

## **Jell-O Everyone**

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Jell-O everyone! Mr. President, Mr. Secretary, Mr. Martin, Gentlemen of the Society, after a period of illness last winter reduced me to eating bland foods for a week or so, I discovered a topic of such interest, such diversity, such passion, that only you, my fellow questers for knowledge, could properly appreciate it. This evening's talk will be on gelatin. While recovering from my illness, I ate a great deal of gelatin. It is nutritious, easy to digest, readily available, easy to make, and comes in a large variety of flavors. I have, over the course of 51 years of living and eating, eaten a great variety of gelatin salads and molds. You will hear about the chemistry of gelatin, its preparation, the methods of cooking it, the history of its consumption in the US and other English-speaking countries, and also some personal musings about the various flavors and creations to which it can lend itself. If you wish to leave now, I certainly understand.

Gelatin is made from the skin, bones, and connective tissues of various animals, primarily beef and pork. The raw materials come from slaughterhouses; for this reason, gelatin plants are usually located close to the source of their materials so that spoilage can be minimized. It is essentially partially hydrolyzed collagen that consists of a mixture of peptides and proteins. While it contains a wide variety of animal proteins, it is deficient in the essential proteins that humans cannot produce for themselves. Different cultures require gelatin from different sources, since Jews and Muslims do not eat pork and Hindi do not eat beef.

Man has known how to make gelatin for centuries, probably discovering how to make it the same way I did – by boiling a piece of meat on the bone and finding gelee in the pot after the water and meat cooled. This type of gelatin is very primitive, but quite tasty. Next time your wife cooks a country ham by boiling it, try some of the ham gelatin. Very tasty.

Today, commercial gelatin is prepared through a three step process. Initially, the hides and bones are pretreated in a dilute acid solution to remove calcium and other salts. The pretreatment also reduces the fat content to below 1%. If hides are used, the hides are also scraped to remove any hairs. Then the raw materials are cooked in either an acid or an alkali process. While it takes longer, the alkali process is suited for bovine hides which contain more complex collagen crosslinkages that need to be destroyed. A new, enzymatic process has also recently been developed that takes less time and produces a more complete conversion to pure gelatin. Next, the partially purified collagen is extracted through water or low acid baths of increasing temperature. Finally, the gelatin is recovered through a combination of filtration, evaporation, and drying. The final result can be sheets, granules, or powder. If granules or powder are desired, then the sheets are subject to further grinding and sifting. (5)

From ancient times, gelatins called isinglass have been prepared from swim bladders of fish. Hartshorn jelly has also been around for centuries, prepared from the antlers of deer. For those opposed to gelatin, whether due to religion or squeamishness, there are substitutes, none of which behave exactly like gelatin. Gums from seaweed such as carrageenan and agar, or from trees such as acacia gum, or even pectin or konjac can be used.

Commercial gelatin in the U.S. began with the creation of the Knox brand of gelatin granules. In 1890, Charles Knox observed the hard work his wife went through boiling bones and straining off the fat in order to create gelatin and came up with a method to make gelatin into a granular powder, which revolutionized the preparation of gelatins at home. With the creation of granular gelatin, with which we are familiar even today, it became possible to make gelatin easily with the addition of sugar, liquid, and flavorings. Knox, a consummate marketer, engaged in several famous marketing campaigns, including spreading signs across the streets of New

York during the presidential campaign of 1900 with the names of the candidates and the words “Hopes to Wins”. Above each candidate’s name he printed the slogan “Knox’s Gelatin Always Wins”. In 1904, he purchased a racehorse, changed its name to Gelatine King, and entered it in numerous races. In 1906, he purchased an airship, which he christened the “Gelatine” and sent travelling around the country, drawing crowds wherever it went, since it was one of the very first motorized balloons in the world.

