Mike’s Marbles Online Reference Book

Published by: Mr. Michael Shamblin

Written by: Mr. Michael Shamblin, Mr. Alan Basinet and information from many marble books and sources! Some of the information was obtained from several marble books that appear on section 3! A big thank you to all of those particular authors!

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Email: mikesmarbles@yahoo.com

Website: http://www.mikesmarbles.com
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History of the evolution of the marble!

Marbles have been around for centuries and have been played with by many. One must understand the rich history of marbles and how they formed into the collectible today. The time line below will consist of the years B.C to the present.

4000 B.C.

During this time there were clay marbles that were in the tombs of the legendary pharaohs of Egypt.

3000 B.C.

During this time in history there were marble objects of various shapes that were in the tombs in the area of Eastern Ireland.

2000 B.C.

In the area of Crete there was the making of clay marbles which were in the colors of Red and Brown.

420 B.C.

In Greece at this time period in history there was a vase of a Greek goddess that was showing her playing with what was knucklebones (the bone of the finger which forms the knuckle).

100 B.C.

In the Southwestern part of the United States and the part of Mexico there were clay marbles in the pueblo dwellings (a place which one lives) during
this time in history.

10 A.D.

During this time in history; in Rome the Castles or the Pyramid were playing marbles in which nuts were used.

200 A.D.

The area which is Ohio there was placed spheres of soapstone that was put in Indian mounds.

300 A.D.

During this time in History Rome was of much military power and had the resources to conquer parts of the world. They took a game they played with polished nuts or knucklebones and evolved the game in places they conquered.

900 A.D.

In Venice, Italy (a place that has some of the most beautiful art work ever made) glass marbles were made there.

1300’s

The Middle Ages were an important time in History and during this time marbles were played with.

1500’s

During this time in History a game called trou madame consisted of small
marbles that were rolled into holes at one end of a board. The arrival of this game in England perspired the name \textit{trunks or trollmadame}.

1560

In Pieter Brueghel most adored painting \textit{Kinderspiele} many children are shown playing marble games.

1600's

In Germany during this time water powered grinding mills are used for the mined marble and alabaster marbles. Also the great Shakespeare wrote of a game called cherry pit this was polished stones that were put into holes into the ground.

1729

One of the great authors of this century Daniel Defoe who was the author of \textit{Robinson Crusoe}, wrote of a marble player that shoots a marble and he never hardly missed.

1800's

In Germany in this time there were China factories that was making the now famous china marbles in various striped patterns. Germany was also making agate marbles most for the American market.

1840's

In this decade there was not only the finding of gold that was important but an Ohio factory was making clay marbles about 100,000 a day.

1846

A German glassblower developed marble scissors which made various colors and patterns.
1902

During this time in Akron, Ohio the development of the first machine to make glass marbles was patented from the M. F. Christenson Company.

1914

There was an increase of the production of Marbles in the United States because World War 1 restricted the export of marbles from Europe to North America.

1920's

The development of the full mechanized marble-making.

1922

In the United States in New Jersey the first national Ringer tournament was held.

1925

Not only was the United States heading into the stock market crash the next four years but in this year the development of machine feeding, so three colors for swirl marbles perspired.

1940's

During the most admired war, World War II servicemen played marbles for fun to get there minds off the war. I salute all the veterans at this time!
1950's

The swirl marbles of the past were changing into a new marble that caught the baby boomer generation the catseye. This was developed from the Japanese.

1970's

The machine made marbles are being made in Asia and Mexico!

1990's

The craze of Mexican Marbles arouse the hobby with beautiful looking marbles that portray the unique colors that were popular from the 1930's and 1940's. Also Marble King has reproduced some unique marbles.

2000 - Present

The start of this new century has brought many marbles from different countries. Marble King in West Virginia is making standard production game marbles.
Welcome to a new page on Marble Games. This page is designed for the collector of marbles, or the player of marble games. The first section on this page will list 4 different ways of how to hit a marble and the second section will list 20 different marble games that you can play with marbles. Enjoy this page and please don't stop playing! The pictures below and information is from the following book "Marble Madness" by Amanda O'Neill. I have revised some of the wording while other wording is quoted directly from the author. I enjoyed her book so much that I felt that it was worth spreading the news to everyone about the book. Children and adults of all ages will love to play marble games.

First section: 4 different ways to hit a marble!

1. **Flicking** - What you want to do here is to set the tip of your thumb just behind the marble. "Bend your forefinger so that its first joint rests on the first thumb joint. Now flick your forefinger forward so that it strikes the marble. This method launches your marble fast and hard."

![Flicking marble](image1)

2. **Fulking** - "Place the knuckle of your forefinger on the ground, and balance your marble in the bent forefinger. Now put your thumb behind the forefinger and flick the marble forward."

![Fulking marble](image2)
3. **Knuckling Down** - This is my favorite position to hit a marble. "Position your marble as for fulking, but this time place your thumb to the side of your finger, toward the palm. Use your thumb to launch the marble sideways from your finger, keeping your knuckles steady on the ground."

4. **Bowling** - "With the back of your fingers touching the ground, hold the marble in your palm and roll it toward the target."

**Second section: 20 different marble games!**
1. **Archboard** - Which you need to do here is to make some arches of different sizes. Number these from 1 to 9 and give the highest number to the smallest arch. Select one player to be the keeper. The other players shoot at the arches 6ft (150 cm) away. "If your marble goes through an arch, the keeper must pay you the number of marbles indicated by the number of that arch. If you miss, the keeper wins your marble." The players select the number of rounds, and then another player takes a turn as the keeper.

![Archboard diagram]

2. **Bomber** - In this game you play with two players and this consist of two parts. In part 1, the first player throws a marble at any designated distance. This actually becomes the target. Then player two bowls or tosses a marble at it. "If the marble hits the target, or lands within a handspan of it, Player two keeps the target marble. If not, both players get their marbles back and start again." The two players change roles after each agree on the number of throws. In part 2, the first player throws a target marble again. "Player two tries to "bomb" the target by dropping a marble on to it from eye level." If the marble hits the marble player 1 wins the marble, if it misses, player 2 keeps it.

![Bomber diagram]

3. **Bounce Eye** - In this wonderful game you need to draw a circle 1ft (30cm) on the ground. Each of the players puts the same number of marbles in the circle that you had created. You need to stand over the circle and drop a marble from looking down. You win the number of marbles that you knock out of the circle. If you don't win any marbles than your marble becomes apart of the others in the circle. When no marbles remain the game has ended. The winner is the person that has the most marbles!
4. **Black Snake** - This game you need to select any 7 objects for example, a shoe, old computer mouse, lamp, etc. Then number the objects from 1-7 and lay them on the floor or ground. You need to then select the player that go's first. Then shoot your marble at object number 1 from 1ft or 30cm away. If you hit this object then aim at the second object. If you miss then the second player gets a chance. If you somehow hit an object that is not in the correct order you must start again. If you hit the 7 objects in two successful turns you become a "black snake." What this actually means is that you can hit other people's marbles off the course. If you hit another persons marble that person is out of the game "unless you knock the marble into one of the obstacles, when you are out of the game."

![Image of marbles and target]

5. **Bull's Eye** - What you need to do first is to draw four circles, one that is inside the other. "The innermost circle should be 1 ft or 30cm across, the others 2ft or 60cm, 3ft or 90cm, and 4ft or 120 cm across." Then in each of the circles you need to write how many points you win if your marble lands in one of the rings. The center circle has to have the highest number of points. Then draw a shooting line about 6ft or 180cm from the biggest circle. You will decide how many rounds will make up your game. Each of the players stands on the shooting line and this person shoots three marbles at the target. Wherever the marble lands in the target you earn those points. If your marble lands outside of the target you get know points. Then add up the points from the 3 shoots you had if your marble lands in the target. After your turn, pick up your marbles, and leave the area clean for the next person. When everyone has had a turn, start a next round and keep adding up the scores. The winner of the game is the person with the highest score.

![Image of bull's eye target]

6. **Conqueror** - This is a neat game that can be played with two to four players. Select the first player and then he or she will throw a marble any distance. Then player two tries to hit the marble. If hit by player two means he or she keeps the marble and throws a new
marble back into the game to restart it. A miss means that the players marble stays where it is and just becomes another target. The next player if more can then aim for anyone of the marbles. If the marbles bounces and hits the other marbles then he or she keeps what is hit. This game reminds me of war!

7. **Crackers** - This game is to be played on sidewalks or streets that have a lot of cracks and bumps. The first player becomes the keeper and places a marble on the sidewalk or street where it will be hard to hit. Then create a "shooting line about 10 ft or 3m from the target, and the keeper offers a number of marbles as the prize for hitting the target." The players take turns to hit at the target marble and any "misses is forfeited to the keeper." The first player who hits the target wins.

![Crackers Image](image1.png)

8. **Croquet** - This is a two to four player game (so get your family and friends involved). You need nine hoops and the best thing is you can make this out of paper cups (check picture below). What you need to do "cut the base off each cup, so that it forms a tube. Then cut each tube in half lengthwise, to make two long arched hoops." Then number the cups from 1-9, and randomly place them around an area. You may need to tape them down. Then draw shooting line that is about 1ft or 30cm that is in front of the first hoop number 1. Then shoot the marble through the cups in the order from number 1. If you miss then it is the next players turn. Leave your marbles wherever they are and shoot from there when it is your turn again. The player that gets their marbles through all the cups in order wins.

![Croquet Image](image2.png)
9. **Die Shot** - With this game you need to balance a die on top of a marble. If you are playing on carpet or a smoother surface push the marble into the ground (the reason being to stop it from rolling). Players take turns to be the keeper of the one die. "Other players in turn pay the keeper one marble to have a shot at the die from an agreed distance." The player who knocks the die off the marble wins marbles. How many? The number that was shown on the die that the face is showing. The bad news if the player misses, the keeper then wins the marble.

![Die Shot Image]

10. **Dopplers** - What you need to do first is to draw two parallel lines on the ground, about 3-4ft or 90-120cm apart (parallel means not touching one another). The very first line becomes your marble line. Each of the players that you are playing with "puts the same number of marbles along it, leaving two finger spaces between marbles." The second line actually becomes your shooting line. You must stand behind the line, and take turns to shoot a marble at the target marbles. You win the marbles that you hit. If you end of missing (I hope not) your marble then stays where it is and you take your next turn from that position. "If another player ends up hitting your marble you must add another marble to the target line." The winner is the person that has the most marbles at the very end of the game.

![Dopplers Image]

11. **Dropsies** - What you need to do here is to draw a 3ft or 90 cm square. Each of the players that you are playing with needs to drop four or five marbles in the square. The players take turns dropping marbles from their waist on to the marbles in the square. When you knock a marble out of the square you win that marble. You keep your turn if your marble stays inside of the square when you hit another marble in the square. If you end of missing or your lovely marble ends up outside of the square it then is the next players chance. You win if you knock out 5 marbles.
12. **Forts** - What you need to do here is to "draw four circles, one inside the other, making the smallest circle 2ft or 60cm across, the next 4ft or 120cm, the next 6ft or 180cm, and the outer one 8ft or 240cm across, the inner circle is the fort. Each player that is playing puts one marble in the outer circle, two in the next, three in the next, four in the fort, these are the targets! "Players stand 2ft or 60cm away from the outer circle's edge and take turns shooting at marbles in the outer ring. You have one shot per turn. If you hit a target, you win it. If you miss, or hit a marble in the wrong circle, add one marble to those in the fort." If your marble lands in the circle just leave the marble there and then take your next shot from that position. If you hit another player's marble instead of the target marble is ok, but the sad part you don't win the marble. You take turns until the outer circle is completely empty. Then continue to the next circle etc. "In the third circle, a hit entitles you to a second throw, and when you reach the fort, two hits earn you a third throw." The game is over when the fort is totally empty, the winner is the player that has the most marbles.

13. **Hundreds** - This must be a two player game so get someone to play with you. What you need to do is to draw a circle, that is about 1ft or 30cm across, and mark out a shooting line that is about 10-15ft or 3 to 4.5m away. What the players do is to take turns to shoot a marble toward the circle. If your marble that you shoot lands in the circle you get 10 points and another shoot. If you miss let the other player have chance. The first player that gets 100 points is the winner.
14. **Knuckle Box** - What you need to do here is to draw a square that measures 2ft by 2ft or 60cm by 60cm (I know this is math). Then you need to draw a shooting line away from the box about the size of your hand (I know some men's hands are much bigger). Put some marbles in the box kind of scattered (four marbles per player). Players take turns to shoot a marble from the shooting line to knock the marbles out of the box. Any marbles you knock out you win, "whether or not your marble remains in the box." If the marble that you shoot leaves the box with the target marble it is the second players turn. "If you miss your target and your marble comes to rest outside the box, pick it up and wait for your next turn. But if you miss and your marble lands in the box, it stays there and becomes another target." The game plays until the box is empty, the player with the most marbles win.

15. **Lagout** - What you need to do here is to draw a line that is 2ft or 60cm away from a smooth wall. Then each player puts one marble on the line. Then you want to draw a shooting line that is 3ft or 90cm away from the first one. The players in this game take turns to shoot a marble from the outer line. Your goal is to hit the wall so that it hopefully rebounds to hit the marbles on the line. The first player that hits the marbles on the line wins all the marbles on the line. If you miss just leave your marble where it is, and the next time just shoot from the new position.
16. **Long Taw** - This game needs two players. What you need to do is to draw a shooting line. "At right angles from the center of the line, draw a target line 12ft or 360cm long. Now what you need to do is at the target line, 6ft or 180cm from the line that you shoot, place a marble. The other player that you are playing with places a marble at the end of the target line. Both players need to agree on how many rounds you want to play. Shoot at the nearest marble, then if you shoot at it then you win and then shoot at a further marble. The game ends when you hit that marble.

17. **Newark Killer** - What you need to do here is to draw a small circle, with a shooting line 10ft or 3m away. Each player needs 10 marbles, you need to shoot your marble into the circle. Each of your marbles that get into the circle earns you 1 point, if your marble is knocked out of the circle by another player than you take away 1 point or more depending on the number of marbles in the circle. When all marbles are used by the players, the player with the most marbles in the circle becomes the killer. You can shoot at any other players marbles that are outside the circle. A hit and the killer keeps the marble and has another go. A miss and the game ends but the killer wins the game.
18. **Ringer** - What you need to do here is to draw a circle that is 10ft or 300cm across, and you need to draw a cross in the center of the circle. Then you need to "place a marble at the center of the cross, and three more on each arm of the cross (making 13 marbles in total), spaced at about 3in or 7.5cm." Then you need to draw a line on either side of the circle, just touching its edge. One side is your lag line, the other is your pitch line. The first player that go's first is the player that gets their marble closer to the lag line when shooting. You must shoot using knuckling down. Each player takes a turn to shoot a marble from outside the ring, your goal is to knock the target marble out, but to keep the marble inside the ring. If you miss and your marble is in the ring it becomes a target. If the marble go's out of the circle then pick it up and use it for your next turn. "If you knock a marble or marbles out of the ring, hit an opponent's marble, or knock an opponent's marble out of the ring, your turn continues as long as your own marble stays in the ring. Once you miss, your turn ends and you add up your score." The game is over when the ring is empty. The marbles that you win are the ones that you knock out of the ring. IN THIS GAME IT IS PROPER TO RETURN ALL MARBLES TO THE ORIGINAL OWNERS. In the scoring atmosphere knocking a marble out of the ring wins you that marble, and one point. Hitting another persons marble without knocking it out of the ring you also get a point, the first to get 7 points wins.

19. **String of Beads** - What you need to do is to draw a circle 3-4ft or 90-120cm across, and another circle 8ft or 240cm around it. "Arrange these marbles round the edge of the inner circle, leaving even spaces between, like beads on a string. The players stand outside the outer circle and take turns to shoot at the target marbles." If you knock a marble out of its place you win it. You keep playing until you miss or shoot your marble out of the ring.
Just leave your marble where it lands and start your next turn from its new position. "If you miss a target, you have to add a marble to the string of beads. The game is over when all the marbles have been knocked from the string of beads, the winner is the player who has the most marbles."

20. **Tic-Tac-Toe** - This is a two player game and the first players marbles need to be a different color from the other persons marbles. For example, one person could have all green marbles and the other persons marbles could be all red marbles. Draw a tic-tac-toe square, that has nine squares, and draw your shooting line that is 10ft or 3m away. Take turns shooting marbles into the small squares. Your goal is to have marbles lined across, down, or upward. If your marble lands in a square keep it there. If it misses pick your marble up. If you end up landing in a square that is occupied by your partner, you can only keep that individual space if your marble knocks the other marble out. The winner is the person that has 3 marbles in a line.

I encourage you if you are interested to purchase the following books Marbles 101 ways to play by Joanna Cole & Stephanie Calmenson and Marble Madness by Amanda O’neill (this book is hard to get and not available at Amazon.com sorry, I will keep checking). Many more marble games are in these books. PLEASE CLICK ON THE LINK BELOW TO AMAZON.COM AND SEARCH FOR THESE MARBLE BOOKS AND MORE MARBLE BOOKS. Again a lot of the information above was from the following book Marble Madness by Amanda O’Neill, much more is in the book and more games.
Marble Books Page

(This page is dedicated to books that are in my personal collection and some are currently out of print and you can not purchase these books from a book company. Their are many more marble books that I can put on this list but I decided on selecting the books that are worthwhile to read and to use as a reference for the hobby of marble collecting).

**Book #1** *Greenberg's Guide to Marbles* by Mark E. Randall and Dennis Webb. First edition printed in 1988. This book is signed by both authors and is numbered 10. This book is extremely hard to find of late and is out of print. You can find information about marble company's in this book along with some pictures of marbles from various companies. A must for any collector and a prize in my collection.

![Greenberg's Guide to Marbles](image)

**Book #2** *Greenberg's Guide to Marbles* by Dennis Webb. Second edition printed in 1994. This is an update to the famous first edition that was published in 1988. This has a little bit more information than the first book. Including information on different marble company's and how different marbles are made. This book is getting harder to find and is out of print. If you are a marble collector you must have this book in your collection.
**Book #3** *Marble Mania* Edited by Stanley A. Block. This is by far the bible of marbles in general. Many, many pictures of marbles from all the different marble companies. You can still get a hold of this book but in time it will be out of print. This book is broken down into 5 sections. Section one consist of various non-glass marble types, section two early handmade glass marbles, section three machine made glass, section four contemporary handmade glass, and section five games, toys and other uses. This book is marvelous.

**Books #3 and #4** *Marbles Identification and Price Guide* by Robert Block. The first book was published in 1996 and was the first book published by Robert Block. This book contains prices and pictures of marbles from all the major marble companies that produced marbles. This book is an excellent book to have and a new third edition just came out. The second edition was published in 1998 and contains just about the same pictures as the first edition but with updated prices. A section on cat's eye marbles was also added. Get this book if you are just starting to collect marbles.
**Book #5** *Antique and Collectible Marbles* Third Edition by Everett Grist. This book was published in 1996 and contains many pictures of old handmade marbles. If you collect many handmade marbles then this book is a must for you. Currently this book is out of print.

**Book #6** *Machine Made and Contemporary Marbles* second edition by Everett Grist. This book was published in 1995 and contains only pictures and prices of old machine made marbles. I love this book and this has helped me through the years of collecting mainly machine made marbles. The pictures of the marbles are kind of small but a wonderful resource to have. A must to have for the serious machine made collector. This edition of this book is out of print.

**Book #7** *Marbles The Guide to Cat’s-Eyes Marbles* by Marlow Peterson and Larry Castle. This book was published in 1998 and is the first to be made based on the lowly cat’s-eye marbles. My edition of the book is signed by both authors.
It is a small book but very complete and accurate. This book contains prices and a lot of information about cat's-eye marbles. A must for a cat's collector and I think this book is out of print.

Book #8 The Great American Marble Book by Fred Ferretti and I also think Jeff Carskadden. This book was published in 1973 and I think was the first published based on different types of marble games. (Their is not a black border around this book, this picture is the result of my scan and brings the picture of the book out more). This book contains over 50 different marble games and is a must for any collection. This book is out of print and is extremely hard to find. A wonderful book to have, and a prize in my collection also.

Book #9 Collecting Antique Marbles Second Edition by Paul Baumann. (The black border around this picture is again the result of the scan). I love this book and this book can supply you with so much information about marbles and marble companies. Their are a few pages in this book that consist of marble pictures and towards the end of the book list the price guide. This book was published in 1991 and is out of print. A must for the serious collector.

Book #10 Sulphide Marbles by Stanley A. Block and M. Edwin Payne. This book was published in 2001 and is the bible of sulphide marbles. I have never before
had a book that outlines all of the different types of sulphide marbles that were produced. This book also has a small section on newer contemporary sulphide marbles, the California and Florida sulphide marbles that appeared on the market, and Italian sulphide marbles that were produced in the 1960's. My book is signed by the author Stanley A. Block. This is a must if you are thinking, starting, or you might me an avid marble collector of sulphide marbles.
Making Marbles Page

Welcome to some of the most fascinating things that are associated with marbles. This page consist of anything that deals in marbles, this can be new or old marbles!

New information added below, just scroll down and find this under Marble Factories To Visit and Marble Museum at York Nebraska.

Does anyone wonder how the most beautiful of colors are developed inside of the marble?

The most fascinating aspect of marbles when one looks at them is how did they get the color inside or outside of the marble. Machine made marbles and handmade marbles consist of various techniques in which makes them truly unique in regards to color and patterns. The many different colors are the result of fluorspar, the usual basic sand, soda ash and feldspar that are the result of the making of the glass. To make the certain colors like white, blue, and the many other colors the use of zinc oxide, cobalt oxide and black copper oxide is used. When getting the colors it is very important that the timing and temperature is of consistency.

Secret "Recipes"

Over the years many different marble factories had there own secret recipes. The most important of these recipes consisted of the workers that worked in the factories. It was those workers that had the knowledge to tool the machine in accordance to a certain pattern. These men were the true artist of the marble machine era. One great example of this era was a gentleman that worked at Christensen Agate Company. The company was located in Cambridge Ohio in 1927 to its demise in 1929. Arnold Fiedler was the inventor of the Flames, Guinea's, Cobras etc. He was a very nice gentleman in which he gave marbles to kids as a token of gratitude for the love of marble playing. The secret he had
carried with him came from Germany in which he got his start of glass working
and he had come to the United States for employment. Arnold Fiedler could
produce many different colors of swirls of marbles that other marble companies
of the time could not produce. Arnold would keep the secrets of his marble
making only to himself and he would not even tell his secrets to his family. His
secret took him to his grave! The secret recipes that are used in marbles
continued up until the demise of machine made marbles in the 1960's.

This is an example of Arnold Fiedler's work this is a prized Guinea from the
Christensen Agate Company.

Another great example of a marble factory was The Peltier Glass Company of
Ottawa, Illinois. The company developed some of today's most magnificent
marbles. Including in these marbles were the superman, Christmas tree, and
comic marbles. One the secrets of this company was the developing of the comic
character marbles. The characters included were Betty Boop (one of the best
known cartoon characters of the 1930's she was adored by many) Bimbo, Koko
and other characters. The unique aspect of this character marble was the
developing of the technique so that the character of the marble would not come
off the marble. George W. Angerstein who lived in Chicago developed this
technique and sold his rights to use the process to the Peltier Glass Company. In
October of 1933 Mr. Angerstein had applied for a patent for developing this.
The sale of these comic marbles came from the years 1932-1934. In conclusion
reproductions of these marbles are made in numerous amounts. The "old"
comic marbles one could feel the surface and you could not feel the character on
the marble and thus it would not come off. The new marbles one can definitely
feel the character on the marble!
This is an example of what are called the Comic Marbles but these marbles are "NEW" but resemble the old style comic marble. One way to determine an old comic marble from a new one is to feel the surface! If you feel a rough imprint on the comic marble it is NEW. If you do not feel a rough surface on the marble it is most likely OLD.

Cat's-Eyes Marbles

The question arises What came first the American catseye or the Japanese catseye? A lot of marble collectors may feel that the Japanese had developed the first catseye marble. In reality according to Everett Grist he explains the origin of the catseye as developing in America. The Heaton Agate Company from 1939 to 1987 was the original producer of the cat's-eye in 1939 and 1940. This new marble did not sell. This marble evolved into a Japanese design in the decade of the 1950's. In the late 1940's the Vitro Agate company had come out with a catseye marble in addition before the Japanese had come into the market with making catseye marbles.

As you may have noticed of my marble site I have dedicated vast amounts of time into cat's eyes marbles. During the 1950's and the 1960's the swirl marbles of the past were losing touch with the children and the baby boomer generation found itself playing with a new form of a marble. A few marble company's evolved a new marble; a cat's eye. The Japanese marble factories were producing this marble and had developed it in a unique perspective then the United States. Although the Peltier Glass Marble factory had developed a cat's eye that was in a form of a banana by the early 1950's. Japan was making the most unique cat's-eyes marbles in the 1950's-1960's. The United States had company's such as for example, Marble King of Paden City West Virginia and Vitro Agate of West Virginia making there own unique american cat's-eyes marbles.
This nice grouping of marbles are some of the Japanese style catseye marbles.

This is a american cat's eye marble!

**Sulphide Marbles**

The mid 19th century until the mid part of the 20th century Germany was developing Sulphide Marbles! The sulphides could of been made in the United States and England. This had started the beginning of marble collecting! The contemporary sulphide marbles mimic the old sulphides with new animals etc. in the clear glass. Sulphides are clear glass round marbles that have silvery or white figures that consist of numbers, human figures, birds and animals. Pellat was an englishman and he is credited to the technique of the sulphide. Two glassworkers were needed to insert the sulphide into the marble. One worker took the glass on the front of the rod while the other gently put the figure into the very soft glass. The glass from the end of the ball was folded over the figure gently. The sulphide was rounded using a wooden tool. The silvery sheen on the marble evolved when the process of the air would become trapped between the surrounding glass and the figure. The most interesting aspect about sulphides was that they were given to children as toys and were also used in jewelry. Currently today contemporary sulphide marbles are being made using the same technique that the legends of the time had used. One glass worker for example, Jim Davis in West Virginia is making sulphide marbles of various kinds. He is using his years of knowlege in glass to make some of the most spectacular sulphide marbles one can imagine. His brother Andy Davis is sharing his
technique and is also making contemporary marbles. These artist explicit contemporary marbles in a way that the legends of the past had used!

This is an example of the new contemporary sulphide marbles.

This is an example of a old sulphide rabbit marble.

Reproductions, Fakes, & Repaired Marbles

I have always been amazed of the many marbles that have been produced using scrap glass or that have been re-worked from the past few years! Jabo Inc. with the use of Fentons scrap glass have used this to produce their classic marbles the past few years! As an owner of quite of few jabo marbles the marbles do appear to look dull looking! It seems to me that the mixing of the glass causes the particles to break down and thus the bright colors from Fenton become duller!

Some glassworkers and there are only a few at this time have been making marbles that mimic older machine made marbles. They sometimes do this with glass from old marbles or cullet (re-works), and sometimes from new glass. Some glassworkers do indeed sign there marbles and some do not! The marbles that seem very popular of late to reproduce are Christensen Agate Guineas and swirls Peltier National Line Rainbos and others. Please be careful when purchasing these marbles!

"Re-worked marbles are marbles that are made from pieces of original marbles, cullet glass or a combination with new glass". Most of the re-worked marbles today are bricks and oxblood's and also Leighton transitionals. The marbles are produced by a process which melts or layers colors together or on top of one another. Again most of these have been ground and polished because when making them this does not create a smooth surface.
Reproduction marbles are new marbles that are made to look as closely to the older machine made or handmade marbles. The majority of reproduction marbles seem to be the rarer examples. The most important point here is that no one is going to take the time to produce a 5-20 dollar marble when they have can reproduce a 200-400 dollar marble.

I would like to share with you one of my favorite glass artist that have been making marbles since the latter part of the twentieth century Mike Edmondson! Mike has been making marbles since 1995 and is very gifted at making the round sphere. Mike Edmondson has created an oxblood marble from a piece of old slag glass that looks real but the "fakes" he has been working on are for research and are not for selling purposes! Again education is the means of ones hobby and Mike is making it a point to make a few of the look alikes, so marble collectors can get a better idea of what to look for when contemplating buying a marble. He is NOT producing any type of old marble, he is sharing with marble collectors in the nation that certain individuals can have the ability to make older marbles! Mike does like to work with machine made ideas and designs. Mike reworks the designs so that he has a very contemporary marble and NOT a reproduction. Mike could have been making marbles in 1994 but he wanted to learn how to make glass signature chips first. Mike's first marbles were signed with a black E in white glass and this was in 1995. In 1996 Mike added a date in the glass chip. Below are one of Mikes Oxblood Marbles that was made from a piece of old slag glass that he has made along with a picture of a akro agate oxblood marble. Again Mike is sharing his knowledge and expertise in the wonderful world of art glass making and his marbles are to only show the education in marbles!

This is a picture of Mike Edmondson's oxblood marble which is made from a piece of old slag glass! Again this is for the education of marble collecting, this marble is not for selling purposes!
This is a picture of a Akro Agate Oxblood Marble

This is another of Mike Edmondson's creations of an oxblood marble. You can see that it looks like a M.F. Christensen & Son marble with the 9 pattern on the top pole! Again this is a new marble that was made from Mike and this is for the education of marble collecting, this is not being produced.

Mexican Marbles

"Vacor De Mexico is a Mexican manufacturer of marbles. The company began operations sometime in the 1930's and today is one of the largest, if not the largest, manufacturer of marbles in the world. Their marbles are marketed under a variety of imaginative names: Pirate, Galaxy, Meteor, Galacticas, Silver, Agate. They are readily identifiable based on two features. First, the marbles tend to have an oily or iridescent sheen to them. Second, the glass tends to have ripples and creases in the surface". These marbles have value and are going to be one of the most collectible marbles in the future.

Some of the most fascinating of the mexican marble lines in the early part of the 90's consisted of the handmade marbles. I feel that these marbles were made for a very short time and thus this will become one of the sought after of the mexican line. The marbles are unique, and some consist of gold, silver specks and much more. The marbles do not have any sort of design and this is why the marbles are unique. One such pattern looks like superman colors of red and blue swirled
like a tornado. If you have any information about the exact years of operation of the marbles please let me know!

**House of Marbles in England**

I have always been fascinated of the European countries. Some of the prized marbles have evolved from Germany, Czechoslovakia, etc. At present I wanted to educate the marble collectors of a place in England that is called the House of Marbles, in Teignmouth, South Devon, England this place is known for some high quality glass. The company makes art deco spheres, eggs, glass objects marbles and paperweights. House of Marbles makes handmade glass marbles and they resemble the older handmade swirls. They do not make sulphide marbles but all early handmade marbles are made. A lot of marble collectors become confused when purchasing marbles from the House of Marbles. They assume that the machine made marbles are produced at the factory. This can cause problems for collectors in which without adequate study individuals assign names to the marbles. Marbles that are sold from the House of Marbles are produced by foreign marble factories, in addition the United States. The House of Marbles head office is Devon England and in Belle Mead, New Jersey the United States office is located.

**Marble Factories to Visit**  (New information added June 26, 2002)

The most interesting way to learn how marbles are made is to visit marble factories. Some factories that still exist today will give you a tour of the factory and show you the way marbles are made. One of the most popular marble factories is Marble King in Paden City West Virginia. Please visit there website at [http://www.marbleking.com](http://www.marbleking.com). Marble King is still producing marbles today!

Guy and Denise lukegregg@msn.com had posted this on the marble family bulletin board and I think that it should be included under this category. While at the Ottawa, IL marble show he had time visiting all of the great marble collectors and dealers at the show. This also included the new owner of Peltier Glass, Mr. Boyce Lundstrom, and one of his employees, a Mr. Mike Barton, who is a glass artist and has been in the employment of Mr. Lundstrom for some 28 years. Boyce as he is called, has shown a great interest in marbles, and plans are on the table to start the production of a new line Peltier Marbles, without reproducing any of the Peltier as we now know them. One of his other plans, is to open a museum of glass, and related items, in the city of Ottawa near the Peltier facility. Denise and Guy were invited to go on a tour of the Peltier glass company facility with Boyce. They were greeted by Mr. James Armstrong, who is the son of the previous owner, and is now employed by Mr. Lundstrom. They
were taken from where the raw materials were stored right on through to the finished product. They were shown several of the original marble making machines, which are presently being restored. They were allowed to take pictures and they proceeded through the factory. Click on the thumbnails to enlarge the pictures.

