

Caroline Roll
Moving Image and Sound: Basic Issues and Training
Ann Harris
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A History of Panacolor

By the 1960s, color film was well established in the United States. Despite the successes Technicolor and other brands, new processes were often developed in pursuit of something cheaper, clearer, brighter, more naturalistic, or more efficient. Panacolor was just one of these processes, having been developed in the 1950s and earning some prominence in the following years. Panacolor Inc. was devised solely to grow this business, and the company spent years trying to prove that their process was the next big thing in color film printing. At the same time, there was rising interest in making film more accessible in the home, as well as in the industrial, governmental, and educational markets. An influx of new systems sought to bring feature films beyond movie theatres and into these spaces, and the Panacolor projector briefly developed a niche in the hotel industry. Despite these two promising ventures, Panacolor never overcame its financial burden and disappeared after the 1970s. The trajectory of Panacolor proves how the fierce competition to update moving image technology can cause a promising company to emerge strongly, only to fade away a short time later.

In the early 1950s, Michele P. Martinez began work on a new color film process while an employee at M-G-M, and Panacolor Inc. was formed on June 10, 1957 with the intention of developing this process further. Martinez applied to patent his photographic iron-silver color process in 1953, and it was granted on May 12, 1959. By that time, Martinez had moved on to work at Panacolor and focus his efforts on improving the process. According to the patent, it uses “light sensitive ferric salt layers and is characterized by the fact that at one stage or another of the inherent procedure silver salts are brought into play resulting in the formation of silver images,

the latter being afterwards transformed or converted into colored compounds, or used to form colored compounds by way of accessory reactions.”¹

Panacolor’s original goal was to provide a method of photographic color printing for motion picture film that was efficient, reliable, and inexpensive. The use of ferric salt sensitizers resulted in several advantages over other color processes. The first is that ferric salts ensured a finer grain image upon treatment in a silver solution. Martinez also notes that in his experimentation, gelatine layers exhibited “a seemingly endless capacity to absorb and adsorb ferric ions,” which allowed for multiple sensitizations of the same piece of film and produced a strong image each time on the same film area.²Second, “the speed to light of a gelatine-ferric salt sensitive layer increases with increase in the saturation of ferric ions absorbed or adsorbed.”³These discoveries led to claims that Panacolor film allowed not only for faster production of color images, but also for greater control and flexibility in doing so. Moreover, Martinez claims that this process is superior to other plurilayer color process because “the ferric salts permeate to any part of the layer in which impregnable colloid is still free or partly free for instance also, in part, underneath a previously formed image. Everywhere the ferric salts penetrate, an image is thereafter formed. Hence [the] resulting pluricolor images are not produced in stratifications but really are composed of effective mixture of images.”⁴

Through the 1950s and into the early 1960s, Panacolor Inc. existed exclusively for development of new its technology. Following Martinez’s death, Leo J. Nicastro took over to make improvements to his work. The finalized Panacolor process was a subtractive three-color process that was unique because it produced natural color prints on positive black and white film

¹Martinez, Michele P. L. Photographic Iron-Silver Color Process. Patent US2886435A. May 12, 1958.

²Ibid.

³Ibid.

⁴Ibid.

stock. Nicastro filed his patent on behalf of Panacolor on January 10, 1963, and it was approved on March 5, 1968. The process starts with three color separation negatives, assuming that is what the original photography produced. If this was not the case, a few extra steps were necessary before the process could begin. If, for example, a multi-layered tri-pack was used for principal photography, then three separation-positives and three separation negatives would need to be made first. If a reversal film stock was used originally, then color separation negatives could be made directly from it.⁵

Once the separation negatives are ready, they are placed on loop racks, one for each of the color printers and one for the sound track printer. The black and white film stock, containing a single layer silver-halide emulsion, is first exposed to the cyan negative on a continuous contact printer before passing through the developer solution, which acts as the dye coupler. The film is then washed and treated with a bleaching agent at a temperature between 80 and 120 degrees in order to destroy any latent image that may still be present after exposure. Nicastro emphasizes that a remaining latent image may produce unwanted effects when the print is exposed to other colors. The bleaching also acts as an oxidizer, which converts the metallic silver particles into light-sensitive silver salt. Following this step, the film is dried before returning to the printer to be exposed to the magenta negative. The film is then sent through the same process as previously described. Nicastro explains that an optical soundtrack may then be added before or after exposure to the yellow negative, or even simultaneously, depending on what is convenient. After this process, the film is again washed and bleached, however the bleach would only be exposed to the picture area, allowing the metallic silver produced from the yellow exposure to convert to light-sensitive salt. Finally, the film is washed, fixed, washed again, and

⁵Ryan, Roderick T. *A History of Motion Picture Color Technology*. London: Focal Press, 1977: 218-221.

