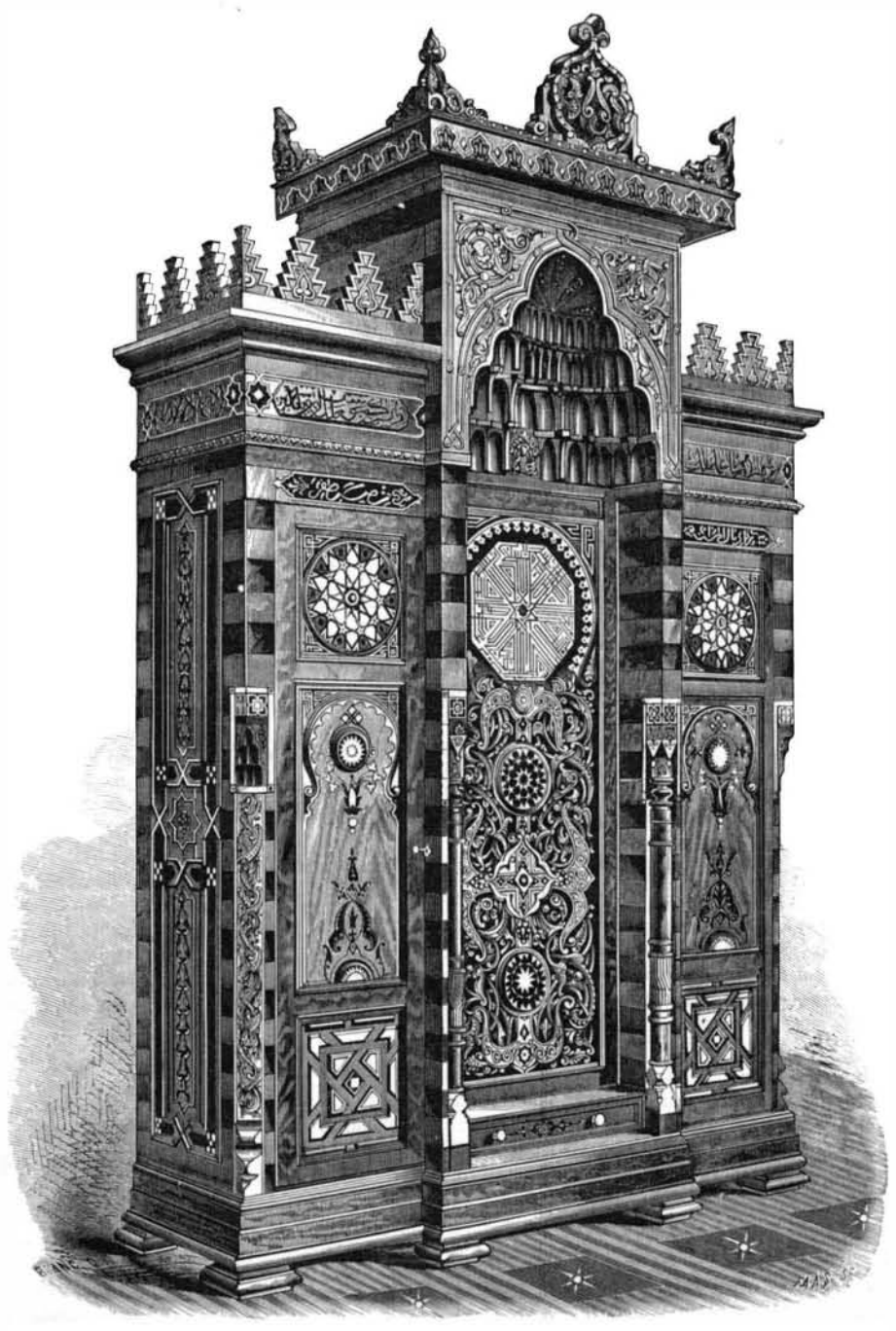
ARABESQUE CABINET.

The accompanying engraving represents a cabinet, in a style of the purest Arabic, made by the celebrated Parvis of Cairo, whose *atelier* is well known to all art lovers who have visited the interesting city of the East. This fine example of the cabinetmaker's skill is built of sycamore wood and ebony. It is inlaid with ivory and mother-of-pearl, in those highly effective patterns that are at once the admiration and the wonder of other nations. Every detail has been worked up and studied from the specimens of the best period of Arabic art. Nothing could be more effective than the result. There is but little carving—none indeed in high relief—and yet an effect has been produced more ornate than any carving. The richness of the tracery in the central panel is particularly fine, and taken as a whole it deserves commendation of the highest description. The possessor of such a piece of work as this cabinet would never tire of it, simply because the harmony of its parts would be constantly asserting themselves, and, like in a good picture, new beauties would constantly be revealing themselves.