The first picture is of a 5/8's marble roller machine, with Mike, Boyce and Denise. The molten glass is cut, and dropped down on the left hand side of the rollers which are turning. The rollers themselves, as you can see are grooved and are auger type in design, so the molten glass will travel to the right as the marble is forming. When the marble reaches the right hand side of the rollers, it drops down on to a short shoot, onto another type of an auger which is also revolving and carries the container. Then is goes to an annealing oven which in theory prevents the glass from fractures.

The next picture is of a pee wee machine, with the same procedure or operation.

The next picture is Mr. Lundstrom, after taking a ladle of molten glass from the furnace.

The next picture he poured the molten glass onto the floor to give us an idea of just how hot the glass was. It actually burned as it was supplied with oxygen from the air, while laying on the floor.
The next picture is one of the very capable workers pouring molten glass form one of the main furnaces into another furnace, which brings the glass to the proper temperature. They were making gems at this particular furnace (those little things that look like a marble that has been stepped on).

The next picture is one of the original walls of the 116 year old building, with James, Denise, Mike, and Boyce.

Next is three of the various glass tiles that they will be making.

Next is two other glass tiles.
Marble Museum at York Nebraska (New information added June 26, 2002)

Did you know that there is a marble museum in York Nebraska? I did not know until Guy had posted this on the Marble Family Bulletin Board. He had visited the museum and had shared a few pictures from his visit. This is his exact words that he had posted on the bulletin board. "Our visit to the Marble Museum, in York, Nebraska was a very pleasant one. It started with a trip to Leroy Johnson’s house. What a nice guy, and his wife and Son is just as nice. He took Denise & I on a tour of his Marble reconditioning Room. He has I believe, six Machines, all working at the same time, it keeps him pretty busy, but he took the time to show us some of his collection, he has thousands of marbles, and we just touched the surface. After about two hours we went on to the Museum, There we were met by Mike Lee, and his Aunt Marge Son. It seems like we had known all of these people for years, they all had a personality, that was warm and friendly. The Museum was a Florist Shop, prior, to the Lee’s buying it and making it into a Marble Museum. All around the perimeter of the this large room on the top shelves were Fruit Jars full of Marbles, with Showcases below full of marbles. They had every kind of Marble that you can imagine. From Clearies to Sulphides ranging in price up to, and including thousands of dollars. One of the Sulphides was a very rare 1 ½”, two fish passing in Yellow or amber glass. They had boxes, bags, and everything else that marbles were sold or given away in, there was Marble related items such as auto reflectors, road sign reflectors, razor sharpeners, and about anything else that you can imagine. In the coolers where they used to keep the flowers, they installed black lights and they showed fluorescent marbles. These pictures don’t even touch the surface. My suggestion is if you are passing within 3 hundred miles, of this 8th wonder of the world, you have got to go see it, it is unbelievable. Just say Guy sent you.
Below you will find marble information that was stored on Mr. Alan Basinet's Marble Website during the late 90's to the mid 2000's. Alan Basinet is the author to all the pictures and information below.

GLASS HAND MADE MARBLES

Hand made glass marbles were invented in Lauscha, Germany, in the late 1840s. They were produced until the early part of the twentieth century, when World War I and the invention of marble producing machinery in America effectively ended the hand made marble industry. For a much more thorough description of the history of hand made glass marbles, please visit my History of Glass Making in Lauscha, Germany page.

TRANSPARENT SWIRLS

Transparent Swirls can be found in size from 7/16" to well over two inches, though some are more restricted in their size range. The most common size is 9/16"-11/16". Several factors can increase the collectibility and therefore the value of Transparent Swirls. Naked examples, along with those possessing three levels, are rarer and therefore more collectible. Examples with a left-hand twist are also more highly prized but often go undetected; these marbles have a twist to their design that goes to the right of the viewer, rather than to the left as is much more common.

Another factor that may positively affect the value of a Transparent Swirl is if it is from the end or beginning of the cane. End-of-cane examples have a design that terminates somewhere inside the marble without reaching the other side; since they are the last marble off the cane there will only be one pontil, and it is from this that the design originates. These are rare because most marbles from the end of the cane were mis-shaped or just not very pleasing to the maker, and were rejected. Beginning-of-cane examples are harder to recognize but have a design that seems to come out of one end of the marble.

LATTOINIO SWIRLS
Latticinio Swirls possess cores comprised of colored strands that are usually twisted into a lattice-shaped appearance. Sometimes there is little twist to the marble and the strands will be rather straight. Now and then the strands will be divided, typically into three different sets. The color of the core is white, yellow, orange, red, green, and blue, in increasing order of rarity. On rare occasions there will be two colors in the core, and usually these colors alternate. The colors are typically opaque, though translucent strands do occur, especially in white examples.

The base glass is almost always clear and colorless, though tinted glass is found infrequently in shades of blue, green, or even amber. Some Latticinio Swirls are "naked," that is, lacking an outer design. However, most have such an outer layer and this almost always consists of either single colored strands or multicolored bands. The bands are most often of two different color schemes, alternating with one another (four and six bands are the rule though exceptions can occur), while the strands occur in sets, usually four, and may have two to five or more strands in each set. The strands may be all of one color, alternate within the set, or be in sets of alternating colors. The most common colors on the outer design are white and yellow, followed by green, blue, pink, orange, red, and purple, and may be either transparent or opaque.

Latticinio Swirls are the most common type of handmade glass marble. Compared to most other handmade marbles, Latticinio Swirls have little value, though there are several factors that can increase their value, other than large size and/or rarity of colors (especially core color). One is whether or not there are alternating colors in the core, and another is the appearance of the core itself, specifically how well defined the lattice is.
White Latticinio Swirl

Translucent Latticinio Swirl

Yellow Latticinio Swirl

Orange Latticinio Swirl

Red Latticinio Swirl

Green Latticinio Swirl
Solid Core Swirls come in several different forms, though the one pervasive trait all have is that the core appears solid, with no or at the very most minor openings. Like Latticinio Swirls, the base glass is almost always colorless, though on rare occasions it may be colored.

The core may be cylindrical or it may have lobes, and it may either be transparent or opaque. Single colored cores are usually cylindrical and are truly "solid," while multicolored cores are often comprised of tightly spaced bands. On the latter type, the bands may be situated in such a manner as to give the appearance of lobes if the core is observed from above. Solid colored cores often have strands on their surface, either straight or twisted around the core. Sometimes these strands "float" well above the core; in such cases the marble is considered "trilevel." The most common core colors are yellow and white when the core is solid colored; otherwise a wide variety of colored bands may comprise the core.

Like Latticinio Swirls, Solid Core Swirls almost always possess an outer design that most often consists of alternating colored bands or sets of typically white and/or yellow strands. When strands occur at equidistantly spaced intervals and are very close together all the way around the marble, the marble is considered "caged." "Naked" specimens lacking the outer layer are not uncommon.
DIVIDED CORE SWIRLS

Divided Core Swirls have, as the name indicated, a core comprised of separated bands. There will be at least three and as many as six bands. The most common number is four, followed closely by three, then five and six. The bands are usually multicolored but are sometimes single colored. They may all be the same color.
combination but more often, particularly on the common four-band examples, have two different color combinations that alternate.

The other traits that apply to solid core swirls also apply to divided core swirls. That is, examples may be "naked," "caged," "trilevel," or even "four-leveled." Some Divided Core Swirls have bands that are very close together but still have observable spaces in between them; these are considered "closed" Divided Core Swirls, an oxymoron that is really only useful in differentiating them from true solid core swirls.

RIBBON CORE SWIRLS

Ribbon Core Swirls are a type of Transparent Swirl with either one or two bands, or "ribbons," at the core. Those with one ribbon are called Single Ribbon Core Swirls and those with two are known as Double Ribbon Core Swirls; the latter are more common than the former, but both are more rare than most Latticinio, Solid Core, or Divided Core Swirls.

The bands in these marbles are usually wide but are sometimes narrow, especially in double ribbon cores, and may be thick or extremely thin. On the double ribbon varieties, there is usually color only on one side of each ribbon, while on the single ribbon examples both sides often have colors. Each side of the ribbon may be the same color scheme, or they may be different.

As with all swirls, ribbon cores may either be "naked" or have outer designs. The outer designs are typically comprised of sets of strands, though bands do occur, and most commonly mirror the ribbon or ribbons. The colors of both the ribbons and the outer strands or bands are much like those seen in other types of Transparent Swirls, though bright colors seem to be more common in these.
RIBBON LUTZ SWIRLS

Basically, a Ribbon Lutz Swirl is a Naked Ribbon Core Swirl with a wide, thick ribbon edged on both sides by "Lutz," or goldstone. The Lutz is usually flanked by narrow strands, usually white in color. They may have one or, less commonly, two ribbons, and the ribbons are opaque. The ribbons are either white covered with a transparent color or are themselves colored. If the marble has two ribbons, both are almost always the same color, though rarely two different colors occur. The base glass is most often clear, but on occasion color-based examples are found, and the ribbons in these are always white.

JOSEPHS COAT SWIRLS

Josephs Coat Swirls possess subsurface multicolored strands placed very close together, though sometimes there are open areas that allow the interior of the marble to be viewed. Some of the strands may go deeper into the glass, often to
the core. The colors of the strands may be very bright or more earth-toned, and the base glass may be clear or less frequently colored, usually light or pale blue. There may be many different colors in the strands or as few as two. It is uncommon, but Josephs Coat Swirls may also contain aventurine.

Banded Transparent Swirls are those swirls that have colored bands on the surface of the marble. The base glass may be clear but is usually colored. Shades of blue and green are most common. The exterior bands may be multicolored and very bright, or may consist of only one color. The strands may occur individually or be in sets spaced close together. In some examples the bands cover the entire surface (or close to it), and these are referred to as 360 Degree Banded Transparent Swirls. Sometimes the bands are not random but occur in one or two,
and rarely more, panels. These are often called transparent Indians since they are made in the same fashion.

![Banded Transparent Swirl](image)

**CORELESS SWIRLS**

Coreless Swirls are very similar to Josephs Coat Swirls, with the exception that the bands in Coreless Swirls may be much wider and are not closely spaced. Also, there are fewer strands or bands that go deep into the marble, though sometimes they do and may even be at the core, despite what the name of the marble suggests. The bands of Coreless Swirls may all be the same color or may occur in a number of colors; however, each band is typically one color, as opposed to the outer bands on other types of transparent swirls, which may be composed of two or more colors.

![Coreless Swirl](image)

**TRANSPARENT BANDED LUTZ SWIRLS**

Transparent Banded Lutz Swirls possess a clear or colored base, with two opposing goldstone, or "Lutz," bands edged by white or (rarely) colored opaque strands. In between these are two sets of, or much less often single, white or colored opaque bands. The opaque bands are typically all of the same color. I have seen one example of this type of marble with four Lutz bands and no opaque bands; however, it was a reject dug from a German glassworks site.

**PEPPERMINT SWIRLS**
Peppermint Swirls have a transparent base, but this is completely covered with color that lies just under the surface of the marble. These marbles all have a pink, white, and blue color combination. Typically, there are two opposing blue bands of varying thickness and two opposing white bands that cover up the remaining base of the marble. Floating on top of the white will be pink bands that are usually, but not always, narrower than the blue bands. Most examples have two or three pink bands per white band, though single pink bands occur infrequently. On these, and even more rarely, the pink, white, and blue bands may be the same width; such specimens are referred to as "Beachballs." Peppermint Swirls with more than three pink bands are very rare, as are those with different numbers of pink bands in each white panel. On occasion, a pink or green band may occur in a blue band, or a blue band may occur in a pink band.

Mica rarely occurs in Peppermint Swirls. When present, it is found in the blue bands.

Gooseberry Swirls are a type of Coreless Swirl in which the base glass is an amber color. Rarely, however, the base glass may be clear, green, or blue. Just under the surface will be white strands that are typically equidistantly spaced. As with many Coreless swirls, some of the strands may go into the core.
Gooseberry Swirl

CARAMEL SWIRLS

Caramel Swirls are a type of Coreless Swirl in which the base glass is transparent dark brown. It contains white strands or swirls that often fill much of the base glass. Rare examples contain mica.

Caramel Swirl with Mica

MIST SWIRLS

A Mist Swirl is a type of transparent swirl that have varying amounts of stretched bands or flecks of translucent or transparent colors beneath the surface. The base is often clear, but is usually colored, most often green or blue. When the base is clear, the bands are almost always green. Some Mist Swirls also have mica, and even more rarely a few have goldstone. These latter examples are known as Mist Lutz Swirls.

Mist Swirl with Mica

MICA SWIRLS

Mica Swirls are transparent-based marbles that may be clear, various shades of green, brown, various shades of blue, gray, amethyst, red, or yellow. Within the glass are flecks of mica (muscovite) that may vary widely in size and amount (mica swirls with large amounts of mica are called “blizzards”). Usually, the mica will all swirl in the same direction, though it may also seem to float randomly within the marble.
Mica Swirls commonly contain "ghost" and/or "filament" cores. A ghost core is a group of tiny air bubbles all contained within an ethereal "sheath." Filament cores are typically green, and are thin strands that run straight from pontil to pontil. They are often within ghost cores but are sometimes alone, too. Other rare examples have exterior bands.

![Green Mica](image1)

Green Mica

![Blue Mica](image2)

Blue Mica

![Clear Mica](image3)

Clear Mica

![Banded Mica](image4)

Banded Mica

**SUBMARINES**

Submarines are difficult to classify but seem best suited to the category of Transparent Swirls. These are marbles that superficially resemble Paneled Onionskins. However, two opposing panels of color will have colored bands on the surface of the marble, which has a transparent base that is usually blue, green or clear. The other two panels, which fill in the space left by the two surface ones, will have colored bands under the surface. It is this alternating surface/subsurface paneling that defines the Submarine. These marbles are rare, and those with mica in the clear panels are rarer still.
OPAQUE/TRANSLUCENT SWIRLS

Opaque and Translucent Swirls are not typically found in the larger sizes as are Transparent Swirls; very few have been found with a diameter of over two inches. However, the most common sizes are about the same as those of the Transparent Swirls; that is, 9/16" to 11/16". The same factors that can increase the rarity and value of the transparent swirls also apply to the Opaque and Translucent Swirls: end of canes, left hand twists, and so forth.

INDIAN SWIRLS

Indian Swirls typically possess an opaque black base. However, some are translucent (so-called Maglites, since a powerful flashlight is required to make light pass through them), and these will have an amethyst, dark green, red, amber, or blue base. On the surface will be stretched bands of color; some go from pontil to pontil while others are discontinuous and are often referred to as "end of day." A variety of colors may occur; yellow and white are most common, followed by red, blue, green, orange, and lavender. Oxblood is found only extremely rarely.

The colored bands commonly occur in panels. There are usually two panels, though individual panels are frequently found, while three-paneled examples are more scarce. At other times the bands will be more or less random and on occasion cover nearly all of the marble's surface. These latter examples are called 360 degree Indian Swirls and are highly prized.

On some Paneled Indians there will be a set of white or colored strands under the surface. The panels are usually edged with white or yellow strands on the surface. These are sometimes known as Submarine Indians.

Banded Indian Swirls are similar to Paneled Indian Swirls, except that they exhibit multiple single colored bands that are typically edged on both sides by another color, usually white.

On rare occasions, goldstone is found on Indians. These are known as Indian Lutz Swirls and occur in two basic styles. One style has more or less random streaks of goldstone intermingled among the colored bands, while the other possesses three Lutz bands, each edged by colored strands. On the latter style, each band usually has strands of a different color.

Submarine Indian Swirl
Clambroths are an opaque, semi-opaque, or translucent type of swirl that has colored strands (most often pink) on the surface. The strands are usually equidistantly spaced and are typically all of the same color, though examples with two, three, or even more colors are found. The base is almost always white and often composed of a soft glass that is subject to chipping and bruising. However, Clambroths sometimes have a colored base, and the most common of these are opaque pale blue or translucent dark purple.

The number of strands on the surface is usually between eight and 18. Some have more than 18 and this often results in the strands being very closely spaced. These are known as "Caged" Clambroths. On occasion, there will be a thin layer of clear glass over the strands; such marbles are considered "Cased."
BANDED OPAQUE SWIRLS

Banded Opaque Swirls can have either an opaque or translucent base, usually white, with stretched bands or strands of color on the surface. Colored glass base examples are rare and therefore more valuable. The surface colors may stretch from pontil to pontil or may be found in discontinuous "end of day" streaks. Sometimes there will only be one color, though multiple color specimens occur and may even give the marble a multicolored "Josephs Coat" appearance.

The Lightning Strike is a specialized type of Banded Opaque Swirl that is extremely rare. On these, the surface colors go around the equator (perpendicular to the usual trajectory) and often form "lightning-shaped" streaks.

BANDED OXBLOOD SWIRLS
Banded Oxblood Swirls are a recently discovered type of hand made marble that are composed of solid oxblood (German-style) with two opposing bands of white and/or yellow just under the surface but floating on the oxblood. These are extremely rare and only appear to be originating from digs at German glassworks sites, and thus are almost always damaged or imperfect.

Banded Oxblood Swirl

**BUTTERSCOTCH SWIRLS**

Butterscotch Swirls have a semi-opaque light brown base glass with translucent brownish to pinkish strands completely covering the marble's surface.

Butterscotch Swirl

**CUSTARD SWIRLS**

Custard Swirls are similar to butterscotch swirls but have a more yellowish brown base glass.

**OPAQUE BANDED LUTZ SWIRLS**

Opaque Banded Lutz Swirls are identical to transparent examples, except that the base is opaque, typically black. Some examples appear opaque but when backlit with strong light they actually are seen to have a transparent base, albeit very dark. These are usually in shades of purple.

Opaque Banded Lutz Swirl
CORKSCREWS

Handmade Corkscrews represent a rarely seen type of hand made opaque swirl. These are usually semi-opaque and were formed from a cane that was one color on one side and another on the opposite side. The twisting of the molten cane to form the marble resulted in a corkscrew-like pattern of the two colors. These colors are usually blue or green in combination with white.

ONIONSKINS AND CLOUDS

ONIONSKINS

Onionskins are a transparent-based (usually clear but sometimes colored) type of marble in which there is either a transparent clear or colored core on which are stretched flecks of color (usually opaque but sometimes transparent---the latter are sometimes called Mist Onionskins). The core will often almost entirely fill the marble so that the colors are very close to the surface, though sometimes the core will be closer to the center of the marble. Such examples are considered "Shrunken." Examples with multiple layers in the cores are known, too.

Onionskins can have either flecks that are stretched from pole to pole are those which are discontinuous. The latter types are known as "End of Day" Onionskins. There may be as few as one color or many colors, and the more colors present, generally the more desirable the marble. White, blue, pink, green, and yellow are the most common colors.

Paneled Onionskins are those that have two or more "panels" that consist of colors different than the other panels. Generally, there will be two colors in each panel, and the panels most often occur in even numbers and are opposite one another. Four paneled examples are the most common, though some have two or six (or more). Specimens with an odd number of panels (three or five) are rare.
Some Onionskins are "lobed"; that is, they have cores with slightly shrunken spaces from pole to pole. Thus, the core appears undulating to some extent. Lobed Onionskins are fairly rare and may have as few as three and as many as 18 lobes.

Onionskins rarely have either muscovite (Mica Onionskins) or goldstone (Lutz Onionskins) floating above the core. In the case of Lutz Onionskins, the core itself may contain streaks of goldstone. Both types are difficult to find and valuable, particularly Lutz Onionskins.
A Cloud is similar to an onionskin, but has flecks of colors that are not stretched, but which form spots within the glass. These spots of color may occur on a core or simply "float" within the base glass. As in Onionskins, the base glass of Clouds is...
usually clear but may be colored, and like Onionskins they may be lobed or paneled, and may contain muscovite (Mica Cloud) or goldstone (Lutz Cloud).

Many Clouds have single pontils and their construction as single-gather marbles seems intentional. However, they are often confused with End of Cane Onionskins.

SOLID COLORED MARBLES

Monochromatic (Solid Colored) marbles belong in a class by themselves because they are not swirls, having no design. They are composed of one color, either opaque, transparent, or translucent. Many Solid Colored hand made marbles have single pontils, though most will evince two pontils. They often contain tiny air
bubbles that are oriented in one direction, demonstrating how they were twisted from the cane.

**OPAQUES ("GAME AND BALLOT BOX MARBLES")**

Opaque marbles are comprised of glass that will not let light pass through. Among these, black and white are the most common colors, as they were used in ballot boxes for voting. A black marble represented a "no" vote and a white marble represented a "yes" vote. Other colors may include blue, pink, green, and red. Other colors are known but are rare.

**TRANSPARENTS ("CLEARIES")**

Transparent marbles ("Clearies") are generally more rare than Opaques. Clear examples are most common, with green, blue, and amber also occurring.

**TRANSLUCENTS**

Translucents are the least common of the Solid Colored marbles; they are defined by their ability to let light pass through them. White, light blue, and light green are the most common colors.

![Pink Translucent](image)

**"MOONIES"**

The "Moonie" is most often associated with machine made marbles, particularly Akro Agate and Christensen Agate. However, some hand made examples do exist. The Moonie is a translucent whitish marble made of opalescent glass. This type of glass is easily recognizable if backlit because it will give off an orangish glow. Such glass is considered to be an American invention of the early twentieth century, having been perfected at Steuben. However, the one example of a handmade Moonie I have seen was sent to me from Germany and exhibits two pontils like all hand made marbles produced from around 1850-1920.
SULPHIDES

Sulphides are a type of single-gather hand made marble that have a figurine (or rarely two or even three figurines) within a transparent base. These are fairly large marbles; the smallest size is around 3/4” and is rare. More commonly, they range in size from around an inch to two inches. Large examples occur, but infrequently.

Sulphide figurines are only very rarely painted. Most have a silverish appearance, though in actuality they are white. The silver color is due to a thin layer of trapped air surrounding the figurine. Sometimes large bubbles occur in the glass, often adhering to the figurine and often obscuring its appearance. This can negatively affect value.

Because Sulphides were formed individually on the end of a punty, they have only one pontil. Ideally, the pontil, which is usually ground or melted, should be directly beneath the figurine. However, depending on the skill of the maker, the pontil can be in areas that detract from viewing the figurine. This, too, can lessen the marble’s eye appeal and therefore value.

Other factors that relate to the skill of the marble maker and the value of the marble include how well centered the figurine is and whether or not the figurine has fractures due to heat stress when it was inserted into the molten glass.

The base glass of Sulphides is almost always clear. However, rare examples possess colored glass, usually blue. Other colors can include green, amber, yellow, amethyst, and pink.

Sulphides fall into three broad categories, based on the type of figurine inside: animal figurines, human figurines, and inanimate object figurines. Each type will be discussed below.

Human Figural Sulphides

Sulphides with human figurines are among the most valuable and indeed are quite rare. They occur either standing, sitting, or in bust form. Some represent real life persons, while others are of mythical figures. Most common, however, are simply anonymous characters. Known examples include the following figurines: angel playing flute, ape man (alone or in colonial dress), baby (alone or in basket or cradle), barrister, boy (alone or as baseball player or sailor with boat, or sitting on stump or praying, or with accordion, dog, hammer, hat, or horn, or nude), Beethoven (bust), cellist, cherub head (alone or with wings), child (with book, dog, or croquet, or as a face on a disk, or on sled), Christ on the cross, clown, Columbus (bust), court jester, Dolly Madison, dunce, elf (alone or with wings), gargoyle, George Washington, Genghis Khan (head), girl (alone or bathing, brushing hair, or sitting in swing, or with doll, or nude), gnome, Goliath (bust), hunter carrying deer, Jenny Lind (bust), Kaiser Wilhelm, Kate Greenway, leprechaun, Little Boy Blue, Little Red Riding Hood, Madonna, (alone or seated on throne), man (holding hat, on potty or rock, or with rifle, or mounted on horse, or
Animal Figural Sulphides

Sulphides with animal figurines are among the most common. The most frequently occurring of these are pets, farm animals, and common types of animals. Rarer are wild animals. There is an almost endless variety of animal Sulphides known: afghan hound, alligator, alpaca, anteater, ape, armadillo, baboon, badger, bantam rooster, bat, bear (alone, or holding pole, or with bat, fish, or hat), beaver, bird, bison, boar, buffalo, bull, buzzard, camel, caribou, cat (alone or on platform), cheetah, chicken, cockatoo, collie, colt, cow, cougar, coyote, crane, deer, doe, dog (alone or with bird in mouth), dove, donkey, duck (sitting or flying), eagle (alone or with arrows in claw, or on ball), elephant, egret, fish, fox, frog, goat, goose (sitting or flying), hawk, hedgehog, hen, hippopotamus, hog, honey bee, horse (alone or with saddle, or on rock), iguana, jackal, kangaroo, kitten (face only), lamb, leopard, lion, lioness, lizard, llama, lobster (alone or on rock), mandrill, marmot, mastiff, monkey (alone or with banana, hat, or wings), mouse, mule, newt, otter, owl (sitting or flying), panda, panther, partridge (sitting or on nest), peacock, Pegasus, pelican, penguin, pheasant, pig, pigeon (sitting or on stump), polar bear, Pomeranian, porcupine, puma, quail, rabbit (sitting or reading), raccoon, ram (along or head only), rat, rhinoceros, rooster, seagull, seal, shark, sheep, snake, sparrow, squirrel, stork, sturgeon, swan, tiger, tigress, turkey, turtle, vulture, water bird, weasel, whale, whippet, wolf (alone or with shawl), wolverine, and woodcock. Double figurine examples include cow with calf, double eagle, hen with rooster, pair of doves, pair of fish, pair of lovebirds, rooster and dog, and sheep with lamb. Triple figurine examples include bird, cat, and fish, three bears, and three fish.
Inanimate Object Sulphides

Sulphides with inanimate objects are quite rare as Sulphides go. Known examples include the following figurines: anchor, cannon, coin (with or without numbers), crucifix, flower, numbers 0-13 (alone or on disks or shields), papoose, pocket watch, sailing ship, sword, teddy bear, totem pole, and train.

"PAPERWEIGHT" MARBLES
Like Sulphides, the so-called Paperweight marbles were formed one at a time by the single gather method, and therefore have only single pontils. All Paperweight marbles are very rare.

**PAPERWEIGHTS**

Paperweight marbles have transparent glass with flecks of colored glass (usually white, pink, yellow, and/or green) forming a layer near the bottom of the marble (just above the pontil). The base glass is typically clear, though colored glass examples occur, yet only extremely rarely.

![Paperweight Marble](image)

**MILLIFIORIES**

Millefiori marbles are a type of Paperweight marble in which instead of having flecks of glass there will be a layer of millefiori canes. These are harder to find than regular paperweight marbles and in fact are among the most valuable of all hand made marbles.

![Millefiori Paperweight Marble](image)

**SLAGS**

Though slags are traditionally thought of as mostly machine made types, most of the earliest "transitional" marbles, that is to say those made partially by hand and partially by machine, as well as some hand made marbles, are slag-types.

**Hand Made Slags**

Hand made slags can either be those drawn off a cane (two pontil examples) or formed by the single gather method (single pontil examples). The latter should not be confused with Transitional Slags, which also have single pontils. Most hand
made Slags with two pontils are composed of black or purple glass mixed with white.

Single pontil hand made Slags differ from most other slag-type marbles. First, they employ different colors, not the dark colors often found in early Slags but lighter ones, with green being most prevalent. These base colors are more translucent than transparent. Furthermore, rather than having white as the secondary color, they usually contain yellow swirls or rarely another color, such as purple. Such slags appear to be known mostly from examples excavated at German glassworks sites.

Leighton Transitional Slags

Leighton Transitional Slags are single pontil marbles attributed to manufacture by James Harvey Leighton. Leighton, whose family had been in the glass industry for at least three generations, first produced marbles at the Iowa City Flint Glass Manufacturing Company between 1880-1882. Subsequently, he worked at a number of other American glassworks until settling in Akron along the Ohio River. In this region he established a number of small glass companies, none of which appear to have survived more than a couple years.

At one of these factories, the J.H. Leighton & Company, which was in operation during the second half of the 1890s, is probably the location where Leighton produced his marbles. Working with more than 20 different glass colors (including what is popularly known as "oxblood"), Leighton is believed to have been
responsible for many or most of what are today referred to as "Ground Pontil Transitionals." These marbles usually have a characteristic "nine"-shaped swirl on the pole opposite the pontil, with a "tail" wrapping around the marble to terminate at the pontil. Most Leighton marbles contain oxblood, the invention of which is often credited to Leighton, though some German marbles with oxblood predating Leighton's work have been unearthed.

It should be noted that though most Ground Pontil Transitionals are attributed to manufacture in America by Leighton, some have recently been dug from former glassworks sites in Lauscha, Germany, suggesting that perhaps the technique for producing these marbles was picked up by Leighton and others by German artisans.

Leighton Transitional Oxblood Slag

Leighton Transitional Oxblood Slag

Navarre Transitional Slags

The Navarre Glass Marble and Specialty Company operated in Navarre, Ohio, around the close of the nineteenth century (ca. 1896-1901). While this company may have produced small numbers of Sulphides and German-type swirls, they were responsible mostly for Transitional Slags. These slags, which like other Transitional types, possess one pontil. The base glass is usually purple, with green and amber less commonly found, and as is the trait of all slags white glass is mixed in.

Most Transitional marbles attributed to Navarre have white swirls that form loops originating and ending at the pontil. However, research has shown that marbles from this factory will also display the "nine and tail" swirl formation that is so often considered a characteristic of M.F. Christensen slags.
Navarre Transitional Slag

**M.F. Christensen Transitional Slags**

The M.F. Christensen and Son Company operated from 1904-1917, and produced not only slags but also several other types of marbles. Though technically "Transitional" because they were gathered by hand but rounded by machine, most collectors group them with other machine made marbles, and therefore that is how I've discussed them. You can find out more about this early American factory at the M.F. Christensen Identification Page.

**Christensen Agate Transitional Slags**

Though Christensen Agate is known best for its beautiful machine made marbles such as Flame Swirls, Guineas, and Striped Opaques, the earliest marbles from this company were hand-gathered and therefore Transitional. These marbles will include not only Slags, but also swirls (including the American Agate). Like M.F. Christensen marbles before them, Transitional Christensen Agate specimens will exhibit the characteristic "nine and tail" common to hand-gathered marbles.

**Miscellaneous Transitional Slags**

When unidentifiable as to manufacturer, Transitional Slags are categorized by a taxonomy that defines them by pontil treatment. Though useful in placing them into neatly fitting categories, there is nothing heuristically meaningful about such classification because it merely reflects the skill, time, and care put into finishing a marble. Slags with different types of pontils could have been made by the same factory and even, theoretically, the same worker. The same holds true for handmade marbles, which evince a variety of pontil styles, though it should be emphasized that some research has demonstrated overall changes in the finishing technique of handmade marbles through time.
With this said, the following discussion details each of the seven recognized styles of Transitional Slags as relates to their pontil type.

Regular Pontil Transitional Slags have single pontils that look just like the ordinary pontils on hand made marbles. That is, the pontils are rough areas that have not been further refined after the marble was cut from the punty. In fact, these are probably single-gather marbles and not "Transitional" in the true sense of the word. Many marbles thought to be Navarre, however, manifest this sort of pontil.

Ground Pontil Transitional Slags are basically the same as Regular Pontil Transitional Slags but which have had the pontil ground, which results in a faceted appearance. Sometimes such marbles contain oxblood, and these are often thought to have been manufactured by James Leighton.

Melted Pontil Transitional Slags, like those with a ground pontil, may represent an upward progression in the care taken to put a final touch on a single-gather marble. The single pontil will not be as evident as on most other types of Transitional Slags and will be evident as an irregularly smooth area on one pole. Melted Pontil Transitional Slags may exhibit either the looping swirl pattern of Navarre marbles or the "nine and tail" of other hand-gathered types.

