

INK & PAINT - WALT DISNEY STUDIOS

Welcome to the last, continuously-functioning division from the golden days of Animation at the Walt Disney Studios. This division is where the animator's brilliant drawings were brought to life onto vibrantly colored animation cels.

Established in October of 1923, the Ink & Paint Department set up shop at the first Disney Studios on Kingswell Street in Los Angeles before moving to the Disney Hyperion Studio and finally to the Burbank Studios. At one time, the artistic staff of Ink and Paint numbered over 250. At the height of production, there would be tables and staff lined throughout the hallways of the Ink & Paint building on the studio lot. A mere 10 years ago, the employees of the Ink & Paint division numbered 45 and now, with the advent of 3-D animation, the entire staff of this vital division of animation is down to five employees.

In the beginning, every line crafted by the animators was painstakingly inked by women who were carefully trained in this steady-handed aspect of early animation. These inked cels were then painted to their full colorful glory by women trained in the craft of cel painting. Imagine an artist carefully adding a touch of rouge to Snow White's cheeks, painting beside an open refrigerator door because the fragile paint for the Blue Fairy's wings must be kept cold, and tipping a fleck of pixie dust on a fairy's wings with a brush no larger than a pin.

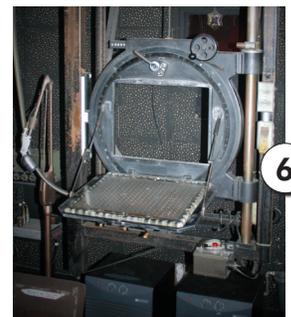
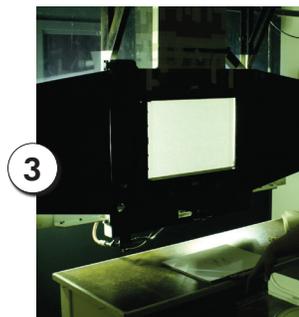
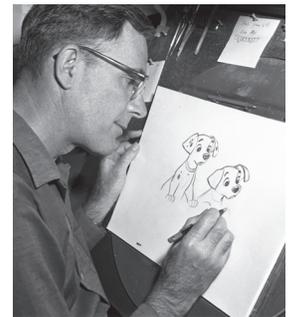
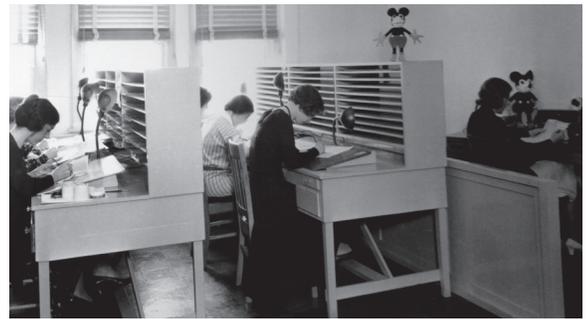
Today, The Walt Disney Studios Ink & Paint Department continues the tradition of artistry in the creation of limited-edition animation artworks which are treasured by fans and collectors worldwide.

THE PUNCH

Ub Iwerks (1), who developed much of the technology that advanced early Animation, built the first punch machines that are still utilized at the studio today. Built in 1910, the **Disney Punch and Acme Punch** (2) establish a peg/hole alignment to keep uniformity locked between the animation drawings and the final cels.

XEROX CAMERA

In an effort to streamline and expedite the production aspects of animation, Ub Iwerks developed an approach to eliminating the process of inking altogether, by xerographically transferring the artist's actual lines to the final animated cel. Working with the then, fledgling company of Xerox in 1958, Ub Iwerks built a custom camera/photocopier which is still utilized today. Spanning the size of three small rooms, it took five people to run the entire process with two operators on the camera in its prime. Ultimately, this technology resulted in the elimination of an entire division of personnel, but brought about a quantum leap in the production time and efficiency of the animation process and soon became an industry standard.