This form of decoration, consisting of fantastic combinations of flowers, fruits, and branches, or, indeed, of almost any intertwinings of graceful forms and lines in a repetition of the same pattern, is a characteristic of Moorish architecture that has been given a distinctive name, arabesque. Ornamentation of this kind, either in sculpture or painting, has been found wonderfully effective; but it requires the exercise of the nicest discrimination.



ARABESQUE CABINET.

Coloring and Finishing Brass Work.

To prevent the every-day rusting of brass goods, the trade has long resorted to means for protecting the surface from the action of the atmosphere, the first plan of which is to force a change to take place. Thus, if brass is left in damp sand, it acquires a beautiful brown color, which, when polished with a dry brush, remains permanent and requires no cleaning. It is also possible to impart a green and light coating of verdigris on the surface of the brass by means of dilute acids, allowed to dry spontaneously. The antique appearance thus given is very pleasing, and more or less permanent. But it is not always possible to wait for goods so long as such processes require, and hence more speedy methods became necessary, many of which had to be further protected by a coat of varnish. Before bronzing, however, all the requisite fitting is finished and the brass annealed, pickled in old or dilute nitric acid, till the scales can be removed from the surface, scoured with sand and water, and dried. Bronzing is then performed according to the color desired; for although the word means a brown color, being taken from the Italian *bronzino*, signifying burnt brown, yet in commercial language it includes all colors.

Browns of all shades are obtained by immersion in a solution of nitrate or the perchloride of iron, the strength of the solution determining the depth of the color. Violets are produced by dipping in a solution of chloride of antimony. Chocolate is obtained by burning on the surface of the brass moist red oxide of iron, and polished with a very small quantity of blacklead.

Olive green results from making the surface black by means of a solution of iron and arsenic in muriatic acid, polished with a blacklead brush, and coating it, when warm, with a lacquer composed of one part lac varnish, four of turmeric, and one of gamboge.

A steel-gray color is deposited on brass from a dilute boiling solution of chloride of arsenic; and a blue by careful treatment with strong hydrosulphate of soda.

Black is much used for optical brass work, and is obtained by coating the brass with a solution of platinum, or with chloride of gold mixed with nitrate of tin. The Japanese bronze their brass by boiling it in a solution of sulphate of copper, alum, and verdigris.

Success in the art of bronzing greatly depends on circumstances, such as the temperature of the alloy or of the solution, the proportions of the metals used in forming the alloy, and the quality of the materials. The moment at which to withdraw the goods, the drying of them, and a hundred little items of care and manipulation, require attention which experience alone can impart.

To avoid giving any artificial color to brass and yet to preserve it from being tarnished, it is usual to cover properly cleaned brass with a varnish called "lacquer." To prepare the brass for this, the goods, after being annealed, pickled, scoured, and washed, as already explained, are either dipped for an instant in pure commercial nitrous acid, washed in clean water, and dried in sawdust, or immersed in a mixture of one part of nitric acid with four of water, till a white curd covers the surface, at which moment the goods are withdrawn, washed in clear water, and dried in sawdust. In the first case the brass will be bright; in the latter, a dead flat, which is usually relieved by burnishing the prominent part. Then the goods are dipped for an instant in commercial nitric acid, and well washed in water containing argol (to preserve the color till lacquered, and dried in warm sawdust. So prepared, the goods are conveyed to the lacquer room, where they are heated on a plate and varnished.

The varnish used is one of spirit, consisting, in its simple form, of one ounce of shellac dissolved in one pint of alcohol. To this simple varnish are added such coloring substances as red sanders, dragon's blood, and annatto for imparting richness of color. To lower the tone of color, turmeric, gamboge, saffron, Cape aloes, and sandarac are used. The first group reddens, the second yellows the varnish, while a mixture of the two gives a pleasing orange.

A good pale lacquer consists of three parts of Cape aloes and one of turmeric to one of simple lac varnish. A full yellow contains four of turmeric and one of annatto to one of lac varnish. A gold lacquer, four of dragon's blood, and one of turmeric to one of lac varnish. A red, thirty-two parts of annatto and eight of dragon's blood to one of lac varnish.