After Knox’s death in 1908, his wife Rose took over the company, becoming a formidable businesswoman and the first female ever elected to the board of the Grocery Manufacturers Association. She promoted the use of gelatin through cookbooks and columns with tips and recipes. She set up a test kitchen where many recipes were developed and published them in newspapers and magazines under the heading “Mrs. Knox say...” Her son and grandson were both also active in the business, but today the brand belongs to Kraft. The son worked both at developing good relations with retailers and in the laboratory finding new uses for gelatin. He developed the first pharmaceutical grade gelatin, which is used to encapsulate medicines. This type of gelatin is solid at room temperature, but dissolves quickly and readily at body temperature; and, since it is gelatin, it is easily digested by humans and animals. He also developed a plasma extender, an intravenous solution used as a blood plasma substitute during World War II. (1)

Kraft also owns the Jell-O brand that is the most common and most famous gelatin brand in the United States. In 1897, a cough syrup manufacturer named Pearle Bixby Wait trademarked the name Jell-O for a powdered gelatin dessert that contained granular gelatin, sugar, flavoring, and coloring, thus simplifying the preparation of gelatins. Initially, the flavors were limited to strawberry, raspberry, orange, and lemon. Two years later, he sold it to Orator

Woodward, owner of the Genesee Pure Food Company. Initially, Woodward struggled to create sales, until in 1904 he sent armies of salesmen into the retail trade to distribute cookbooks containing recipes using Jell-O and explaining how to use it. He also added cherry, peach, and chocolate flavors; the chocolate was discontinued in 1927. Woodward engaged prominent performers such as opera star Ernestine Schumann-Heink and stage star Ethyl Barrymore to extol his product; he even engaged Maxfield Parrish to illustrate some of his advertisements. In 1923, he renamed his company the Jell-O Company and launched a line of artificially sweetened gelatin named D-Zerta, which was sold in stores until 1984 when it was reformulated and rechristened sugar-free Jell-O.

From the 1930's until well into the 1960's, America enjoyed a vogue for congealed salads, which Jell-O and others promoted through their cookbooks and promotional columns. As you know, some are sweet and others savory. Lime flavored Jell-O was launched in the 1930's to complement the vegetables and dairy products being incorporated into the salads. Today, we poke gentle fun at the lime Jell-O salad. If you poke around on Youtube, you can even find a song dedicated to this dessert called the Lime Jell-O Marshmallow Cottage Cheese Surprise.

Over the years, Jell-O added and deleted a large variety of flavors, including celery, Italian – not quite sure what an Italian tastes like, perhaps one of you can enlighten me during the comments, mixed vegetable, seasoned tomato, apple, black cherry, grape, orange-banana, and others. In addition, the company launched a line of gelatins called Sparkling Jell-O, which was a carbonated version of the regular product promoted as the champagne of gelatins. It was recently discontinued. The company also expanded into instant puddings in 1936 and premade packaged puddings in 1971. In 1974, Jell-O began an association with Bill Cosby that lasted for

more than 30 years. Most of us can remember his commercials on television. Today, Jell-O sells around 300 million boxes in the United States each year.

In the mid-1920's, the Jell-O Company merged with Postum, maker of Post brand cereals and two years later, the new company acquired Birdseye frozen vegetables, creating General Foods which also came to own a modest Nashville brand of coffee. Today, it is possible to visit the Jell-O museum in LeRoy, New York. (2)

Jell-O had many competitors through the years, but the most successful has been Royal brand gelatin. It was established in 1925 and like Jell-O, engaged in extensive advertising on radio and in the press, collaring endorsements from celebrities such as Howdy Doody. For many years, Royal distinguished itself from its rival by claiming that it used natural flavorings in the creation of its product and featuring a housewife who claimed she switched to Royal "the moment (she) smelled the difference". Today, Royal commands about 6% of the U.S. gelatin market. While formerly owned by Standard Brands, which merged into Nabisco during the 1980's merger and acquisition boom, it was spun off to Jel Sert by consent decree when Phillip Morris, owners of the Jell-O brand through Kraft and General Foods, bought Nabisco. (3)