dried. The patent details specific instructions regarding the bleaching solution used, and Nicaastro explains that this allows for faster processing, roughly 200 feet per minute.⁶⁷ Another Panacolor employee, Harlan Baumbach, patented the machine that carried out this process. Baumbach's technology, in addition to Martinez and Nicaastro's chemical discoveries, contributed to the higher processing speeds that Panacolor promoted.⁸

In 1961, M-G-M purchased 50,000 shares of Panacolor, and the company also completed construction on a laboratory equipped to print up to 160 million feet of release prints in a year.⁹ These were the first serious steps that indicated Panacolor was ready to establish their printing business. As such, publications began announcing a new color film process using black and white positive stock, touting the process as high quality, yet cheaper to produce. Harry E. Eller, who served as president of the company, also began hosting demonstrations for journalists and potential stakeholders. One such demonstration was held at the Screen Directors Guild Theatre in Hollywood on July 3, 1962, where two film excerpts were shown. One was an Air Force film from the Deep Sea Survival School, and the other was *The Horizontal Lieutenant*, an M-G-M feature that had already been released in April with color provided by Metrocolor.

Reactions to the screening were mixed. Many were already skeptical that the process could accomplish what it promised. One such skeptic noted that a few years prior, Polaroid and Paramount had worked together on a similar technique – which involved resensitizing the film before exposure to each negative, as Panacolor did – that was ultimately abandoned.¹⁰ After the demonstration, *Variety* reported multiple claims of “a certain cloudiness and lack of definition

⁶Nicaastro, Leo J. Color Process Utilizing A Single Layer Silver Halide Emulsion. Patent US 3372028 A. March 5, 1968.

⁷Ryan, Roderick T. *A History of Motion Picture*. 221.

⁸Baumbach, Harlan. Color Film Processing Machine. Patent US 3227060 A. January 4, 1966.

⁹“M-G-M in Panacolor Deal.” *New York Times*. July 15, 1961

¹⁰Anreder, Steven S. “Out of the Dark Room: The Cinema Labs are Developing a Big and Profitable Market.” *Barron's National Business and Financial Weekly*. July 10, 1961: 5.

[in the image],” blue sky appearing a little too dark, “and face complexion not always natural.”¹¹ Still, many were intrigued by Eller’s pitch, which focused on economy and efficiency of the printing process. At the time, color film stock cost \$36 per 1000 feet, whereas black and white film stock only cost \$16. He announced that the Panacolor lab was capable of printing 100,000 feet of 35mm film daily, with more production units in the works. There were also talks of expanding into 16mm film, though it seems this never came to fruition. He noted that by printing and processing simultaneously, called registration printing, their machines were capable of processing more than 200 feet per minute. This was compared to speeds of less than 50 feet per minute in typical step printers. Eller boasted that Panacolor promised “a degree of color control never before attained in the film industry.”¹²

Following this demonstration, Panacolor attracted the attention of producer Sidney W. Pink, who contracted the company to make prints of his film *The Castilian*, which starred Cesar Romero and Frankie Avalon. Eller showed footage of the film to Panacolor shareholders at the Trans-Lux 52nd St. Theatre in New York City on May 28, 1963. Pink boasted that Panacolor was the most exciting color process to ever be developed... [capable of producing] every conceivable color and shade with a high degree of quality.”¹³ Again, reactions from the viewers varied, and many couldn’t help but question if the process outperformed others, especially Technicolor, but there was still interest in its potential.

The partnership between Eller and Pink led to a four-picture deal with Pink’s S.W.P. productions, intending to use all of Panacolor’s planned yearly output, roughly 20 million feet of film. *The Castilian* premiered in Chicago on September 6th, and the following film, *Pyro*,

¹¹“Panacolor Reports Cheaper Process; Color-on-Monochrome Positive Print.” *Variety*, 227.6: 61.

¹²Ibid.

¹³“Panacolor Demonstrates New Color Process on Black & White Positive.” *Boxoffice*, 83.6: 5.

premiered in January 1964. Up until this point, Panacolor Inc. had been putting all of its capital toward developing the process, but they were expecting to begin making a profit by 1964.¹⁴ The release of these two films brought renewed attempts to emphasize the advantages of Panacolor, but neither seemed to make an impact. *The Castilian* received mixed reactions, and the color did not make as big of an impact as Panacolor had hoped. *Pyro* received poor reviews, and there were only brief acknowledgements of the Panacolor process. No one suggested that it was special or potentially game changing, and in fact, the color suffered from the same faults that were present in *The Castilian*.¹⁵