Pinch Pontil Transitional Slags often have the classic "nine and tail" swirl of hand-gathered marbles and a pontil that may be hard to see but which will be present in the form of a tiny straight line. Unlike the "cut-off" line seen on M.F. Christensen Slags, such pontils will be raised above the surrounding surface and therefore discernible to the touch. It is generally believed that Pinch Pontils result from the shearing process of early marble machinery, and not the result of having been cut by hand. Thus, they are thought to be American, circa 1910-1925.
Fold Pontil Transitional Slags are relatively rare and may represent a poorly executed form of the Melted Pontil Transitional Slag. Typically, the single pontil on such specimens is characterized by an area of glass that was partially melted at the cut-off point. Incompletely melted, this glass may be of varying length, sometimes long enough to wrap partially around the circumference of the marble, forming a raised "tail" on the surrounding glass surface.

Pinpoint Pontil Transitional Slags are similar to Fold Pontil Transitional Slags, but instead of there being a "finger" or "tail" of unmelted glass, the unmelted area will form a tiny point that is barely visible. These are among the rarest of the pontil types of Transitional Slags.

Crease Pontil Transitional Slags are perhaps the most common of the Transitional types. Some argue for American origins, while others insist these are of Japanese manufacture. Whichever the case, they show up more more frequently than the other types. Common colors are aqua, dark blue, amber, and green, though a few other colors have shown up. Ox blood may be present, but very rarely. Some Crease Pontil Transitionals are better classified as swirls, since they have an opaque white base. These almost always have red swirls, though other colors may include blue, green, brown, aqua, or yellow. Whether a slag or swirl, the secondary color usually forms "nine and tail" swirl. The "tail" terminates at a pontil, seen as an uneven crease, both longer and more evident than either marbles with "cut-off" lines or Pinch Pontils.
Please note that most of the information on this page is borrowed from the writings of Jeff Carskadden and Richard Gartley, both of whom have heavily researched this topic and are gratefully thanked for helping advance the hobby of marble collecting into the realm of professional archaeology.

**AGATES**

Hand cut agates were mostly produced in the Idar-Oberstein area of western Germany at least as early as 1775 and probably much earlier. However, the peak period of production was in the 1880s. Agate was mined from Idar-Oberstein for centuries and evidence for actual agate mills dates to as early as 1454. By 1775 there were 26 agate mills in the region.
In 1802, to counter the dwindling supply of locally procurable semi-precious stones, agate was begun to be imported to Idar-Oberstein from India. Then in 1827, agate was discovered in Uruguay (in a region that is now part of Brazil), and thereafter (beginning around 1834) this agate was exported to Idar-Oberstein.

The agate marble market thrived after 1860 and continued until the onset of World War I. Many of these marbles were shipped to the United States during this period. After the great war, the industry was seriously crippled, not only because of the war but likely resulting from the growing popularity of machine made glass marbles, which were initially given names to suggest their similarity to "aggies." Hence, such companies as Akro Agate and Christensen Agate. Though some hand cut German agates were distributed in small Master Marble boxes at the 1934 Chicago World's Fair, production of these marbles had effectively ceased around 1925.

Agates are composed of chalcedony, a fibrous quartz, that formed concentric layers (bands), mostly in lava flows. Mineral impurities in these layers give the stone various natural colors, usually shades of red and brown. Specific names have been applied to agate marbles, depending on their color. Carnelian agates are red to reddish brown, striped carnelian agates have alternating red and white bands, onyx agates are black, and striped onyx agates have alternating black and white bands. There are other types of agates, too. Dendritic agates possess "fern-like" patterns in an otherwise gray matrix, while moss agates have intertwined hair-like fibers. Both of these patterns are formed by mineral impurities.

However, most banded agates from Idar-Oberstein were heated and/or dyed to create their banding effect, due to the fact that after 1834 a lot of the stone used for the marbles was translucent bluish-gray South American agate. It was long known in Idar-Oberstein that otherwise plain agates would become red when exposed to long periods of sunlight. Therefore, after 1813 agate workers began heating the agates in ovens to achieve the same effect. This heating changed the color in the stone because the ferric oxide impurities would react to the high temperature. Soon thereafter, the workers realized that a reddish color could also be achieved by immersing the marbles in iron nitrate or iron vitriol solutions. The black color in some agates was effected by boiling that agate in a sugar solution or soaking it in honey, and then treating it with sulfuric acid. Black dyed agates was an idea introduced from India around 1819. Less commonly, some agates were dyed blue, green, or yellow, and this apparently was done only after 1845.

Agates were made by first chipping small cubes of stone from a larger piece of material. Then, the stone was ground down by workers who had to lie on their stomachs across a sloping board, with their feet braced against pieces of wood attached firmly to the floor. This position allowed the workers to face the millstone and exert the considerable force needed to grind the stone. The millstone itself was made of sandstone and measured around five feet in diameter. It was kept moving by a water wheel attached to a set of cogwheels to quicken the number of revolutions.

Hand cut agates are typically faceted, as they were ground by hand into spheres. However, following this procedure they were placed into polishing drums, and depending upon the amount of time they spent in these drums the facets could be completely removed, or might remain mostly intact.
Machine ground agates, on the other hand, never have facets, though this too cannot be used as a trait to date agates. Again, some hand ground agates will lack faceting, and will appear to be machine ground. Conversely, some people still hand grind agates avocationally, so just because an agate manifests facets does not necessarily mean it is old.

There are many other types of semiprecious stone that can be placed in the agate category. However, most (but not all) of these are modern and machine ground. These minerals may include malachite, tigereye, rose quartz, amethyst, onyx, bloodstone, and rhodenite, among others.
Bullseye Banded Agate (Striped Carnelian)

Banded Agate
Blue Dyed Agate

Bullseye Banded Agate (Striped Carnelian)

Bullseye Banded Agate (Striped Carnelian)

Green Dyed Agate

Green Dyed Agate

Eye Agate
Banded Agate

"Crystal" Eye Banded Agate

Banded Agate (Striped Carnelian)

Bullseye Banded Agate (Striped Carnelian)

Bullseye Banded Agate (Striped Carnelian)
Alabaster marbles are made from real marble and originate primarily from the Berchtesgaden-Salzburg region of Germany, where they were made chiefly after around 1790. Marble mills were operating in this region no later than 1680. Here, the marble was mined primarily from Untersberg Mountain, though some came from near the town of Oettingen; this latter marble is called Hochhaus. The marble mills in this region continued operating commercially until the beginning of the twentieth century, and in fact some still operate today as tourist attractions. The annual production is low, around 500-2000 pieces.
Most alabasters, or marble marbles, are composed of a white to light pink material with reddish veins. Some are of a grayish, yellowish, black, or red material, though. Though the term "alabaster" is something of a misnomer, as true alabaster is comprised of gypsum, the use of the term to refer to any stone containing banded calcite has been popularized by sculptors, architects, and the like. The term was adopted by marble players, and from this we get the term "alley" (hence the company Alley Agate).

Marble marbles are comprised of a softer material than the quartz agates. Therefore a different method was used to produce them. First, the parent material was cut into appropriately sized cubes. Then these cubes were placed into grooves in sandstone grindstones through which water was forced, turning the marble until it was smoothed into a perfect sphere. This process consumed as little as fifteen minutes, and therefore a single marble mill could produce thousands of these marbles each day.

LIMESTONE

Limestone marbles are among the oldest marbles made from stone and date to no later than around 1575. The earliest limestone marbles were from the Berchtesgaden-Salzburg region of Germany and are often recovered from archeological sites in Amsterdam. However, it was the Sonneberg-Coburg region of Germany that produced the bulk of limestone marbles; known production in this area began in 1769 at the Trinks marble mill, though there may have been earlier, undocumented, mills in the region.
After 1769, the limestone marble industry truly flourished in the Sonneberg-Coburg region. Another mill went into operation in 1771 and was responsible for well over one million marbles per year. By 1800 there were nine mills in the region; by the end of the century, there were more than 70. Thereafter, the limestone marble industry declined and by the end of the 1930s only two mills were running, and only to fill special orders.

Not all limestone marbles were used as toys. In fact, many of these "marbles" were used by the navies of several nations, particularly England, as canister shot for their cannons. This was especially common in the late 1700s into the early part of the following century, though there is at least once instance where limestone marbles were used in this fashion during the American Civil War. This occurred when the Union ship The Essex attacked the Confederate ship Arkansas, using a mixture of stone, earthenware, and glass marbles as shot.

Limestone marbles were manufactured by first being cut into small cubes. These cubes were then placed into grooves in millstones. Water was forced through a water wheel, which turned the millstone against an oaken block, smoothing down the limestone. Some limestone marbles were then polished. Polishing was conducted as early as 1781, but seems to not have been used commercially until after 1822. As time passed, polished limestone marbles became more popular, but were somewhat more expensive than non-polished examples.

Limestone marbles were available in natural colors of mostly gray and brown, with white, tan, and (rarely) yellow. Often, limestone marbles, being of a less dense material, will be misidentified as earthenware marbles. However, one reliable test is to drop a diluted acid solution (such as hydrochloric acid) on the marble's surface. This acid reacts with the calcium carbonate in the limestone and will cause mild effervescence. If there is no reaction, the marble is composed of clay. Another characteristic of limestone marbles is that they sometimes have flat spots, which are remnants of their having been ground down from cubes.

Some limestone marbles were dyed, and though it is not known exactly when this first took place, such dying was conducted at least by the 1880s. Most of these dyed marbles were in shades of blue and red. Some naturally yellow limestone marbles with brown banding have been found.

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**FLINTS**

Flint marbles are discussed separately from agates because, though they are related, they are composed of non-semiprecious stone. Flint can either be pure (a dull variety of chalcedony) or comprised of silicified limestone (chert). It also includes jasper and petrified wood, which are other forms of chalcedony. The remainder of chalcedony marbles (carnelian, etceteras) are considered here as agates. For purposes of classification, the flint marble category will also include those marbles made from sandstone and even river pebbles.

Flint marbles and related spheres were produced for the most part after 1781, though they have turned up at archeological sites dating to the sixteenth century.
It might be surmised that these date even farther back in time, especially naturally rounded river pebbles, since they have been recovered from sites of great antiquity. Their use as "marbles," however, is in question. By 1763 there was at least one mill dedicated to grinding pebbles into marbles; this mill was located near Sollingen, Germany.

True flint marbles are found in shades of brown, gray, and tan; they are often difficult to distinguish from limestone marbles since the material of each is closely related. However, as the calcium carbonate in limestone has to be replaced by silicates to become limestone, flint marbles will not effervesce when in contact with acid. Flint marbles are also much harder than limestone marbles; flint cannot be scratched with steel, whereas limestone can be. Flint marbles, and related spheres, are rare.

STONEWARE

Stoneware marbles are those that are distinguished by their hard-paste characteristics. These were the earliest of the three basic styles of ceramic marbles (the other two being Chinas (porcelain) and Clays (earthenware). Stoneware marbles first appeared in the 1500s and were produced mainly in Germany and Belgium, and distributed by the Dutch. The main centers of stoneware marble production were in Raerin, Flanders (now part of Belgium) (ca. 1550-1650); Frechen, Germany (ca. 1550-1725); Grossalmerode, Germany (ca. 1550-1885); and Thiersheim, Bavaria (ca. 1790s).

Brown Saltglazed Stoneware (ca. 1600-1800)

Brown saltglazed stoneware marbles are gray-bodied, with a salt glaze over a light brown to dark purple (iron or manganese) slip. The salt glaze very frequently lends the marbles an "orange peel-like" texture. The slip may completely cover the marble or simply form patches on it.

That these marbles date to the seventeenth and eighteenth centuries has been very well documented. They have been securely dated to ca. 1600-1805 in closed contexts at Dutch archaeological sites, and they were retrieved from the wreck of the Amsterdam, a Dutch East India ship that sank in 1749. In America, they have been recovered from sites dated from the mid-1600s to as late as 1761. They are known to have been manufactured at potteries in Grossalmerode as late as the 1790s, and those made at this stoneware-producing center often manifest orange inclusions in the paste. It should be noted that these marbles are the most common types associated with archaeological sites of the 1600s.

Gray Saltglazed Stoneware (ca. 1600-1880)

Generally, gray saltglazed stoneware marbles are the same as the brown saltglazed stoneware marbles mentioned above, but without the slip. However, as many of them lack the orange inclusions seen in many Grossalmerode brown saltglazed marbles, they may have been produced intentionally elsewhere.
Gray saltglazed stoneware marbles were probably manufactured in the German stoneware centers of Westerwald and Cologne during the 1600s and 1700s, but were also made in America during the late nineteenth century. Most of the American examples, however, were decorated with sponged, spattered, or (rarely) banded cobalt blue decorations. They appear to have been made between 1860-1880.

Cobalt Banded Gray Saltglazed Stoneware

Bisque Stoneware (ca. 1600-1800)

Bisque stoneware marbles have the same paste characteristics as the brown saltglazed and gray saltglazed examples discussed above, but lack any slip or glaze. Some have orange inclusions and thus may have been made in Grossalmerode. These represent either unintentionally unslipped and/or unglazed marbles, or intentionally made, less expensive marbles.

Raeren Brown Stoneware (ca. 1600-1640)

Raeren Brown marbles are almost identical to brown saltglazed marbles. However, their primary distinguishing trait is the fact that they do not have the "orange peel" texture typical of salt glazed ceramics. Rather, they are smooth and lustrous. This characteristic is common to ceramics from the Raeren-Frechen region, exemplified by Bellarmine bottles, in which an iron or lead oxide was added to the slip.

These marbles are rare and to date have only been archaeologically recovered from sites in Europe, ca. ca. 1600-1640. They may often be mistaken, however, for the more common brown saltglazed marbles, as their luster tends to wear off over time, which would be hastened by their burial in soil.

Tigerware (ca. 1600-1650)

Tigerware is related to Raeren Brown. However, on ceramics bearing this name, usually Bellarmine bottles attributed to Frechen origins, the glaze is heavily mottled. Tigerware marbles are extremely rare and, because of their resemblance to Frechen bellarmines, are considered to have occurred contemporaneously with, and slightly later than, Raeren Brown marbles.

Lined Crockery (ca. 1860-1920)

Lined crockery marbles, originally called "jaspers" or "cloudies," are variegated stoneware marbles that replaced variegated earthenware marbles of the late...
eighteenth to mid nineteenth centuries. They are differentiated from their earlier counterparts by not only their harder-paste but also by their blue, green, or even green bands or veins, as compared to the brownish mottling or banding of the earthenware examples. Some lined crockery marbles are glazed.

Lined crockery marbles were introduced in the late 1850s in Germany. They were called jaspers because of their similarity to Jasper Ware, a ceramic type introduced around 1775 by Josiah Wedgewood, who had also created the popular Creamwares and Pearlwares of the late 1700s and early 1800s.

Lined Crockery, Glazed

Lined Crockery, Unglazed

EARTHENWARE

Earthenware marbles can be divided into two classes: brown-bodied and white-bodied. The latter class originates from earlier periods than the former. A third class, yellowware, comprises a very small portion of the earthenware marble category.

Common Brown-Bodied Earthenware

Common brown-bodied earthenware marbles are usually referred to as "clays" or "commies." They were manufactured from low-fired brown or red clays, and depending on the amount and type of impurities always present in the clay, would assume a post-firing color of red, brown, gray, or tan. These marbles are very porous and rapidly absorb water placed on them.

These marbles were produced in vast numbers in both Europe (mainly Germany) and America. Their date of production is between the mid 1700s up to the late 1920s or even 1930s. They are often found in their original boxes, most often from Germany but even found in Christensen Agate Company boxes.
Brown-bodied earthenware marbles have been found on archaeological sites dating to the 1600s in England. However, these are isolated incidences and do not represent commercial manufacturing, which appears to have begun until the middle of the following century. By late in the same century they became common enough to be found in significant numbers at archaeological sites in Europe as well as America during this period. Early clay marbles were molded by hand, as evidenced by many of them being out-of-round and even having fingerprint impressions, while after the invention of a marble-shaping machine in 1859 they were made more perfectly spherical.

In America, these marbles were probably made locally by immigrant Moravian potters in Bethabara, North Carolina, around 1756-1773. They may also have been produced at potteries in Westmoreland County, Pennsylvania between 1795-1840. In 1889, several potteries in and around Akron, Ohio, began producing "commies." These were apparently made in such mass amounts that the flow of these marbles from Germany was effectively halted.

Many of these American clay marbles were not specifically used in children's games. Large numbers of them were utilized in a number of different manners, particularly in oil cans and oil pipe lines to clean out paraffin buildup.

As mentioned, manufacture of common brown-bodied earthenware marbles began in Akron, Ohio, in 1889. They were first made there by S.C. Dyke and Company, and shortly thereafter by that company's co-owner's brother, Acton L. Dyke. It was Acton Dyke who apparently introduced painted, or dyed, clay marbles in 1890, around the same time he also applied for a patent for machinery that could produce 300 marbles per hour.

The following year the two brothers consolidated their companies and operated as the American Marble and Toy Manufacturing Company until 1904. They soon had their machinery producing approximately 1000 marbles per hour. These marbles were sold both dyed and undyed; the dyed examples were most frequently red, green, yellow, and blue. Some were dyed in solid colors while others were speckled with one or more colors.

There is evidence that Germany produced some dyed clays prior to 1890 and after 1883. These were called "bird's eggs" and more mostly speckled and less commonly solid colors. After the turn of the century, when that country was exporting very few clays to the United States, Germany did produce a type of clay that was covered with colored metal foil and distributed with "Mosaic" games.
Brown-Bodied Earthenware (Dyed Clay)

Brown-Bodied Earthenware (Multicolored Dyed Clay)

Brown-Bodied Earthenware (Multicolored Dyed Clay)

Brown-Bodied Earthenware (Dyed and Painted Clay)

Lead-Glazed Brown-Bodied Earthenware

Some common brown-bodied earthenware marbles were made with a clear lead glaze. These are very rare and have only been found in Dutch collections lacking provenience information. It is believed that a hand full of these were probably made at potteries that were mainly producing kitchenware that need the slip added to prevent the absorption of liquid. Such vessels and other ceramics were slipped with lead glaze prior to around 1820 and beginning around the middle of the previous century, and therefore the marbles likely also date to this period.

White-Bodied Earthenware

Clays that fire to a whitish color contain less impurities than brown-bodied clays and therefore can be fired at higher temperatures. Porcelain is the purist form and has the hardest paste of all ceramics. Refined earthenwares, also known as
Whitewares, are fired at the lowest temperatures and have a soft paste, while the stonewares were fired at higher temperatures and have an intermediate paste that is considered semi-vitreous to vitreous. White-bodied earthenware marbles, then, are those that are fired at the lowest temperatures.

These marbles were produced in Holland and Germany during the mid sixteenth century up to the early nineteenth century. They are comprised of the same white-firing clays found in German and Dutch ceramic wares of that period. A few such marbles, probably made non-commercially, have also been recovered from at English potteries near Wakefield, Yorkshire. Some may also have been manufactured around 1818 at the Frazey Pottery in Zanesville, Ohio.

White-bodied earthenware marbles are almost all unglazed, though some that were made in Germany from around 1885-1920 may be either glazed or unglazed. These marbles, however, were made from more refined clays and were intended to imitate the more expensive porcelain "Chinas" of the period, and as such will be discussed in the China category.

Some white-bodied earthenware marbles were painted. These are rarely found in either private collections or at archeological sites, but may be confused with other types of marbles as the paint obscures their white bodies. This paint was red, blue, green, or yellow. To date it is not known when such marbles were painted but as one was recovered from a Dutch site occupied circa 1700 they may be from around this time.

Aside from the harder-paste "whiteware" marbles discussed below in the section on Chinas, few white-bodied earthenware marbles are thought to have been decorated. These were probably made at the Grossalmerode potteries from the mid 1500s and are reported to have been hand-painted with dots and intersecting lines.

One final category of white-bodied earthenware marbles includes those made from "pipe clay," or kaolin. These marbles are polished and therefore are probably from Holland during the 1600s and 1700s, as their polished surfaces resemble tobacco pipes from this time and place. They were not made commercially and in fact only a few are known from a private collection.

**Variegated Earthenware**

Variegated earthenware marbles were meant to resemble the more expensive stone marbles and were made from various clays of different colors. This produced a mottled or banded marble that did superficially have the appearance of agates and "alabasters."

In the ceramic industry, particularly in England, pottery using a variety of blended clays was produced as early as 1740. Such ceramics are collectively referred to as "agatewares." However, the manufacture of marbles utilizing this technique did not occur until later that same century, around 1788 or perhaps earlier.
Variegated marbles were made in Germany, though they were often called "Dutchmen" or "Dutch alleys" because they were distributed by Dutch merchants and perhaps because of the similarity of the German word "Deutsch."

Variegated earthenware marbles are generally unglazed, though glazed examples have been found, but only from American sites and collections. Therefore, such examples may have been produced in the United States, perhaps in the Zanesville, Ohio, area, as one glazed specimen was recovered from a privy there dated to ca. 1830-1850. The glaze on these marbles is a clear leadless alkaline glaze; such glaze was used after around 1820 as the harmful effects of lead glaze came to be realized.

Three techniques were used to produced "Dutchmen" variegated clay marbles. In one method crumbs or shavings of the darker (usually brownish) clay was sprinkled and the stirred into the white clay, while another method called for twisting coils of the different clays together; both of these methods resulted in a swirled or mottled appearance. The third method was to stack thin layers of alternating colored clays, and this caused a banded effect in the final product.

Around 1860, the "Dutchmen" variegated clay marbles were replaced by a variegated white-bodied stoneware type. These are called "Lined Crockeries" and are discussed in the Stoneware section above.

**Yellowware**

True yellow earthenware marbles are rare and seem to have been restricted to manufacture by a handful of potteries in Ohio, such as Howson and Hallam Pottery in Zanesville and Bromley's Brighton Pottery in Cincinnati. The former company produced such marbles during the 1860s to as late as 1874, and specimens found at the site include both plain and geometrically decorated bisque examples and marbles with a clear glaze. The latter company, on the other hand, manufactured yellowware marbles that, save from their interior paste, are indistinguishable from German "Benningtons" (see below).

**Benningtons**

Benningtons were created in Germany around 1870. Despite their name, they are not from Bennington, Vermont, as commonly believed, though they do have the appearance of the glaze of Rockingham ware from that town. Production of these marbles probably ceased sometime around 1910.

Benningtons were made from both white stoneware and porcelain clays. However, at least two potteries in Ohio produced similar marbles made of yellowware clays. They were usually glazed either brown (manganese) or blue (cobalt). Some possess a combination of the two colors and are called Fancy Benningtons. Rarely, Benningtons will also be found with white, pink, or green glazes.

The best identifying characteristic of a Bennington is the number of circular raised spots, or "eyes," on the marble, which were formed where the marbles touched one another while their glaze was still soft and they were being heated in kilns.
Brown Bennington

Blue Bennington

Pink Bennington

Green Bennington

"Fancy" Bennington (blue/brown)
"Fancy" Bennington (blue/green)

"Fancy" Bennington (pink/blue/brown)

**CHINAS**

Chinas are, for the most part, comprised of porcelain. Porcelain is a term used to refer to high-fired white-bodied clays. These clays are extremely pure and therefore can be subjected to very high firing temperatures, resulting in a dense, vitreous, white, and often translucent paste. Porcelain is totally resistant to water absorption, unlike lower-fired ceramics such as earthenwares and whitewares.

China marbles were probably introduced in the 1840s, and perhaps even earlier in the century. As with many types of handmade marbles, they originated in Germany. They may also have been manufactured in America as early as 1844, at the Indiana Pottery Company, situated on the Ohio River in Troy, Indiana. These dates agree well with archaeological evidence, as Chinas have been recovered from contexts dated between 1830-1870. Many Chinas were imported to the states from Germany in the second half of the nineteenth century, but this importation had ended by 1910, coinciding with the rise in the American machine-made marble industry.

Chinas can be either glazed or unglazed, and they may also be either painted or plain. If glazed, the glaze will be under the paint, if present. Chinas with designs under the glaze are modern and are often passed off as old. The "glaze" on modern reproduction Chinas usually consists of an acrylic spray or other fixative substance.

In general terms, most unglazed Chinas date to the 1860s and before, while most glazed Chinas date to after 1890. Several stages of firing occurred depending on the treatment of the Chinas in terms of glazing and decoration. All Chinas were air dried following their formation, and then were fired (bisque-firing). If painted decorations were applied to the marbles following the bisque-firing, they were then refired at a lower temperature in order to set the paint. Glazed Chinas were dipped into a clear glaze and also refired at a lower temperature. If, after the glaze-firing, decorations were added, the marble would require a third firing at an even lower temperature to soften the glaze and allow the paint to set.

The color of paint applied to Chinas was limited because many coloring compounds could not survive the final firing of the marbles. In order of decreasing presence, colors found on painted Chinas include brownish red, green, black, orange, blue, pink, yellow, brown, and lavender. A very few possess liquid gold.
Most painted decorations on Chinas were applied by hand with a brush. Some designs required that the marble remain static during the painting, while others, such as spirals, required that the marble be spinning on a small wheel during the procedure. Infrequently, some designs were stamped or stenciled onto the marble surface.

The design elements of painted Chinas are varied, and some of them are temporally sensitive and can be dated to a more or less specific period of time. These time periods have been divided into the Early (ca. 1846-1870), Middle (ca. 1870-1890), and Late (ca. 1890-1910) Periods. Each of the primary design elements will be discussed in detail below.

Lined Chinas

There are five basic styles of lined Chinas: single sets of narrow parallel lines, intersecting sets of narrow parallel lines, intersecting single lines, intersecting sets of narrow and wide lines, and single sets of narrow and wide lines.

Chinas with single sets of narrow parallel lines have only one set of lines, usually three or four lines, that encircle the marble's equator. Sometimes the marbles will have flowers, pinwheels, or leafsprays on the poles perpendicular to the lines. These marbles are typically unglazed and mostly date to the period ca. 1846-1870.

A much more common design element is that of intersecting sets of narrow parallel lines, which resemble the previous type but have an addition set of lines perpendicular to the first, intersecting at the center of the marble. This design has the effect of leaving four quadrants open on the marble, and these are usually filled with leafsprays. On rare occasions the two sets of lines are oblique to one another, forming an "x" shape where they intersect, leaving open areas which are filled with leafsprays on two poles. More commonly, there will be three sets of intersecting lines, leaving no open areas for the application of other design elements. For the most part, each set of lines will be of a single color, though usually each set is differently colored from one another. Most of those with two sets of lines are unglazed and date to the period ca. 1846-1870; the most common color combinations on these are red and black. When there are three sets of lines on glazed examples, orange-green-blue is the most frequently found combination, followed by red-green-black; when the marble is unglazed red-green-black and red-green-blue occur most frequently.

Chinas with intersecting single lines are similar to those with sets of lines, though there are simply two or (rarely) three single lines that encircle the equator and intersect with one another. Again, open quadrants are typically decorated with leafsprays. The lines may be narrow or wide. Most of these marbles are unglazed and are early (ca. 1846-1870).

Chinas with intersecting sets of wide and narrow lines have, as the name implies, two or three sets of lines that intersect at right or acute angles. However, the lines in individual sets vary in width, and the most common variation has a wide line (band) paralleled on either side by a narrow line. These marbles are unglazed and presumed early (ca. 1846-1870).
Chinas with single sets of wide and narrow lines are identical to those above but have only one set of lines. These lines encircle the marble's equator leaving two poles that are always decorated with another element, normally pinwheels or flowers. The unglazed condition of most of these marbles, together with the fact that they contain early style flowers or pinwheels, indicated that they primarily date the the period ca. 1846-1870.

**Helix Chinas**

Helix Chinas are similar to lined examples, though on these the lines are continuous. Like spiral Chinas, they were decorated with a brush stroke as the marble revolved on a wheel. Unlike spirals, however, the lines are around the equator and not on the poles. Thus, they are sort of intermediate between lined Chinas and spiral Chinas.

Helix Chinas can have a single helix or two or three sets of intersecting helix. Most helix Chinas are glazed, and those with three helixes are probably from an earlier period of manufacture than those with two. Over time, helixes probably replaced lines on the marbles since the marbles could be decorated more swiftly, as lines were, for the most part, painted on a stationary marble while helixes were made on a spinning wheel.

![Late Period Glazed China: Helix](image)

**Bullseye Chinas**

Bullseye Chinas have sets of concentric rings, and the rings usually occur in pairs, three pairs per marble. Early examples sometimes have a pair of opposing bullseyes or one bullseye opposite to another design element. One pervading trait is that all bullseyes have rings of the same color (typically black, orange, or green), and no matter how many bullseyes are on a single marble, they will be of the same style. The various styles of bullseyes are discussed below.

The "solid eye" motif is one in which the "eye" is a solid-colored dot surrounded by one or two rings. They are probably early examples, and are very rare.

The "doughnut eye" motif is similar to that of the "solid eye," but rather than having a solid-colored dot, the inner ring is simply wide with an unpainted center. This wide ring will be surrounded by one or two narrower rings. These Chinas are early (ca. 1846-1870).

The "multiple ring" variety is a China in with the bullseyes have five or more rings as compared with the two or three usually seen. The rings will all be the same width. These marbles date to the early period.
The "overlapping ring" motif is a late style in which the bullseyes have been hastily applied, usually resulting in overlapping of the bullseyes. These Chinas are always glazed.

The "opposing eyes" motif is one in which there are only two bullseyes on the marble, always set opposite one another. These bullseyes may occur as the "solid eye," "doughnut eye," or "multiple ring" styles. Usually, the marble's equator is filled in with a three-palmate leaf or polychrome flowering wreath pattern (see below). These Chinas are unglazed and are early types.

**Banded Chinas**

Banded, or striped, Chinas are very rare and were probably made mostly in the ca. 1846-1870 period. They are always unglazed. Some have doughnut bullseyes on opposite poles, with so many rings on each bullseye that they meet at the marble's equator. Others have simple bullseyes on either pole, and a set of wide or narrow lines around the equator.

**Spiral Chinas**

Spiral Chinas possess a spiraling line on one or both poles. There is usually a band of leaves around the equator to offset the sets of spirals, though on a few examples there is no equatorial decoration. When two spirals are present they are always the same color; in decreasing order of frequency the colors are orange, red, black, and blue on glazed examples and red, green, orange, and pink on unglazed examples. When there is only one spiral, the opposite pole normally is decorated with a leafspray. Leaves on these Chinas are primarily red or green. Most spiral Chinas are glazed and therefore are assigned to the period ca. 1890-1910.

**Leaf Chinas**
Leaves are seldom the defining element of Chinas, but rather were used to fill in spaces left by other designs. The leaves may occur in one of several styles: sprays, in garlands, wreaths, clovers, and palmate bands. The most common color is green, followed by red. Most Chinas with leaves are unglazed and thus early (ca. 1846-1870).

Leafspray Chinas have either random sets of leaves on them or are found radiating from the quadrants formed by two sets of perpendicular intersecting lines. Random Leafsprays often occur as "fillers" on Chinas with other design elements. They will have two or more leaves radiating from a single point, though the leaves seldom touch one another. There is a late example in which there is only one leafspray, on the pole opposite a spiral.

Garland Chinas are those in which there are linear "chains" of leaves filling each quadrant of a China single intersecting lines or sets of lines.

Wreath Chinas are those in which two sets of spirals, one on each pole, are separated by an equatorial band of leaves or leafsprays. There is an early variation lacking the spirals, with two sets of intersecting wreathes.

Clover Chinas have three or four "V-shaped" or "heart-shaped" leaves extending from a stem. They are always unglazed and the clovers are always diametrically opposed and usually separated by an equatorial set of wide and narrow lines.

Palmate Chinas consist of a band of three-fan or five-fan leaves around the center of the marble. They are unglazed, and therefore early types, and almost always occur in conjunction with bullseyes or pinwheels on either pole.

**Pinwheel Chinas**

There are two styles of pinwheel Chinas, standard pinwheels and exotic pinwheels, and each will be discussed below.
Standard pinwheel Chinas could alternately be considered a variety of flower Chinas (see below), as the motif does indeed resemble a stylized flower. Standard pinwheels have between four and sixteen "petals" radiating from a central dot and can resemble not only flowers but propellers. Eight-bladed pinwheels are the most common, followed by seven, six, four, nine, and ten. Usually, there will be two pinwheels on an individual marble, and they will be diametrically opposed to one another and separated by a set of parallel lines, usually a wide/narrow combination, around the equator. The number of "petals" on each pinwheel are generally the same, and are also mostly of the same color. Green and red are the most common colors, followed by pink, black, blue, brown, lavender, and yellow. However, polychrome examples do occur. Standard pinwheel marbles are unglazed and represent early (ca. 1846-1870) examples.