Gelatin is also popular outside North America, but under different brands. Outside North America, gelatin is usually called jelly. In Britain, Rowntree's Jelly is the popular brand, while in Australia, Aeroplane Jelly is the most popular brand. Adolphus Herbert Frederick Norman Appleroth, a tram conductor in Sydney, created the product in his bathtub at home, combining gelatin and sugar with flavorings to make an instant instant success. He was an aviation fan, so he named his product Aeroplane Jelly. He made deliveries into the rural parts of Australia using a Tiger Moth plane, which came to be featured on the packaging. His business partner created an advertising jingle in the 1930's which has entered the popular consciousness due to its many

decades of use. If you search Youtube for the Aeroplane Jelly song, you can hear this popular jingle. (4)

In addition to food uses, there are quite a number of commercial uses. I have already mentioned the use of gelatin for pharmaceutical capsules and for a blood plasma substitute. I am sure that you are already thinking about gelatin emulsions for photographic prints. It is used in almost all films to hold silver halide crystals in emulsion. Because of its low cost and stability, no commercially viable substitute has been created. In the theater, colored lights are created by placing sheets of colored gelatin, or gels, over regular lights. Gelatin is also used as an external surface sizing for paper. While this market for gelatin is greatly diminished, its use as a sizing agent has been documented back to 1337. It is still used to maintain the wrinkles in crepe paper.

Gelatin is also used for a variety of cosmetic purposes. For instance, synchronized swimmers apply a solution to their hair in order to keep it in place during their routines in cold pools. It is easily washed out later with shampoo and hot water. This process is known as “Knoxing”, since swimmers favor unflavored, uncolored gelatin. For those wanting a temporary hair color, Jell-O or similar products may be used. The color will wash out in a few days and the individual has a rainbow of alternatives from which to choose. It is also used in some cosmetics. Homemade hair gels can be made from gelatin too, although they do not keep as well as commercial products. Nail polish remover is another use.

Some other, more obscure uses of gelatin include as a binder in match heads, to make the shells of paintballs, as a binding agent for india ink, in marshmallows, as windowpanes in gingerbread houses, to simulate muscle tissue for ballistic tests, and for clarification of juices and vinegar. (5) As a child, my youth group used gelatin, combined with peeled grapes, as a substitute for brains and eyeballs at a Halloween haunted house.

Now for your favorite use of gelatin: as a medium for shots. Gelatin containing distilled alcohol, such as vodka, rum, gin, or grain alcohol, can be made in individual servings or cut into appropriate sized servings. At least half the liquid needs to be water, otherwise the gelatin will not set well. Any flavor can be used. You can also make “windowpanes” by mixing LSD into your gelatin, a process popularized by Timothy Leary. My senior year in college, I served the marching band as manager. Occasionally a visiting band would arrive on Friday and want to spend the night. By mutual agreement, the home band was obligated to provide housing on floors and sofas, but before housing assignments were made, we always had a social event with the two bands. A staple of the event was something we called Jell-O Tang, which you might know as boat racing. Each band selected 5 people who each had to consume two shots of Jell-O. It fell to my lot to make the shots. Just imagine the confusion of a teetotaling guy who had never made Jell-O of any kind, let alone Jell-O shots. The former band manager had graduated and was therefore not available for consultation; this is also something it is better not to ask an adult, such as the band director, how to do, since any responsible adult would have to discourage such foolishness. How I wish that the band had owned one of the new automatic shot makers introduced this year.

Now that you have heard about the origins of gelatin, how it is made, why it works, and its various uses, as well as a brief review of some of the various brands and their histories, both here and abroad, it is time to get to the aesthetic part of the paper. As part of the research for this paper, I made every flavor of Jell-O available commercially. All of the Jell-O brand flavors are pleasant to eat, as you might expect from the leading item in the category. I made the Jell-O in regular baking pans and in individual serving molds. Why did I do this, you might ask? Well, since we eat with our eyes before we ever taste the food, I posited that a difference in shape



might change the way the food tasted. While trying the various molded plain Jell-Os did give me extensive experience in unmolding gelatins, and the molds helped to create appropriate portions, and the unmolded gelatins were indubitably more attractive than the squares or piles of spoonage, the flavor remained the same, regardless of the appearance.