Lacquers suffer a chemical change by heat and light, and must therefore be kept in a cool place and in dark vessels. The pans in use are either of glass or earthenware, and the brushes of camel's hair with no metal fittings.—*Ironmonger's Review.*

The National Museum.

Hidden from sight by the noble trees which make the Smithsonian grounds the pleasantest retreat in Washington is a large but modest brick structure, which, when it shall be completed and filled with the treasures now hidden away in packing boxes, will be one of the finest museums in the world. For the past three years Professor Baird has worked for this building with great energy and perseverance, and last winter Congress rewarded his efforts with an appropriation of $250,000. A model of the new building, which is displayed in the main corridor of the Smithsonian Institute building, shows a square, red-brick building, all but the central part one story high. "The idea of the building," writes Professor Baird, "is due to General Meigs, although the details and special adaptations were worked out by Messrs. Cluss & Schultz, the architects, the principal feature being the arrangement of everything on one floor of a square building of great extent, in which there shall be no interruption to the drainage of the water from the center of the roof to the exterior. I do not know an edifice constructed precisely like our new building, and I am confident that it will make a new era in public architecture in its economy of space combined with a minimum of expense, being at the same time entirely fire-proof."

The building is relieved by the straw-colored Milwaukee and blue-faced brick, and the Ohio sandstone lintels and cornices. Between the arched windows are bosses of stone with foliated ornaments. The supports of the roof are substantial brick columns, and the interior is arranged to utilize all the space possible for the exhibition of specimens. It is intended that the new building shall be devoted more particularly to industrial exhibits, the natural history objects being retained in the Smithsonian where they now are. Special space will be given to the display of mineral wealth, arranged by States, counties, and mines. There will also be a complete exhibit of the American fisheries, showing every imaginable device for the pursuit, capture, and mode of preservation of the inhabitants of the waters. Plaster and *papier maché* casts of fishes and other aquatic objects will be exhibited, and illustrations of every preparation of fish for food.

Under the law the National Museum receives all specimens and objects of interest that are gathered by persons in the employ of the government, but with all its advantages in this respect the museum has been up to a short time ago but a weak and struggling adjunct of the Smithsonian, but little known or appreciated. In 1875 there was, as the annual report expresses it, "a sudden and abrupt augmentation," which culminated in 1876 after the close of the Centennial Exhibition. The exhibits of foreign countries, of States, and of individuals were kindly given to it, and the armory building is literally packed with the boxes containing the specimens which have been presented or bought with the $100,000 appropriated to the museum to enable it to make a creditable showing at the Centennial. When properly arranged this wealth of curious and beautiful objects will fill the building going up, leaving the collection now in the Smithsonian as it is.

A week or more might be profitably spent in Washington, even when Congress is in session, by examining the collections in the National Museum. The domestic exhibit is almost perfect. The exhibit of fishes is quite complete, Professor Baird being at the head of the Fish Commission. The day of stuffed animals has gone by, and most of the specimens are plaster casts, with the colors copied from nature. The birds and reptiles of the country are almost completely represented, and there are a few skeletons of mastodons, large turtles, American elephants, Irish elks, and other creatures of a primeval age, with here and there one of Waterhouse Hawkins's clever reproductions.

The method of arranging industrial exhibits needs but one illustration. The Alaska Fur Company has supplied the institution with specimens of the skin of the seal in every step of its progress, from the rough protecting coat of the animal to the luxurious over-garments of fashion. First, there is the rough skin, a grayish fur with a blacker hair marking the course of the backbone, and stretching out, finger-like, toward the fins; then the plucked skin, all gray, the black hairs having been removed; then the dressed skins, and then the rich lustrous black fur ready to be made into garments. This is the method of showing the stages through which the seal's skin passes. The same method is employed with all the products of the country which can be treated in this way. The silver is traced from its embedding ore to the shining "dollar of our fathers," and we can follow the duller iron from its rocky surrounding into the most useful of metals.

Back through the longer halls is a room in which is gathered some of the pottery brought from the Centennial. A great group in clay, representing the "Progress of America," stands in the center, and on either side a pulpit and baptismal font of Doulton ware, while in cases around the room are grouped specimens of the pottery of different countries. A huge Japanese punch bowl of blue, with figures of flying pigeons engraved upon it, is a wonderful specimen of Japanese art. One end of the room is devoted to the clay models of the houses of the cliff and cave dwellers of our extreme southwestern country. Most of these casts were made by the Hayden Survey.