Exotic pinwheel Chinas differ from standard pinwheels in not only being glazed (and dating to the middle period, ca. 1870-1890), but also by possessing bifurcated or trifurcated blades rather than single petals. The pinwheels will always have at least two colors (polychrome) and sometimes three. The two-colored versions are typically red/pink, red/green, or blue/orange, and these colors alternate. Some of these Chinas have opposing pinwheels separated by a helix or a set of wide/narrow lines around the equator, while others occur individually on a marble and lie opposite a spiral.

Middle Period Glazed China: Exotic Pinwheel

Geometric Chinas

Chinas with dots are very rare and come in two basic styles: one with a circle of dots encompassing a central dot on opposite poles of the marble; and one with dots encircling the marble's equator and flanked by single or multiple lines.

There is one known example of a China with converging bands. In this style, the bands extend longitudinally from one pole to the other, so that the entire marble is covered with vertical stripes.

Checkered Chinas are very rare and are decorated with an alternating colored checkerboard pattern. They have never been found archaeologically, and are possibly modern.

Flower Chinas

Chinas with hand-painted flowers were introduced around the same time that this decoration began being used on tablewares. Typically, flower Chinas have flowers on either pole, opposite one another, and are set apart by parallel lines encircling the equator. More than one dozen distinctive styles of flower Chinas have been
categorized, and their complexity, care of application, and association with or without glazing have allowed them to be roughly dated.

Chinas with primitive flowers are among the earliest of flower Chinas; they have also been referred to as "tomatoes" or "apple" flowers, because the design is simply a red dot with a stem and a few leaves. They are almost always unglazed and usually have a flower on each pole, set off by an equatorial set of parallel lines (most commonly the narrow/wide combination).

Doughnut flower Chinas are those that resemble the doughnut bullseye motif with a stem and leaves added. In fact, they are identical in style to primitive flowers with the exception of a central wide ring and not a solid dot. They, too, are unglazed and early (ca. 1846-1870).

Three bud flower Chinas have three red petals radiating in a fan-like pattern from the tip of a stem. Rarely, the flowers will resemble clovers or tulips. The marble will have two such flowers, one on each pole, with an equatorial set of lines, usually the wide/narrow combination. They are always unglazed and as such are early.

Chinas with the strawberry motif are extremely rare. There is one known example; on this marble there is a flower with four small red "buds" resembling strawberries. Each bud has a black stem; between each stem is a trifurcate green leaf, and all the stems and leaves radiate from a central green dot.

Polychrome dot flower Chinas typically have a small central dot which is surrounded by five or six dots of a color other than the central dot. There will be leaves radiating from this circle of dots. Like the above examples, such flowers occur on opposite poles of the marble and are separated by a set of lines around the center of the marble. On rare occasions the equatorial design has a repeating pattern of the dot flowers. These are early marbles (ca. 1846-1870) and as such are unglazed.

Radiating petal flower Chinas resemble standard pinwheels, with the exception that there leaves and a stem added to the radiating petals. This is a rare, early type that can either have two opposing such flowers or be part of a polychrome flowering wreath motif.

Polychrome flowering wreath Chinas come in one of four forms: differently colored palmate leafsprays forming a continuous pattern around the equator; a vine-like band of leaves around the equator interspersed with bud-like dots; a series of early style flowers (particularly doughnut flowers and polychrome dot flowers) evenly spaced around the equator, with leaves between the flowers; and elaborate and intricate flowers interspersed among wandering vines. These are all early styles.

Monochrome dot flower Chinas, otherwise known as "radiating splotch flowers," are those that have as their primary design flowers which consist of five or six dots, normally pink, that are usually elongated to superficially resemble petals. These dots or splotches radiate from a central dot of the same color. These are thought to date to the early-to-middle periods (ca. 1846-1890), since they are
either glazed or unglazed, and because pink flowers are considered to be a middle period trait.

Five bud flower Chinas are considered later versions of the three bud flower types. This motif involves the use of five red buds radiating in a palmate fashion from the tip of a stem.

King's Rose flower Chinas possess a single rose with leaves and a stem or vine on one side of the marble. The leaves typically radiate outward from around the rose, and there will be no other decoration on the marble. These Chinas are always glazed and are thought to date to the middle period (ca. 1870-1890).

King's Rose China

The flowering plant motif is a middle period (ca. 1870-1890) style in which the China is decorated with flowers that do not fit into any other category. Such Chinas have two diametrically opposed flowers consisting of red or blue dots or splotches on a vine or stem. These are extremely rare and all known examples are glazed.

The most frequently encountered flower type on Chinas is the common rose. This motif only occurs on glazed examples (and thus is probably a middle period type), and has two opposed flowers usually separated by equatorial wide/narrow lines but rarely by a helix. The flowers are pink (very rarely blue) and consist of a simple splotch to a more elaborate depiction.

Stylized flower Chinas are the only the only ones that belong exclusively to the late period (ca. 1890-1910). These share as common traits more stylized designs, less intricacy and fewer brushstrokes, and glazing. The flowers approach sloppy in their application, and usually consist of a pair of leaves or leaf and stem with an individual red splotch. Typical examples of this type of China have two opposing flowers and a helix around the center of the marble.

Pennsylvania Dutch Chinas

The so-called Pennsylvania Dutch Chinas exhibit complex designs utilizing such elements as flowers, leaves, and/or interlocking semicircular lines. Some have bands or stylized tulips encircling the equator. The decorations tend to be pink and black. They are generally larger than most other Chinas and can be glazed or unglazed.

Pennsylvania Dutch Chinas are called such because of their similarity to that particular style of art. They also resemble more modern Mexican ceramics, in particular piggy banks, and have even been called "Mexican Piggy Bank" marbles.
Controversy surrounds their true origins, and it is believed that many, if not all, of them are of recent origins.

**Scenic Chinas**

The term "scenic," or "figural," as it applies to Chinas refers to those examples with animals, humans, or objects other than the aforementioned stylized designs. These are extremely rare. Almost all known examples are glazed and have the motif on the equator, separated by polar standard pinwheels. Though glazed, they are considered to be early types, based on the complexity of their designs. These carefully and artistically painted designs are polychrome and include a man plowing a field, a man with a cane beside a castle, a woman beside a castle, a horse-drawn carriage, man riding a horse, a house, a pipe-smoking man seated on a stump, a dog, a sailing ship, a boy drinking from a flask, and a hunting scene.

There is one known example of an unglazed scenic China which has a crude sailing ship opposite a pinwheel, with wide/narrow red lines around the equator.

**Miscellaneous Chinas**

There are several styles of Chinas that do not fit into any of the above categories. Such Chinas may have painted numbers (one through sixteen) or, much more rarely, advertisements that may have been meant for use as tokens.

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**M.F. Christensen & Son Company (1903-1917)**

**COMPANY HISTORY**

Martin F. Christensen immigrated to the United States from Denmark in 1867 and settled in Akron, Ohio, 13 years later. In 1899, at the age of 50, he invented a machine that was capable of producing a perfectly round steel ball bearing. It was a short leap from creating that machine to one that could produce marbles. In 1905, he obtained a patent for a mechanized marble-making machine, for which he had applied in 1902.

In 1903, M.F. Christensen joined his son, Charles Frederick, in founding the M.F. Christensen and Son Company. They established the factory in the 400 block of Exchange Street in Akron. Harry Heinzelman, formerly of the Navarre Glass Marble and Specialty Company, was hired as the company's glass master. It is also known that glass formulae were purchased from J.H. Leighton, which would explain Christensen's use of oxblood (a dark red glass with black filaments), which was used in many of Leighton's marbles.

Due to the success of his invention, Christensen's company shifted the focus of marble manufacture from Germany to the United States. The company's sales
were also probably aided by the onset of World War I, which effectively halted the import of German handmade marbles into the country. 1914 was Christensen's peak year of production. Unfortunately, Martin Christensen died during dinner a year later; the same fate was suffered by his son Charles in 1922, only seven years after that incident. Though Charles had assumed control of the company following his father's death, the M.F. Christensen and Son Company was out of business by 1921. By this time, the Akro Agate company was already ascending to its greatest heights; this company was co-founded by Horace Hill, Christensen's bookkeeper, who earlier had embezzled money from Christensen and also taken some glass recipes and plans for marble machinery, which then helped Akro Agate produce their own marbles after several years of simply buying marbles from the M.F. Christensen and Son Company and then selling them in Akro packaging.

**IDENTIFICATION TIPS**

The earliest M.F. Christensen marbles were "transitionals," as they were gathered by hand on a punty and hand-fed into the rounding mechanism. This procedure left a tell-tale "pontil" on one pole of the marble. These pontils were later eliminated, due to refinements in the glass temperature, as well as timing, and perhaps even owing to improvements in the machinery. However, most M.F. Christensen marbles have a diagnostic trait known as the "nine and tail." Basically, as the glass was twisted from the furnace a nine-shaped spiral (sometimes inverted) was left on one pole of the marble. Often, this "nine" exhibits a "tail" that spirals around the marble and either ends at the opposite pole or terminates somewhere in between, even occasionally looping back to the point of origin. Quite often, where this "tail" ends, there is a small cut-off line, which is evidenced by a usually faint straight line in the glass. Sometimes this crimp may be felt with the fingernail.

All M.F. Christensen marbles were single-stream, and the glass for each batch was mixed in one furnace pot. This restricted manufacture to single-color opaque and two-color slag and swirl marbles.

**SLAGS**

Most M.F. Christensen marbles seem to have been slags, which are easily identified as having originated from this company because they normally have a "nine and tail" which was formed when the glass was twisted from the furnace. Opposite the "nine" a cut-off line can often be seen, too. As mentioned, earlier examples may have single pontils, which were typically melted in the finishing process. Slags were called National Onyx by the company and were available in such colors as amber, <purple, blue, green, clear, aqua, yellow, orange, and lavender, in approximate increasing order of rarity. This company did not produce red slags as earlier thought. Very dark blue slags were coined "Royal Blues." Some slags were produced in very large (over 1 1/2") sizes.

Some National Onyxes, which are probably early types, are referred to as "horizontal slags." These are easily recognized, as instead of having a single
"nine" swirl the white spirals multiple times around the marble, forming a tight corkscrew pattern. These are valued much more highly than regular slags.

There was one additional type of slag marble produced by M.F. Christensen. These are oxblood slags (possibly called "moss agates" by the company), which have a very dark transparent green base and an oxblood swirl. These are uncommon.

OPAQUES

M.F Christensen produced limited numbers of opaques, distinguishable by the often faint "nine" visible in the glass. Colors included green (Oriental Jade), light green (Imperial Jade), light blue (Persion Turquoise), yellow, and lavender. The latter are reported to have been restricted to a single run of 45,000 specimens, though all M.F. Christensen opaques are rare.

BRICKS

Perhaps the most collectible of the M.F. Christensen marbles are "bricks," called American Cornelians by the company. These contain the very attractive oxblood glass along with opaque white, opaque black, or translucent green swirls. Some with blue are also known to exist, but are extremely rare. Many bricks manifest the "nine" pattern, with an accompanying cut-off line. There is a lot of variety in bricks, and many are stunning.

One word of warning about bricks is that many of those that seem to be in "mint" condition are, upon closer scrutiny, either recooked or polished. Recooked, or remelted, specimens are those that have been repaired by bringing the surface temperature of the marble to a high enough point that any damage simply melts back into the marble. Polished ones often exhibit tiny pits where trapped air bubbles were exposed as the surface glass was stripped away. These also frequently appear dull, without many of the black filaments that make oxblood really appear like dried blood.

PERSION OXBLOODS

The Persion Oxblood marble is an extremely rare variety that is sort of a cross between a light blue opaque (Persion Turquoise) and a brick (American Cornelian), as oxblood is swirled throughout a light opaque blue base to create a truly spectacular marble.

M.F. CHRISTENSEN MARBLE GALLERY
Amber Slag

Purple Slag

Blue Slag

Green Slag

Yellow Slag

Orange Slag
Brick

Brick

Brick

Brick

Brick

Brick (showing "cut-off line")
The Christensen Agate Company was founded in 1925 but was out of business only eight years later. However brief its career was, it was also spectacular, for the company produced some of the most colorful and beautiful machine made marbles the world would ever see. Much of this should be credited to Arnold Fiedler, who brought with him both expertise and glass formulae obtained during his employment with the nearby Cambridge Glass Company.

The Christensen Agate Company was initially located in Payne, Ohio, but shifted its operations to Cambridge, Ohio, in 1927, where it occupied a small brick building on Bennett Avenue, adjacent to the Cambridge Glass Company, from whom it purchased scrap glass. Here, it produced, like M.F. Christensen (from whom it took its name, perhaps because the Christensen name was well-known), only single-stream marbles.

The Christensen Agate Company was founded by W.F. Jones, H.H. Culper, Owen M. Roderick, Robert C. Ryder, and Beaulah P. Hartman. However, the two individuals who made the company's marbles as distinctive as they are were the aforementioned glass chemist Arnold Fiedler, who later became the head of the company, and Howard M. Jenkins, who was president of Christensen Agate and also manufactured and patented its marble-making machinery. This patent was obtained in 1924; however, there is little that can be said about the first marbles
produced by this machinery while operating in the factory's original location in Payne.

At the Cambridge location, Christensen Agate began producing the marbles for which it is so well known. Fiedler used his innovative techniques and skills learned in Germany and later refined at Cambridge Glass to lend to the marbles their unique coloration. When Christensen Agate closed its doors in 1933, two years after the actual cessation of marble manufacture, Fiedler had already shifted his employment to Akro Agate, which explains why early Akro marbles possess many of the same colors seen in Christensen's marbles.

Today, Christensen marbles are rare. One reason is because the company was in operation for a very short time, perhaps in peak activity only four years at the Cambridge location. Since the factory could only produce some 300,000 marbles each day, probably an estimate of 400,000,000 marbles made in Cambridge is a reasonable assumption. This may seem like an abundance of marbles, but given the fact that over 65 years have elapsed since the factory closed its doors one can imagine that through loss and breakage it is no wonder they are so difficult to come by.

**IDENTIFICATION TIPS**

Christensen Agate marbles were produced by machinery that only made single-stream marbles. In their swirls, multiple color marbles were created not by variegated-stream machinery but by mixing the different colors of glass together. The various colors had different consistencies and therefore remained separate for the most part, instead of blending together. Few Christensen Agate marbles will manifest the blending of colors so often seen on later marbles, such as Akro Agates. Also, many Christensen marbles, particularly those with opaque colors, are identifiable due to their unique coloring. Thanks to the skills of Arnold Fiedler, Christensen colors are distinguishable from those of other companies, and once you have seen them you will not mistake non-Christensen marbles from those made by the company during its brief existence. Most Christensen Agate marbles will have a diameter of under 25/32". Any larger than this are considered very rare and none have yet been found that are over one inch.

**SLAGS**

Like most marble companies of the day, Christensen produced slags (in blue, aqua, green, brown, clear, purple, red, orange, yellow, and peach---the latter color is unique to Christensen). Christensen slags are identifiable by their seams; they may have two or they may have only one. They can be differentiated from Peltier slags because they do not have the fine "feathering" of the white glass that the latter possess. The white swirls occur on the surface of the marble as well inside it. However, if the white is primarily on the surface, and forms bands running over one side of the marble and terminating at a seam, then the marble is considered a Striped Transparent (see below).

**STRIPED OPAQUES/STRIPED TRANSPARENTS**
Christensen Striped Opaques and Striped Transparents both share a common trait and are only differentiated based on their base glass (opacity vs. transparency). Both will have a base of one color, on top of which there will be one or more opaque colors forming stripes across the surface, running from one side of the marble and terminating on the other at a seam. Often the point of origin is another seam that is also very obvious, though sometimes it is not so noticeable. More often than not, the stripes on these marbles will be "electric," that is, they will be especially vibrant.

SWIRLS AND FLAMES

Christensen Agate swirls are among the most collectible machine made marbles, not only because they are often so beautiful and colorful, but also because they are fairly rare. White-based examples often go unnoticed because these swirls can easily be mistaken for the swirls of later companies, but the color-based ones are very easy to recognize. On the opaque swirls there is much more variety, and the marbles may have as many as five different colors. Infrequently, one or more of the colors in an opaque swirl will be transparent.

Transparent swirls are more rare than opaque swirls and are more limited in their color combinations. Typically, colors in a transparent base will be electric yellow or orange, and the base is usually clear, green, blue, or yellow. Electric transparent swirls often have one or two seams, with the colors forming stripes such as those on Striped Transparents, but with the colors under the surface. Other transparent swirls have one or more colors forming a ">U" or "V" inside the glass. The clear glass on such swirls often has a syrup-like effect, looking much like glycerin or corn syrup. However, this trait is often seen on transparent-based Akro Agate marbles, too.

On rare occasions, because the molten glass mixed to form the swirls formed strata (owing to the varying densities of the different colors), Christensen swirls formed "flames," so-called because the color strata actually appears on the surface of the marble as fine flames. Most collectors seem to agree that in order to be considered a flame, a marble must have at least four "stacked" flames. Some swirls have so many flames that they can hardly be counted, and when this trait combines with a multicolored swirl the effect can be nothing less than spectacular. Such a marble can fetch upwards of a thousand dollars, and even more if the marble is large, too.

Besides the flames, there are specialized types of swirls named by the company itself. The ">bloodie" is one such marble. This marble will always have an opaque white base, with both translucent brown and transparent red swirls. These are rare, and often hasty collectors will think they own one when in fact the marble is something entirely different (often Ravenswood swirls with these same colors are thought to be Bloodies). It is good for a collector to own a genuine Bloodie, not only because they are beautiful, but because the type is so diagnostic that one can compare its white base to other marbles in order to gain an eye for the subtle difference in Christensen's white glass as compared to that of other companies.

Another named swirl is the American Agate. These marbles will have either an opaque white base or an > opalescent white base (opalescent glass is translucent and will glow orange when held to a light). Mixed in with the white are swirls of translucent electric red to transparent electric...
orange. Therefore, American Agates have a degree of variation in them and one can find several combinations of the colors. The giveaway is the electric swirling. If the swirls are not this bright red or orange, then the marble is just a swirl.

One additional type of Christensen swirl, and an extremely rare one at that, is the "." This is called such because of the way the strata in the glass formed. These strata are even finer than seen in flames and in fact the marble will bear a striking resemblance to the layers of different colored sand one used to see in aquariums and glass frames. In fact, most Layered Sand swirls will have more than two colors, and these are frequently electric. There are few machine made marbles as difficult to find than this type.

Other names have been thrown around by collectors for Christensen swirl varieties. Few of these have gained recognition and remain as obscure terms, known only to a few. Such types include ">Blue Laces" (transparent amber with light blue), "Bluebells" (light transparent blue and opaque white), "Blue Azurites," "Jennies," "Submarines" (transparent green and yellow and/or red), "Tanks" (transparent green and brown), """>Blue Rays" (transparent cobalt blue with opaque bright orange), "Orange Peels" (black opaque base with orange and yellow patch), "Blue Devils" (transparent cobalt blue with white and yellow patch), "Red Devils" (transparent red with yellow patch), "Figers" (opaque yellow, orange, green, and brown), "Rockets" (translucent black and orange), and so forth.

Usually the swirling on Christensen swirls is random, excepting flames and Layered Sand examples. Quite often, however, the swirls will form a loop known to collectors as a "<>turkey." These truly do resemble the head of a turkey, in that they swirl upward from an oblique angle, then loop back around in the opposite direction, and finally parallel the beginning of the swirl. Rarely, turkey swirls will even have an "eye" of a third color.

Recently, numerous marbles have appeared which possess the colors of Christensen swirls but are hand-gathered. Some Christensen slags are also hand-gathered. In both cases there will be the "nine and tail" characteristic of "transitional" marbles. It appears that many of the hand-gathered swirls have the colors of American Agates and therefore this may have been one of the first marbles produced by the company.

One last note about Christensen Agate swirls is their lack of seams. Seamed examples are known as Striped Opaques or Striped Transparents. One exception is called a "Diaper Fold." In these, there will be a single seam, and this will form an indentation into the marble, into which the swirls extend.

GUINEAS AND CYCLONES

There are few machine made marbles that are as completely swathed in awe and reverence by collectors as the Christensen World’s Best Guinea," which was named, it has been said, because it reminded workers at the factory of the colors of the guinea hens which roamed the company grounds. Guineas are always transparent-based. Clear is the most common, followed by amber and cobalt blue. Red and green examples have been reported but are exceedingly rare. On the surface of the marble will be splotches and/or stretched flecks of opaque color originating from, and terminating at, one or two seams. The colors are usually a combination of light blue, light green, yellow, orange, lavender, and
white, though sometimes only some (as few as two) of these colors will occur. Often most of the surface of the marble is covered, though sometimes there are large clear areas. The colors will also be found inside the marble on occasion. Rarely, all of the colors will be inside the marble; such examples are called Cyclones or, alternately, Cobras. These are much more scarce than are regular Guineas. Even rarer, a Guinea-Cyclone will have the characteristics of the Cyclone, but in these there will be color on the surface and in the interior of the marble, often all on one side. The interior colors will be heavily swirled, not simply floating inside. It is important to emphasize that all three of these variations have recently been reproduced by marble artists who knowingly make them to allow their distribution to collectors as the genuine item. Caution is a necessity for anyone wanting to purchase a genuine Guinea or variation thereof.

**WORLDS BEST MOONS**

The last Christensen marble, and arguably the least collected, is the "World's Best Moon," so named by the company. These marbles have an opalescent white base that is translucent and which glows orange under illumination. They can be differentiated from Akro Agate Moonies by their bluish tinge (very rarely the marble will actually be light blue) and by their tiny air bubbles, which are not always present. Also, Akro Agate Moonies tend to have tiny open "eyes" into the marble; these areas will be clear while the remainder of the glass is cloudy.

**CHRISTENSEN AGATE COMPANY MARBLE GALLERY**

![Green Slag](image)

![Red Slag](image)

![Purple Slag](image)
Blue Slag

Brown Slag

Orange Slag

Yellow Slag

Striped Opaque

Striped Opaque
Three Color Swirl

Three Color Swirl

Three Color Swirl

Three Color Swirl ("turkey")

Four Color Flame

Five Color Flame
Three Color Flame

Four Color Flame

Three Color Flame

Two Color Flame

Five Color Flame
Five Color Flame

Four Color Flame

American Agate (opalescent base)

American Agate (opaque base)

"Layered Sand"

Electric Transparent Swirl
Blue Ray

Transparent Swirl

Transparent Swirl

Transparent Swirl

Transparent Swirl

World’s Best Guinea (clear-based)
The Akro Agate Company, perhaps the best known of the marble manufacturers and certainly the most prolific during most of their career, was formed in 1910 in Akron, Ohio, by George T. Rankin and Gilbert C. Marsh. They used as their trademark, which was registered the following year, a crow holding marbles in its feet and beak and flying through a capital "A." For the first three years of the
company's existence they simply bought and repackaged marbles made by M.F. Christensen and Son Company. In fact, their shop was located not too far away from the Christensen factory.

Meanwhile, M.F. Christensen's bookkeeper, Horace C. Hill, was embezzling money from his employer. Hill left the company in 1913 and joined up with Rankin and Marsh. In 1914, Hill moved the company to Clarksburg, West Virginia. Hill had applied for a patent on a marble-making machine in 1912 but it was at first rejected for being too similar to Martin Christensen's machine; perhaps Hill had stolen more than money from his employer. In 1915, a year following Akro Agate's relocation, and the same year in which Hill submitted a slightly different patent which was approved by the patent office, M.F. Christensen presented the courts with evidence of Hill's embezzlement. Hill paid back the $4,000 he had stolen, and died in early 1916, not too long after the death of Martin Christensen.

Akro Agate began marble production late in 1914. After Hill's demise, the company hired John F. Early, who made major improvements to Hill's machines. A major enhancement, the so-called Freese Improvement, was made in 1924 which allowed for more precision in the rounding of marbles and which did away with the tiny seams found at the poles of the marbles (often manifested on Corkscrews as fine feathering at or near the ends of the spiral). Previous to this as many as 20% of their marbles had to be rejected. A second improvement four years later more than doubled the production capacity of Akro's machines. The patent for this was approved in 1932, but by this time Early had left Akro Agate.

During the 1920s Akro Agate grew into the leading manufacturer of marbles thanks in large part to Early's innovations. Also, Arnold Fiedler, who had supplied Christensen Agate with its unique marble colors, worked for Akro Agate following his departure from Christensen (by some accounts prior to his employment with them), brought to the company his skills in glass mixing, which lent to Akro's marbles beautiful and vibrant eye appeal.

The 1930s saw some troubles for Akro Agate, as some of their key employees resigned at the beginning of the decade. Some of these went on the form the Master Marble Company. Sales of marbles declined everywhere toward the latter years of the decade and slowed even more in the subsequent decade. Akro began producing other glass objects during this period, including ashtrays, powder jars, jardinières, vases, decorative flower pots, candlesticks, bowls, dishes, and more. These met with moderate success. Their line of colorful children's dishes did not sell well at first, but with the onset of America's involvement in World War II and the concomitant halt of imported Japanese toys they soon became more popular. However, this diversification did not pull Akro Agate from its decline, and by 1951 it closed down for good.

The Akro Agate factory site as it exists today covers some two acres. Late in 1997 and into early 1998 one of the buildings was demolished, revealing large numbers of discarded marbles beneath the foundation. Many experimental types, which were rejected by the company, were discovered due to this incident. This find was termed the "Old Annex" site. Toward the end of 1998 and additional discovery was made in the drainage system used by the factory. Dubbed the "French Drain" site, it yielded multitudes of marbles, again many of them experimental varieties that
did not "make the grade." Several new oxblood marble types have entered the market as a consequence of the frantic digging that took place here.

**IDENTIFICATION TIPS**

Akro Agate marbles were produced in a mind-boggling abundance and in a large variety of styles. Among the most common were the monochromatic "clearies" (transparent) and "Opals" (opaque) marbles. These are just about impossible to distinguish from the essentially identical marbles from other companies, though if one pays close scrutiny to the opaque marbles in original Akro Agate Chinese Checkers boxes, subtle differences between their colors and those of other manufacturers can be observed. The company, however, is to collectors better known for its production of many varieties unique to them and therefore usually readily identifiable.

**SLAGS**

Akro Agate slags ("Striped Onyxes") were available in the following colors (in increasing order of rarity): amber, purple, blue, green, red, aqua, clear, vaseline, and orange. The red slags were called Cardinal Reds by the company. Like the slags of other companies, those of Akro were produced by the single-stream method and include a transparent colored based mixed with opaque white glass. One exception is the Cornelian which was produced in the same method as a slag but consists of an opaque red base mixed with opaque white. Perhaps the best way to identify an Akro Agate slag is not by any particular feature but rather by its lack of features. Akro Agate slags will lack the seams seen in Christensen Agate and Peltier examples, the fine feathering of the white seen in Peltier examples, and the "nine and tail" of the white as well as the cut-off mark of M.F. Christensen examples. As to the latter rule of thumb, it needs to be stated that early Akro slags, like those of M.F. Christensen and Christensen Agate, were hand-gathered and therefore may exhibit the "nine"-shaped pattern of the white where the marble was twisted out of the glass furnace.

**CORKSCREWS**

Perhaps the most popular Akro Agate marbles are the corkscrews. These are basically unique to the company and consist of one or more spirals of color encircling the marble from one pole to the other without ever crossing. Some corkscrews have a double or triple twist, particularly those in transparent glass. Corkscrews may have a white, colored, or transparent base; some contain several colors, fluorescent glass, or oxblood. The variety is nearly limitless, and is enhanced by hybrids and experimentalts. Corkscrews come in a variety of sizes, though any over one inch are extremely rare and were usually "experimentals," whereas those 1/2" or smaller are perhaps even more scarce. Some corkscrews will possess feathering near the ends of the spirals, manifested as fine "fingers" of color extending from tiny crescent-shaped crimp marks; as mentioned earlier, this trait indicates manufacture prior to the "Freese improvement" of the mid-1920s. Such early marbles will also usually have vibrant colors.
Corkscrews with two opaque colors were called Prize Names, while those with three or more opaque colors were called Specials. These come in a bewildering array of color combinations. White-based examples are most common. Usually, the colors formed separate strata as they were injected into the shearing mechanisms of the marble machines. However, sometimes the colors blended, perhaps because the densities of the different colored glass were similar. When counting colors in corkscrews, it is generally accepted that the blended colors are not counted separately. Therefore, for instance, a blue and yellow corkscrew with a green blend is a two-color Prize Name, not a three-color Special.

Other types of corkscrews named by the company itself include: Spirals, which have a transparent clear base and a colored spiral; Onyxes, which have a transparent colored base with a white spiral; and Aces, which have a translucent milky white base with a colored spiral. Some names have been adopted by collectors. A "snake" is a Spiral or Onyx with the spiral near the surface of the marble, while a "ribbon" has the spiral nearer to the center. Rarely, a corkscrew will be a cross between a Spiral and an Onyx, in that it will have a colored transparent base and a colored spiral. However, these are often misidentified, as a white spiral may simply look colored beneath the colored base glass.

One of the most popular corkscrew types is the Popeye (marketed as the Tri-Onyx by the company), so-named because it was sold in the much-sought after Popeye box (which depicted the cartoon character). This marble is recognizable because it contains a transparent clear glass with opaque white filaments in addition to a combination of two other colors (Popeyes with three or more colors are called Hybrid Popeyes). Some Popeyes have very little clear areas in them, while others have wide clear areas. Popeye color combinations, in approximate decreasing order of frequency, include red/yellow, green/yellow, red/green, dark blue/yellow, light purple/yellow, dark purple/yellow, powder blue/yellow, dark blue/red, red/orange, blue/green, and black/yellow. The yellow is often entirely or, more often, partially fluorescent.

Related to Popeyes are Imperials and Ringers. Ringers have the clear areas with white filaments of Popeyes but only have one additional color. Usually this color is transparent red or orange. Imperials have a more translucent milky base, with a red spiral shadowed by a more transparent orange spiral.

"Ade" corkscrews are identified by their base glass of translucent off-white mixed with wispy opaque white. The spirals on these marbles will be translucent and come in yellow ("lemonades"), green ("limeades"), orange ("orangeades"), red ("cherryades"), and reddish brown (Carnelians). Sometimes these spirals will be accompanied by oxblood, though this is a more common feature on Ade swirls (see below). Lemonade oxbloods and limeade oxbloods are most common; typically, there is more oxblood on the former than the latter.

Besides oxblood ades, oxblood may occur on other corkscrews. Oxblood is a type of glass that is always dark opaque red with fine black filaments in it. It is extremely easy to recognize once a collector has seen it at least once. Oxblood corkscrews can be quite valuable. One of the rarest types, if not the rarest, is the Popeye oxblood. Besides this and the aforementioned oxblood ades, oxblood corkscrews can include oxblood on a transparent clear base ("clear oxbloods"), oxblood on a translucent milky white base ("Milky Oxbloods"), oxblood on
translucent wispy white base ("silver oxbloods"), oxblood on an opaque brown base ("chocolate oxbloods"), oxblood on a milky translucent white base with opaque yellow ("eggyolk oxbloods"), and oxblood on a milky translucent white base with translucent blue ("blue oxbloods"). These are more commonly seen as swirls than as corkscrews, though. True oxblood corkscrews are usually on an opaque or translucent white base, though oxblood on colored bases are known but are rare. Oxblood on top of a blue spiral on a white base is known as a "blueblood." Hybrid examples (e.g. "blue eggyolk oxbloods") occur but are extremely rare. It should be emphasized that oxblood usually occurs on the surface of a marble but is sometimes found beneath.

Sometimes two corkscrews fell down the marble machine chute at the same time, forming together into what is called a "double ingot" corkscrew. This usually is found with those that have all opaque colors and which are in shooter sizes. The resulting marble has what appears to be seams and a "broken" corkscrew pattern. These are frequently mistaken for Peltier's National Line Rainbos.