I started off with mango, because the box said it was a new flavor. It had a light orange to yellow color and a mild mango flavor, which made a pleasant change from the more common orange Jell-O. Apricot and peach Jell-O have a similar taste to the mango, and looked similar as well, with a slightly dull color. Since the flavors looked so similar, this may be a case of eating with the eyes whereby the eyes trick the taste buds into perceiving the flavors as similar. While not really orange, the watermelon Jell-O had a basically pinkish color, but with a slight orange cast. The flavor was mild, but noticeably different from the other flavors of Jell-O.

Lemon Jell-O is an interesting flavor. It is not as pronounced or assertive as some flavors. The color is a nice rich yellow, but it is difficult to plate to display the color to good advantage. The yellow color tended to wash out, whether I plated it on a sunflower plate, a green leaf plate, or a glass plate. It really only appeared to good advantage on a white plate. Even then, low lighting helped the color to shine, while strong lighting tended to wash out the color. Because of its unassertive flavor and color, it makes an excellent base for a tomato aspic, helping to sweeten the tomato juice a little and add a little piquancy from the lemon flavoring. The yellow color, which as noted tends to wash out against colored plates, disappears in the strong red color of the tomato juice. To follow up on the curious issue of the yellow color that would not display well, I tried making a gelatin using apple juice and plain gelatin. It produced a very mild flavored dessert, which you might expect from its basic ingredients. The color, while

a little paler than the lemon Jell-O, was quite attractive and actually displayed to better advantage than the lemon Jell-O, much to my surprise. The gelatin had the look of a pale Topaz.

Now, on to the red and purple Jell-Os. Strawberry seems to be the generic red flavored Jell-O. The flavor is assertive without being offensive and it really just tastes more like red than it does of strawberries. Perhaps the best thing to do with strawberry Jell-O is to make a Christmas salad with us, adding frozen strawberries and canned pineapple to the Jell-O and inserting a layer of cream cheese between layers of the Jell-O. You could even add some nuts if you so desired, although this would be highly unorthodox. Fruit punch Jell-O looks just like strawberry and tastes like Hi-C. Cherry Jell-O, on the other hand, does taste like cherries, but more like the juice than the cough drops. It also has a slightly darker color. Next on the scale of darkness is the cranberry Jell-O, which looks much like cranberry sauce from the can, although is not as sweet. It has a tarter flavor than most Jell-Os, which complements another favorite Christmas salad, one consisting of celery, cranberries, and nuts added to the Jell-O. My mother had eaten that salad as a girl growing up and grew tired of it. Her sister-in-law had eaten the strawberry salad growing up and tired of it. The two women exchanged recipes, and now the Yosts eat the Bishop's salad and vice versa. Black cherry Jell-O is darker still, but the darkest Jell-O of all is the grape Jell-O. When making the gelatin, the scent is quite aromatic, smelling much like grape Kool-Aid, but the flavor of the congealed dessert is not as strong as you might expect. Curiously, the color dissipates over time, leaving older grape Jell-O with a duller color than fresh grape Jell-O. Not all flavors fade over time. In fact, by my unscientific observation, the berry flavor, was paler in the liquid form than in the congealed form and gave off a distinct gelatin odor during cooking, actually intensified in color and flavor over time. Time here covered two weeks.

Finally, in this long recital of flavors, I am sure you are wondering what happened to your old favorite flavor, orange? Well, I have saved orange for last, because I used orange as the flavor to compare all the brands of gelatin I could find. In the comparison test, I used Jell-O, Royal, Kroger, Crush, and Knox brand gelatins. The Knox brand, as some of you probably know, is plain unflavored gelatin without any flavoring, sugar, or colorant. To make the Knox gelatin, you start with a liquid of your choice, in this case orange juice, add the gelatin, and add some sugar. Definitely more complicated than the other varieties, which only required the addition of hot and cold water. I followed the directions from each package just the way they were printed and molded them in the same vessels so that they would have the same shape and volume. The Jell-O brand tasted normal in every respect, like orange only not exactly. Perhaps it tasted normal because we have all eaten so much Jell-O that it has become the taste norm for gelatins. The Royal brand gelatin, which is the number two branded gelatin in the United States, had a more artificial smell while cooking but a less intense flavor upon eating. In appearance, both the Royal and the Kroger brands looked just like the Jell-O brand. The Kroger brand, which seemed to have the fattest package, had the sweetest flavor of all the varieties and was the only one to have an artificial aftertaste. It also seemed slightly softer than the other varieties. The Crush brand of gelatin was distinctly different from the other prepared gelatins; it was murky while hot and also once congealed. Furthermore, it also smelled exactly like Orange Crush soda while cooking and tasted like orange soda upon eating. However, the gelatin prepared using the Knox brand was the most different of the five varieties. It too was opaque while cooking and after congealing. It also had a much paler, yellower color, like the color of orange juice, which is no surprise, since the gelatin did not have any colorants added. If the color did not appeal, the cook could add a drop or two of food coloring to enhance the