The subsequent films with S.W.P. Productions were once slated to be *The Invisible City*, *Unknown Galaxy*, and either *Andora* or *Vanilla Chocolate and Strawberry*, but none of these were ever made.¹⁶¹⁷ Two films that may have been printed by Panacolor were *Hercules, Sampson, and Ulysses* (1963) and *The Secret Seven* (1963), though this is difficult to confirm.¹⁸ There is no evidence that Pink's production company was involved in these films, and some sources indicate their color was provided by Metrocolor and Eastmancolor, respectively. It is certainly possible that Panacolor provided the color printing on these films, but one cannot be certain since many of Panacolor's planned deals fell through. At one demonstration, Harry Eller announced his agreement with Leon Fromkess of F&F Productions for several films, including *Blood On The Arrow* (1964), but color printing on that film was ultimately provided by DeLuxe.¹⁹

After failing to make an impact, Panacolor shut down production in 1964. At that time, MGM still owned 50,000 shares in the company, and they declined the option to buy another

¹⁴"'Castilian' in Panacolor Shown in Chicago Sept. 6." *Boxoffice*, 83.20 : C-3.

¹⁵"Film Review: *Pyro*." *Variety*, 234.10 : 6.

¹⁶"Pink's Panacolor Four-Film Deal with Eller Co." *Variety*, 229.11: 4-22.

¹⁷"'Castilian' in Panacolor." *BoxOffice*. C-3.

¹⁸Ryan, Roderick Thomas. "A Study of the Technology of Color Motion Picture Processes Developed in the United States." Ph.D. diss., University of Southern California, 1966.

¹⁹"Blood On The Arrow (1964)." Web. <www.tcm.com>.

100,000. Panacolor was left to seek out other deals, but as none came forward, they had essentially reached a dead end in their business. The failure of the process proves just how fierce the competition in color film processing was at the time, as more films were being made in color than ever before. Several movie studios operated their own printing companies. MGM had Metrocolor and 20th Century Fox owned DeLuxe. Technicolor remained the biggest name in the business, but other companies like Pathé, Eastman, DuArte, and MovieLab were key players in the market as well. These companies found success not only with commercial films, but also in processing film for television, educational and industrial films.²⁰ The mixed reactions to the quality of Panacolor film, as well as the company's inability to make major film deals, resulted in Panacolor Inc. never becoming a serious contender against other established companies.

Despite this failure, Panacolor wasn't closing its doors just yet. In 1966 they printed one last film called *Mother Goose A Go-Go* (and also known as *The Unkissed Bride*).²¹ They also had a new business prospect on the horizon. As early as 1963, there were reports that Panacolor had partnered with Zeiss-Ikon of West Germany to develop a new projector that "looks like a television set and uses a film cartridge," which was expected to be a much cheaper option for educational and home use than film reels. Prototypes were expected soon, and some said they might be on the market within the next year, but it proved to be a longer time frame. Still, by the mid-1960s, Panacolor Inc. was in the process of transitioning to this business and out of color film printing, which they officially exited in 1968.²²

Dr. Leo J. Wells developed the new projection system, and he devised a 70mm film format consisting of 12 rows of Super-8 size images and 12 optical soundtracks, which could be

²⁰Renberg, Warner. "Out of the Darkroom: Despite a Few Negatives, the Picture is Bright for Movie Film Processors." *Barron's National Business and Financial Weekly*. July 5, 1965: 11.

²¹"Mother Goose A Go-Go." AFI Catalogue of Feature Films. Web.

²²"Panacolor to Produce Zeiss-Ikon Projectors with Cartridge-Fed Film." *Wall Street Journal*. September 18, 1963:4.

played on the 12-track projector.²³ Panacolor chose the Super-8 image size over standard 8mm because its perforations leave more area for audiovisual information. These images were laid sideways so that they could fit properly on the filmstrip. The film included perforations so that the optical faces and the image frames were properly synchronized, but the perforations weren't used to transport the film in the projector because the capstan mechanism eliminated such a need. With the aid of a pinch roller, the capstan provided the tension necessary to move the film horizontally through the projector in a smooth, continuous motion. The projector had a prism core assembly consisting of 12 symmetrical lens elements, and it used optical rear projection with a 100-watt halogen lamp. This lamp didn't require an air blower to cool the system, so Panacolor claimed that the projector would be much quieter than comparable systems. Crucial to the function of the projector was its ability to step up the film from one track to the next, with each track carrying about ten minutes of content.²⁴ After one track traveled through the projector, a tone on the soundtrack, which was inaudible to the viewer, signaled the mechanism to step up the track and reverse the direction of transport, allowing the next track to be viewed. After viewing, the film returned to its starting position, eliminating the need to rewind the film. The projector included stop, start, rewind, and volume controls, and the viewer was also capable of selecting a specific row of the film to view. Each cassette housed 300 feet of film, and the unique film format allowed up to two hours of content, either one complete feature film or 12 single-subject films. The projector was produced by Zeiss-Ikon in Stuttgart, Germany.²⁵

In May 1968, Panacolor partnered with Interfilm Nassau Limited and Balute Productions to hold a demonstration of the projector at the Cannes Film Festival. There, they promoted the

²³White, Gordon. "Hotel Movies: A Room Service." *British Kinematography, Sound and Television*: 267.