**SWIRLS**

Swirls are typified by their random swirling pattern, which stands in marked contrast to the well-defined pattern of a corkscrew marble. Many of the corkscrew types, in particular the ades and oxbloods, occur more frequently as swirls. Other than lacking the characteristic spiral of a corkscrew, their characteristics are the same. Because they are more common they are usually priced lower. Without the diagnostic traits of the fluorescent ades or the oxblood swirls, Akro Agate swirls are very difficult to distinguish from those produced by other companies. In fact, as one does not often see swirls with the rich colors of early Akro Agates (save for those that are easily recognized as Christensen Agates), common white-based swirls were probably produced late in Akro Agate's history.

**PATCHES**

In basic terms, an Akro Agate patch marble is a corkscrew that didn't twist. Therefore, one may find marbles that have the same colors as many of the corkscrews but instead of spiraling from one pole to the other, there will simply be a short strip of color(s) on the base glass. They are generally considered to have been produced by error. These are rare, and are most often seen in Popeyes. Blue/yellow Popeye patches are the most common, thanks to a recent find of many thousands of them by diggers at the old factory site. Other Akro patches were purposefully made by the company; these were marketed with names assigned by Akro Agate.

Uniques are patches that have an opaque white base with a wispy brushed brown patch covering about one third of the marble, with a small space on the patch that allows the underlying white to show. The Hero is the same type of marble but lacks the space. Both of these are pre-"Freese improvement" marbles. Collectively, these two types are often known as "birds," because when viewed from one angle the patches have a shape suggestive of the breast and head of a songbird. "Grebes" have a reddish orange to orange brown patch; "brown thrashers" have a dark brownish red patch; "golden tawnies" have a yellowish orange to orangish brown patch; and "rainbows" have all the colors seen on the previous three varieties.
Royals have an opaque colored base with an opaque or translucent patch. Again, the patch covers about one third of the base. Another type, the Moss Agate, has a fluorescent milky light brownish white base with a translucent colored patch covering up to one half of the marble. Hy-Grades have a transparent blue or brown base with a patch of brushed opaque white covering about half of the surface. Finally, there is the Helmet, which has a transparent colored base with an opaque colored patch covering about half the marble, and a colored stripe on the patch. Viewed from the correct angle this marble will resemble a head with a football helmet on it, hence the name. There is strong evidence that Vitro Agate actually produced these marbles, and in fact the colors and the seams do resemble those of that company.

Other patches by Akro Agate tri-color patches that are practically indistinguishable from those of Vitro Agate, as the colors and seam patterns are the same. Perhaps the companies used similar machinery. The patches, which have an opaque milky off-white base, normally have two separate patches. Each patch begins and terminates at seams on opposite sides of the marble. Color combinations include green and red, green and yellow, red and blue, and yellow and blue. Sometimes these patches will have a fourth color, too. In other instances, one of the patches will be oxblood. The colors are always dull and on the surface, and were thus manufactured late in Akro Agate’s history.

Other oxblood patches are also known, and most appear to be of larger sizes. Examples I have seen often have oxblood and a patch of one other color brushed on the surface, with a clear glass base containing a core filled with white filaments. These were probably experimental.

SPARKLERS

Sparklers were Akro Agate’s only marble that was manufactured with the "injection" method, where colors were actually injected into the clear base. This was essentially the same technique used to produce catseye marbles, which came much later and which were not produced by Akro (since the company folded before they became popular). Sparklers are often mistaken for Master Marble Sunbursts, though this should not happen, as Sparklers always have at least five colors (with rare exceptions) while Sunbursts have no more than three. Also, the colors used in Sparklers are very bright, whereas Sunbursts are normally duller or more earth-toned. Typical Sparkler colors are red, yellow, orange, green, blue, and white, and these will form a wispy core in the marble. Less often, the colors will be in bands. Sometimes these colors come almost to the surface while at other times they are closer to the core.

FLINT MOONIES AND FIRE OPALS

Akro Agate Flint Moonies (referred to by many collectors simply as "moonies") are translucent white marbles composed of opalescent glass, which will glow orangish when held to a light. Flinties are also opalescent, but have colored base glass (brown, yellow, green, red, and blue, in increasing order of rarity); "Fire Opal" is Akro's name to refer to their red Flinties. Akro Agate's opalescent marbles can be distinguished by their small clear "eye," a small circular area of clear glass surrounded by the remaining cloudy matrix.
CORNELIANS AND BRICKS

Akro Agate produced two types of marbles that were very similar to the American Cornelian (brick) by M.F. Christensen. The first was the Cornelian, which contained a dark red translucent base with white swirls. Though the red in this glass appears to be oxblood, it is not. On the other hand, a type of Akro Agate marble being called a Brick has been appearing lately, likely as a result of the recent round of digging at the Akro dump site. These marbles are comprised of a very dark oxblood which is nearly black, with white swirls. It can be differentiated from the M.F. Christensen Brick because it does not have the characteristic hand-gathered "nine and tail" nor the cut-off line of that type. Also, the Akro examples often have hair-thin wires of oxblood coiled on the surface.

EXPERIMENTALS/DUG MARBLES

In the past few years there has been a virtual flood of "dug" Akro Agate marbles appearing at shows, on the Internet, and elsewhere. The reason for this has been because diggers have recently been very active at the Akro Agate plant site, where caches of discarded marbles have been encountered. While many of these discarded marbles are simply rejected examples of the types discussed above, others have either not been seen before or were available to collectors albeit very rarely. Many of these have been termed "experimentals" because they are thought to represent runs of marbles that were tried out by the company but for one reason or another rejected and discarded. Most of these seem to be in larger sizes, from 3/4" to over one inch. Some are quite rare while others have appeared in large quantities and have depressed the value of their counterparts that were already in collections.

Within the latter category are a variety of tri-colored corkscrews that have as a common trait a translucent to transparent red spiral which often has stress or annealing fractures. Usually the red "floats" on top of another color rather than being distinct and separate. These have been assigned somewhat controversial names by some collectors: "patriots" are red, white, and light blue; "supermen" are red, yellow, and light blue; "lifesavers" are red, yellow, and light green; and "Indian blankets" are black, yellow, and red or black, white, and red. As stated, these marbles are normally of a shooter-size. Smaller examples with opaque red appear to have been in general circulation rather than having been abandoned by the company; thus, they have been in collections longer, are generally in better condition, and are more highly valued.

Another class of experimental marble is that of oxbloods. Several new varieties have appeared as a result of the Akro Agate digs, such as the "chocolate oxblood" and the "sky blue onyx." At first these fetched top dollar but once collectors realized the abundance of many of them the prices plummeted sharply, though some were recovered in small enough numbers to remain very highly sought after.

Some of these marbles have a transparent clear base with "anemic" oxblood swirled inside. Another type has a transparent dark brown base with an oxblood patch; this patch often forms a "V" on the marble's surface. There are several other types of experimental oxbloods, and many of these also seem to be characterized by their "v" patch. At least three varieties of fluorescent oxbloods have also been identified.
Other experimental Akro Agate marbles, and those which seem to have been around longer owing to earlier digs, are a variety of large corkscrews and patches. Many of these are comprised of the vibrant colors indicative of marbles produced early in Akro's existence. The patch versions appear to represent an attempt to make corkscrews, but produced by error because the spinning mechanism of the marble machinery was not working. One other type of experimental corkscrew has an opalescent milky white bubble-filled base with a spiral brushed on the surface. The spiral is often of an "anemic" color and is translucent to transparent.

SCREENPRINTED MARBLES

Recently, I spoke with a friend who told me his uncle was in the screenprinting business in the mid-to-late 1930s. One of the items he screenprinted for companies (filling stations, Cracker Jack, and small local businesses in the area of western Pennsylvania) and individuals (i.e. political campaigners) included marbles. This elderly gentleman, Howard E. Koehler, was born in 1910, and obtained his marbles from Akro Agate. Over the years he has given these marbles to his relatives, including his nephew, my friend, who showed me a jar full. Among the marbles were Popeyes, Corkscrews, and Opaques. Many were printed with the names of individuals, while others had the names of petroleum companies (Esso, Mobilgas, and Sunoco) and such words as "freedom" and "1937." Mr. Koehler himself kept around 100 of these marbles, and allowed me to go through them. Perhaps some of the more interesting examples contained "Landon" or "Landon/Knox"; Alfred Landon and Frank Knox were the republican candidates for president and vice president, respectively, during the 1936 election, and lost against Franklin D. Roosevelt.

AKRO AGATE COMPANY MARBLE GALLERY

Vaseline Slag

Clear Slag
Prize Name

Special (Three Color)

Special (Three Color)

Special (Three Color)

Special (Three Color)
Spiral

Onyx

red/yellow Popeye

red/blue Popeye

green/yellow Popeye

purple/yellow Popeye
blue/yellow Popeye

powder blue/yellow Popeye

hybrid Popeye

hybrid Popeye

hybrid Popeye

hybrid Popeye
hybrid Popeye

hybrid Popeye

hybrid Popeye

hybrid Popeye

Ace

Tri-Colored Ace
Tri-Colored Ace

Lemonade

Lemonade Oxblood

Limeade

Limeade Oxblood

Limeade Hybrid
Carnelian

Carnelian Oxblood

Eggyolk Oxblood

Hybrid Eggyolk/Blue Oxblood

Blueblood

Blue Oxblood
Double Ingot Corkscrew

Oxblood Swirl (white-based)

Milky Oxblood

Tricolored Milky Oxblood

Brick

Popeye Patch
Sparkler

Moonie

Flintie

"Superman"

"Lifesaver"

"Indian Blanket"
"Patriot"

Experimental Oxblood in Clear

Experimental Oxblood on Transparent Dark Brown

Experimental Swirl

Experimental with Oxblood

Screenprinted Popeye
Screenprinted Opaque

Screenprinted Opaque

Screenprinted Flintie

Screenprinted Blue/Oxblood Swirl

Screenprinted Popeye

Peltier Glass Company (1886-present)

COMPANY HISTORY
The Peltier Glass Company, located in Ottawa, Illinois, has its roots in the 1880s but did not begin producing marbles until the 1920s. However, when it did begin manufacturing them the company did it with a flourish.

The story of Peltier Glass begins in 1859 when Victor Peltier, a glass craftsman, immigrated to the United States from his native France. He moved to Ottawa, Illinois, and worked at the Ottawa Flint Glass and Bottle Company from 1882 to 1886. At this time he established the Novelty Glass Company in Ottawa. This location was already home to several other glass companies, owing to the allure of its deposits of silica, which were among the purest in the nation. Here, Peltier manufactured a variety of glass items, including lamp chimneys, library lamp shades, Pullman car windows, cathedral windows, and more. Most of these items were composed of opalescent glass.

In 1919 the factory burned down. Peltier rebuilt it and changed the name to the Peltier Glass Company. Shortly thereafter, Victor's two sons, Sellers and Joseph, took over the company, along with one of their own sons. Soon, the Peltier brothers included marble manufacturing among their company's operations. This began around 1927, and the machinery used was patented by William J. Miller in 1926. This machinery was actually made in 1920 and used by Nivison-Weiskopf Company until 1924, when it was probably sold to Peltier. Records indicate that this little known company produced some 2,700,000 marbles with Miller's machine, though it is currently unknown what these marbles looked like.

In their first full year of marble manufacture, Peltier produced approximately 33,000,000 marbles. The earliest Peltier marbles were made with the single-stream Miller machinery. Swirls and slags were produced in this manner. Within a few years Peltier updated the machinery, which eliminated the random swirling if "Miller" marbles. Due to declining sales in later decades, mostly due to the influx of the extremely popular "catseyes" from Japan, Peltier stopped producing marbles in either the late 1960s or early 1970s, though the company remains in operation today and still produces a variety of glass items.

IDENTIFICATION TIPS

Like Akro Agate and Christensen, early Peltier marbles are often composed of brilliant combinations of color. The first marbles by Peltier were produced by Miller machinery, and were single-stream slags and swirls. Many Peltier marbles, especially early examples, have as-made blow-out holes that appear on the surface of the marble as tiny pits. Peltier marble sizes seem to be more variable than those of most other companies, and they produced many peewee marbles, in diminutive sizes for the most part not seen from other major manufacturers. However, some of their marbles, such as the National Line Rainbos (see below), are extremely rare in peewee (under 1/2") or shooter (over 3/4") sizes.

SLAGS

Peltier slags were called National Onyx by the company and were available in colors of brown, blue, green, aqua, purple, red, and yellow, in approximate
increasing order of rarity. Early Peltier slags lack seams while later ones often have them. Regardless of when they were made, most Peltier slags exhibit a fine feathering of the white glass, a trait not seen in slags manufactured by other companies. More than anything, this is the key to identifying them.

**MILLER SWIRLS**

As mentioned, the earliest Peltier marbles (late 1920s) were produced by machinery patented by William Miller. As single-stream machines, Miller swirls are characterized by random swirling, though they typically will have a single seam from which the swirls originate. Most Miller swirls are composed of bright colors, which are often in the same combinations as the National Line Rainbos (discussed below).

Multicolored Swirls are a type of Miller swirl that have a transparent base, usually green, with swirls of several different colors. This type lacks seams. A specialized variety is known as the Honey Onyx; this marble will have a semi-opaque white base with a translucent yellowish brown patch and a thin translucent green ribbon.

**NATIONAL LINE RAINBOS**

Among Peltier's most popular marbles are the National Line Rainbos, which were produced as early as the late 1920s and up to the late 1930s. All National Line Rainbos will exhibit two seams, which differentiates them from the earlier Miller swirls. Most have an opaque base, though some are semi-opaque or translucent. The design will consist of "ribbons" of opaque to transparent color. There will be one or more colors represented on the ribbons, and usually there will be four or six ribbons present. Rarely, the ribbons will have aventurine glass in them, usually in black ribbons but also present on extremely rare occasions in blue or red ribbons. Aventurine is a type of glass with finely ground particles of copper (golden), chromic oxide (green), or ferric oxide (red), which causes it to sparkle under illumination, especially direct sunlight.

Collectors have assigned a variety of names to National Line Rainbos to describe their different combinations of color. A Superman will have a light blue base with yellow and red ribbons. Golden Rebels have a yellow base with red and black ribbons (there is often aventurine in the black). A Ketchup and Mustard has a white base with red and yellow ribbons. Christmas Trees also have a white base, but on these the ribbons are green and red. A Liberty has a white base, with blue and red ribbons, and a Rebel has a white base with black and red ribbons. Again, there is often aventurine in the black ribbons of the latter type. Other varieties include the Bumblebee (yellow with black ribbons), Zebra (white with black ribbons), Blue Bee (yellow with blue aventurine ribbons) Lemon Lime (lime green with yellow ribbons), Bloodie (transparent red on translucent off-white), Blue Zebra (white with blue ribbons), Red Zebra (white with red ribbons which often have aventurine), Cub Scout (blue with yellow ribbons), Wasp (red with black ribbons), Blue Wasp (red with blue ribbons), Tiger (orange with black ribbons), Blue Tiger (orange with blue ribbons), Spiderman (light blue with red ribbons), Superboy (light blue with blended red and yellow ribbons---usually the red lies on top of the yellow), Burnt Christmas Tree (white with green and reddish brown ribbons), Dragon (light green with red ribbons), Flaming Dragon (light green with
red and yellow ribbons—usually the colors are blended to create a more orange effect), Blue Galaxy (light blue with aventurine black and yellow ribbons), Black Panda (black with white ribbons), Chocolate Cow (brown with black ribbons), Gray Coat (white with red and gray ribbons), and Submarine (translucent blue with wispy white base and orange ribbons). Sometimes the colors are blended, and often these marbles are very beautiful due to the multicolored effect. It should be noted that other, unnamed, color combinations are known, and also there are hybrids with three or more different colored ribbons. These latter examples are extremely rare. Also very scarce are National Line Rainbos with oxblood.

Recently, there has been an effort to further define National Line Rainbos based on their style of ribboning. Type One National Line Rainbos will have four to six ribbons that are heavily swirled as they run from seam to seam. Type Two National Line Rainbows will have four to six ribbons that run very straight from one seam to the other. Type Three National Line Rainbows have four ribbons, two each of which emanate from seams set on opposite sides of the marble but perpendicular to one another ("t"-shaped). Type Four National Line Rainbows also have four ribbons which form a "broken corkscrew" pattern as they swirl from one end of the marble to the other. Finally, Type Five National Line Rainbows have four ribbons, two of which form patches on either pole of the marble and two of which form equatorial bands. These latter marbles are often mistaken for Marble King ("patch and ribbon") Rainbows.

PEERLESS PATCHES AND CHARACTER MARBLES

Peerless Patches, as the name implies, are patch marbles. They were produced during the same period as the National Line Rainbos and therefore the colors are often the same. Peerless Patch patches are distinct from the patches seen on the marbles of other companies because they have curved edges. Sometimes they form the shape of the letter "S." Known color combinations include opaque black on white (the black often contains aventurine), transparent green on white, opaque yellow on green, opaque red on white, opaque yellow on light blue, opaque red on light blue, opaque red on yellow, opaque red on orange, and more. "Hybrid" examples with three colors also exist. A very rare type of Peerless Patch has a satiny finish on the patch. These are referred to as "pearlized" and are usually found as a greenish patch on light blue.

A very distinctive type of Peerless Patch was called "Picture Marbles" by Peltier and are usually known to collectors simply as "comics." These are Peerless Patches that have had one of 12 comic characters that were popular throughout the 1930s fired in graphite on the surface of the marble, which was subsequently refired with a clear overglaze. Usually, the marble has a white base, though color-based examples occur infrequently. The characters, in approximate increasing order of rarity, include Emma, Koko, Bimbo, Andy, Smitty, Herbie, Skeezix, Annie, Sandy, Betty, Moon, and Kayo. Very rare examples also have Tom Mix or an advertisement for "Cotes Master Loaf," and at least one specimen with Franklin Roosevelt also exists.

Another type of patch that may have been manufactured is the oxblood/aventurine patch. This marble closely resembles the Peerless Patch, and has a green patch on an opaque white base. On one edge of the patch there will be a thin strip of oxblood, and floating on top of that is light aventurine.
RAINBOS

Peltier Rainbos, the descendants of the National Line Rainbos, appear to have been first manufactured in the late 1930s and throughout the following decade. Composed of less brilliant glass, they were probably a response to a declining marble market and a need to reduce production costs. Like their predecessors, these marbles have two seams. They may have a base glass that is either opaque or transparent, and usually one or two ribbons that encircle the marble, usually near the center. Unlike on the National Line Rainbos, the ribbons on Rainbos often go into the base glass, whereas on the former they lie on and perhaps just underneath the surface.

As with the National Line Rainbos, several types have been defined by their ribbon patterning. Type One Rainbos are heavily swirled. Type Two Rainbos have six ribbons, four that form two bands on the equator and two forming patches at either pole. Type Three Rainbos have four ribbons which form two bands around the equator.

Most Rainbos have an opaque base, which is usually white though color-based examples are fairly common. Some of these have the same color combinations as National Line Rainbos, though they are generally duller. Rainbos with a translucent colored base are called Acme Realers. If the base is opalescent, and the ribbons are red, the marble is called a Bloodie. Sunsets are those that have a transparent bubble-filled clear base with red, orange, or yellow and white ribbons. Champions Jrs. have a dark transparent base with white and yellow ribbons. Tri-Color Rainbos have a colored base, either transparent or opaque, with ribbons of two different colors. Finally, Clear Rainbos are transparent clear-based, and have four or more different colored ribbons. Slightly resembling Markle King’s Four-Color St. Marys Catseyes, these most often have a blue/red/yellow/white or green/red/yellow/white color combination. Almost all Clear Rainbos have thin ribbons, with around 10% possessing thicker ones.

Additional imaginative names have been adopted by collectors for various Rainbos. A "clown" has a dark transparent base with red and yellow ribbons. A "seven-up" has a transparent green base with red and white ribbons. "Baseballs" are opaque white with blue ribbons. The list goes on, but many of the names are rather arbitrary. Occasionally, a Rainbo will contain oxblood.

BANANAS AND ROOT BEER FLOATS

Peltier Glass Company produced a very specific type of catseye marble referred to be collectors as "bananas," because the shape of the single vane that runs from pole to pole in the center of the marble. These appear to have been produced later than most other American catseye type marbles, though by some accounts they were made prior to those manufactured by other companies. The vanes are often smooth sided, much like a true banana, while others have lobes or ridges down the sides. Common banana colors in clear base glass are yellow, red, orange, blue, green, and white, though other colors, such as lavender, are available but less frequently. Some bananas have turned up that have a green vane with a red stripe. More rare are hybrid bananas, which have two separate vanes instead of one. Peltier produced one specialized banana type in a colored base. Known as a "Root Beer Float," this marble has a dark amber base with a white vane.
SOLID COLOR MARBLES

Like most marble companies, the solid color marbles produced by Peltier are impossible, for the most part, to differentiate from those of any other manufacturer. However, some can be found in original boxes and therefore are identifiable as such. National Milkies were Peltier’s version of the Akro Agate Moonie. These marbles are a translucent opalescent white. Canaries are similar marbles, but with a yellowish green tint, while Moons have a beige to orange tint.

PELTIER MARBLE GALLERY

Multicolored Swirl

Multicolored Swirl with Oxblood

Blue Slag

Green Slag
Miller Swirl (Liberty)

National Line Rainbo (orange on yellow)

National Line Rainbo (orange on blue)

National Line Rainbo (green on yellow)

National Line Rainbo (Red Zebra)

National Line Rainbo (Bumblebee)
National Line Rainbo (Blue Bee)

National Line Rainbo (Lemon Lime)

National Line Rainbo (Wasp)

National Line Rainbo (Tiger)

National Line Rainbo (Cub Scout)

National Line Rainbo (Rebel)
National Line Rainbo (Superman)

National Line Rainbo (Superman with Yellow Aventurine)

National Line Rainbo (Ketchup and Mustard)

National Line Rainbo (Liberty)

National Line Rainbo (Flaming Dragon)
National Line Rainbo (Blue Galaxy)

National Line Rainbo (Citrus)

National Line Rainbo (blue base with black aventurine)

National Line Rainbo (red, blue, and black on green)

National Line Rainbo (Blended Superman)
National Line Rainbo (Burnt Christmas Tree)

National Line Rainbo (Christmas Tree/Ketchup and Mustard Hybrid)

National Line Rainbo (Rebel/Christmas Tree/Ketchup and Mustard Hybrid)

National Line Rainbo (red, black, yellow, and oxblood on blue)

Miller Swirl (Superman)

Peerless Patch
Peerless Patch

Peerless Patch Hybrid

Peerless Patch with Oxblood and "Metallic" streak

Oxblood/Aventurine Patch

Character Peerless Patch (Koko)

Character Peerless Patch (Bimbo)
Character Peerless Patch (Betty)

Character Peerless Patch (Moon)

Character Peerless Patch (Kayo)

Character Peerless Patch (Cotes Master Loaf)

Character Peerless Patch (Tom Mix)

Rainbo
Rainbo (Christmas Tree)

Rainbo (Bloodie)

Rainbo (Sunset)

Rainbo (with oxblood)

Rainbo (tricolor)

Rainbo ("clown")
Clear Rainbo

Banana

Banana

Banana

Banana (aventurine)
Master Marble Company/Master Glass Company (1930-1973)

COMPANY HISTORY

The Master Marble Company formed in 1930 following the departure of several key employees from Akro Agate. These former employees, John F. Early, Claude C. Grimmett, John E. Moulton, and (later) Clinton F. Israel, set up their fledgling company in Anmoore, West Virginia, and began producing marbles almost immediately, perhaps first from an Akro Agate machine modified by Early and then from one designed by Early.

In their first year of business, Master Marble received an offer by Akro Agate to buy them out. However, they refused, setting off a price war initiated by the latter company. Akro even went so far as to send an employee onto the company grounds to spy; this person was caught and eventually jailed. Frustrated, Akro Agate tried the legal route to destroy Master Marble through litigation, as they believed their competitor's owners (former Akro employees) had infringed on Akro's patents. This law suit endured from 1933-1937, terminating in Master's favor.

Master Marble Company gained prominence when, in 1933, they exhibited millions of marbles at the Chicago World's Fair. A collector's "College Edition" box was produced for the event. These boxes, which were available in several sizes, are now exceedingly rare and valuable.

By 1936 both Grimmett and Moulton left the company, followed soon by Early. This perhaps precipitated the closing of the company in 1941. The equipment and supplies were purchased by the sole remaining founder, Clinton Israel, who re-established a marble company in Bridgeport, West Virginia, as Master Glass. The Master Glass Company produced marbles that were similar to Master Marble Company marbles, as the same machines were used, and also sold Akro Agate marbles and jobbered its own marbles in Akro boxes following the closing of that company in 1951. Production continued until 1973, when the company closed its doors for good. Israel died two years later.

IDENTIFICATION TIPS
All marbles produced by Master Marble and Master Glass utilized the same type of machinery which was similar to that used by Akro Agate but which never involved the "Freese improvement" that eliminated the cutoff marks at the poles by offsetting the rollers. Therefore, all Master marbles, even the clearies and opaques, possess tiny crimp marks and feathering at either pole. These crimps will occur in conjunction with the seams, which usually form a "V" or "U" shape. Generally, the "U"-shaped seams apparently occur on older examples (Master Marble) while the "V"-shaped seams are associated more with later ones (Master Glass).

An addition method, and perhaps a more reliable one, to differentiate between Master Marble and Master Glass marbles is that generally brighter colors were employed on the former, while duller colors were used on the latter. This trait is seem on most American machine made marbles, which switched to cheaper, and therefore less vibrant, glass during the 1930s.

In terms of size, Master Marbles were almost exclusively limited to the 9/16"-25/32" range. While some smaller specimens have been reported, very few larger ones exist.

SUNBURSTS AND TIGEREYES

The Master Marble Sunburst appears to have been an effort to reproduce the handmade onionskin marbles of an earlier era. These marbles have a clear transparent base which may be partially to entirely filled with colored glass filaments. The filaments run from one pole to the other and may be opaque to translucent and in a variety of colors. A variety of colors occurs, but most Sunbursts have only three colors or less in them. This trait helps differentiate them from Akro Agate Sparklers, which usually have more and brighter colors than do Sunbursts. However, some multicolored Sunbursts with four colors do exist.

A specialized variety of the Sunburst is known as the Tigereye and is fairly rare. This marble is essentially a Sunburst where the filaments occur only in a wide flat band that forms a ribbon stretched from pole to pole. It has been noted that most of these are white, black, and orange.

Some Sunburst-like marbles with a colored transparent base have been identified as Master marbles. One type that has been called "Crab Claws" has a transparent green base and yellow filaments and strands. These appear to be rather scarce.

METEORS, COMETS, AND CLOUDIES

Another class of Master marbles are their patches, which can be categorized into three major varieties. Meteors have a wispy translucent patch on an opaque base, Comets have an opaque patch on an opaque base, and Cloudies have a wispy translucent patch on a wispy translucent base. Most Cloudies have a white base, while on the Meteors and Comets there is a wide variety of colors. Aventurine sometimes occurs on the patches. Master patches are easily recognized by their "V" and "U" seams and associated crimp marks and feathering.
Another type of Master patch is the brushed variety. This marble, which appears to be a later (Master Glass) type, usually has a wispy white patch on a transparent black (actually very dark purple) base.

**CATSEYES**

The final type of Master Glass marble is the catseye, a variety that was not made when the company operated as Master Marble. These catseyes usually have an opaque to translucent three-vane core. Some are filled with small bubbles and have "banana"-like core. A few color-based examples have been found. Master Glass catseyes are arguably the least attractive of their contemporaries, with dull colors (purple, white, orange, light green, light blue) and vanes that can either occur in the center of the marble or pushed off to one side. Sometimes the vanes are well-defined but at other times they form almost amorphous blobs.

**ORIGINAL PACKAGING**

The first packaging by Master Marble appears to have been its "College Edition" boxes produced for the 1933 Chicago World's Fair, at which the company had an exhibit. These boxes were made in three different sizes, each featuring a panoramic aerial view of the fair on the inside cover and a simpler picture of the fair in red print, along with the company name and "Century of Progress Chicago 1933" on an outside slip cover. Another rare box made for the World's Fair, but marked "1934," contained a single hand ground agate.

Other early boxes by Master Marble include retailer stock and display boxes containing 100 specimens of a single type of marble, colorful gift set boxes (often with "Sunbeams," rainbow-colored rays radiating from the circular company logo), stenciled game marble boxes, and game marble boxes containing smaller cellophane-covered boxes (three or five) with single colored opaque marbles.

Another type of "Sunbeam" box was the No. 13 box containing thirteen marbles. These oblong boxes were made by both Master Marble and later by Master Glass, though the former are more rare. They contained oval cut-outs to allow the marbles inside to be viewed, and the backsides of the boxes often contain advertising for such companies as "Popsicle" or for people running for local and political offices.

Master Glass also commonly distributed its marbles in the No. 5 box, which was blue and red with ten oval cutouts on the front, along with the company logo. These are reported to have been recently reproduced, though the originals are fairly common and therefore inexpensive. The No. 10 box is much more scarce and is essentially the same as the No. 5 box, but twice the size and with 20 oval cutouts. The No. 10 boxes usually have the rules for the game of "Ringer" printed on the rear.

The final type of original packaging is the polyvinyl bag, which was made by Master Glass but not by its predecessor. These bags differ from those of other companies in that they do not possess the rear vertical seam but rather were heat
sealed along the top. The headers consist of thin peach-colored paper situated inside the package, not outside, and the heat-seal lies approximately through the center of the header. The marbles in these packages are typically Catseys and Clearies.

MASTER MARBLE/MASTER GLASS MARBLE GALLERY

Sunburst

Sunburst

Sunburst

Sunburst
Sunburst

Sunburst

Sunburst

Sunburst

Sunburst

Sunburst
Sunburst

Sunburst

Sunburst

Sunburst

Sunburst

Sunburst
"Crab Claws"

Meteor

Comet

Comet

Comet

Comet with Aventurine
Catseye (blue-based)

No. 13 Sunbeam Box

No. 13 Sunbeam Box (reverse)

No. 13 Sunbeam Box (reverse)

No. 5 Master Glass Box
Marble King, Inc. (1949-present)

COMPANY HISTORY

Though a relatively late starter, Marble King, Inc. quickly became a major force in the realm of American marble manufacturers. It actually began more than a decade earlier as the Alley Agate company (see Alley Agate page), but was sold by Lawrence Alley to Berry Pink and Sellers Peltier in 1949. The name was changed to Marble King and operated in St. Marys, West Virginia, until 1958, when it was destroyed by a fire. That same year the factory was rebuilt in Paden City, West Virginia, not too many miles north of St. Marys. The factory is still in operation today.

Berry Pink was no stranger to the world of marbles. For years, he had been a prominent promoter of the game of marbles (he had sponsored tournaments since 1922) and had even "jobbered" those of other companies under the name of "Berry Pink, Inc." since the 1920s. As owner of 51% of the company (Sellers, co-owner of Peltier Glass, possessed the remaining 49%), Pink was in charge of the
company. However, he was based in New York City and for the most part trusted operations of his plant to Roger Howdyshell.

For the first several months Marble King did not manufacture marbles, though they had purchased Alley’s machinery along with the factory, but rather packaged and sold marbles made by Peltier Glass. The initial production runs were in July, 1949. However, for many years following marbles by Peltier, as well as such other companies as Heaton Agate, were sold inside Marble King packaging.

The mid-1950s witnessed the introduction of catseye marbles from Japan to the American market, an event that crippled the U.S. marble manufacturers and even sent some out of business. In an effort to battle this blow, Pinky, Howdyshell, and Duncan Peltier (son of Sellers) traveled to Japan in order to purchase the machinery necessary for producing catseye marbles. Negotiations failed, but not before they managed to learn how to copy Japanese techniques. In 1955 Marble King introduced its own line of catseye marbles, which enabled the company to survive.

Earlier methods to reduce costs and keep the company profitable included a technique called "veneering," which was reportedly developed by Howdyshell. By this method, white-based glass was covered with colored glass, which was much less expensive than using colored glass for the base.

Marble King was sold to Howdyshell, Duncan Peltier, and Cornell Medley in 1963. Howdyshell emerged in 1983 as the company’s sole owner. He died in 1991 after 42 years with the company; he was succeeded as president of Marble King, Inc. by his wife, Jean.

