

Flash Photography

Get The Most Out Of Your
On - Camera
Flash

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Chapter 1

The History of Flash

Images For The Masses:

In the beginning days of photography, the exposure times were massive! When Daguerre originally invented the photographic process known as the daguerreotype in the late 1830's, the exposure times were in the neighborhood of 30 to 60 minutes!

While these times may seem laughable to us, it was considered almost a miracle back then. Keep in mind that prior to the daguerreotype, the only way to capture an image was to paint a picture of it.

Unfortunately, there was no way a person would be able to hold still for that length of time – so the daguerreotype was considered as an interesting novelty, but useless as a portrait medium.

In a visit to France (to interest the French government in his telegraph), Samuel B. Morse met Daguerre and was dumbfounded by this new discovery.

Intrigued by the new science of photography, Morse acquired an instruction manual from Daguerre and once he got back to his home in New York he built his own camera.

Like a rampant wildfire, interest in photography caught the public's fancy. Soon thereafter, Americans with knowledge of chemical processes began experimenting. Before long they had discovered the right mix of photosensitive chemicals to bring photographic exposure times to more workable levels.

Since the very beginning, improvements in both chemicals and lenses had come about on an almost daily basis. Soon, images could be produced with a blazingly fast exposure of only 8 to 12 seconds.

At last, portrait photography was coming within reach of the photographer. However, even with the miraculous exposure times of 8 to 12 seconds, there was still the problem of the subjects holding still. As we all know, movement during an exposure creates blurry, out of focus pictures!

The answer to the problem was a simple torture device. Photographers used wooden or iron braces running up the subject's back. They clamped the torso, neck and head into a fixed, immovable position.

Ever wondered why portrait subjects from the mid 1800's look so stiff and uncomfortable? Now you know.

Then, assuming that they were in bright enough sunlight, the photographer would pull off the lens cap and silently count off the seconds – 1,2,3,4,5,6,7...

When they reached the length of time the photographer guessed was enough for the exposure (no such thing as a light meter) they put the lens cap back on the camera and they were done!

As a portrait medium it worked – but left a lot to be desired. Still though, it was better than the only other option – hiring an artist to paint a portrait.

At last, photo images were available for the masses.

But, what if there wasn't enough sunlight available? Or the weather was bad and they had to shoot indoors? Clearly, they needed a way to produce more light – a LOT more light!

Enter the flash tray.

The Flash Tray:

This was a small, flat tray that held a bit of metallic fuel mixed with an oxidizer such as chlorate. We generally refer to the explosive mix as flash powder. It's the same type of thing used in fireworks.

The photographer would remove the lens cap, and holding the flash tray up in the air, he would touch the metallic powder with a flame or spark of some kind.

When lit, the metallic mixture exploded and quickly burned with a very bright flash of light. (And roiling clouds of smoke as well as a shower of sparks.)



It was dangerous to say the least, but with this introduction of a massive burst of light, the exposure times were cut dramatically.

The photo flash was born!

Again, it was dangerous to the photographer and everyone close to him. Photographers and their clients both were frequently burned, sometimes severely - but it did the job!

The Trough:

Photographers didn't much appreciate being burned by sparks and spillage from the flat flash tray, so the inventors got to work and eventually the tray evolved into a trough shape. There were still sparks and smoke, but at least some of the problems with spilling the burning, hot metal were lessened.



The flash powder was eventually changed to ribbons of magnesium that could be cut to specific lengths. This allowed for varying exposure times. The magnesium also had the benefit of burning at an intensity comparable to sunlight and exposure times were easier to predict.

Tripod Mounted Flash:

The next improvement saw the flash unit being connected to the camera's shutter so the flash would fire when the shutter was triggered. The ignition spark was created by a dry cell battery.

That cut out the need for the photographer to physically light the magnesium! This allowed the flash to be mounted on a tripod and physically took it completely out of the hands of the photographer.

By taking the flash out of the hands of the photographer, it helped to cut down on burns and the resultant scarring, but it still wasn't safe by any means. There were still a lot of fires and while working with the magnesium, many photographers actually died from explosions.

An additional benefit of mounting the flash units on a tripod or other type of stand let the photographer use multiple flash trays. This created even more light as well as opening the creative door to portrait lighting patterns.

Budding photographers and scientists continued working to find a better, safer alternative and eventually the flash bulb was invented.

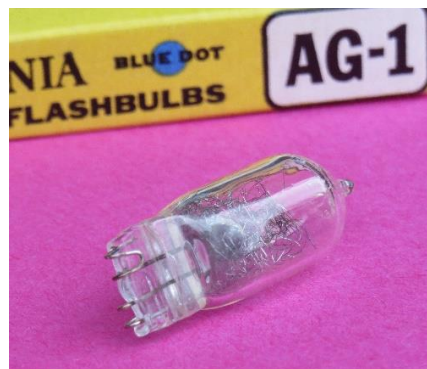
Flash Bulbs:

In 1927 the first flash bulbs hit the scene. They were made of glass and were filled with magnesium and oxygen gas. The sudden burst of light from the magnesium created a flash of

light, but it also frequently made the glass bulb explode - showering everyone with bits of burning magnesium and shards of flying glass.



