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Instant Strip Photography

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Strip photography is a technique in which photographs are made by a process that falls somewhere between a that used in a motion picture camera and that used by a regular still camera. As in standard photography, strip photographs are viewed as 2-dimensional paper prints or transparencies but unlike regular photographs they resemble motion pictures because they are made over time. In a very special way, strip photographs are pictures of time itself. They are reproductions of what happens over time at a particular location in space.

Strip cameras come in many different shapes and sizes and are often designed for specific applications. Among the more common cameras that depend on the strip method to fulfill their objective are certain panoramic cameras such as the Globuscope, the Hulcherama and the vintage Cirkut panoramic camera. More specialized are the photofinish cameras typically used at racetracks and other sports events for determining the winning order in races involving a close finish. Even more specialized are synchroballistic cameras and peripheral cameras.

Most strip cameras are quite expensive because they are specialized. Because of this the potential for applying these cameras on a more general basis has been slow in gaining popularity. In this article I will describe how to modify inexpensive Polaroid cameras and adapt standard view cameras to exploit this neglected field of photography.

In order to make a strip photograph all that is required is to move the film past a narrow slit installed just in front of the film plane while the image of the subject is made to move over the slit. Generally it is desirable to make the film move under the slit at the same rate as the image is moving over it.

While 35mm cameras can be adapted to for strip photography by installing either near the film plane or out in front of the lens a narrow vertical slit and then rewinding the film while the shutter is open there is also a way in which one can be more readily experiment with this process using Polaroid materials.

While I conducted successful experiments with motorized film ejection cameras the approach that proved much more successful involved the use of Polaroid film pack type cameras.

The first thing to realize is that a 600 series Polaroid film pack is designed a very special way. The negative material faces the lens at the time the exposure is made and then later,
when you are about to process the film and you pull on the film positioning tab, typically a white tab, you actually pull the negative around a curved metal edge at the other side of the pack. This eventually brings the negative face-to-face with the receiver sheet. Therefore, while you pull on the positioning tab in one direction the negative in the camera is moving in the opposite direction.

Therefore, to make a Polaroid pack-type camera operate as a strip camera the first step is to install a stationary mask over the film pack image gate leaving just a small opening about 1 mm or so wide near the leading edge of the pack as shown in the illustration. Note that the leading edge is the one away from the white tabs. I made the mask out of exposed and developed Kodalith sheet film because it is thin, quite dense and is easy to cut and install just over the cover sheet on the pack. The mask is cut so it is slightly larger than the image gate and slid under the edges. Then it is taped in place so that when the film underneath it moves it remains firmly anchored to the plastic edge of the pack.

After the pack is prepared with the mask the pack is inserted in the camera and the protective cover sheet is removed. The camera is now set for the first "strip" exposure.

At this time the camera is aimed in the general direction where some kind of action will be taking place and the shutter is opened. The shutter must remain open for the length of time that it will take you to withdraw the white film positioning tab.

This is not too difficult to achieve with most cameras. With Polaroid cameras equipped with adjustable shutters, the shutter is simply set to T or B and locked open. With automatically controlled exposure time Polaroid cameras one solution is to place a piece of opaque tape over the photocell. The metering systems will be setting an exposure time that may last as long as 5 to 10 seconds and this should give you ample time to withdraw the processing tab for most applications.

Since the film must be moving past a slit inside the camera for a strip exposure to take place, it is obvious that if most of the image gate of the pack is covered with an opaque mask, the film will not "see the light of day" until pulling on the white tabs makes the film pass under the open slit.

When you pull on the white tab the unexposed film passes under the open slit at the front of the pack where it is briefly exposed. If the subject was stationary then a bunch of lines should appear across the print representing the brightness and color distribution of the subject along the slit during the time it took the film to pass by the open slit.

For orientation and aiming purposes you should remember that the "slit" is located at the right edge of the viewfinder frame when the camera is held normally.