²⁴Fox, Hank. "Film System Bows Capstan 12-Track." *Billboard*. May 25, 1968: 58.

²⁵*British Kinematography Sound and Television*, 55.8.

two-hour footage capacity of the magazine and the cartridge that weighed only 3 ½ pounds, making the projector relatively portable. Ferde Grofe, Jr. of Balute claimed that this would allow 500,000 people in remote areas access to moving image media, which up until then had been unavailable to them. They announced plans to do further demonstrations in Asia, Africa, and Latin America, though no more specifics were reported.²⁶

At this time, Panacolor had completed a processing lab in Lodi, New Jersey, and business was promising for the company, really for the first time since they went public. *Barron's National Business and Financial Weekly* reported in the 1968 that Panacolor, which “[had] yet to earn a cent,” was experiencing a positive shift in its stock value due to the plans for its projector. Charles L. Greenbaum, who was by then president of Panacolor, claimed, “There’s nothing comparable” to the new projector.²⁷ They expected to focus their business on industry, government, and education, and were planning an initial production output of 1,000 projectors. The only downside to the uniqueness of the projector was that it brought concerns that some, especially schools, would be slow to adopt a new system that was incompatible with films they had already purchased.²⁸

Cartridges were becoming the next big technology in home viewing, and Panacolor certainly wasn’t the only company with plans to put a cartridge projector on the market. In 1970, Technicolor, Fairchild, Bohn-Benton, Jayark, and MPO each had similar products. There were several distinguishing factors to these systems, and running time was perhaps one of the most important. While most of these were endless loop systems, only the projectors produced by Technicolor and Panacolor were compatible with cassette cartridges, which allowed the user to

²⁶“Panacolor Demo due at Cannes.” *Variety*, 229.11 : 4-22.

²⁷“Up and Down Wall Street.” *Barron's National Business and Financial Weekly*. June 3, 1968: 23.

²⁸Ibid.

rewind the film or even access it directly if something went wrong. Some of the differences, like front or rear projection, or magnetic or optical sound, were less significant. However, these other companies' projectors offered capacities ranging from 15 to 30 minutes, which gave Panacolor the greatest advantage. With a capacity of 120 minutes, Panacolor stood out from the pack and opened up a variety of possibilities, whereas a shorter cartridge capacity limited the projector's overall capabilities. The downside was that the Panacolor projector was the most expensive, costing \$595. Fairchild's projector was comparable at \$585, but the other projectors ranged from \$300 to \$445. Many of these companies, including Panacolor, promoted their projectors for educational use, and certainly cost was a major factor in that market.²⁹

Since Panacolor was operating at a \$6 million deficit, they desperately needed this new venture to succeed. Yet actually moving forward with the business proved to be a slow process, one that nearly caused Panacolor to fail before they even got a chance to pick themselves back up.³⁰ In 1970, Panacolor announced that it needed to renegotiate with creditors and acquire new capital if they were going to continue as a business entity. They reported a loss of \$2.2 million in the previous year, and they owed Zeiss-Ikon \$2.3 million, most of which was nearly due. Since Panacolor was incapable of making the next installment of \$250,000 to Zeiss, they hoped to make a new deal with the company instead.³¹ Panacolor agreed to transfer seven million shares over to their creditors to account for their debt. Since Zeiss owned Panacolor's main creditor, Compur-Work, this transfer resulted in Zeiss becoming its largest shareholder.³²

²⁹ Kahlenberg, Richard, and Aaron, Chloe. "The Cartridges Are Coming." *Cinema Journal* 9.2 : 2.

³⁰ "Up and Down." *Barron's National Business and Financial Weekly*. 23.

³¹ "Panacolor Inc. Says It May Not Survive Without New Capital: Concern is Trying to Work Out \$600,000 Subscription Offering; '69 Loss of \$2.2 Million Posted." *Wall Street Journal*. June 16, 1970: 14.

³² "Panacolor Inc. Holders Approve Plan Giving Zeiss Ikon Control: Seven Million Shares Are Being Issued to Firm's Creditors in Lieu of the Bulk of Its Debt." *Wall Street Journal*. December 16, 1970: 4.