XEROX CAMERA - continued:

Initially, this advancement was employed on one scene of SLEEPING BEAUTY while the first feature to be completed entirely with this innovative technology which would become the industry standard, was 101 DALMATIANS. The last animated feature film to utilize Xerox technology was THE LITTLE MERMAID. From then on, most of the industry shifted to 2-D CAPS Systems and now 3-D computer animation.

This camera can enlarge, shrink, rotate and relocate images, though everything done with this camera today is a 1:1 reproduction – essentially, a direct duplicate of what is placed in front of it.

The concept behind the Xerox Photocopiers that we are familiar with today, involves the charging of a plate, drum, or belt which is covered with a toner or photoreceptive material. This toner loses its charge once it is exposed to light. As the original work is brightly illuminated and reflected onto this charged surface, the exposed areas lose their electronic charge. The powdered carbon toner clings to the unexposed or dark areas. The toner is vapor-fused which solidifies the toner onto the blank paper or surface and a copy or cel is complete.

ROOM ONE

Outside Platen Area (3) – The animator’s artwork is placed in the outside platen. The work is referenced via the registration pegs.

ROOM TWO

Darkroom: everything takes place in the dark – just as a regular photographic darkroom would work

Xerographic Plates (4) are two-sided, made of aluminum and selenium – printing takes place on the selenium side.

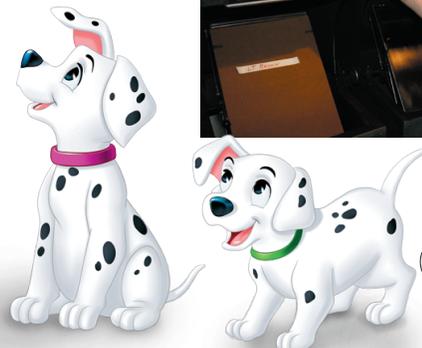
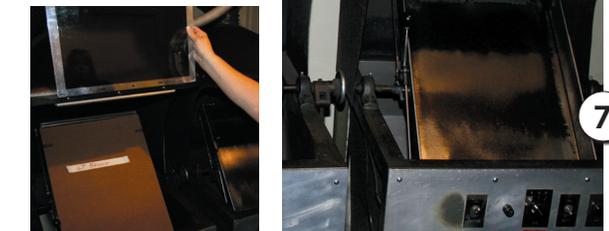
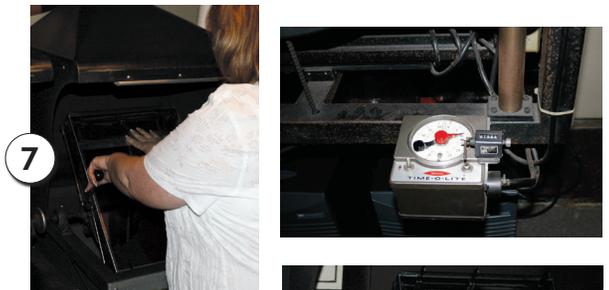
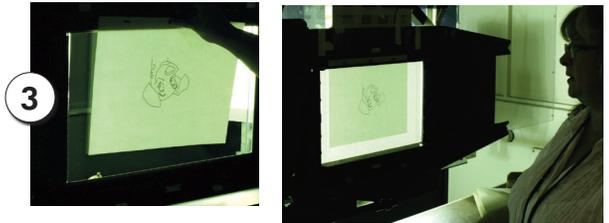
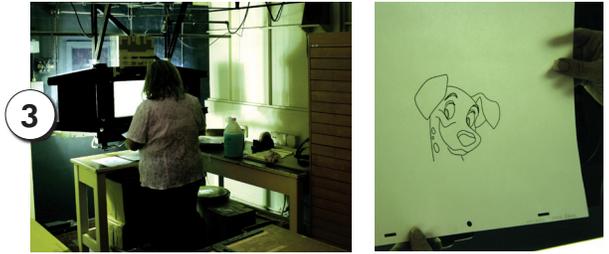
Each plate is run through **The Charger (5)** twice and is given a positive electrical charge.