The flash bulbs were later changed from glass to plastic and eventually the contacts were changed from a metal base to a couple wires.



Flash bulbs solved a number of the problems mentioned before in our discussion of flash trays, but they had their own challenges too!

One Time Use:

First, they could only be used once. Which became expensive in a hurry! Back then, manufacturing wasn't as advanced as it is now and the relative cost of everything was higher.

Additionally, they could get very hot. After each shot, the photographer had to physically change the bulb, but due to the heat from the burning magnesium, finger burns were a common hazard.

Finally, since they could only be used once, the time it took to change the bulb slowed down the photo process and many important shots were missed because the photographer was changing flash bulbs.



Another problem with the one time usage was that a photographer had to carry quite a few bulbs with him. The fragility of the bulbs caused a lot of breakage, unusable bulbs and extra expense.

Eventually the magnesium filament was changed to zirconium for a brighter flash.

To help save the photographer's fingers from getting burned, the flash unit was eventually designed with the ability to eject the burned bulb without actually having to touch it.

As a side note: In the 2002 academy award winning movie "Chicago", I remember a scene where one of the stars was swarmed by masses of news photographers and paparazzi taking her picture. What struck me as great attention to detail was that I could hear the sounds of all the used flash bulbs hitting the pavement as the photographers ejected them to put in new ones.

It was an off screen activity and no one would have noticed if it wasn't there! Here's an "ATTABOY" to the sound crew!

Another problem with a flash bulb is that the flash isn't quite instantaneous. It takes a little bit of time to reach full strength.

To solve that issue, cameras that had the ability to sync with the flash would actually fire the flash a split second before the shutter opened so that the full strength of the flash was recorded on the film.

The Flash Cube:

As you might imagine, constantly having to change the flash bulbs was a real hassle and eventually (1960's) the flash cube was invented.



This was a small cube that had a flash on each side. After firing, the cube could be turned to have a new flash available. While not perfect, having four flashes available with each cube was a far better alternative than the one solitary flash available with a bulb.

It was an immediate hit with photographers and dozens of variations on the concept soon hit the markets.

The Flip Flash:

One of the variants was a "Flip Flash". It consisted of a series of 5 flash bulbs in a row on one side. Once they were all fired, you could "flip" the flash over for another five flashes.



Finally in the latter half of the last century, the electronic flash became available. It was originally invented in the 1930's but it took several decades before it was a useable, cost effective alternative to the flash bulb/cube.

The Electronic Flash:



In an electronic flash the magnesium or zirconium filament is replaced by a tube of gas. They are typically filled with xenon gas. This has the benefit of multiple uses since no filament is burned (and destroyed) by the flash. There IS a lifespan and eventually the tube will need to be replaced, but for most of us, that could take years or even decades.

The igniting spark is created electronically by releasing the energy stored in a capacitor. The recycling time we have with our flashes is the time it takes for the capacitor to recharge.

By the way... a capacitor can hold a charge even when not connected to anything, so don't take your flash apart. You could get zapped. I've never heard of that happening with a flash unit and there may not be enough power to matter, but it's better to be safe. A lot of people have been seriously injured by the capacitors in television sets.

LED Flashes:



If you are taking a photograph with the camera in your phone, you should know that there is no xenon flash tube in there! They use an LED light that is nowhere near the strength of a flash tube, but it is better than nothing and doesn't use much battery power.

Some of the better phones are now using a colored LED so that the skin tones are more accurately portrayed.

Like every other aspect of photography, the flash unit has come a long way. By using the flash, we have gone from 60 minute exposures down to thousandths of a second! AND we don't have to worry about getting burned by flying sparks or killed by exploding magnesium!

Whew! Now that we know how we got here, let's learn about the major types of on-camera flash units and how to use them to best effect!

Now that I've given you a brief history of flash photography, it's time to start learning how to use it to create jaw dropping, stunning images!

The rest of the book is pure learning.

You'll learn how to:

Chapter 2: Measuring The Light

The Light Meter:

Incident Vs. Reflectance Meters:

18% Gray:

Sunny Days:

The Camera's Histogram:

The Photo Histogram Explained:

Exercise To Learn The Histogram:

Chapter 3: The On Camera Flash

Types Of On-Camera Flash:

The Pop-Up Flash:

Red-Eye:

When To Use A Pop-Up Flash:

The Ring Flash:

Catch Lights:

The Speedlight:

Brand Specific Speedlights:

TTL:

Chapter 4: All About The Speedlight

Increasing The Size Of The Light:

Issues With Bouncing The Flash:

Feathering The Light:

Light Modifiers:

Gels:

No More Red Eye:

Light Stand:

Brackets:

Remote Trigger:

Master and Slave:

Zoom:

Using The Zoom Creatively:

How Flash Sync Works:

HSS:

Dragging The Shutter:

Showing Motion:

Front Curtain Sync:

Rear Curtain Sync:

Chapter 5: Power

Don't Use The Shutter Speed

Aperture

ISO

Power Output Settings

Strobe

Distance

Batteries

Balance With Ambient Light

Chapter 6: Camera Shake

You Still Need A Tripod

More Camera Shake Causes

Shutter Release Vibration Fixes

Timed Shutter Release

Bulb

Remote Shutter Release

Mirror Vibration

Conclusion

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