appearance. While cooking the Knox based gelatin gave off a tart smell and it had a slightly bitter taste upon eating, which is not unpleasant, but certainly different from the very sweet products made from the other brands. The flavor would have been greatly influenced by the type of orange juice purchased, and I had purchased an inexpensive store brand of juice. Using fresh squeezed orange juice with a little sugar produced a tart but very refreshing dessert.

Sometimes, after making a batch of Jell-O, I did not eat it right away. I observed that after sitting in the refrigerator for a week, it began to shrink a little. It also begins to become stickier and is more prone to sticking to the sides of the molds after two weeks, rendering the unmolding process a little stickier, so to speak. The unmolded gelatin is also a little firmer after two weeks.

As inexpensive and inoffensive as gelatin is, I imagine that every one of you had it offered in the cafeteria when you were in college. After a couple of years of watching the dessert trays, my friends and I became experts at judging the age of the gelatin served. On the first day of serving, it appeared unadorned as cubes in individual glass cups. The second day it appeared, it would be dressed up with whipped topping. The third day it received rainbow sprinkles – perhaps chocolate sprinkles don't really go with gelatin. The fourth day, it received chopped nuts, and finally on the fifth and last day, it received a cherry. After five days, we assume that it was thrown away or eaten by the employees, since by then the whipped topping was beginning to deteriorate.

In addition to being served plain, gelatins can be adorned, as I just discussed. They can also be enhanced by the addition of other edibles, frequently fruits, but sometimes savory items. I have already mentioned the cranberry and strawberry Christmas salads and the tomato aspic. Many of you probably have fond memories of congealed salads made by grandmothers and great

aunts, or eaten at old-time southern cafeterias. Another old favorite is the lime gelatin salad, popular at the Belle Mead Cafeteria, and made with whipped topping, pineapple, and usually some nuts. When making molded gelatin salads, you must be careful not to use fresh pineapple or kiwi. These items contain enzymes that prevent the gelatin from setting.

You can also make entrees using gelatin, such as salmon, tuna, or ham mousse. These can be very attractive on a warm summer evening, especially accompanied by an appropriate cold sauce, such as a dill sauce over the salmon mousse. If your home is fortunate, you might even have a fish shaped mold you can use. This brings to mind the famous episode from “Monty Python and the Meaning of Life” in which several couples are enjoying a dinner party together at a house in the country until the grim reaper knocks on the door and they all keel over dead at the table. As the grim reaper is leading all of the souls away, one of the guests asks the cause of their death and the reaper replies: “the salmon mousse”. As they trail away, the audience hears one of the women say: “but I didn’t eat the salmon mousse”.

All Athenaeum papers, whether pleasurable or otherwise, must come to an end. This paper has ranged widely across the topic of gelatin, discussing its manufacture, its brands, its usages, and offering some observations of direct personal experiences. Maybe you are now tempted to go home and try some salmon mousse or Lime Jell-O Marshmallow Cottage Cheese Surprise.

- (1) Knox information from [www.kraftbrands.com/knox/knox\\_history.html](http://www.kraftbrands.com/knox/knox_history.html)
- (2) Jell-O information comes from the Wikipedia entry for Jell-O
- (3) Royal gelatin information from [www.metnews.com/articles/2005/reminiscing042105.htm](http://www.metnews.com/articles/2005/reminiscing042105.htm)
- (4) Aeroplane Jelly information from the Wikipedia entry Aeroplane jelly
- (5) Production information from the Wikipedia entry for gelatin