**IDENTIFICATION TIPS**

Like most companies, Marble King, Inc. produced a variety of solid color opaque and transparent marbles, as well as swirls, that are for all intents and purposes indistinguishable from those of their contemporaries. They did, however, create a number of styles which are unique to the company.

**RAINBOWS**

Rainbows, which are sometimes referred to as "patch and ribbons," are easily identifiable, though some have been mistaken for Type Five National Line Rainbos (see Peltier page). These marbles are typically two-colored; one pole have a patch of one color, with a ribbon of another color encircling the equator and then another ribbon of the original color paralleling it, and finally a patch of the second color on the opposite pole. On opposite side of the marble will be arc-shaped seams.

The bulk of Rainbows have a white base with a colored patch and ribbon veneered on it. Other Rainbows will also be white-based, though they are covered with two different veneered colors. Sometimes a bit of the underlying white glass will show through, however.
Two color Rainbows have been assigned a number of names by the children who once played with them, and also by later collectors (many of whom were once the children). In approximate order of increasing rarity, the marbles are known as Bumblebees (yellow and black or dark purple), Gray Bees (yellow and gray), Wasps (red and black or dark purple), Boyscouts (a.k.a. Cub Scouts) (blue and yellow), Girlscouts (green and yellow), Tigers (orange and black), Ruby Bees (red and yellow), Spiderman (red and blue), Hercules (blue and black or dark purple), Green Hornets (green and black), Watermelons (red and green), and Dragonflies (green and blue). Hybrid examples are known (see below).

Thin lines of oxblood are sometimes found on the green ribbons and patches of Rainbows. This is most often seen on Girlscouts and Watermelons. This increases the value of the marble in many cases, though it should be noted that most genuine Watermelons seem to have this feature. Aventurine is also found at times on the green; on color-based Rainbows it may occur along with oxblood, while on white-based examples it does not. Aventurine green on white Rainbows have been called Grasshoppers.

It is important to emphasize that the best color-based Rainbows will have bright colors with well-defined patches and ribbons. Also, new collectors should be aware that in recent years the company has released a series of marbles that somewhat resemble the older Rainbows. There are several differences that should be taken into account. First, the base is translucent, not white with a colored veneer. Second, the pattern is patch/ribbon/patch, not patch/ribbon/ribbon/patch. Third, these marbles, always of one color combination, are often placed into reproduced polyvinyl bags by con artists. Original Marble King packages never contained all of one combination of colors. The most common of these new marbles superficially resemble Watermelons and were called "Ninja Turtles" by the company.

RAINBOW REDS, TRICOLOR RAINBOWS, MULTICOLOR RAINBOWS, AND VARICOLORED RAINBOWS

There are four variations of Rainbows that are worthy of mention. The first of these is the Rainbow Red, so named by the company; these do not have patches but rather are white-based with two equatorial colored ribbons, one of which will always be red. These are common and have little value to collectors.

The second variation is the Tricolor Rainbow; these are white-based and usually have a lot of white showing through. On one pole there is a patch of one color, and encircling the equator are two different colored ribbons. One of the ribbons runs from seam to seam, so that it encircles half of the marble. Opposite this there will be a third color which also runs from seam to seam but on the other half of the marble. These are fairly common. More rarely, examples will be found with aventurine.

The third variation of the Rainbow is the Multicolor Rainbow, which is fairly scarce. This marble possesses a white base, with very little or a lot of the white showing through between the patches and ribbons. This marble resembles the pattern seen in regular Rainbows, but the two equatorial ribbons will be different colors than the patches, which also are differently colored than one another. There is also a
seven-color variety that is often ascribed to Marble King but which more recently is being debated as possibly Vitro Agate.

The fourth variation is the Varicoloered Rainbow, the name of which I have dubbed here to differentiate it from Multicolored Rainbows. This is actually a hybrid type and as far as I know has only originated from the Paden City dump sites. This marble can have as many as seven colors in addition to the white. The factor separating it from the Seven-Color Patch mentioned above is that the colors are usually blended and not as sharp as on the latter type.

HYBRID RAINBOWS, BLENDED RAINBOWS, EXPERIMENTALS, AND OTHER ODDS AND ENDS.

In the last few years there has been an influx of Marble King marbles that previously were either very rare or had indeed never been seen before. Many of these owe their appearance to the fact that several old dump sites used by Marble King in the late 1950s and early 1960s near their Paden City plant have been discovered and are continuously being excavated. While some of the "hybrid" types remain rare, others, especially the "blended" types, have been found in such numbers that their value has dropped to sometimes a tenth of what was paid not a year previous. Though sometimes regarded as "rejects" by a few collectors, many of these marbles are beautiful and extremely rare.

Some of the styles that have been recognized for quite a while include Rainbow hybrids which have three or four colors instead of two. Two such types include the "Spidermelon," which has the colors of a Spiderman and a Watermelon, and what has been jokingly referred to by some collectors as a "Hermaphrodite," a marble that contains the colors of both the Boyscout and Girlscout. There is also the Bengal Tiger, which has a black and yellow base like a Bumblebee, but with orange on top of the yellow. Other errant Rainbows are patches, many of which basically have connecting polar patches in the absence of equatorial ribbons.

Blended Rainbows are those, that for some reason, did not come out as separately colored patch and ribbon styles but rather are veneered with fine striations of the separate colors, which often have blended together to form a multicolored effect. For example, a Blended Spiderman contains blue, red, and purple striations, the latter color having formed where the other two mixed together. Other Blended Rainbows include Bumblebees, Boyscouts, Girlscouts, Green Hornets, and Dragonflies. The colors on some are more muted than they would be on true Rainbows. Hybrid examples also occur rarely. It is unclear whether or not such marbles were accidentally made and then discarded, or were purposefully made as an experiment but for one reason or another rejected. What is clear is that significant numbers of these striking marbles have been dug up, though for the most part they remain scarce.

Some blended types which appear to have never been distributed, but which are coming out of the Marble King dump sites, have very interesting and often beautiful color combinations. The Robin has a blended light blue and white base with a reddish brown patch on one pole and two opposing equatorial ribbons: one light brown, usually trimmed with dark blue, and one bright red, usually trimmed by shades of brown. The Peacock has a blended red and white base with a bluish green and purple patch and ribbon. The Irish has a blended red and white base
with a blue and green patch and ribbon. Other recently identified and named varieties include the "Jillian," "West Virginian" "Cookies and Cream," "Polar Bear," and "Copperhead." The list goes on.

Other marbles being unearthed in Paden City dump sites include odds and ends that never saw distribution in the marble market. For instance, peewee (less than 1/2") Bumblebees, Boyscouts, and Girlscouts, as well as hybrids, have been recovered. There are also Rainbows which have a light transparent blue base and yellow patch and ribbons; these have been dubbed "Blueboys" by the diggers. A variation of this marble is the "Clearboy," which has a colorless transparent base and yellow patch and ribbons. There is also a transparent blue-based Wasp. Another type is being called the Black Widow; it has a black base with two equatorial bands of red that do not touch.

Another great aspect of the Marble King dump sites is that they are producing a number of oddball types that represent discarded production errors. Some of these marbles are manifested as corkscrews. Others have "Christensen-like" turkey-swirls.

**CATSEYES**

As discussed earlier, Marble King was one of the first, if not the first, companies to produce its own line of Catseye marbles in an effort to compete with those being exported from Japan to the States. Since the company's design was copied from that of the Japanese, Marble King catseyes resemble those from Japan, at least more so than those of other American manufacturers. Marble King Catseyes have four intersecting vanes which meet in the center of the marble. Typically, the vanes are all the same color (white, red, blue, yellow, green, and orange), and the vanes are most often wavy, not straight. Many of them tend to be fluorescent.

One type of Marble King catseye is called the "St. Marys," as it appears that this marble was only produced at their plant location in the city of that name, and thus would have had to be made between 1955 and 1958. This marble is basically identical to the other catseyes described above, save that the vanes are of two or more colors. The most common are those that have two opposing vanes of one color intersected by two opposing vanes of another color. Color combinations include blue/yellow, yellow/white, blue/white, red/white, green/white, and red/blue. Some very rare St. Marys catseyes have four colors. Two color combinations are known: blue/red/yellow/green and blue/white/green/yellow. Again, hybrid examples are known among the St. Marys catseyes.

An additional catseye is called the "Signature Catseye." This is essentially a St. Marys type produced, it is thought, at the Paden City location. The Signature Catseye is identifiable by its orange and blue vanes. It tends to be larger than the earlier St. Marys catseyes.

Several more catseye marbles merit attention here. All are known only from the digs in Paden City. One has four vanes in "carnival" glass, which is an iridized yellowish orange color that has been sprayed onto the marble. The second type has a transparent ruby red base with a white banana-like blob of glass floating on the interior. Even more rarely, other colored bases occur. A third type is the Green-Blue Catseye, which has four fat green vanes, with a transparent blue vane
floating over one of the green vanes. Finally, there is a peewee variety that measures between 5/16" and 13/32". These have been found in yellow, green, red, and blue and have four vanes; often, one or more of the vanes "float" on or near the surface of the marble. Some of these tiny marbles are hybrids, containing two or three colors.

A new 4-Color catseye put out by Marble King in 2000-2001 closely resembles the St. Mary’s 4-color catseye and is going to fool some collectors. The marble, like the St. Mary's, has four vanes, one each of yellow, orange, blue, and green. However, these new versions seem to have lighter colors, especially the blue and green. Also, the green vanes appear to have diffuse edges which do not reach the exterior. Since these marbles can be had for around a dollar apiece (they are collectible I feel, so be sure to find one), and St. Mary's examples can fetch up to around $75-100, fraud and misrepresentation may well be a problem with these.

"BERRY PINKS"

The "Berry Pink" is a transparent-based two-seamed patch marble that only is found in the one inch size range. The base is almost completely filled with opaque white that has blue and green highlights. Covering about one third of the surface, and encircling half the marble's equator from seam to seam, is a patch with red and blue bands. These marbles are almost always fractured and are very rare/

MODERN MARBLE KING MARBLES

After 1975, Marble King ceased production of its true patch and ribbon Rainbows and switched over to a style that involved either two polar patches but no equatorial ribbons or a polar patch with an equatorial ribbon that covers only one side of the marble. These were all white-based with one color. In the mid 1990s Marble King produced a blended marble with colors of the old color-based Rainbows but on a transparent base. Later, in the later 1990s, they have also manufactured a series of new style color-based Rainbows with have patches of one color and ribbons of another, instead of possessing alternating colors. These were made to resemble such older styles as Wasps and Watermelons.

ORIGINAL PACKAGING

The first Marble King packaging involved polyvinyl and net mesh bags in which the company distributed marbles by other companies, primarily Heaton Agate and Peltier Glass. In addition to having headers labeled with the company name, Marble King also produced advertising packaging for beverage distributors such as Pal Ade and various other companies like Morton's Salt. The trait possessed by all such early Marble King packaging is that the header is a yellowish orange color with either "Marble King" or the company for which it is producing premium packaging printed on a white background which is separated from the yellowish orange by either a twin-layered checkerboard pattern or hatched thin straight lines. The rear of the header will have a similar white label marked "glass marbles" bordered on either side by the number of marbles in the package (usually 16, 19, 25, or 40).
After the company began making its own marbles, Marble King did away with net mesh containers and primarily used poly bags, though boxes were utilized in some cases. Save for a few exceptions, like the "Champion Set," the only Marble King marbles sold in boxes were Chinese Checkers types, marketed as "Chinko-Checko-Marblo" under the name of "Berry Pink, Inc." These were also distributed under the name of "The Peltier Glass Co.,” demonstrating the alliance between Berry Pink and Sellers Peltier.

The later Marble King poly bags contained their Rainbows, Rainbow Reds, and Catseyes, and were available with 14, 30, and 100 marbles. The headers commonly used during the later 1950s and into the 1960s were red, with white labeling of the marble type and company name, along with white circles containing the number of marbles in black print. Some less frequently found poly bags from the same period, or slightly later, have white headers.

During the later 1960s and into the 1970s Marble King poly bags had white headers with a red bar across the top containing the company name in white; this bar was interrupted on the right side by the trademark "crown" printed in red. Below the bar and crown, printed in red, was the name of the type of marble flanked on either side by the number of marbles inside. on the opposite side was the full name and city address of the company with two crowns, one on each side, again printed in red. These bags held six (shooters), 10, 20, and 60 marbles.

Since around the mid 1970s Marble King has distributed its marbles mostly in poly bags (some are found in "blister packs) with red, white, and black headers. These headers, in addition to other information, will read "our marbles crown kings" along with a stylized image of a round-headed boy wearing a crown. These headers will have the UPC bar code, dating them to the later 1970s and after. The marbles inside the bags are typically the post-1975 patch marbles, though some contain catseyes.

One final type of "packaging" that should be mentioned is the "Tournament Assortment" bag. Though these were not sold with the marbles inside, they were intended for holding Marble King marbles. These drawstring bags were made in thick polyvinyl and cloth.

MARBLE KING MARBLE GALLERY

White-Based Rainbow
Bumblebee

Bumblebee (from Paden City dump site)

Gray Bee

Wasp

Boyscout
Girlscout

Girlscout with Oxblood

Tiger

Tiger (rare 1")

Ruby Bee

Spiderman
Watermelon

Hercules

Green Hornet

Dragonfly

Grasshopper
Rainbow Red

Rainbow Red

Rainbow Red

Tricolor Rainbow

Tricolor Rainbow

Tricolor Rainbow
Tricolor Rainbow with Aventurine

Multicolor Rainbow

Varicolor Rainbow

Varicolor Rainbow

Varicolor Rainbow
Seven-Color Patch (possibly Vitro)

Blended Rainbow with Aventurine (possibly Vitro)

Bengal Tiger

Spidermelon (peewee)

Hermaphrodite

Jillian
Black Widow

Blueboy

Clearboy

Transparent Blue-Based Wasp

purple and blue patch and ribbon
light blue and pink/peach patch and ribbon

orange-red and sky blue patch and ribbon

brown and yellow patch and ribbon

Peewee Bumblebee (transparent base)

Peewee Bumblebee (opaque base)

Peewee Bumblebee/Boyscout Hybrid
Peewee Boyscout

Blended Bumblebee

Blended Gray Bee

Blended Dragonfly

Blended Boyscout

Blended Girlscout
Blended Green Hornet

Blended Bumblebee/Boyscout Hybrid

"Poor Man's" Hercules (Patch)

"Poor Man's" Watermelon (Patch)

"Poor Man's" Dragonfly (Patch)
Girlscout Patch

Blended Girlscout Patch

Berry Pink

Catseye

St. Marys Catseye (red/blue)

St. Marys Catseye (yellow/blue)
St. Marys Catseye (green/white)

St. Marys Catseye (blue/white)

St. Marys Catseye (hybrid)

St. Marys Catseye (four-color)

Signature Catseye
Carnival Glass Catseye

Ruby Red Catseye ("banana"-like)

Green-Blue Catseye

Peewee Catseye

Peewee Catseye Hybrid

Superman Hybrid
electric orange and yellow with white swirls in clear (error)

Corkscrew (error)

Turkey Swirl (error)

green/red/blue swirls on white (error)

red/yellow/purple swirl (error)
Post-1975 Rainbow

Post-1975 Color-Based Rainbow (late 1990s)

"Ninja Turtle" (late 1990s)

Four-Color Catseye (2000-2001)

Marble King Poly Bags (with Heaton marbles) (1949-early 1950s)

"Pal Ade" Beverage Premium (Marble King packaging with Heaton marbles)
"Morton's Salt" Net Mesh Premium (Marble King packaging with Peltier Rainbos)

Chinko–Checko–Marblo Box

Unlabeled Cereal Premium (Marble King packaging with Catseyes)

Catseyes Poly Bag (late 1950s)

Rainbows Poly Bag (early 1960s)

Marble King Poly Bags (1960s)
Vitro Agate Company (1932-1992)

COMPANY HISTORY

The Vitro Agate Company began in 1932 when the company was founded by Henri Arthur Fisher, Lawrence E. Alley, and Press Lindsey. It was moved to Parkersburg, West Virginia in 1945; Parkersburg had been used as a mailing address since the company’s founding. In the late 1930s Alley sold his portion of the company to the other two and focused his attention on his Alley Agate Company (see Alley Agate page). Later on, Fisher bought out Lindsey and became the sole owner.

Vitro Agate was a strong contender in the marble market through the 1940s-1960s, being among the first of the American marble manufacturers to cash in on the craze for Japanese catseye marbles when the company developed its own in the mid-1950s. The knowledge for the manufacturing process of this particular marble style was obtained from Fisher’s son, who had spent some time in the orient.
In 1969 Vitro Agate was purchased by the Gladding Corporation, who changed the company's name to Gladding-Vitro Agate. However, the original name was returned following the sale of the company to the Paris Manufacturing Company in 1982. Paris used Gladding label stock, however, until 1984, at which time they created their own labels. The following year Vitro Agate went bankrupt, only to be revitalized in September, 1987, when it was bought by Tim Sullivan and Dick Ryan of the Viking Rope Company for just over $360,000. Like the owners before them, they used their predecessors label stock before creating their own. In July of 1989 they moved the company to Anacortes, Washington.

Under the ownership of the Viking Rope Company, the name of the company became the Vitro Agate Corporation. In its Washington location, it was somewhat rejuvenated with the production of mostly game, decorative, and industrial marbles, though some marbles employing transparent and opaque swirls were produced in 1991. The company, however, went under in 1992 and was bought by Jabo, Inc. (see Jabo-Vitro Agate page).

IDENTIFICATION TIPS

Most Vitro Agate marbles are patches, though other varieties were also produced. The styles changed over time, so it is fairly easy to approximate the ages of their marbles based on a number of attributes. Vitro Agate patches come in two main styles, identified by their seams. One style has seams that are straight and have palpable crimps into the glass. The other style has one straight seam and other that is shaped like a flattened "U." The seams on both styles are opposite one another on the equator and are perpendicular to the poles.

BRUSHED PATCHES

Brushed Patches are among Vitro Agate's oldest marbles. The base is either transparent clear or opaque white and has colors brushed on the surface. Some of these have oxblood; sometimes the oxblood is "anemic." It should be noted that Victories and Conquerors are types of brushed patches, but are discussed separately, below.

VICTORIES AND CONQUERORS

A Victory is a brushed patch marble that has an opaque color patch on a transparent clear base. This patch covers about one quarter of the marble and, like many Vitro marbles, the patch is usually shaped like an oval with a small "v" or "hook" coming off one end. A Conqueror is basically the same type of marble, but on this variety the remaining three-quarters of the marble not covered by the patch contains brushed opaque white. One variation of the Conqueror is the "phantom conqueror," which has translucent white filaments inside the marble. The glass may be opalescent on this latter type. Finally, another variation of the Conqueror, which as yet has not been named but could be labeled the "veteran conqueror," has a dull patch as opposed to bright and brushed off-white as
opposed to white. On these, the patch seems to often be shaped like a large "V." Victories and conquerors were distributed, as their names might imply, around the period of World War II.

TRICOLOR AND MULTICOLOR PATCHES

The Tricolored Patch is a two-seam marble with a transparent clear base. All or nearly all of the surface is veneered with colored patches, always white in combination with three other colors such as light or dark blue, green, orange, yellow, or lavender. One pole will contain the characteristic football-shaped Vitro patch with the "hook" on one side. One side of the equator has a wide patch of a second color, while the other side will contain two thinner patches, one a third color and one white. The equatorial colors meet at the opposite pole.

The Multicolored Patch, sometimes called a Seven-Colored Patch, has recently come to the attention of collectors as a rare and beautiful marble. It has an opaque white base, some or none of which shows through veneered patches of colors that represent just about every color imaginable: red, orange, yellow, blue, green, and purple. Usually, there will be two different colored patches at opposite poles, and patches of other colors radiating from the two opposing seams to cover their respective halves of the marble. This type is often found with annealing fractures.

BLACKIES, WHITIES, AND ALL REDS

Blackies, Whities, and All-Reds are opaque white-based patch marbles with veneered colors. A Blackie has a black band encircling the equator and a colored patch on either pole (both poles will be the same color). A Whitie has a translucent colored band encircling the equator; these are hard to find as compared to Blackies. An All Red has a black band encircling the equator and a red patch on one pole and a patch of another color, usually green, blue, orangish yellow, or brown, on the other. Later All Reds lack the black band.

PARROTS

Arguably the most popular Vitro Agate marble is the Parrot, so named because it usually contains four or more colors. These marbles are white-based and have colors brushed on the surface; sometimes one or more of these colors form a "V" and the better formed the more valuable the marble becomes. Common colors on a Parrot include red, lavender, yellow, green, black, and light blue, and sometimes different shades of one particular color. Sometimes the green patches will contain aventurine. Parrots tend to be large, at least 3/4" and up to 1". More recently, Vitro-Agate produced a smaller version containing many of the same colors but which are veneered. These have been dubbed "Parakeets" by some collectors.

MISCELLANEOUS PATCHES

In addition to the aforementioned patch style marbles, Vitro produced many more that have yet to be categorized properly. This lack of categorization may be due not only to the fact that often they resemble Akro Agate patches, and certain patches from each company are often mistaken for one another. One good
example is the "Popeye" patch, which has some of the same color combinations as the infamous Akro Agate Popeyes which formed patches because the cup creating the corkscrew effect was not spinning at the time of production. The Vitro patches that resemble these are worth much less than their Akro counterparts, and can often be distinguished from Akro examples by their obvious seams.

Another type of patch marble that is alternately assigned Akro and Vitro origins is the Helmet, which in truth may well have been a type of patch produced by both companies. These often fluorescent marbles derive their name from the trait they have in which if the marble is viewed from a particular angle, the patch looks like a football helmet on a head.

Recently, two green-based patches have been given names and therefore are becoming very popular. The Sweet Pea has a green base with red and yellow patches, and the Blackeye Pea has a green base with yellow and black patches. These patches often form characteristic "V's" or "U's" and sometimes the green base will have aventurine.

CATSEYES

Two basic catseye styles were manufactured by Vitro. The earlier style is a four or five vane variety; the vanes are wavy and common colors include red, light green, dark green, light blue, dark blue, orange, yellow, lavender, and white. Frequently, the vanes will be tipped by a second or even third color. Though these are often referred to as "hybrids," they probably are not because they usually comprise more than half of the marbles found in original packaging.

The later catseye variety was produced in the 1970s while the company operated under the name Gladding-Vitro Agate. These are caged-style catseyes with five to eight strands which meet at opposite ends but widen out to fill the marble toward the center. On occasion these occur in aqua base glass but more often are in clear glass like most catseyes. Some examples are found in two colors.

A recently discovered Vitro marble that has a Caged Catseye-like appearance, but which is not exactly a Catseye, has been dubbed Four Fingers. This has a transparent color base with four finger-like bands extending from two opposing seams on either hemisphere, for a total of eight "fingers." Yellow-based examples seem to be the rarest, followed by red and dark purple. Other colors may be available, but the story has it that all originated from a single bag, so few have been seen.

ORIGINAL PACKAGING

Vitro Agate packaged its marbles in boxes, net mesh bags, and polyvinyl bags. The boxes include 100-piece stock boxes, salesman's sample kits, gift set boxes with pouches, Chinese checkers boxes with 60 pieces, cellophane-paneled boxes with 35 pieces, "Marble Champ" game boxes, "Circle-X" game boxes, and more.
Net mesh packaging predates polyvinyl packaging. These were used primarily to distribute their Conquerors and Victories, though they also contained Brushed Patches. The mesh material is usually either red or yellow in color, with an often yellow but frequently orange header.

The earliest poly bags used by Vitro Agate appear to have been those with white headers with red labels with undulating borders. The bags typically hold Brushed Patches. Such marbles were also given away by beverage companies in bags with headers possessing holes so that they could be fitted over a bottle's neck. Later bags have red headers with red, black, and white print. These usually have All Reds or catseyes. Still later, probably in the late 1960s to early 1970s, Vitro poly bag headers were white or yellow. When the company was renamed Gladding-Vitro Agate, the bags were attached with red, white, and blue headers with an American flag printed on the left side. Later Vitro bags often were filled with catseyes, "clearies," or opaque game marbles. Finally, when Vitro regained its original name, but before it was sold to Jabo, it manufactured a poly bag with 45 smaller marbles and one shooter; the headers were a sturdy card stock of a tannish color.

Two other packaging types warrant mention. First, there was a large thick polyvinyl bag with a drawstring. A picture of a cowboy riding a bull and brandishing a lasso was printed on this bag. The other type of packaging was a cellophane sleeve which held six catseye marbles and which was used as a premium giveaway in bread and cereal boxes.

VITRO AGATE MARBLE GALLERY

Brushed Patch (transparent)

Brushed Patch (transparent)
Brushed Patch (opaque)

Brushed Patch ("oxblood")

Brushed Patch (Oxblood "V")

Victory

Conqueror

Conqueror (multicolored)
Conqueror (patch "V")

Conqueror (clear "V")

Phantom Conqueror

Phantom Conqueror

"Veteran" Conqueror
"Popeye" Patch

"Popeye" Patch
Blackie (Swirl)

Blackie (hybrid)

Blackie (hybrid)

Al Red (early style)

All-Red (late variety)

Vane Style Catseye
Vane Style Catseye ("hybrid")

Vane Style Catseye ("hybrid" with aventurine)

Vane Style Catseye ("hybrid" with three colors)

Cage Style Catseye

Cage Style Catseye

Cage Style Catseye (two-color)
Four Fingers

Tricolor Patch Poly Bag

Brushed Patch Poly Bag

Catseye Poly Bag

All Reds Poly Bag
Heaton Agate Company (1939-1971)

COMPANY HISTORY

The Heaton Agate Company was founded in 1939 by William Heaton. Based in Cairo, West Virginia, the company was the first to produce a catseye-type marble design. In partnership with Oris Hanlon, who left in 1947 to begin the Cairo Novelty Company, Heaton also manufactured opaque and transparent swirls until the 1960s, when production focused on catseyes, game marbles, and industrial
Heaton sold the company and its supplies to Clayton E. Bogard in 1971. Renamed the C.E. Bogard & Sons Company, the company was shortened to the Bogard Company by Clayton’s son Jack in 1983. The company was shifted to Reno, Ohio, in 1987, and reorganized by Jack Bogard, Dave McCullough (formerly of Champion Agate), and Joanne Argabrite as Jabo, Inc. The continuing evolution of the company can be seen at the Jabo-Vitro Agate page.

**IDENTIFICATION TIPS**

Heaton Agate marbles are primarily transparent and opaque swirls, as well as catseyes and game marbles. The production of swirls stopped after the mid 1960s.

**SWIRLS**

About the only way to identify a Heaton swirl is to find it in its original packaging. However, there do seem to be some diagnostic traits. First, though many are white-based, the company apparently was responsible for many of the blue-based and green-based swirls that are so common. The blues and greens are available in several shades; the green-based examples usually have red swirls, which also come in several shades, while the blue-based examples have both red and green swirls. There is also a cream brown-based type that always has green swirls.

**CATSEYES**

Heaton Agate catseyes are the four-vane variety. The vanes tend to be very pale whitish-blue, dark blue, or light green, and are transparent. After the company was transformed into the C.E. Bogard & Sons Agate Company, the quality of the marbles seems to have declined, and the vanes are often malformed, twisted, and sometimes pressed together, rather than forming the symmetrical cross-through pattern of the vanes of Heaton catseyes. Bogard catseye vanes are also transparent, and colors include light blue, yellow, light green, red, and occasionally black.

**ORIGINAL PACKAGING**

Heaton Agate packaging was almost exclusively polyvinyl. However, what appears to be a very early Heaton bag, labeled "Royal Immies," is made from a stiff plastic, stapled at the top with a flimsy paper header and sealed at the bottom with cotton thread. The example I have is the only one known.

Heaton poly bags were labeled with "Big Shot" headers. The marbles are usually catseyes. However, their swirls were often bought and distributed by other companies, particularly Marble King. Their swirls are also found in genuine Mr. Peanuts bags.
When ownership of Heaton passed to the hands of Clayton Bogard, polyvinyl packaging continued to be used. These bags contain a variety of catseyes and transparent swirls. The C.E. Bogard and Sons Agate Company also sold their marbles in blister packs, which contained catseyes and were marketed as Mountaineer Shooters.

HEATON MARBLE GALLERY
(click on thumbnails to see full image)

Transparent Swirl

Transparent Swirl

White-Based Swirl

White-Based Swirl
White-Based Swirl

White-Based Swirl

Blue-Based Swirl

Green-Based Swirl

Blue-Based Swirl
Cream Brown-Based Swirl

"Royal Immies" Bag (unique example)

Heaton Marbles in Marble King Packaging

"Mr. Peanuts" Premium Poly Bag with Heaton Marbles

"Big Shot" Catseyes Poly Bag

C.E. Bogard & Sons Agate Company "Mountaineer Shooters"
Champion Agate Company (1938-present)

COMPANY HISTORY

The Champion Agate Company traces its roots back to 1938. At this time it was founded in Pennsboro, West Virginia, by Yucca Jones and Ralph Michels; over the years ownership passed through the hands of several members of the Michels family.

Champion's machines were made by Yucca Jones. At first, the company produced only game marbles (opaque Chinese checkers and "clearies"). Soon, however, opaque and transparent swirls, as well as opaque patches, were added to the line-up. In the mid-1970s production ceased of all types of marbles with the exception of Chinese checkers. However, from time to time Champion has produced limited numbers of swirl types, beginning with the red, white, and blue swirl in 1976 that was the company's contribution to the "Bicentennial Special Pack," a package of marbles containing examples from most of the companies still operating at that time.

Champion revived two old styles in 1983 and 1984, the "Whirlwind" and "Old Fashioned." Other types appeared in subsequent years, perhaps most prominently the "Furnace" or "Special Run" marbles of 1994.

IDENTIFICATION TIPS

Almost all identifiable Champion marbles are swirls, though the company also produced the ubiquitous Chinese Checkers marbles that are indistinguishable from those manufactured by other companies. They do not seem to have made many shooter-sized marbles and almost all are around 5/8".

PRE-1970s SWIRLS

Swirl marbles were part of Champion's regular run from 1938 up into the early to middle 1970s. Most of these appear to have been opaque white-based. On these marbles there is usually only one color in addition to the white, with swirl patterns forming ribbons that fill little of the base glass, as opposed to the swirls by many other companies that cover the majority of the white.
Transparent-based and translucent-based swirls were also manufactured, but for the most part these seem to have been made later in the company's history.

For the most part, early Champion swirls are difficult to distinguish from swirls by other companies unless found in original packaging.

There is one color-based swirl that has been the subject of some debate recently. This marble has a dull yellow and orange to orangish-red swirling pattern that often forms flames reminiscent of Christensen Agate Flame Swirls. In fact, these marbles are often assumed to be Christensens but it is becoming the majority opinion that they are not. First, the colors are wrong (Christensen colors are much brighter). Second, these have never been found in original Christensen packaging. Finally, they are simply too common to be from a company that only produced marbles for a few years and whose marbles are very difficult to find.

Another older swirl marble that has long been assumed to be Christensen but now is being recognized as of probable Champion origins is the Coral. This is a marble with a transparent green base with white swirls in the interior and salmon red to pinkish red swirls on the exterior. Again, the same rules that apply to the aforementioned swirl applies to this type. However, matters are somewhat complicated by the fact that there does appear to be a Christensen marble that may rightly be called a coral as it possesses the same basic traits as the Champion Coral. However, on the Christensen examples the swirling is much more dramatic and the colors are more vibrant.

1970s SWIRLS

As mentioned, sometime during the first half of the 1970s Champion ceased production of its swirls and switched to manufacturing only game marbles. However, from time to time they did produce limited runs of swirls. The first of these was probably a type manufactured in 1975-1976 for the Bicentennial marble bags, which contained a mixture of different marbles made by American companies in operation at that time. The Champion bicentennial swirl had a white-base with an often intricate swirling of red and blue. These marbles are not common today and while not necessarily valued highly in terms of their monetary value are still very desirable to collectors because of their beauty.

Another Champion swirl that may have been produced around the same time is the ketchup and mustard swirl. This marble is completely covered by yellow and red swirls.