The rate at which the processing tab is pulled out will determine the exposure time that the film receives. You then adjust the aperture and/or the lighting level to properly expose the type of film that you happen to have loaded into the camera.
The actual exposure time can be calculated by multiplying the width of the slit in the pack by the time you will take to withdraw the white processing tab and dividing their product by the length of the tab that you withdraw. Assuming that you are working with 3 1/4 x 4 1/4 size pack film and the slit you left in the pack is about 1mm in size, and it takes you 5 seconds to pull the white tab out completely and it is 4.5 inches or about 100 mm long, the exposure time would be 1mm x 5sec / 100mm or about 1/20 second.

If you place the camera on a tripod or hold the camera steady and ask a person to run quickly in front of the camera while you pull the film past the slit your camera operates as a photofinish camera. Remember that the image must move in the same direction as the _film_ and at approximately the same speed.

To photograph a runner, for example, your subject must run from left to right and it will be recorded as it passes the right side of your viewfinder.

To determine approximately how fast you should withdraw the white tab estimate the number of seconds it takes your subject to cross your viewfinder. That is approximately how long it should take to pull the white tab out of the camera.

If you ask your subject to sit on a rotating stool and turn quickly while you aim the "slit" at the rotating figure your camera will be behaving like a peripheral camera. You should make sure that you are aiming the right edge of your viewfinder towards your subject. Determining the time it should take you to pull the white tab out of the camera is a bit more difficult for this application but a simple test will tell you if you are going too fast or too slow.

If you hold the camera in your hand or "pan" it on a tripod turning the camera counterclockwise while pulling on the tab and making the exposure, your camera will be behaving like a panoramic camera. The old "Cirkut" panoramic cameras made wide angle pictures that covered 360 degrees this way. Since the actual length of a panorama is governed by the focal length of the lens you will only be able to include an angle that basically matches the normal angle of view of the Polaroid camera's lens. However, you will probably have much more fun taking a scanned wide angle panorama than a simple "straight" shot of a scene. Besides, once you are scanning a scene it is easy to introduce interesting alterations to the image.

One slight drawback to using standard automatic Polaroid pack cameras for this purpose is that you have to remember to point the camera at an angle in order to place the sensitive slit on your subject. To correct for this I cut the plastic snout off the front of my Polaroid Color-Pack camera and moved cone over so that the lens now sat directly on front of the slit. Now I knew that the slit in the camera was aimed at a line that exactly cut my viewfinder in half.
In the process of moving the lens assembly over in my Color Pack camera I also decided that the lack of an adjustable diaphragm in the camera was somewhat of a limitation. So I disassembled the shutter assembly, removed the shutter and installed a diaphragm between the lens elements. I still have not calibrated the settings on the diaphragm. Since I operate mostly by test anyway having the possibility to adjust the light level by altering the aperture instead of having to use ND filters was a great advantage.

Removing the shutter is advisable but not required. I did it because since exposure takes place by moving the film past the slit, the shutter is actually superfluous while making pictures because it has to be open all the time anyway.

As shown in the illustration, if the manual pull approach is too crude for your taste, the system can be motorized fairly easily as shown in the accompanying illustration. Some means for tightly clamping the white tab needs to be devised. This clamp could be a small "C" clamp. The clamp is connected via a flexible steel cable (I have used leader wire from fishing rigs) to the shaft of a small, high torque, DC gearhead motor. The motor itself has to be held in a fitting that locates it far enough away from the edge of the pack to allow the full length of the white tab to be pulled out of the camera. I have powered my motors with batteries or with a stepwise variable DC transformer that puts out 3, 4.5, 6, 9 and 12 volts DC. The variable voltages provide variable speeds which in turn are matched to the speed a variety of subjects demands.

Obviously, it is not easy to bring a system like this under as tight a control as is possible with other cameras, such as possibly a 35mm camera, at least this approach to making panoramic, photofinish and peripheral can be investigated. In general the system is most applicable to learning the principles involved in strip photography rather than being one of absolute technical perfection. Experimenting with this technique should also provide you with a new vision which truly incorporates _time_ into your photographs.

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