On an upper floor of the present building is the ethnological collection, one of the finest in the world, and without question the richest in the world in illustrations of American ethnology. The Indians of the country are almost completely represented in their pottery, dresses, ornaments,

weapons, and stone implements. Here is another specimen of Japanese art in the shape of four beautiful figures, two of a nobleman and lady, richly dressed, and smirking at each other with the conventional theatrical expression of the Japanese. The other two are of an old farmer and his wife. These figures make a striking contrast with the Chinese figures in the case beyond. Among the African exhibits may be seen the charms and fetishes, as dear and dread to the negro of to-day as they were to his fathers in the jungle, worn even now by the negroes of Washington after generations have lived and died since their ancestors were brought from their barbarian homes.

These specimens of the different ages of the various human races are worked upon by skilled ethnologists, and every year something is added to the history of ancient man by Professor Foreman and his assistant, Mr. Cushing. The latter is now among the Pueblo Indians studying their customs and laws, and living their life as one of them. It is the most reticent of all the tribes of that reticent race, and if Mr. Cushing secures their confidence it will be more than any one has yet done.

When the new building is up it will not only give the public an exhibition worthy of the country, but it will add tenfold to the facilities of the gentlemen connected with the Smithsonian who are following in the footsteps of Professor Henry, and adding greatly to the sum of human knowledge by their original investigations. The time will soon come when another building, a companion to the one now erecting, will be demanded. The plan is to build it at the other end of the Smithsonian, so that the three will form a symmetrical whole.—*New York World.*

The Law of Dust Explosions.

The cause which produced the explosion of Greenfield's large candy factory, in this city, two years ago, has remained a mystery from that day to this. Many experts insisted, and the *Insurance Monitor*, from which we give the following facts, indorsed the theory, that the cause of the disaster was to be found in the almost impalpable dust arising from the starch used in the manufacture of candy; that the explosive properties of the flour mill were shared by these risks, and the same agent, viz., starch or flour, was active in each. But the fire marshal, after an investigation extending over several months, declared his inability to discover the cause of the accident. An explosion in another factory of the same kind last month has appareutly furnished a solution of the mystery The circumstances connected with this case were well observed. The drying-room, containing the candies stored on shelves, had a temperature of about 160 degrees Fahrenheit. Near the center stood a red-hot furnace. A workman engaged in removing the candies stumbled, upsetting the trays he was carrying, and sending a cloud of fine starch powder over the furnace. An explosion followed instantly, attended by a body of flame rising from the stove, filling the room, and, pouring through the open door, setting fire to the building. The flames were fortunately extinguished before serious damage had been done, except to the workmen in the room, but this practical illustration of the explosive action of powdered starch was worth more than all the theories and scientific discussions that have been advanced on this subject.

It is one thing to know that powdered starch contains explosive properties, and quite another to know that the conditions under which such an explosion will occur may be present in the factory. The case illustrates the remarks we made on this subject a few months since. It is not essential to an explosion of this kind that the pulverized dust be distributed in explosive proportions through the whole body of the air. All that is needed is that a sufficient body of the dust be ignited to produce a volume of flame. This will fire the remaining dust scattered through the room, even though comparatively small in quantity. We find the law illustrated in our every-day experience when kindling an ordinary fire. The wood will not catch from the small light of a match, but requires a body of flame induced by kindlings. The gas in the cellar does not explode from the light which is carried through it until a body of it is met with mixed air in explosive proportions; then the flame that is generated lights the whole. The same was true in the Washburn Mill. The flour dust which created the explosion was small in quantity from a single hopper, but the flames, once kindled, flashed through the dust of that entire portion of the mill. So in the Greenfield factory. Employes in the portion where the explosion occurred describe a sudden flash of light preceding the explosion.

All these cases show that in every factory and mill where the air is permeated with powdered starch, whether a candy factory or flour mill, the sudden generation of a volume of flame may produce an explosion throughout the whole. The prominent point of danger is the starting point of the fire.

Underwriters should understand that an intensely heated stove or furnace in such establishments is a special source of danger, and such stoves should be placed where there is no exposure to a body of dust. An instructive experiment may be made by taking a handful of finely-powdered starch and allowing it to descend in a cloud on a heated furnace. The result will be an explosion such as occurred in these factories. Take another handful and throw it bodily on the fire, and there will be only an ordinary combustion. In the one case we have the light kindlings ready to burst into flame, in the other the solid stick of the same material slowly consumed. If the explosive character of flour dust remained in doubt before, the experience of this New York candy factory has finally settled the question.

The Climate of Europe.