Amidst these financial troubles, very little business was occurring. Panacolor had originally made an agreement with Zeiss for 8,000 projectors, but only a few hundred had been delivered by 1971.³³ These setbacks may have been a result of Panacolor's inability to pay Zeiss, but it was also becoming clear that the Panacolor projector was not a serious contender in education. This uncertainty in direction brought even more strain to the company, which resulted in a change of leadership. Charles L. Greenebaum resigned as president, Orton Hicks resigned as a director, and Irving Rossi resigned as chairman of the board. Siegfried A. Kessler, president of Zeiss, became chairman, while Karl-Heinz Breford became president.³⁴ The following year, Robert Leder was named president and CEO.³⁵

With this new status quo in place, Panacolor finally began to make strides in 1972 after realizing that their projector was better suited to entertainment purposes. An advertisement in *Variety* referred to the projector as a "Mini-Theater," and called for films that could be made compatible. It reads, "But we're only looking for the best films. Domestic or foreign. So we don't want to hear about anything that can't even earn an 'X' rating. As far as where the films will be shown, they'll be shown in restaurants, hotels, lounges; places where good, inexpensive entertainment is wanted."³⁶ This ad distances the projector from its original educational pursuits, and from any other market that doesn't deal in feature films. This was a smart move since Panacolor was the only projector that offered an unimpeded 2-hour running time.

With this shift in focus, Panacolor found interest in their projector from the hotel industry, which was searching for ways to improve in-room movie viewing for their guests. By this time, hotels were showing films through closed-circuit television systems, but portable

³³"Panacolor Inc. Says It May Not Survive." *Wall Street Journal*. 14.

³⁴"Panacolor Chooses Kessler Chairman, Breford President." *Wall Street Journal*. March 23, 1971: 14.

³⁵"Panacolor Picks Leder." *The Independent Film Journal*, 71.2: 16.

³⁶"Advertisement." *Variety*, 264.13: 23.

projectors would offer guests more control over what they wanted to watch, and when. Sheraton was the first hotel chain to test the Panacolor system, in a joint venture with Creative Cine-Tel, with 15 of its hotels across the nation participating. This program offered a list of 10 different films to choose from. For \$4, a guest could rent a movie for viewing at a specific time, and that time a bellman brought the projector up to the guest's room and inserted the cassette. The test run was considered successful, so successful that Sheraton was struggling to meet demand from its guests, some of whom were ordering three films in a single weekend. With only 15 projectors, a long wait list developed, and Sheraton rush ordered 45 more projectors.³⁷

After establishing the system in 21 Sheraton hotels, Panacolor then attempted to extend this success internationally in a joint effort with 20th Century Fox in London. Across the pond, the system was dubbed "Pik-A-Movie," and it was tested at the Strand Palace and Regent Palace hotels in London. Some of the films available to guests included *Butch Cassidy and the Sundance Kid*, *Planet of the Apes*, and *The Prime of Miss Jean Brodie*.³⁸ After a positive 90-day run, the system expanded to two hotels in Glasgow and Manchester.³⁹ At the same time, Panacolor was still considering business in other parts of the world. Its president, Robert Leder, embarked on trip to South Africa to make a deal with Vic Donen Agencies to distribute the system, agreeing to ship at least 200 projectors there by the end of there. These parties had high hopes for the South African market because the country did not have television yet, and wouldn't until 1978.⁴⁰ There was also discussion of expanding to Hong Kong, Taiwan, Singapore, Malaysia, and Thailand, and Leder was working on a distribution deal with Hutchison Enterprise

³⁷"Chain Tests 'TV' Cassette Hotel Films." *Billboard*. September 16, 1972: 57.

³⁸"Cable Pay-Television Launched by Warner Communications." *The Independent Film Journal* 71.6: 6.

³⁹"20th & Panacolor In UK Hotel Pix." *Variety*, 269.13: 61.

⁴⁰"Cassettes to South Africa." *Back Stage*, 14.20: 15.

for this purpose.⁴¹ However, the lack of follow-up reports to this, or to the South African business, indicates that the system never gained traction in these locations.

Unfortunately, the “Pik-A-Movie” program also did not survive through the end of the 1973. 20th Century Fox pulled out of the deal in October, and though they declined to give detailed reasoning, one can assume they were not benefitting financially from the program. Fox had originally put up some money to start the venture in London, and they also were responsible for software for the system. In addition, the competition from other systems likely worked against them.⁴² Columbia Pictures was actually the first company to provide feature film entertainment in British hotels. EMI and Computer Television already offered a two-way cable system in the United States, and were also in the process of expanding to England.⁴³

At this time, many hotels were considering whether to invest in projectors or install a closed-circuit television system. The most compelling aspect of the Panacolor projector was that it allowed the viewer the most control when watching a movie. After the projector was delivered to the room, they could watch the movie without needing any assistance from hotel staff, and they could stop or start the movie at any time. However, the projector also had its downsides. Hotels would have to stock up on a lot of projectors and cassettes or else risk being unable to meet the demand of their guests. The Sheraton test run proved this problem right away, as they struggled with a long wait list almost immediately.⁴⁴

In contrast, closed circuit systems were beginning to seem more advantageous than projectors. Although hotel guests were unable to pause the programming, there was no limit on how many people could watch the same movie at the same time. With projection systems, there

⁴¹"Panacolor Picks Rep." *Back Stage*, 14.19: 17.

⁴²"20th Exits Panacolor's London Pik-A-Movie; Supplied 'Seed' Money." *Variety*, 272.11: 28.