1980s SWIRLS

In the 1980s, Champion produced another limited run of swirl marbles. These are known as "New Old Fashioned" swirls. There seems to be two types of these. One type includes shooter-sized swirls that are often multicolored and very attractive. These can easily be mistaken for older swirls by less experienced collectors. They are easy to spot, however, because they often have a very shiny, almost oily, surface, and because they frequently possess crimp marks.
The other type of Champion swirl that I believe is from this decade is smaller like their older swirls and is color-based (most often brown), either with transparent or opaque swirls. Some of these marbles are quite nice and may even have "electric" swirls.

1990s SWIRLS

Around 1994, Champion Agate produced a style of swirl that has become highly collectible and which for the most part is very rare. Considering the recent vintage of the marble, certain color combinations have fetched nearly $100 for a single marble! Their rarity owes to two factors. First, they were made in very limited numbers and never distributed to the general public. Second, they were made of a glass that easily fractures and therefore mint examples are hard to obtain.

These swirls have been alternately called "Special Run" or "Furnace" marbles. They all possess a transparent base with opaque to transparent swirls, usually of several different colors. Sometimes the colors are highlighted with other colors and the effect is dazzling. The story goes that Champion Agate’s glass furnaces were scraped, and the resulting residue was made into these marbles. Unfortunately, as noted, the glass tends to fracture, and examples with no fractures are rare.

Based on my own observations of these marbles, I have identified at least 14 different color combinations. It is worth describing each of these in ascending order of relative rarity.

Style One is about the common, and is always the least fractured. In fact, shining a light through more than 100 I found none that contained annealing fractures. Unfortunately, it also has the least eye appeal. This style has a clear base almost completely filled with dull yellow and white swirls. Most are around 5/8".

Style Two is probably the second most common style. After inspecting a sample of these I found that exactly 30% were undamaged while the remainder had at least one sizeable fracture. This style has a clear base with bright yellow swirls with red, and sometimes greenish, highlights. Most are around 19/32".

Style Three is the third most common from what I’ve observed. Many have annealing fractures. This style has a clear base with red and yellow swirls with purple highlights. Most are around 5/8".

Style Four is the fourth most common from my observations and most have fractures. This style has a clear base with greenish yellow swirls with brown highlights. This style often exhibits flames and most are around 5/8".

Style Five is rare. It contains yellow, pink, and purple swirls in a clear base. Most are around 5/8" and these are tough to find without fractures.

Style Six is fairly rare. It contains yellowish orange swirls in a transparent red base. Much of the swirling is inside the marble, not on the surface. Most are around 5/8".

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Style Seven is rare. It contains yellowish orange swirls in a transparent dark amber base. The swirls are usually inside the marble. Most are around 17/32" and typically seem to be fractured.

Style Eight is rare. It contains orange swirls with purple and yellow highlights in a transparent red base. Most are around 5/8".

Style Nine is somewhat rare and almost impossible to find without fractures. In fact, out of about a dozen I found all had serious fractures. It contains yellow, brownish purple, and light blue swirls in a clear base. The swirls almost completely fill the marble and often form complex flame patterns. Most are around 5/8".

Style Ten is very rare. It contains yellowish green, orange, red, and purple swirls in a transparent red base. Most are around 5/8".

Style Eleven is rare. It contains blended yellow and orange swirls in a dark transparent base. Most are around 5/8".

Style Twelve is fairly rare. It contains salmon swirls in a dark transparent red base. Most are around 1/2".

Style Thirteen is very rare and is similar to Style Eleven. It contains yellow and pink swirls with green and pale blue highlights in a transparent red base. Most are around 5/8".

Style Fourteen is very rare. It contains green, brown, red, and purple swirls in a clear base. The one example I’ve seen measures 19/32".

Style Fifteen is fairly rare. It contains yellow and red swirls in a clear base, and differs from Style Two in that the red is more defined, there is more clear glass, and there is less of an amber-tinge to the yellow. The one example I’ve seen measures 19/32".

Style Sixteen is very rare. It contains yellow swirls with red and green highlights in a transparent amber base. This type, which usually measures around 19/32", typically forms frames and is rarely seen without fractures.

Style Seventeen is uncommon and seems to found in 5/8"-21/32" sizes. It does no seem to fracture as easily as many others. The base on this type is transparent cherry red, with bright yellow swirls that blend to orange where it meets the red base.

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CHAMPION MARBLE GALLERY
Translucent Swirl

Wirepull Swirl

Wirepull Swirl

Bicentennial Swirl

Ketchup and Mustard Swirl

Electric Swirl
"New Old Fashioned" Swirl

Special Run (or "Furnace) Swirl

Special Run (or "Furnace) Swirl

Special Run (or "Furnace) Swirl
Special Run (or "Furnace) Swirl

Special Run (or "Furnace) Swirl

Special Run (or "Furnace) Swirl

Special Run (or "Furnace) Swirl

Special Run (or "Furnace) Swirl

Special Run (or "Furnace) Swirl

Special Run (or "Furnace) Swirl
Ravenswood Novelty Works (1931/32-1954/55)

COMPANY HISTORY

Ravenswood Novelty Works was founded in Ravenswood, West Virginia, by Charles Turnbull in either 1931 or 1932. Besides marbles, pottery was also produced by the company. The company employed five machines to produce its own marbles, marketed as "Buddy Brand," and also may have sold marbles made by other companies, such as "Paul Bunyans," though there is evidence to suggest that they were making these latter one inch marbles themselves. Besides marbles, the company also made greenware pottery.

In either 1954 or 1955, Paul Cox, the son-in-law of Turnbull who ran the company after the demise of Turnbull's wife (who had assumed control following Charles' death), decided to close the company. It is thought, however, that industrial marbles may have continued to be made up until the closing year of the 1950s. The marble machines were subsequently sold to both the Bogard Glass Company and the Champion Agate Company. The sales to the latter company may help explain why so many Champion marbles resemble those of Ravenswood, if not in color then certainly in swirl designs.

IDENTIFICATION TIPS

Most Ravenswood marbles that are of value to collectors were swirls, both in opaque and transparent base glass. Typically, swirls with an opaque base will contain translucent to transparent swirls, while those with a transparent base often possess opaque swirls. Many transparent swirls contain one color in addition to wispy white swirls. Most were in the size range of 9/16"-5/8", though some were larger, up to one inch in diameter.
During a time when most marble manufacturers were switching from bright, albeit expensive, colors to marbles with brushed or veneered colors on a white base that were inexpensive to produce, Ravenswood was producing many marbles with beautiful color combinations. The most highly prized Ravenswood swirls are brown-based; this brown was usually light cocoa in shade and was almost exclusively used by the company, allowing them to be readily recognizable. Other common base colors, besides white, are light green, mint green, light blue, yellow, lavender, and cream. Ravenswood colors are usually subtle, yet bright, and are usually unique to the company. Swirls commonly are of two colors, though those with three or four colors are often found.

Another diagnostic trait of Ravenswood swirls is that the swirling pattern is typically very "busy" and ornate. In fact, next to Christensen Agate, Ravenswood swirls have the most complex designs of all the companies that manufactured swirls. Some even formed exquisite "flames," these, though not as popular as Christensen Agate flame swirls, often demand a good deal of money.

RAVENSWOOD MARBLE GALLERY

Tri-Color Swirl

Two-Color Swirl

Two-Color Swirl
Tri-Color Swirl

Two-Color Swirl

Two-Color Flame Swirl

Two-Color Swirl

Two-Color Swirl

Tri-Color Swirl
Alley Agate Company (1929-1949)

COMPANY HISTORY

The Alley Agate Company, owned by Lawrence Alley, was very itinerant during its existence (1929-1949); it was located in four different West Virginian cities: Paden City (1929-1932), Sistersville (1932-1934), Pennsboro (1934-1937), and St. Marys (1937-1949). It may also have been situated in Salem for a time. The name of the company was almost as ephemeral as the location: in 1931 it became the Lawrence Glass Novelty Company, and in 1939 it was changed to the Alley Glass Manufacturing Company.

Berry Pink joined the company in 1931 but soon left. He would reappear years later when in 1949 he and Sellers H. Peltier bought the company. The name was changed to Marble King, and details on this important transformation can be seen at the Marble King page.
Alley himself designed his marble making machines, which for the time were capable of producing more marbles per minute than any other company. His marbles were distributed by Pressman, which allowed the company to become one of the largest in the world. Many of the marbles produced were game marbles, but transparent, translucent, and opaque swirls were also manufactured, along with various other designs. Some of the swirls tended to produce "flames," much like the Christensen Agate marbles of a few years before, and in fact it has been suggested that Alley purchased and used Christensen's machinery.

**IDENTIFICATION TIPS**

Alley marbles were produced in a wide array of sizes, with some as small as 3/8". These marbles are difficult to identify when not associated with their original packaging or with some other provenienced location. Besides the usual assortment of transparent and opaque one-colored game marbles, the company produced a variety of swirls. While many of these are white-based, some contain two or three colors and are quite beautiful. Frequently, the second color of these swirls is two-toned. Many of these swirls also formed intricate flame patterns reminiscent of Christensen Agate. Some Alley Agate swirls are reputed to contain oxblood and a metallic color.

**ORIGINAL PACKAGING**

The only Alley Agate packaging of which I'm aware is a small (2 1/8"x13/16"x13/16") cardboard box in which three marbles were placed. These boxes are red, offset by uncolored areas in which "Allies" and "Marbles" are printed on three of the faces with a cut-out on the fourth which reveals the marbles inside. On the end flaps is printed "3 Onyx marbles." This box was distributed by J. Pressman and Company, Inc., who also packaged Alley's marbles in its "Hop Ching" Chinese Checkers games.

**ALLEY MARBLE GALLERY**

![White-Based Swirl](image)
White-Based Swirl

![Image of White-Based Swirl (two-toned green)]

White-Based Swirl (two-toned green)

![Image of White-Based Swirl (two-toned blue)]

White-Based Swirl (two-toned blue)

![Image of White-Based Swirl (two-toned yellow)]

White-Based Swirl (two-toned yellow)

Color-Based Swirl
Color-Based Swirl (two-toned green)

Color-Based Swirl (two-toned brown)

Flame Swirl (two-toned yellow)

Flame Swirl

Swirls (3/8" size)

Allies Box ("3 Onyx Marbles")
Cairo Novelty Company (1946-1950)

COMPANY HISTORY

The Cairo Novelty Company was founded in 1946, in Cairo, West Virginia. It began producing marbles the following year. The founder was Oris Hanlon, who had previously worked at Heaton Agate Company, with financial support by Dennis Farley and John Sandy.

The company operated with only one marble-making machine, but this machine was able to produce more marbles per hour than other machines of its time. It was in stiff competition with Heaton Agate Company, which was also located in Cairo (see Heaton Agate page). Favor turned to the latter manufacturer when, on June 25, 1950, a flood struck Cairo Novelty and dealt a major blow to its operations. It has been reported, however, that the company managed to produce marbles for another three years, however.

IDENTIFICATION TIPS

Very little is known about the marbles produced by Cairo Novelty Company during its very brief existence. Though some industrial marbles were made, most seem to have been for use as toys. It is currently very difficult to identify these marbles, mostly opaque and transparent swirls, unless found in original packaging or dug from the company site. Reportedly, the company’s names for its marbles included "Clouds" and "Snakes."
Apparently, the Cairo Novelty Company distributed their marbles through Woolworth's, in net mesh bags with that company's name on the header. Some Cairo marbles were also sold under their own name, and they also manufactured a game called "Trap the Fox," which included an opaque marble and several black and white swirls.

CAIRO MARBLE GALLERY
(click on thumbnails to see full image)

Dug marbles from the Cairo site donated by Doug Jordan
Transparent Swirl

Transparent Swirl

Transparent Swirl

Transparent Swirl

Transparent Swirl

Transparent Swirl

Transparent Swirl
Alox Manufacturing Company (1919-1989)

COMPANY HISTORY

The Alox Manufacturing Company was begun by John Frier in 1919, though until the 1930s it only distributed marbles made by other companies with the toys produced by Alox itself. At that time seven marble manufacturing machines were bought from another company and production began.

Alox experienced a hiatus during World War II when there was a shortage of supplies needed to produce marbles. Following the war, the company resumed marble manufacture, though halted it again just a few years later. However, it had sufficient stock to continue selling its marbles into the 1960s.

Following the death of John Frier, Alox Manufacturing Company continued to operate up to 1989 under the leadership of Frier's son, Jack. However, they apparently did not sell marbles during the last 25 years or so of their existence.

IDENTIFICATION TIPS

Alox mainly produced Chinese Checkers marbles. These are indistinguishable from those made by other companies. However, they did manufacture a number of opaque and transparent swirls, which they sold in their "Three-in-a-Row Tit-Tat-Toe" boxes and in mesh bags.

Most Alox swirls are unidentifiable unless found in their original packaging, though there are a few varieties that are unique to the company. Most of their transparent swirls appear to be white-based or blue-based.

ORIGINAL PACKAGING

As mentioned above, Alox Manufacturing Company distributed its marbles in either boxes ("Tit-Tat-Toe" game) or in net mesh bags. Recently, three "fantasy" poly bags with fake Alox headers have appeared. These are the now infamous Army, Navy, and Air Force poly bags. They are completely fake and contain modern Marble King marbles. It should be remembered that Alox never sold its marbles in polyvinyl packaging.

ALOX MARBLE GALLERY
Jabo-Vitro Agate, Inc. (1987-present)

COMPANY HISTORY

As discussed on the Heaton Agate Company page, Jabo, Inc. arose from what had been the Bogard Company and before that the Heaton Agate Company. The marble company, reorganized by Jack Bogard, Dave McCullough, and Joanne Argabrite in 1987, was moved to Reno, Ohio. Then, in 1996, the company bought out Vitro Agate; it currently operates under the title of Jabo-Vitro Agate, Inc.

Both Jabo, Inc. and its new incarnation as Jabo-Vitro Agate, Inc. produced mainly industrial marbles. However, from time to time the company releases mostly limited runs of swirl type marbles, thanks to the skills brought to the company by McCullough, formerly of Champion Agate. Often called "Classics," these marbles are often fluorescent and are distinct from previous runs. Currently, many of the limited runs, some restricted to a few gallons, are being jobbered by Lost Your Marbles, who boxes the swirls in decorative sets.

IDENTIFICATION TIPS
The only Jabo-Vitro marbles that are truly of any interest to collectors are their limited run swirls, called "Classics" by the company. These come in a bewildering array of color combinations, though some of the combinations are restricted in quantity to fewer than 50,000 marbles. It would be virtually impossible to catalog all the different color combinations, though a representative sample can be seen below in the Jabo-Vitro Gallery.

Jabo-Vitro swirls can often be easily identified by the tiny white hit marks that very often can be seen on the marbles. This is a result of the soft glass being bruised as the marbles fall down the chutes from the machinery into the collection bins.

Most Classics are around 5/8" in size, though some are as small as 1/2" and some as large as 1". Many of the swirl patterns form "U"s and "V"s reminiscent of early Vitro Agate marbles, and poorly defined "turkey" swirls are often present. Jabo-Vitro swirls can often be differentiated from the swirls by other companies not only by these characteristics but by the glass. Quite often, the glass is fluorescent and may glow either orange or yellow. The colors, too, are distinctive, and are usually not opaque but rather are transparent or translucent. Sometimes the glass will have a milky or cloudy appearance. The colors often swirl deeply inside the base glass, though frequently they seem to be brushed on the surface.

Once a collector has seen a few Jabo-Vitro marbles, he/she will be able to tell immediately whether or not a marble is by that company. However, many new collectors mistake these marbles for older, and much more expensive, marbles by companies such as Christensen Agate.

**JABO VITRO MARBLE GALLERY**

**Early to Mid 1990's Production Runs**

![Image of a marbel with red and yellow swirls](image1.jpg)

![Image of a marbel with green and yellow swirls](image2.jpg)
Late 1990's Production Runs
"Peacock"

"Bloody Jade"
"Hot Tamale"

"Tie Dye"

"Black Tiger"
Vacor de Mexico (1930-present)

COMPANY HISTORY

Vacor de Mexico originated in Guadalajara, Mexico, in 1930. It began by producing clay marbles but by around 1934 was manufacturing glass marbles with two
machines. Today it is the world's leading manufacturer of marbles (making over 12,000,000 marbles each day!) and exports its products to over 40 countries.

IDENTIFICATION TIPS

Little is known about the early marbles produced by Vacor de Mexico. It is though they began manufacturing catseye marbles in 1944 and if so these would predate those imported to the United States by Japan in the years following World War II.

In the 1990s, Vacor de Mexico marbles have become more familiar to collectors, as each year they release new styles, many of them comprised of bright colors. Each style has a name attributed to it by the company; such names include Agates, Black Panthers, Blue Macaws, Candies, Corals, Dalmatians, Destroyers, Diamonds, Fiestas, Flames, Galacticas, Galaxies, Glitters, Green Parrots, Jaspers, Jupiters, Mambas, Meteors, Milky Ways, Mirages, Oldies, Owls, Oxbloods, Pandas, Pearls, Picassos, Pirates, Red Devils, Ribbons, Saharas, Scorpions, Serpentinas, Silvers, Spaghettis, Spotties, Stardusts, Sunsets, Tapeworms, Thunderbolts, Tidal Waves, Tomatoes, Turtles, Wave Breakers, Yellow Jackets, Yellow Perils, and Zulus, to name a few.

The key to identifying modern Vacor marbles and differentiating them from older styles, which they often resemble, is in the glass. Vacor marbles often have an "oily" sheen that makes them shinier than most older marbles. Second, the glass surface often has an "orange peel" texture. This is especially apparent on larger marbles, but even the smaller ones, if inspected under magnification, will manifest tiny pits that really do make the surface look like the peel of an orange.

Most Vacor de Mexico marble can be categorized as either patches or swirls. These can be further subdivided by the base glass: transparent or opaque. Furthermore, either type of glass may be regular or iridescent. Overall, marbles from this company are rather dull, though some new styles, like the Michelangelo, are actually quite striking.

During the 1990s Vacor also produced a series of hand made marbles, which were distributed through Toys R Us. They were sold in net mesh bags, each containing three marbles. These marbles lack pontils and contain multicolored swirls that loop within a clear glass matrix. They measure around 1 1/16" and are sometimes mistaken for large Christensen "Cyclones" by inexperienced or wishful thinking collectors.

VACOR DE MEXICO MARBLE GALLERY
Black Panther ("Pirata")

Opaque black base with two opposing banded patches of the same color, either red, yellow, green, or blue.

Milky Way

Opaque metallic purple base with white swirls.

Hurricane

Opaque white base with green, red, brown, and blue swirls.

Michelangelo

Translucent blue base with white, yellow, and red or orange swirls.
Red Baron
Opaque white base with red swirls.

Snowflake
Transparent clear base with iridescent surface and six-vaned blue or white catseye core.

Serpent ("Serpentina")
Opaque light blue base with yellow and red to orange swirls
WARNING: SOMETIMES MISREPRESENTED AS A PELTIER SUPERMAN
Opaque white base with one blue patch opposing one smaller red patch.

Picasso
Transparent clear base with iridescent surface.

Surfing
Translucent blue base with an iridescent surface and a white banded patch opposing a banded patch of another color, either red or yellow.
Jupiter

Opaque metallic base with speckles of two different colors (combinations of yellow, blue, green, red, and white).

Meteor ("Meteoro")

Super Crystal Cat Eye ("Trebol")

Transparent clear base with six-vane three color (any combination of red, orange, yellow, green, and blue) catseye core.

Flame ("Flama")

Transparent clear base with an iridescent surface and a red, green, yellow, or blue "banana" core.

Volcano
Opaque blue base with red swirls.

Stardust

Transparent clear base with red, blue, yellow, or green raised speckles on the surface.

Destroyer

Opaque black base with yellow, blue, and red raised speckles on the surface.

Turtle ("Tortuga")

Opaque light to dark green base with two opposing banded patches of the same color, either red, orange, or yellow.

Spaghetti

Transparent clear base with blue, orange, green, yellow, or white "wirepull" swirls.
**Starburst ("Stelaris")**
Transparent clear base with an iridescent surface and blue, orange, green, yellow, or white "wirepull" swirls.

**Cotton Candy**
Transparent pink base with white "wirepull" swirls.

**Atomic Fireball**
Roughened translucent red base with one white banded patch opposing one yellow banded patch.

**Wave Breaker ("Duende")**
Opaque pale blue base with white swirls.
Agate ("Perico")
Opaque white base with two opposing banded patches, either red and green, red and yellow, blue and green, or blue and yellow.

Blue Dolphin or Corsair
Opaque light blue base with two opposing banded patches, either red and yellow, green and red, green and yellow, red and white, or yellow and white.

Oily
Transparent pink, red, blue, clear, brown, or yellow base with an iridescent surface.

Orca
Opaque black base with two opposing white banded patches.

Green Parrot
Transparent green base with one white banded patch opposing another banded patch of yellow or red.
Galaxy

Opaque black base with white, blue, red, green, or yellow speckles.

Wicked Owl

Transparent teal blue base with an iridescent surface and white and purple to brown swirls.

Jasper or Bumblebee

Opaque yellow base with purple to brown swirls.

Van Gogh

Opaque blue base with yellow swirls.
Old Fashioned

Opaque white base with yellow, red, orange, green, blue, or purple swirls.

Red Devil ("Diablo")

Opaque red base with two opposing yellow banded patches.

Zulu or Twister

Opaque black base with orange to red and yellow swirls.

**WARNING: SOMETIMES MISREPRESENTED AS A CHRISTENSEN TRICOLOR SWIRL.**

Spumoni

Opaque yellow base with an iridescent surface and red and blue swirls.

Panda

Opaque white base with an iridescent surface and two opposing brown to purple banded patches.
Gumball

Transparent clear base with an iridescent surface and two opposing banded patches of the same color, either white, blue, yellow, green, red, or purple.

Banana Swirl

Transparent clear base with yellow and white swirls.

Blueberry Freeze

Roughened translucent light blue base with white swirls.

Mango Twist

Transparent clear base with an iridescent surface and red and white swirls.
**Tornado**

Transparent cobalt blue base with an iridescent surface and red, yellow, and white swirls.
Hand Made Swirl

Hand Made Swirl

Hand Made Swirl

Hand Made Swirl

Hand Made Swirl

Hand Made Swirl

Hand Made Swirl
Jackson Marble Company (1945-1946)

COMPANY HISTORY

The Jackson Marble Company was founded by Carol Jackson around 1945, near Pennsboro, West Virginia. Jackson was a machine operator at Champion Agate Company prior to venturing out on his own. Unfortunately for him, this was a time of declining American marble sales and he was soon forced to close the factory doors.

It is believed that Jackson Marble Company produced only about two boxcars full of marbles, an extremely small amount considering the millions made by other manufacturers. Most if not all of these marbles were sold to other marble companies rather than directly to the retail market.

IDENTIFICATION TIPS

Most of what is known about the marbles produced by Jackson Marble Company is coming from recent digs at the factory site. Without provenance it would be difficult to identify their marbles, as they resemble the examples made by many contemporaneous companies, such as Cairo. Jackson marbles often have dull, transparent colors, though often in attractive combinations and swirl patterns. A few of the marbles exhibit a spiral pattern that is reminiscent of Akro Agate Corkscrews, though by no means as pronounced.
ORIGINAL PACKAGING

Some Jackson marbles were distributed in net mesh bags with red headers. Apparently, the red bags were smaller, and the yellow bags were larger. In 1976, some Jackson marbles were also distributed by Champion Agate in their Bicentennial Packs, which included marbles purchased from the short-lived company some 20 years previously, along with marbles made by many other American companies.

It should be noted that it has been learned that the short-lived company Playrite bought Jackson's unused net mesh bags to package their own marbles. However, the marbles inside the bags claimed to be Playrite are identical to those excavated from the Jackson site. It is currently unclear why the marbles said to be produced by each company are so similar.

JACKSON MARBLE GALLERY

Tricolor Swirl (spiral)

Tricolor Swirl (spiral)

Tricolor Swirl (spiral)
Opaque Swirl

Transparent Swirl

Transparent Swirl

Opaque Swirl

Opaque Swirl
The Davis Marble Works was founded by Wilson Davis in 1947, in Pennsboro, West Virginia. Davis had just returned from duty in World War II and was inspired by the success of other marble companies in the region. He and his father constructed a metal building on their farm and used it to house a marble making machine they acquired from Corning Glass, who in turn had purchased it from Alley Agate. Marble production began early in the year, though locally Davis was unable to convince larger marble companies to buy his marbles. Therefore, he sought to sell them through an advertisement in the New York Times, which eventually resulted in a deal with a toy producer who shipped the marbles to Puerto Rico. Apparently, almost all of the estimated 14 million marbles made by Davis Marble Works were thus exported. Sadly for Davis, rising costs in cullet glass prices helped bring about the demise of the company in the spring of 1948.
IDENTIFICATION TIPS

Most of what is known about the marbles produced by Davis Marble Works is coming from recent digs at the factory site. I have seen nine distinct types arise from the digs. Most are transparent swirls, some with distinct shades. They measure between 9/16" and 21/32".

ORIGINAL PACKAGING

Davis marbles were initially distributed in net mesh bags, and later in cardboard boxes, though it is assumed that the overwhelming majority were sold in unpacked bulk lots.

DAVIS MARBLE GALLERY

Transparent Swirl

Transparent Swirl

Transparent Swirl
Davis Marble Works (1947-1948)

COMPANY HISTORY

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DAVIS MARBLE GALLERY
COMPANY HISTORY

The Playrite Marble Company was founded by Jesse O. Krupp on November 8, 1945. The factory site was situated in downtown Lamberton, now known as Ellenboro, on a lot now occupied by the Mid-Atlantic glass company. While Krupp serves as president, his Secretary-Treasurer was Andy Long and Lawrence Jones was in charge of production. In the spring of 1946, C.A. Wilson, Joseph E. Wilson, and Mary Jane Krupp purchased stock in the company and became co-owners.

Little is known about Playrite's marbles. Their marbles were bagged in net mesh bought from the nearby Jackson Marble Company, and in fact the only known examples also have Jackson's headers. Confusion and controversy arises, because the marbles inside these extant net mesh bags are identical in all aspects to those

**Playrite Marble and Novelty Company (1945-1947)**
that have been dug from the Jackson site. Thus, while the marbles shown below were pulled from a bag owned by Mary Jane Krupp (now Wilson), they are the same as some shown on the Jackson Marble Company identification page. It is entirely possible that Playrite purchased Jackson marbles, too, and further research must be conducted to illustrate exactly what types of marbles were manufactured at Playrite.

IDENTIFICATION TIPS

As indicated above, Playrite marbles are found in Jackson Marble Company bags, and these marbles are identical to Jackson marbles. A number of explanations could be forwarded to explain this phenomenon, but to set aside conjecture more research will be required to settle this confusion.

ORIGINAL PACKAGING

It has been reported by a former co-owner of Playrite Marble and Novelty Company that their company purchased leftover Jackson Marble Company net mesh bags. The marbles inside the bags are the same as those dug from the Jackson site. Thus, if you are the owner of one of these rare bags, to date there is no reliable way of knowing if the marbles were manufactured by one or both of the companies, or if the bag was distributed by Jackson or Playrite.

PLAYRITE MARBLE GALLERY
Recently, there has been an astounding number of "original packages" flooding the marble collecting market. Some of these appear as vintage boxes, such as attempts to reproduce containers by Christensen Agate Company, Master Marble, and others. More popular are polyvinyl bags, apparently because of the ease and
inexpensiveness with which to create them. Many of these actually do not even represent marble bags that ever existed in a genuine state! Common to this category are promotional items, such as promotional petroleum giveaways, beverage giveaways (some having genuine counterparts, however), and "Rio Theater" giveaways.

**FAKE ALOX AGATES POLY BAGS**

The Alox Agate Company was in operation from the 1920s until 1989. They produced net mesh with their own marbles. However, they never made marble packaging advertising the U.S. military or even packaged any marbles in polyvinyl bags, as the following fake bags, filled with modern marble King marbles, suggest.

"Air Force"

"Army"

"Navy"

**THEATER POLY BAGS**

In an obvious attempt to tap into other collectible markets, the person(s) responsible for producing fake poly bags have cleverly come up with the idea of creating a set of packages purporting to be theater giveaways, primarily from the
Rio Theater in the 1940s. These mostly "advertise" popular western stars of the day in order to attract collectors of Americana, film, and western collectibles. These never existed until the past couple years!

"Gene Autry"

"Cisco Kid"

"Hopalong Cassidy"
“Hopalong Cassidy”

“Lash La Rue”

“Roy Rogers”

“Roy Rogers”
Beverage giveaways are popular, and therefore someone has decided to reproducing genuine marble bags as well as concoct some that do not have genuine counterparts. These are perhaps the toughest bags to determine the origins of since some are very similar to the vintage examples. The best way to differentiate them is by the marbles inside. Also, real beverage giveaways were "bottle hangers," where a circular opening in the header allowed the bag to be suspended from the neck of the bottle. However, as you can see, some of the fakes possess this same feature.
"Coca Cola"

"Coca Cola"

"Hires"

"Moxie"
Another popular line of collectibles include filling station giveaways. Thus the large number of marble bags sporting gasoline company headers that have appeared lately. All of these are fakes...to my knowledge, no petroleum companies ever distributed promotional marble packages.
"Esso"

"Gulf"

"Sinclair"

"Texaco"
MISCELLANEOUS POLY BAGS

The following set of packages represent both "fantasy" and reproduction polyvinyl marble bags. Some, like Champion Agates, Vitro Agates, Mr. Peanut, and Milton Bradley, have genuine counterparts while most of the others are products of someone's imagination.
"Champion Agates"

"Mitee Marbles"

"Santa Barbara Air Express"

"John Deere"
“Shur Shooter”

“Lil’ Black Sambo”

“Aunt Jemima”

“Dupont”
"Farmalls"

"Eisenhower and Nixon"

"Levi’s"
"Popsicle"

"Reddy Kilowatt"

"I Love Lucy"
"Barber Shop"

"John Deere"

"John Deere"

"Billy Jo Bob's Bait and Tackle Shop"
"Coppertone"

"Eddy's Bread"

"Sonny Sugar Cones"
"Campbell's Kids"

"Winchester"

"Catseye"

"Winchester Fishing Tackle"
"Hedlon's"

"Kelly Tires"

"Purina Cattle Chow"
"Purina Pig Chow"

"Jolly Rabbit"

"Kingfish"

"Popeye"
TOBACCO POLY BAGS

A new wave of fake poly bags struck in the summer of 2000. All of these bags are filled with modern marbles, with one variety per bag. These marbles have color schemes which are intended, apparently, to be matched with the product with which they are supposed to be associated. Though there is a large number of these bags, which have fake headers for many companies, many are for cigarette and other tobacco products. Common sense alone will tell you that even in the heyday of tobacco products, these bags (which obviously would have been geared toward children if genuine) would never have been released.
"Marlboro"

"Chesterfield"

"Copenhagen"
FAKE POLY BAGS WITH MODERN MARBLE KING MARBLES

The most recent fake poly bags seem to be those filled with new Marble Kings. I have seen four types, represented by Bumblebees, Girlscouts, Boyscouts, and Watermelons. Remember, Marble King never sold its Rainbows in poly bags by type; they were always mixed. Also, vintage Marble King marbles have patches and ribbons of alternating colors, while their new marbles have a single ribbon of one color and two poles of another.
So who is perpetrating this scam? Well, many dealers are attempting to sell these bags. These items appear on Internet auction services such as eBay, at flea markets, in antique malls and stores, and even at marble shows. Many sellers of reproduced and faked packaging may themselves be ignorant of their origins and
perhaps purchased them believing they were genuine. Actually, one person is allegedly to blame for most of the poly bag hoax. He lives in Florida. Apparently this is the person producing these polyvinyl reproductions. I only have well-informed second-hand information about this character.

Here are a few pointers on becoming better educated about how to detect and avoid fake poly bags:

1. Know Your marbles! People who manufacture the polyvinyl bags are either too cheap or too stupid to fill them with vintage marbles. Often what they will contain are modern Marble Kings or Jabo Vitros. In the future I suppose we'll see these bags with older marbles, once the scam artists can no longer fool people with the present reproduction bags.