Naturally the bad season in Europe calls out no little speculation in devising replies to the very common query, "What ails the weather?" A French writer seriously argues that the climate of France, at least, is deteriorating. The argument is based on historic as well as prehistoric phenomena. For instance, the nakedness of the ancient Gauls is attributed not to their barbaric condition, but to the circumstance that they enjoyed a charming climate, which rendered clothing a mere superfluity. Passing, however, to facts which may be regarded as authentically ascertained, Arago is quoted as remarking that in his day the vine was no longer cultivated on the shores of the "Gulf of Bristol," or in Flanders, or in Brittany; and that those countries which, according to old chronicles, one produced exquisite wines, no longer yielded ripe grapes, unless the season were exceptionally favorable. Then it is mentioned that, according to certain title deeds of property going back to 1561, on the mountain slopes of the Vivarais, where now the vine crops of grapes used to be gathered at the height of 600 meters no longer bears fruit. Again, in the neighborhood of Carcassonne, the cultivation of the olive has receded some 15 or 16 kilometers to the southward from the latitude to which it extended a hundred years ago. The sugar cane has disappeared from Provence, where it had been acclimatized. The orange trees of Hyeres, the cultivation of which extended in the sixteenth century as far as the village of Cuers, have been smitten with disease under a sky which is no longer favorable to their growth, and have had to be replaced by hardier fruit trees, such as peaches and almonds. In the Swiss Alps the ice line has invaded summits formerly covered with magnificent forests, of which the massive trunks and sturdy roots are still found *in situ*. In Germany the vegetation of the steppe shows itself in our own day in the midst of tracts formerly fertile. All botanists have remarked this; and in support of their observations the meteorologists prove by daily, monthly, and yearly averages of temperature that cold has perceptibly increased in those regions. Iceland and Eastern Greenland have become much colder since the fourteenth century; for in the former large trees have ceased to grow, while on the opposite shores of the latter a great number of valleys, once inhabited, are now completely inaccessible, owing to the intrusion of glaciers. Not to multiply instances, continues this writer, interrogate the old men, and none of them will find in the recollection of his youth rigors analogous to those we now endure. Within human memory one has never before seen snow cover on the 15th of May the plateaux of Central France. Formerly winter was a sort of sequel to autumn, and spring gradually glided into summer; but nowadays the hoar frosts commence in October and last to the first days of June.

Waste of Petroleum.

A press dispatch from Bradford, Pa., dated October 2, estimated that as much as 150,000 gallons of petroleum was running to waste every day in the McKean County oil regions. The tanks, with capacity for several million barrels, were filled to overflowing. The market was overstocked, and still production went on at the rate of at least 25,000 barrels a day, 5,000 more than the pipe lines could handle. The United Tidewater Pipe Lines had iron tankage in the Bradford districts for 3,000,000 barrels of oil, and were able to take care of all the oil of individuals and companies owning tankage in connection with them. The heavy loss fell chiefly on small producers, who could not afford to build tanks. All the streams of McKean County were literally rivers of oil; and in the marshy places the ground was a mass of greasy mud several inches deep.

In some parts of the region the streams were dammed and the oil collected in large ponds, at places as far distant as possible from derricks and buildings. These ponds were set on fire daily. Thus a large quantity of the waste oil was disposed of. It was not uncommon for fire to be communicated to the combustible rivers by sparks from locomotives. Sometimes they were fired by malicious persons and tramps. Derricks and other property had thus been destroyed, resulting in losses of thousands of dollars. All efforts to limit the production of oil and stop this great waste had been unavailing; and though the overproduction was excessive, new wells were going down in all parts of the district.

Origin of Language.

A Frenchman named Clairefond has published a small work in which he revives the argument that the earliest attempts at human speech were imitations of natural sounds or the cries of animals; and he contends that out of recollections and repetitions of those sounds the names of certain natural phenomena, and of animals and other objects, originated. He finds numerous examples in the French language, and thinks that proofs might be found in other languages if search were made, and suggests that the Geographical Society of Paris might furnish instructions to their travelers to collect from among the natives of different countries all the sounds traceable to the source indicated above. M. Clairefond is of opinion that the series of sounds, words, and expressions thus collected would aid in the discovery of the origin of language. Taken in connection with natural sounds, the origin of words in our own language—such as thunder, sigh, whisper—becomes evident.

Washing Powders.

Hager, in *Phar. Centralhalle*, gives the following analyses:

The so-called *English Washing Crystal* is an impure, half-efflorescent crystallized soda, containing a large proportion of sulphate of soda and common salt.