The charged plates are placed on the **Inside Platen (6)** of the camera which also has the registration pegs. The Camera’s lens is located within the wall that separates the first two rooms. The platen is closed and the exposure is set – usually a nine second exposure works on average. The exposure can be adjusted as a higher exposure gives a lighter, thinner line. A lower exposure gives a fatter, thicker line. Back in the day when the animators and in-betweeners were working together, occasionally their pencil weight would be different, causing differences in their lines. If a line was too light or too dark against the others, the Xerox camera operator could compensate with exposures to even-out the work to a uniform style.

The exposed plate then goes into the **Cascader Bin (7)** which is filled with developer – a combination of tiny glass beads along with toner. For every six camera exposures, a scoop of toner -- just like in a standard copier machine we use today – is added to the Cascader Bin. The Cascader Bin rocks back and forth to evenly attach the toner to the positively charged image on the plate. Where the electrical current picks up the line form, that’s were the toner sticks to the plate.

The plates are sent out via the **Conveyer belt (8)** to the final room. Conveyer belts were built to ease the flow into an assembly line approach for the employees operating the camera.

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ROOM THREE

With regular cotton, excess **Toner** (9) is wiped away from the image to remove excess lines and to give the image a cleaner quality.

If an animator didn't want something on their scene (specific lines, images etc), they would take a blue pencil and 'x' thru it – blue pencil is not picked up in this form of Xerox technology. If an animator didn't like a foot drawn on a particular character, they would blue-pencil it out and the rest of the scene could be processed. On a separate set of animation papers, they would draw the foot they desired and it could be 'combined' back into the scene via the Xerox process.

The plate's images are then transferred onto clear acetate cels on the **Transfer Table** (10). Here, the toner is still in **Powder form** (11) and the lines could easily be wiped off.

The acetate cel is placed into the **Fuser** (11) where it is pressured sealed with a Trichloroethylene vapor fuse. Once this process is completed, the lines on the cel are now **Fixed** (13) to the top of the cel and can be touched without smudging or smearing.

The plates are brushed off in the vacuum which has been lovingly named **The Monster** (14), and the plates are sent back into the dark room via the second return conveyer belt.

Staffing consisted of four positions which would rotate every two hours between the outer platen area and the final room. The camera operator in the darkroom would stay on post all day. Once a day, the boss would come by and the darkroom/camera operator would be given a 10 minute break. **A Microphone** (15) was placed between each room for communication between operators.

All drawings were numbered and the cels would be numbered accordingly as well. Once completed, the finished cel is transported between **Cardboard panels** (16) to protect the delicate cels.

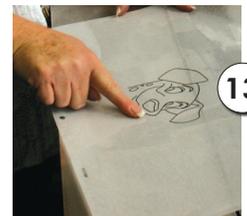
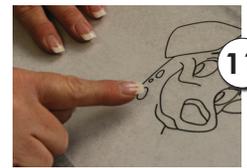
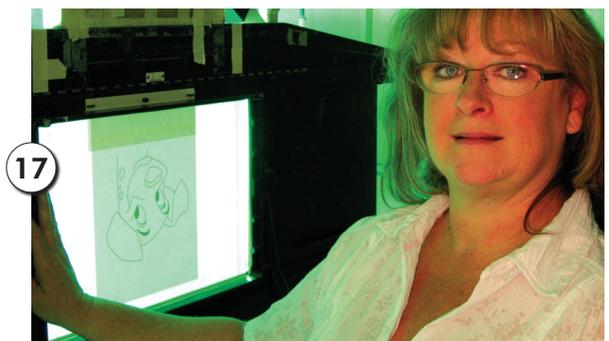
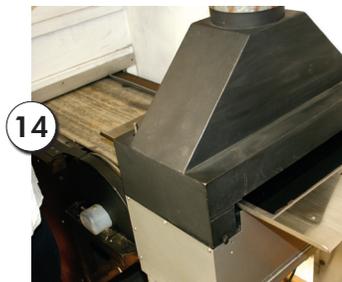
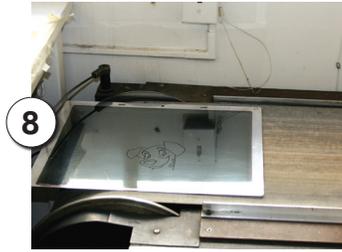
Color xerography is possible, and was later developed after production on 101 DALMATIANS. In later productions, the color black was rarely used as it gives such a harsh line. But in 101 DALMATIANS, black was the primary color used to facilitate the minimal reproduction of so many spots! The color most used was brown as it is the color of fur & flesh.