⁴³White, Gordon. "Hotel Movies." *British Kinematography*: 267.

⁴⁴Dubin, Morton. "Further Discussion Relating to the Systems That Bring Movies to Hotel Rooms." *Back Stage*, 13.29 : 5,12-13.

would always be a limit to how many projectors or film cassettes would be available at any given time. Closed-circuit systems were controlled from a central location in the hotel, and it only required that the hotel stock one or two copies of a film. The systems typically used videotape instead of film, and the fact that videotape could be erased and reused was very appealing for hotels wanting to keep their programming current. It also eliminated the need for a bellhop or other staff member to enter a guest's room to deliver a projector. These systems also could be used for other purposes beyond renting feature films. Closed-circuit television systems typically displayed hotel information and sight seeing guides, and they also could be used to rent other special programming, like a boxing match or concert. The variety of possibilities allowed by the system quickly began to outweigh those of the Panacolor projector.⁴⁵

In 1975, Film Corp., a film processing and distribution company gained a 48% stake in Panacolor for \$200,000. This was the equivalent of 3,360,000 shares, and there was potential for Film Corp. to acquire even more in the future, up to 90% of Panacolor. Before this, Panacolor had briefly considered offers from other manufacturers in Hong Kong, Japan, Thailand, and Israel to produce a new version of their projector, but this never materialized.⁴⁶ The deal with Film Corp. also gave Panacolor control of American Consumer Inc. for \$3.5 million, which they would pay out over several years.⁴⁷

After this acquisition, Panacolor dropped out of the news almost entirely. Film Corp. experienced financial woes over the next few years, claiming a \$3.4 million loss for 1977. The *Wall Street Journal* reported that Film Corp. was turning over some of their operation to

⁴⁵ Ibid.

⁴⁶ "Panacolor Cassette Machine." *Variety*, 14.18: 12.

⁴⁷ "Panacolor Inc. Holders Approve Plan Giving Zeiss Ikon Control: Seven Million Shares Are Being Issued to Firm's Creditors in Lieu of the Bulk of Its Debt." *Wall Street Journal*. December 16, 1970: 4.

Napcolour, a company based in the United Kingdom. In this article, Panacolor was referred to as “a Philadelphia-based general mail-order merchandiser.”⁴⁸

Without any further evidence, one can only assume that Panacolor Inc. faded away shortly thereafter, and would become mostly forgotten. Their efforts in hotel movie projection had stalled in the face of closed-circuit television, and the high cost of the projector, along with the rapidly evolving home movie market, kept it from becoming a viable option in that setting. Hotels would have gotten rid of these machines and cassettes after moving on to new technologies. If any still exist, they have long been obsolete. As for Panacolor film, relatively few films were ever printed using the process, so preservation issues have been overlooked. Although the process never lived up to other color processes of the 1960s, one would assume that any surviving prints would have suffered similar problems, including fading and vinegar syndrome. Some of the films that used Panacolor are still accessible today in some capacity. Currently, *The Castilianis* is available on Amazon Prime, and copies of *Pyro* and *Mother Goose A Go-Go* can be found on YouTube. The copies certainly show the age of the films, with various scratches and dirt prominent throughout. The color is often dull but occasionally bold, and the skin tones don't look natural. The copy of *Pyro* looks especially dim, with obvious color fading and a distinctly brown cast throughout. Any other surviving prints of Panacolor film are likely suffering from these same problems, but this may never become a priority because Panacolor is now largely forgotten, lost in this seemingly endless number of processes and technologies that mark color film's past.

⁴⁸"Film Corp. Will Lease some of its Operations to Napcolour of U.K." *Wall Street Journal*. October 19, 1977: 17.

Bibliography

"20th & Panacolor In UK Hotel Pix." *Variety*, 269.13: 61.

I used a number of *Variety* articles for this paper, and it proved to be one of the most useful sources because they reported on nearly every stage of Panacolor Inc.'s existence. This one provided useful information on Panacolor's first attempt to take the projector to hotels internationally.

"20th Exits Panacolor's London Pik-A-Movie; Supplied 'Seed' Money." *Variety*, 272.11: 28.

This was a convenient source because it provided an update to the previous article they ran that announced Panacolor's venture in London. This one showed just how quickly the deal fell apart, and I think it was a major setback for the business.

"Advertisement." *Variety*, 264.13: 23.

It was useful to look at some of the ads for the projector because they showed how Panacolor wanted their product to be received, and who their audience for it was. Ads discuss the product in a different way than a newspaper article or technical journal would, so it provides some variety, as well as a nice visual of the product itself.

Anreder, Steven S. "Out of the Dark Room: The Cinema Labs are Developing a Big and Profitable Market." *Barron's National Business and Financial Weekly*. July 10, 1961: 5. Anreder spoke broadly about the state of film processing in 1961, and he had a lot to say about the various color processes that were available then. This made it very easy to see what kind of competition Panacolor was up against in that era.