Under the name of *Washing Crystals* simply a filtered solution of borax and soda has been introduced.

The *English Patent Cleansing Crystal Washing Powder* is a half-efflorescent soda, containing about twenty-five per cent of Glauber's salts.

The *Washing and Cleansing Crystals* (Harper Twelvetrees and Sons) are pure crystallized soda, with one to two per cent of borax.

Krimmelbein's *Wool Washing Composition* is a mixture of thirty-five parts of dried soda, ten parts of soap powder, and ten parts of sal ammoniac.

Ward's *Wool Washer* is a mixture of ninety parts of efflo resced soda crystals, with ten parts of soap powder.

The *Universal Washing Powder* (Henkel's) is a water-glass containing soda, with a small percentage of tallow soap and starch powder.

Hudson's *Soap Extract* is a mixture of crystallized soda and soda soap, containing water (soap 14·3, anhydrous soda 30, and water 55).

A washing powder for the finest white linen is a powdery mixture of ninety parts of effloresced soda, with ten parts of hyposulphite of soda, and two parts of borax.

The so-called *Finest Brilliant Elastic Starch* is a mixture of about seven to eight parts of stearine, with one hundred parts of wheaten starch (melted stearine is mixed with about fifteen times its weight of starch, and after cooling powdered and combined with the rest of the starch).

The *Berlin Prepared Brilliant Dressing Starch* is good wheaten starch mixed with two to two and a half per cent of borax.

Brilliant Relief Printing.

This interesting invention, which is claimed by several manufacturers, and especially by Thuillier, of Rouen, and Petit-Didier, of St. Denis, has been applied since 1866 to silken tissues, which are scattered over with brilliant points in relief, and of different colors so as to imitate embroidery. This style, which produces very pretty effects in a very economical manner, has had a very extraordinary demand. It is executed with a resinous matter, either colored or left colorless, which is deposited upon the tissue in melted drops by means of a plate engraved in relief. On cooling, these drops acquire hardness enough to form, so to speak, a part of the tissue and to resist friction.

Depouilly and Meyer have devised something analogous for fixing upon very light tissues, like tulles, brilliant drops in relief, which by their limpidity recall pearls or precious stones. They are obtained by means of gelatine or gums deposited while liquid by means of pins arranged symmetrically. This style has been named "diamond tulle."—*Teinturier Pratique.*

Manufacture of Clothing.

It is estimated that 50,000 men and women are employed in Philadelphia in the manufacture of clothing, and 20,000,000 suits are made there every year. Cutting machines are gradually finding their way into all of the large manufacturing establishments of the city. The machines have a capability of cutting nearly eighteen hundred garments in a day of twelve hours, or about equal to the combined results of the labor of eight men. Buttonholes also can be worked by machinery at the rate of one hundred and eighty per hour, while by hand it would take the same period to complete three holes. By the cutting machines folds of cloth forty ply thickness can be easily cut through. An instance of the value of machinery in expediting manufacture is afforded in the fact that the establishment where cutting and buttonhole machines are used turns out one hundred suits ready for wear inside of twelve hours.

Ancient Glass.

The London *Saturday Review* is of the opinion that the oldest specimen of pure glass known is a little moulded lion's head, bearing the name of an Egyptian king of the eleventh dynasty, in the Slade collection at the British Museum. It was probably fashioned more than 2,000 years B.C., and the skill displayed in it is sufficient evidence that the art of glass making was not then in its infancy. Glazed pottery and beads as old as the first Egyptian dynasty have been found.

Of later glass there are numerous examples, such as the bead found at Thebes, which has the name of Queen Hatasoo or Hashop, of the eighteenth dynasty. Of the same period are vases and goblets and many fragments. It cannot be doubted that the story prepared by Pliny, which assigns the credit of the invention to the Phœnicians is so far true that these adventurous merchants brought specimens to other countries from Egypt. Dr. Schliemann found disks of glass in the excavations at Mycenæ, though Homer does not mention it as a substance known to him. That the modern art of the glass blower was known long before is certain from representations among the pictures on the walls of a tomb at Beni Hassan, of the twelfth Egyptian dynasty; but a much older picture, which probably represented the same manufacture, is among the half obliterated scenes in a chamber of a tomb of Thy at Sakkara, and dates from the time of the fifth dynasty, a time so remote that it is not possible, in spite of the assiduous researches of many Egyptologers, to give it a date in years.