Sherri Vandoli – Asst. Supervisor Ink & Paint (17), is the last of the Studio Ink & Painters. Starting with this division in March of 1981, Sherri's first feature film was THE FOX AND THE HOUND and she continued working on every 2-D animated feature film until 1990. With the advent of computer technology, Sherri then began work on Gallery and Employee Cels as the division shaped with the changing times. Born and raised in the San Fernando Valley, Sherri raised two daughters and has one granddaughter. Today, Sherri is the last employee to run the Xerox camera, paint animation cels and paint 3-D statues.



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PAINT

Jim Lusby – Asst. Paint Lab Supervisor (18). Jim works closely with the color stylist and director of the various division projects to choose the specific shades and colors. He oversees the mixing, blending and inventory of the Studios unique mix of paints.

Originally all paints were custom made at the Studio labs. In the 1930's, a gum-based resin paint was the mainstay. This type of paint applied beautifully, but took up to eight hours to dry. Some features could take up to 400,000 cels so imagine the volumes of stackers w/ cels as well as other problems with slow-drying cels. Over time it became a challenge to find the right materials to continue with the gum-based paints. Lead and other toxic materials actually tended to stabilize the paint, but as regulations required removal of such toxins, it became a challenge to find proper materials.

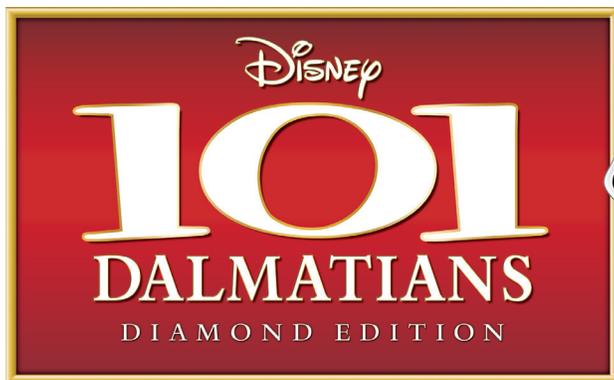
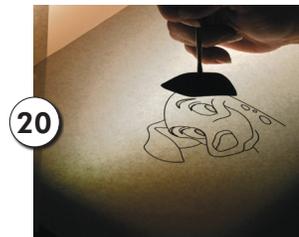
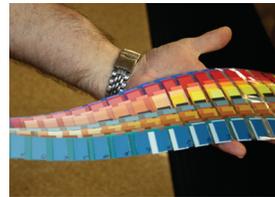
In 1986 on the production of *OLIVER & COMPANY*, the Studio switched over to a fast drying (10-30 minutes) Acrylic paint which is still used today. This material is purchased from the outside, but all of the mixing and matching done in-house with the original **Color Recipes** (19). Jim refers to the original recipe cards for over 3800 colors in the original mix records. A master chip for every color is kept in a card reference cabinet and every new mix of a particular color is matched by eye against the master chip. At one time, this division utilized a computer for color matching, but they quickly found that the computer was not 'creative' enough. As a result everything is done by eye. More colors were added on every feature as new characters and palettes developed.

After a color model is set, **Painting** (20) can begin. The cels are turned over and the paint is applied on the back of the cel, so none of the line work is affected. The brush is loaded and the paint is floated onto the cel – pushing out to meet the lines.

Once completed, the painted cels are placed on a drying rack and checked for quality.

Antonio Pelayo – Head of Special Effects (21). Antonio does the inking, as well as special effects painting, for the studio's animation cels. A gifted artist in his own right, Antonio is the last of the studio's inkers and one of the few men who specialized in this rare art form.

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