Baumbach, Harlan. Color Film Processing Machine. Patent US3227060 A. January 4, 1966.

This patent represents the machine used to carry out the Panacolor process, which it references specifically. I didn't use much of the information it offers because it would be redundant after having already described the Panacolor process in detail.

"Blood On The Arrow (1964)." Web. <www.tcm.com>.

I used this source to clarify that Panacolor did not provide the color printing for this film, as a different source claimed. This issue came up frequently in my research because there were several films that Panacolor was supposed to be involved in, but many of those deals never materialized.

“Cable Pay-Television Launched by Warner Communications.” *The Independent Film Journal* 71.6: 6.

This source didn’t offer a lot of detail because the article touched on a variety of topics, but they did mention which hotels were conducting a trial run of the projector. No other source I researched discussed what films were actually being offered to hotel guests, so this was a worthwhile find.

"Castilian' in Panacolor Shown in Chicago Sept. 6." *BoxOffice*, 83.20 : C-3.

This article provided details about the premiere of *The Castilian* and the generally lackluster response to the film, which didn’t help Panacolor when trying to garner more business.

"Cassettes to South Africa." *Back Stage*, 14.20: 15.

Back Stage proved to be a great source that provided information I didn’t find anywhere else. I was very surprised to learn that Panacolor did briefly attempt to expand beyond the United States and Great Britain to places where people had very little access to film technology. Unfortunately, I couldn’t find any follow up information on these stories.

"Chain Tests 'TV' Cassette Hotel Films." *Billboard*. September 16, 1972nd 57.

This article gives a full report on the first use of the Panacolor projector in hotels, and shows what an initial success it was. There was a clear sense that they thought this system would catch on.

Dubin, Morton. "Further Discussion Relating to the Systems That Bring Movies to Hotel Rooms." *Back Stage*, 13.29 : 5,12-13.

Dubin draws a clear comparison between projectors and closed-circuit systems, explaining how both have their advantages and disadvantages for hotels. I can see why

there was initially competition between the systems, but I also understand why closed-circuit television was the more lasting of the two.

"Film Corp. Acquires 48% Stake in Panacolor For \$200,000 in Cash." *Wall Street Journal*.
November 3, 1975: 13.

The *Wall Street Journal* provided the most information about Panacolor's financial woes and this article was the first suggestion that the company merely faded away after years of struggling to make a profit.

"Film Corp. Will Lease some of its Operations to Napcolour of U.K.." *Wall Street Journal*.
October 19, 1977: 17.

It was surprising to learn that Film Corp., which had only just acquired Panacolor two years prior, were going through troubles of their own. Printed in 1977, this was the last article I could find that mentioned Panacolor, and the description given about the company suggests that it was only a shadow of what it once was, which leaves me to assume it was swallowed by other entities and disappeared.

"Film Review: Pyro." *Variety*, 234.10 : 6.

This review provided a useful reaction to the film and briefly mentioned the Panacolor process, which most reviews overlooked. The critic hated *Pyro* and felt that it was a terrible horror film. This was another negative blow for Panacolor, which was stuck trying to break into the printing business with films that simply weren't any good.

Fox, Hank. "Film System Bows Capstan 12-Track." *Billboard*. May 25, 1968: 58.

This was another great source that offered description of the

Kahlenberg, Richard, and Aaron, Chloe. "The Cartridges Are Coming." *Cinema Journal* 9.2 : 2.

Kahlenberg and Aaron give a thorough analysis of cartridge projectors, which were a relatively new technology at the time. They include a chart comparing each of the projectors, which helped me clearly define Panacolor's direct competition.

Martinez, Michele P. L. Photographic Iron-Silver Color Process. Patent US2886435A. May 12, 1958.

This earlier patent explains the benefits of ferric salt sensitizers in color film, and while it doesn't describe the Panacolor printing process, it does show what kind of work was done in the earliest days of the company. Martinez is credited as the inventor of the process even though he died before it was ready, so it was worthwhile to include this work in the history of the company.

"M-G-M in Panacolor Deal." *New York Times*. July 15, 1961.

I found this same article reprinted in various publications, and it was nothing more than a brief explanation of the agreement between Panacolor and M-G-M, which originally owned the color process that Martinez invented.

"Mother Goose A Go-Go." AFI Catalogue of Feature Films. Web.

The catalogue confirmed that the film was indeed printed by Panacolor, as Roderick claimed in his thesis. I could not find confirmation on the other two films that he mentions, *Hercules*, *Samson and Ulysses* and *The Secret Seven*.

Nicastro, Leo J. Color Process Utilizing A Single Layer Silver Halide Emulsion. Patent US 3372028 A. March 5, 1968.