2. Does the bag look too new? Most of the reproduction bags are in remarkably well-preserved condition. Remember that these are supposed to have been made in the 1940s through the 1960s. They should show it, usually as fading and perhaps tearing of the label, rusted staples, rubbing on the poly vinyl container, and so forth. However, use caution when using these criteria. For example, not all old bags possess rusted staples. And not all new bags have shiny staples. I have seen many with artificially oxidized staples. I believe they are using a mild acid solution to cause this premature rusting. Typically, such staples will have tell-tale stains on the paper header surrounding them, since a liquid solution was dropped onto the staples. Also, I have noticed recently that fake bags often have paper headers that have been ripped, faded, stained, and so on in order to lend them greater credibility by looking as old as they would be expected for their claimed age.

3. Genuine polyvinyl packaging will have a seam down the middle of the backside. This is completely lacking on fakes and reproductions. Also, original poly bags tend to be thicker and will show signs of aging and weathering, typically a "cloudy" effect on the bag's interior.

4. Faked headers are printed with ink jet printers. Look at the header under at least 10x magnification. If you can see tiny dots of color and bleeding of the ink into the fibers, chances are it is fake.

5. Do some research and be sure that the so-called original package you want to buy at least represents a product that was actually produced. One good method is to browse through collectibles books on the company which was promoted by the marble package (i.e. Coca-Cola collectibles books), if it is a promotional bag at least. Make comparisons.

FAKE AND REPRODUCTION NET MESH BAGS

Net mesh bags are also reproduced. Since the genuine ones slightly precede polyvinyl packaging they are often worth more. The reproduction mesh bags I have seen are often genuine; however, they have fake headers attached to them. Older net mesh bags are often found with the headers deteriorated or missing, and
it is an easy chore to print up an new header and staple it on. Other mesh bags are very recent, the types in which Mexican marbles are often distributed, and have had their original headers replaced with fake ones. Regardless of the actual origins of the mesh bags and their marbles, the best way to spot a fake is by knowing whether or not the header is genuine or not. Fake headers are printed with ink jet printers so will have the tiny dots and ink bleeding that can be found under magnification.

"Alox Agates Army"---note genuine but modern mesh bag with fake header

"Mr. Peanuts"---note possibly fake header on possibly original bag (this one I am not completely sure about)

"Tom Mix"---note fake header on original bag
FAKE AND REPRODUCTION BOXES

Reproduction boxes are harder to produce than polyvinyl packaging, but since some original boxes can cost hundreds and even thousands of dollars, there certainly is incentive to go through the trouble to reproduce.

Several such boxes have been detected. Two are Christensen Agate boxes. The trait here that differentiates them from the older boxes are the labels, which have been printed with an ink jet printer. If you inspect these labels closely you will see that the print is composed of tiny dots which bleed into the paper fibers. The genuine labels are block-printed, so will have solid colors, even under magnification. Also, these boxes tend to have staples on the ends, which the originals lack. Finally, the marbles in the boxes will be newer types, and you can tell they have been recently added since the interior of the boxes will lack the small indentations which are formed by marbles resting in them for several decades.

Some years ago the Peltier Comic marble box was reproduced. Though the maker of these stamped the interior as reproductions on most, a few unsavory dealers will still try to pass them off as old.

One other box that appears to have been reproduced is the Master Glass No. 5 box. There are several factors differentiating the new versions from the old, including the font (particularly of the "M" in the word "Master") and the fact that the genuine boxes have a flat look to the print, whereas the reproductions are glossy. It is open to question why these would be reproduced, however, since the originals can often be bought for around $20.

REPRODUCTION HAND MADE MARBLES

PLEASE BE PATIENT WHILE IMAGES LOAD
REPRODUCTION HAND MADE SWIRLS

Today there are scores of glass artists who are creating hand made marbles. Mostly, these do not imitate the classic designs and styles of antique hand made marbles, though many draw inspiration from them. However, a few artists are very skilled at creating marbles that are virtually identical to genuine old marbles. Unlike many other types of contemporary marbles, many of these are left unsigned and even have pontils. Though few makers of such marbles actually try to pass them off as old, the marbles do often get eventually sold to those without such scruples.

It is very difficult for the inexperienced collector to be able to tell reproduced hand made marbles from their genuine counterparts. However, a few cautionary notes can help you from being fooled. First, if the marble is absolutely pristine, with no damage and not even a sign of normal aging of glass (haze, patination, wear, frosting, etcetera), chances are it could be a fake. Second, such fakes are often larger than the typical hand made marbles you’ll encounter. Third, if it is being offered at a price that is far lower than you believe it should go for, stop a moment and think before buying it----why is the person selling such a marble for a cost far below "book value"?

Indian Lutz, unsigned, Chris Robinson

Indian Lutz, unsigned, Chris Robinson

Naked Solid Core wirh Aventurine, unsigned, Chris Robinson
Between late 1993 and early 1994, several Sulphides with never-before-seen figurines appeared on the market. One group originated from California and another group came from Florida; collectively, these have become known as the "California Sulphides." The California examples were said to have been found in East Germany when the Berlin Wall was brought down, while the Florida examples were said to have been unearthed from the site of a drugstore that had been owned by a German immigrant. Besides containing previously unknown figurines, many of these Sulphides had double figurines. Prior to this only around a dozen were known. Both the Florida and California specimens were tested by Antique and Collectors Reproduction News, including the use of a Scanning Electron Microscope to determine chemical composition. ACRN could not unequivocally identify these as fakes, but their results, which included discovering that the new Sulphides contained three to five times as much sodium as the originals, demonstrating that the new Sulphides have no signs of ordinary wear under magnification, and finding clouds of bubbles and dull spots on the surface caused by the exposure of tiny air bubbles, indicated that sufficient differences between the California Sulphides and ones known to be genuine existed to suggest that these "finds" were in fact a hoax perpetrated by one or more individuals.
On the other hand, research conducted by Jeff Treat, a well known collector, in collaboration with Nicholas E. Pingitore, Ph.D., of the University of Texas (Department of Geological Sciences), seems to contradict the findings of ACRN. Using some of the same methods for detecting elemental composition, this study demonstrated that the sodium levels of the California Sulphides were almost exactly equal to that of known vintage Sulphides. Comparisons of other elements (oxygen, silicon, and calcium) also indicated similarities between the two rather than differences. Perhaps the most salient difference found between the two sample groups was that the California Sulphides contained no manganese, whereas it was present in all the specimens known to be old. The researchers were quick to point out, however, that other old sulphides they examined, but which were not part of the study, lacked manganese altogether. In summary, they concluded that sufficient differences between the two sample groups to point to recent origins for the California Sulphides did not exist. In stating these results, they sharply repudiated ACRN’s findings.

I have spoken with several well known collectors on this subject and my own conclusion is that the marble collecting community is about equally split between calling the so-called California Sulphides fake and genuine. Some have made the point that many of those who firmly aver that these marbles are indeed old and genuine are the same people who originally purchased these, and that their opinions are biased toward protecting their investment. Those targeted by these accusations, however, simply counter by saying that the nay-saying is due to "sour grapes." Since the marble collecting community is divided on this issue, it is up to you to decide for yourself whether they are fakes or not. I myself presently hold no opinion either way.

Repaired Sulphides

Sulphides are again becoming the target of misrepresentation following a hiatus after the "California Sulphide" controversy. Since Sulphides are difficult to find, and very expensive, in mint condition, damaged ones are being repaired with polishing and/or polymers to fill in deep chips. Some are also being coated with green glass not only to repair them but to give them the appearance of far more valuable colored glass sulphides. Though often sold as repaired and altered, others who buy them as such may not be so honest in their descriptions and might try to pass them off as genuine. Known examples include amber coating (monkey and coin), green coating (eagle, dog, and turtle), cobalt (numeral and cow), and blue (lion).

Reproduced Sulphides

Sulphides are also being reproduced. As the contemporary "art glass" marble market continues to expand, artists are not only exploring new design techniques but are creating "classic" pieces. Thomas Thornburgh is one such artist who creates sulphides that are not meant to be exact reproductions of older examples but employ new figurines. Thornburgh’s sulphides lack pontils, and there is also some darker swirling in the glass, a trait not seen on original pieces. Jim Davis of Pennsboro, West Virginia, is another of several artists creating sulphides, though his employ painted figurines and would not easily be mistaken for old. Again, it needs to be noted that the individual artists are not making these to precisely copy the old styles and certainly are not trying to pass them off as old. Yet, as they
are bought up by others, beware of them being attempted to be passed off as antique.

Damaged Clear Sulphide with a Green Glass Coating

Thomas Thornburgh Contemporary (note that figurine is not a copy of genuine antique sulphide figurines)

Thomas Thornburgh Contemporary (note that figurine is not a copy of genuine antique sulphide figurines)

Thomas Thornburgh Contemporary (note that figurine is not a copy of genuine antique sulphide figurines)

Thomas Thornburgh Contemporary (note that figurine is not a copy of genuine antique sulphide figurines)
"ATLANTA PORCELAIN" MARBLES

The picture below may seem familiar to you, especially if you live or travel in the southeastern United States. They are the "marbles" that were allegedly dug in 1991 during renovation in Atlanta, Georgia, in preparation for the then-upcoming Summer Olympics. Apparently, a construction worker unearthed 50,000 of these and somehow the story got to the newspaper that they represented porcelain marbles produced by a local factory during the 1820s-1830s. Since the time of recovery these "marbles" have found their way into many antique and collectible venues, particularly in such states as Georgia and Florida.

The "Atlanta Porcelain Marbles"

Are they genuine? The fact is this: during the period in question Atlanta was a small village, incapable of supporting a marble factory, much less one manufacturing porcelain specimens during an era when most children's marbles were made of limestone and imported from Germany. In fact, there was never a marble factory in America until the late 1800s, and most of these made softer-paste earthenware marbles as a sideline while concentrating on other forms of ceramics. Also, when found these marbles were unpainted; the colors you see were added subsequent to their excavation. The paint has been shown to most likely be latex, a type of paint not available then. In fact, these are probably spheres that were used in mill drums. It needs to be noted that to my knowledge they never appeared in any collections prior to 1991 and they have never been encountered during archaeological investigations.

These "marbles," being comprised of industrial porcelain (introduced to America sometime after 1860), are heavy to the touch and measure 3/4" or slightly smaller and sometimes up to 13/16". When painted, they will often be brown, red, green, blue, purple, or beige. Some have designs on them, most likely a single star.
that exposes the natural color of the underlying porcelain. I surmise that these were made by placing on the sphere one of those stick-on stars teachers like to put on highly graded exams, dipping it in paint, then removing the star following drying of the paint. Others I have seen have even been brashly decorated with a magic marker, often in geometric patterns.

Almost a decade after their "discovery," these objects remain the subject of some controversy and the latest tall tales have them being excavated from Civil War battlefield sites, to make them appealing to collectors of militaria.

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**REPRODUCTION MACHINE MADE MARBLES**

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**PLEASE BE PATIENT WHILE IMAGES LOAD**

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**MODERN MARBLE KING RAINBOWS**

The recent Marble King Rainbows may be differentiated from the originals because they have the same colors on both poles and a central ribbon of the second color. The originals have a patch on one pole consisting of one color, followed by a ribbon of a second color around the equator, a ribbon of the first color around the equator, and finally a patch of the second color on the opposite pole.

**VACOR DE MEXICO**

Other marble companies besides Marble King are producing marbles that look superficially like older marbles. The Mexican manufacturer, Vacor de Mexico, is currently offering marbles that could easily fool less experienced collectors. One looks a lot like the Peltier Superman, and has the same colors. These new versions can be distinguished from the old because they have a swirling pattern differing from the original and lack the seams and separate ribbons of color that you will find on genuine Peltiers. Another is called the Twister or Zulu. It looks a lot like red, yellow, and black Christensen Agate swirls. Again, there are subtle differences in the colors between the old and the new. Also, the new examples have an obvious "orange peel" texture which is more evident on the larger sizes. Your best defense against these is to compare and contrast them side by side, and be wary of "valuable" marbles being sold at a price far less that they should. If it sounds too good to be true, chances are it is.
MODERN HANDMADE CHINESE MARBLES

Recently, I have been fortunate to locate a source of modern hand made marbles in China. These are mass-produced and inexpensive. So far I am the only American distributor but I have been selling many of them and inevitably some of the are going to be passed off as older machine made marbles. Why? Because there are two styles that mimic, probably unintentionally, older marble designs. One looks like a Christensen Guinea and has a transparent amber, clear, transparent green, translucent yellow, and transparent blue base. Obviously, not all of these could be passed off as old, but some, particularly the amber examples, could be mistaken for genuine Christensens by inexperienced collectors. Among other distinguishing traits, these lack seams, which are always on original Guineas.

There is also a corkscrew variety available in several combinations, always with a clear base: light blue and white on clear, yellow and white on blue, white and blue on green, pale green on clear, blue on clear, white and orange on clear, yellow on clear, and red and white on clear. These should be easily recognizable, not only because of the pontils on either pole (one melted and one "nub"), but because the spirals are very thin.

A final type is similar to the corkscrew but is formed like an auger inside the marble. These are even less similar to genuine Akro Agates than the corkscrews mentioned above.
GERMAN STRIPED TRANSPARENTS AND OPAQUES

Germany produced a machine made marble that looks remarkably similar to some Christensen Striped Transparents and Opaques. These are said to have been manufactured in the 1930s but my own research suggests the 1950s is more likely. These marbles may have a transparent base, in colors of blue, clear, peach, green, purple, yellow, and red, in approximate order of increasing rarity, or less commonly they may have an opaque base. Of the latter, I personally have only seen blue. Rarely, these may have multicolored stripes (especially on the opaque examples), but the transparent ones almost always have white.

These marbles always have two seams which actually crimp into the marble, much like Master Marble seams. Though there are slight variations, these seams are typically set opposite one another and are shaped like wide "U"s. The direction of the "U" is opposite that of the one opposite it. This, too, is quite similar to Master seams. These seams are the real trait that will differentiate them from Christensen Agate Striped Transparents (and Opaques). Those intimately acquainted with the marbles of both companies will notice subtler differences, too. It is particularly important to be cautious with the peach colored examples, as they are often also mistaken for rare Christensen peach slags.
Both hand made and machine made marbles are being reproduced, often in order to take advantage of the current popularity and therefore inflated values of these marbles. While many glass artists are producing contemporary marbles in their own designs and are signing them, others specialize in reproducing the older styles and very often do not sign them. When these marbles are unsigned they are often bought from the artist with the purpose of reselling them as genuine and old. Common machine made reproductions are of Christensen Agates (particularly Guineas and Flames), Peltiers (particularly Superman and Golden Rebel National Line Rainbos), and Marble Kings (particularly Watermelons).

Genuine Guineas are extremely rare and expensive. Many have tried to reproduce them, and whereas some look fake others look more like the original. However, perhaps the best indicators of the better reproductions are that they will often contain a layer of clear glass over the flecks of color (which should be on the surface of the real thing) and that they may have a thin layer of air bubbles between these two layers. The fakes are also very smooth to the touch because of this layer of glass.

Christensen swirls and flames are also reproduced, often by the same artists making the Guineas. The colors are very often strikingly similar to the original marbles. However, the patterning of the swirls is rarely like that of the originals and there will indeed be subtle differences in the colors.

M.F. Christensen Brick Lookalike---unsigned, Scott Patrick

M.F. Christensen Brick Lookalike---unsigned, Scott Patrick

M.F. Christensen Brick Lookalike---unsigned, Scott Patrick
Christensen Guinea Lookalike—unsigned, Scott Patrick

Christensen Guinea Lookalike—unsigned, Chris Robinson

Christensen Guinea Lookalike—unsigned, artist unknown

Christensen Agate Swirl Lookalike—unsigned, artist unknown

Christensen Agate Swirl Lookalike—unsigned, Scott Patrick
Akro Agate Oxblood Corkscrew Lookalike---unsigned, Scott Patrick

Akro Agate Egg Yolk Oxblood Lookalike---unsigned, Scott Patrick

Peltier "Golden Rebel" Lookalike---signed, Phil McGlothlin

Slag Lookalike, unsigned, Chris Robinson

Miscellaneous Scott Patrick Swirl

Miscellaneous Scott Patrick Swirl
Marbles that have been repaired through any of a number of methods are not reproductions in the true sense of the word, though a warning about them is appropriate here because they, like fakes and reproductions, are often passed off on to unsuspecting and/or inexperienced collectors.

Polishing and buffing are the two most common methods of repairing damaged marbles. This is usually done to rare marbles that have too much damage (flakes, chips, wear, etc.) to be enjoyed on display. Both methods involve grinding away the surface of the marble; polishing removes a good deal of glass while buffing is more superficial. The method used depends on the depth of the damage present. Polishing is more common on handmade marbles and buffing seems to be done more to machine made marbles. On the former type, the polishing usually removes the pontils though sometimes artificial ones are added. The best method to detect polishing and buffing is to closely examine the marble under magnification. Often, all of the damage is not removed and tiny scars, often crescent shaped, will remain. These scars, along with pits and flakes that may be left behind, will have smoothed edges. Polishing and buffing is not practical for some types of marbles, especially those handmade types that have bands of color on the surface (Indians, Banded Transparents, Clambroths, etc.), while on some machine made marbles the removal of glass from the surface can alter the design or even certain colors. This is most evident on such examples as National Line Rainbos.

Some marbles, particularly larger handmade examples, have deep pits and chips that have been filled with a clear polymer to fill in and disguise the damage. These often go unnoticed by the untrained eye. However, such alteration is fairly easy to detect. First, depending on the size of the filled area, the surface of the repaired area will have a different appearance than the rest of the marble. Often it is uneven or has a dull look as compared to the rest of the marble, or may even have an "orange peel" texture. Most polymers will show up under ultraviolet light, so if a marble that has filled areas is held under a black light, often these areas will glow a bit more than the rest of the marble and the repaired areas really stand out. A final method to detect filling is to prick the marble all over with a pin or needle. The sharp end of the object will sink into any filled spots while the areas of glass will not yield.

"Cooking" is perhaps the most difficult method of repairing marbles and therefore is not often done, as few have the skills to do this. Such repaired marbles are also the toughest to identify. Cooking actually involves heating the damaged marble to a high enough temperature so that the glass becomes partially molten, allowing such damage as fractures and cracks to "heal." Sometimes the marble is completely altered from its original appearance; such is especially true for expensive oxblood marbles like Leightons. At other times, the original design must not be altered, so the amount of cooking is less severe.
Polished Handmade Marble---note missing pontil

Polished Handmade Marble---note missing pontil

Polished Handmade Marble---note scars

Buffed Peltier Superboy---note how red has been almost completely removed and turned orange

"Recooked" Oxblood Marble

MODERN CHARACTER AND LOGO MARBLES
With few exceptions, marbles with advertisement logos and comic characters are modern. The exceptions include, of course, the 12 original Peltier Comic marbles as well as the Cotes Master Loaf and Tom Mix advertising marbles by the same company, along with a few rare screenprinted advertisement marbles such as a series of Akro Agates produced in the 1930s.

The Peltier marbles have all been reproduced. These are easy to identify, however, since the characters are painted, screenprinted, or applied as a decal on the marble. The marbles are sometimes Peerless Patches, which is the marble on which all the originals were made, though the overwhelming majority consists of plain white marbles, with an occasional Marble King or Vitro Agate example showing up. The best method for detecting these is to feel the print; the originals have an overglaze so cannot be felt. However, reproductions, because of the way the character is transferred to the surface, can be felt. In addition to the original characters, other marbles will have characters without genuine counterparts, like Jeff of "Mutt and Jeff" and Popeye. Sometimes the characters are multicolored. Original characters were always just one color, black.

There are also many advertisement marbles circulating, and these are often misrepresented as old. Most have been made since the 1970s by Qualatex and later by Lucky Dog, which bought the Qualatex machinery. In addition to the advertisement marbles, they also create character marbles. There is a very long list of these marbles, everything from Coca Cola to Buick and John Deere logos to superhero characters. Mostly, they are found on Marble King opaques, catseyes, and Rainbows, all modern. Since these are produced by screenprinting, the print can be felt on the marble. However, as mentioned some genuine vintage advertisement marbles are known, and these are almost always on Akro Agate marbles.

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**RECAST MARBLE TOURNAMENT MEDALS**

**PLEASE BE PATIENT WHILE IMAGES LOAD**

Beginning around 1997, National Marbles Tournament and VFW Tournament medals have been reproduced. These have mostly been recast in silver, and at least thirteen examples are known.

There are several methods for detecting the recast medals. First, many of them are stamped "sterling," which is absent on the originals. Also, the detailing is inferior to the genuine examples because they were formed from molten metal poured into molds rather than be stamped from dies. The mold method also often gives the surface an uneven thickness, and there are often lines of metal that stand out around the rim. The cast versions are often very shiny and new-looking, while the originals should be dulled by age and perhaps a bit worn with normal wear.

One of the best ways to detect a fake is to inspect the reverse side. Whereas the front of the medal will be seen on numerous genuine examples, the back side will often be unique because it is assigned to a particular tournament winner, whose
name will appear there. Obviously, if you have a medal whose reverse side is shown here with a certain name, it will be a reproduction, unless of course you possess the exact example from which the pictured fake was recast.

"Marble Champ"

"1941 National Marble Tournament"

"United States Marble Shooters Tournament"

"Pittsburgh Press Marble Tournament"

"1935 National Marble Tournament"
A HISTORY OF GLASSMAKING IN LAUSCHA, GERMANY, AND VICINITY
Lauscha is located in the Thuringen province of East Germany. This small town has a history of glass making that goes back at least seven centuries.

Nuns and monks were among the earliest to operate glassworks in the region. These glassworks, Glashutten (or "glass huts"), became more numerous as secular residents of the region acquired the knowledge of glass making, which was at first exclusive to the church because of its members' ability to read Latin, the language in which the ancient glass making recipes were written.
By the early 1400s the glass industry in the region had become well-established and became a tradition passed on from father to son. One of the premier families of glass makers was the Greiner family, and it was their descendents who would produce the first glass marbles.

Lauscha itself was a large, uninhabited forest district until around 1590, when two glassmakers, Christoff Mueller and Hans Greiner, came to the region from Langenbach and erected a glass factory in Marktiegel. However, this factory lasted only a few years due to cramped space. They then settled on the banks of the Lauscha River, licensed to do so by the Duke of Sachen-Coburg, Johann Casimir. The site of the subsequent glassworks they built there, Hultenplatz ("foundry place"), is still known by the same name today. Soon thereafter these two were joined by other glass artisans, and their glassworks swiftly became a source of fine luxury vessels used by the aristocracy. Ointment flasks were among the first objects produced by the glassworks, followed by drinking glasses and small round window panes called "blisterpanes" and "bullseye panes."

The location was favorable for glassworks because timber could easily be dragged down from the nearby mountains, thus supplying the factories with much needed wood for the ovens. For instance, data from a later factory indicates the need for over 2,000 cubic meters of timber each year. Raw material was also abundant. Sand from Steinheid and burned volcanic limestone from Weissbrun were used in the glass formula. The glass had a greenish color due to the high amount of iron present in the sand. Thus, it was named Waldglas ("forest glass").

Hans Greiner and Christoph Muller were also accomplished painters and therefore painted their glass items with Christian passages and, later, humorous passages and folk poetry. These were sold almost immediately upon their completion and were distributed throughout the country by peddlers.

The demand for glass was greater than the supply. To meet some of this demand, the sons of Christoph Muller, Hans and Steffan, built their own glassworks in Schmalenbuche in 1607, obtaining 1,155 acres of forest for the needed firewood. Around 1622, another factory was founded in Piesau, by a fellowship of glassmakers including Scholt from Langenbach, Heins from Langenbach or Fehrenbach, Bock from Lauscha, and Dietz from Seiffen. Other glassworks were built in Klein-Tettelau (1680), Gebiet Altenfeld (1648), Neustadt (1698), and Krumbach (1615) during this century.
The Krumback factory endured until 1783. It was founded when, due to an abundance of timber in Frankenwald, Hans Greiner and Christoph Muller proposed to erect a glassworks there, negotiating with the local ruler to do so. This factory produced plate glass and drinking glasses and goblets, and rapidly expanded throughout the eighteenth century. In 1783 it was sold to Johann Michel Muller.

Later, in Marktiegel on the same location as the first glassworks, two factories were constructed in 1721 and were named Henriettenthal. Here, a method by which to produce stemmed glasses was introduced to Germany, a technique earlier developed in England.

By the late 18th century glassworkers began working out of their homes to handle the overflow from the glassworks, which were operating at capacity. Around this time, the use of oil lamps and, later, gas blowtorches, allowed for increasing intricacy and creative designs. Other smaller "wandering" glassworks were also erected in areas where timber could be exploited. Once the forest in the vicinity was depleted, these itinerant factories were moved to new locations, leaving behind few traces.

A glassworks was established in Marktiegel by Elias Greiner Vetters Sohn in 1853. Louis Robert Greiner also constructed a factory nearby in 1856. The latter was reconstructed in 1895 and supplied with gas heating, but was finally closed in 1934. Also in 1856, a glassworks was founded in Lauscha by two brothers, Peter and Christoph Kuhnert. Here they produced glass marbles, glass canes, and reflective colored glass balls and knobs. This factory endured until around 1916. In 1861 the factory of the Kuhnert and Company Firm was founded by Gunter Kuhnert and his sons. Finally, in 1920, another glassworks was established in Lauscha by Johann Georg Schneider.
During the 1800s, as mentioned, Lauscha glassblowers began creating children's glass toys. Among these were the first glass marbles, made possible by the invention of marble scissors by Elias Johann Christoph Simon Carl Greiner around 1846. However, the scissors were initially used for making glass eyes for toy animals, and the first marbles were not produced until around 1850. Other items produced during this period included thermometers, barometers, artificial eyes, glass beads, and Christmas tree ornaments, among others.
Elias Greiner Vetters Sohn

Antique Christmas Tree Ornament

Antique Christmas Tree Ornament

Antique Christmas Tree Ornament
Marble scissors allowed the marble maker to cut portions of a multicolored, threaded glass rod which was heated then twisted as the glass became molten. Shearing the glass rod left telltale cut-off marks, or "pontils," on either pole of the marble. Depending on the amount of time and effort invested in the production of the marble, as well as the skill and dedication of the artist, these pontils were often melted, ground, or even left as is. There is research to suggest that the earlier marbles have more polished and ground pontils, and that less care was given to this as time passed due to increased production and a concomitant decrease in the amount of time that could be given to the creation of an individual marble.
A HISTORY OF HANDMADE GLASS MARBLES

Hans W. Schmidt engraving of the original glass house at Lauscha, Germany (1597-1905). Note workmen drawing out glass cane.

Drawing of the Dorfglasshutte Glassworks in Lauscha

Apparently, Elias Greiner Vetter’s son, step-brother of the inventor of the marble scissors Johann Christoph Simon Carl Greiner, and son of master glass worker Johann Georg Wilhelm Greiner, was the first to make glass toy marbles in 1849. Along with his son, Septimus, or Seppen, Elias was granted a six year patent from the county government of Meiningen in September of 1848 to manufacture marbles. In May of the following year the father and son team received a similar patent from the Bavarian Ducal Ministry; one year
later it was confirmed that the two were indeed manufacturing the marbles, a requirement in order to maintain the patent.

Elias and Seppen began by producing their marbles in a small portion of the family glassworks. The marbles were polished elsewhere. In September of 1853, however, the two succeeded in opening up the first glassworks devoted to the manufacture of glass marbles. Elias ran this glassworks until his death in 1864 and was succeeded by his son, who died in 1877. Control of the glassworks then passed to Seppen's son Hermann. A gas explosion in early 1894 unfortunately burned the factory to the ground, but it was replaced with an even larger glassworks the following year. After Hermann's death in 1914, his son Otto became the last of the Greiner family to run the glassworks. At some point the factory was producing not only the traditional handmade marbles, but also machine made marbles. Both types of marbles may have been produced at this glassworks ("Seppenhutte") until World War II. Both handmade marbles and "German Striped Transparent" machine made marbles have been dug from this site.
A German Striped Transparent Marble from Seppenhutte

Unidentified German Machine Made Marble

“Catseye” from the Sofienhutte Glassworks (ca. 1980)
Soon after the Greiners opened their factory, numerous other glass toy makers in Germany began specializing in marble making. The first recorded instance of an exhibition of these marbles was in 1854 at the Universal German Industry Exhibit in Munich.

At least five glassworks were operating in Lauscha: Kuhnertshutte (begun in 1856 by Peter and Christoph Kuhnert); Schlotfegerhutte (begun by Louis Robert Greiner in 1853); Seppenhutte; Schneidershutte; and Dorfglasshutte. The latter can trace its history of glass making to the year 1597. Other glassworks producing marbles were in Steinach (Eichhornshutte) and Haselbach (Marienhutte).

At first, German glass marbles were too expensive for most American children to enjoy, and archaeological excavations of working class residential sites dating to the latter half of the nineteenth century demonstrate that less than 5% of the marbles recovered were made from glass, with the balance comprised of the more common, and far less expensive, ceramic and stone marbles.

The following few decades witnessed the emergence of glass marble manufacture in other countries, including England (Bristol Glass Works) and America (Iowa City Flint Glass Manufacturing Company). However, most
glass marbles were still imported from Germany, though this importation was virtually halted in the early 1900s when M.F. Christensen of Akron, Ohio, patented the first marble making machine. However, it was the advent of World War I and the Fordney-McCumber Act tariffs to follow that proved the death knell of German handmade marble importation to the United States.

There is evidence to suggest, however, that some German glass marbles were still making their way to the United States after the first world war. For instance, the Butler Brothers 1927 and the Sears Roebuck and Company 1921-1923 catalogs illustrated imported glass marbles, though it could be argued that they were selling old stock or simply picturing marbles that were different than what were actually being offered. More conclusive proof of the continued importation of German glass marbles derives from the German toy catalog, _der Universal Spielwaren Katalog_, of 1924-1926, which shows that latticinio swirls cut from a cane were still being offered for export.

In fact, there is good evidence to support the fact that, at least in Lauscha, glass marbles were being made by hand in quantity until 1933. The onset of World War II slowed this production considerably, but glass artisans may have continued cutting marbles from glass canes until 1950, allowing this particular craft to flourish a full 100 years.

It should be noted that while the production of handmade glass marbles as toys ended by the end of the first half of the twentieth century, a renewed interest in them by collectors in the succeeding decades brought about a rebirth of sorts. In the past decade or so, more and more modern glass artists have begun to produce handmade marbles as art glass pieces. This trend is growing, and shows no sign of declining. While some of these artists are producing new styles completely different than traditional cane-cut marbles, others are orienting their craft toward reverent reproductions of the old styles.
GALLERY OF HANDMADE GLASS MARBLES FROM LAUSCHA AND VICINITY

A Group of Marbles sent to me from Lauscha

And Another Group...

And Yet Another Group....

Some Indians

A Group of Onionskins

An Odd Solid Core Swirl
Alternating Yellow/Aventurine Green Latticinio

A Black Based Clambroth

Single Pontil Four Color Slag

Lutzes and Clambroths

A Group from the Eichhornshutte Glassworks in Steinach

Two Pontil Oxblood
Onionskin with Aventurine

Another Group from the Kuhnertshutte Glassworks in Lauscha

Another Group from the Eichhornshutte Glassworks in Steinach

An Odd Early Slag-Type Banded Transparent from the Marienhutte Glassworks in Haselbach

Machine Made Striped Transparent Marbles from the Seppenhutte Glassworks in Lauscha

Another Large Group of Handmade Marbles

Black Based Clambroth with Three Colors
An Out-of-Round Single Pontil Cloud

Another Crop of Onions!

Another Group from the Eichhornshutte Glassworks in Steinach

Another Group from the Kuhnertshutte Glassworks in Lauscha

A Group from the Schlotfegerhutte Glassworks

Two 360 Degree Indians (Same Cane?)
A Divided Core Swirl in Cobalt Glass

An End of Cane Marble

A Type of Mist?

My 11th Package from Germany

A Maglite Clambroth

An Oxblood Swirl with Ghost Core

An Indian Cloud?
My 12th Package from Germany!

Now this is a Peewee!

Single Pontil Slag (yellow on transparent green)

Single Pontil "Tornado" Core with Oxblood

Single Pontil End of Cane Indian

Indian Cane Segment
"Leighton"-Style Transitional (Single Pontil Oxblood)