Nicastro's patent builds on Martinez's original Panacolor process and provides the finished version which was used in printing films like *The Castilian* and *Pyro*. Some of

the description of the process was hard to follow, so I used this in conjunction with Ryan Roderick's explanation of the process.

"Panacolor Cassette Machine." *Variety*, 14.18: 12.

This was nothing more than a small blurb that noted Panacolor's efforts to sell the projector in other parts of the world, which likely never happened.

"Panacolor Chooses Kessler Chairman, Bredford President." *Wall Street Journal*. March 23, 1971: 14.

This report on these new appointments proved that Panacolor was going through a major transition. Though it failed to give details as to why exactly several of the men in higher up positions had stepped down in the first place, it isn't hard to guess why.

"Panacolor Demo due at Cannes." *Variety*, 229.11 : 4-22.

This brief article showed that Panacolor and Zeiss were hoping to open big with their new projector by holding a demonstration at the Cannes Film Festival, though I could not find any reports after the fact.

"Panacolor Demonstrates New Color Process on Black & White Positive." *BoxOffice*, 83.6: 5.

This article recounts a second demonstration of Panacolor film after they partnered with Sidney Pink, who apparently believed very strongly in the process.

"Panacolor Inc. Holders Approve Plan Giving Zeiss Ikon Control: Seven Million Shares Are Being Issued to Firm's Creditors in Lieu of the Bulk of Its Debt." *Wall Street Journal*. December 16, 1970: 4.

"Panacolor Picks Leder." *The Independent Film Journal*, 71.2: 16.

This is a short article that provided some information about one of several shifts in leadership that Panacolor underwent after ending its business in color film printing.

"Panacolor Picks Rep." *Back Stage*, 14.19: 17.

Again, *Back Stage*, provided a brief note about Panacolor's attempt to promote the projectors abroad, this time in several Asian countries. The lack of follow up information remains a disappointment, but one can only assume this was another deal that fell through for Panacolor.

"Panacolor Reports Cheaper Process; Color-on-Monochrome Positive Print." *Variety*, 227.6: 61.

This source was excellent because it provided a genuine reaction to how Panacolor actually looked to viewers, with specific details about what didn't seem right. Many articles praised the groundbreaking potential of process, but this one gave an honest opinion.

"Panacolor to Produce Zeiss-Ikon Projectors with Cartridge-Fed Film." *Wall Street Journal*.

September 18, 1963: 4.

This had to have been one of the earliest mentions of the Panacolor projector in the news, and of course it didn't come to fruition until the end of the decade. However, it does prove how early they partnered with Zeiss.

"Pink's Panacolor Four-Film Deal with Eller Co." *Variety*, 229.11: 4-22.

This was a great overview of Panacolor's first and only major film deal, though the list of films that they were supposed to produce caused some confusion, because I couldn't find proof that several of them had ever existed.

Renberg, Warner. "Out of the Darkroom: Despite a Few Negatives, the Picture is Bright for Movie Film Processors." *Barron's National Business and Financial Weekly*. July 5, 1965: 11.

This article discusses so many different color film processing companies that were flourishing in the 1960s, and I was able to get a real sense of just how hard it would have been for Panacolor to make an impact.

Ryan, Roderick T. *A History of Motion Picture Color Technology*. London: Focal Press, 1977: 218-221.

Ryan Roderick's PhD thesis claimed that Panacolor did the processing for *Samson and Ulysses* (1963), *The Secret Seven* (1963), and *Mother Goose A Go-Go* (1966), none of which I found to be true. I ultimately did not use his thesis for the paper, and instead focused on this book that he published later. His explanation of the Panacolor process was incredibly useful to me. I used it along with the patent to describe the process, and Roderick's plainer language helped me work through Nicastro's highly technical description.

Ryan, Roderick Thomas. "A Study of the Technology of Color Motion Picture Processes Developed in the United States." Ph.D. diss., University of Southern California, 1966. This was the only source that said Panacolor printed *Hercules*, *Samson and Ulysses* (1963), *The Secret Seven* (1963), and *Mother Goose A Go-Go* (1966). He did not cite a source to back up this claim, so I felt I could not trust him without finding corroborating evidence elsewhere.

"Up and Down Wall Street." *Barron's National Business and Financial Weekly*. June 3, 1968: 23.

This was a surprisingly positive look at Panacolor's situation for 1968, when they were firmly in transition from the printing business to the projector business. Panacolor quickly fell back into financial trouble.

White, Gordon. "Hotel Movies: A Room Service." *British Kinematography, Sound and Television*: 267.

The article focuses on the new prospect of renting movies in hotels, whether with projectors or closed-circuit systems. It discusses some of the pros and cons to both options and mentions other companies that were currently involved in the business. It provides a basic explanation of the projector but includes a picture of the machine and a diagram of the 70mm film. It gives credit to the inventor of the projector, Leo Wells, who was often overlooked in other sources.