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# **Vacation Filming**

Vacation is the time to do the unusual. We travel and take in the sights, observe and admire nature, enjoy togetherness with family and friends, and find generally a multitude of subjects to film. "Why didn't we film more of the children or the sights at the Grand Canyon?" is unfortunately only too familiar a phrase. But it is too late to talk about it afterwards. So let's do it now.

Our splendid cover and center spread scenes of spectacular Grand Canyon are meant to give an example of the great variety one and the same scene can convey at different times of the day. Vacation will give us the opportunity to cover any subject in depth, and what we thus will capture on film will assume, with its great variety, an altogether new dimension.

And even if in a hurry you must travel on to new adventures, by all means film while there, but also buy a few postcards or slides of the sights (at dusk, for instance). If you are lucky enough to own a Bolex Macrozoom camera (and there are three to choose from), it will then be easy to supplement your own movies (taken for instance in the morning) by simply filming such material mounted on the Multitrix attachment, which comes free with Macrozoom cameras.

Our scenes were photographed with a Hasselblad 500C camera and 80mm Planar lens by professional photographer Hy Simon. They do suggest how just one event can be covered in depth. We are, of course, restricted to convey our thoughts through the reproduction of still pictures, while the moviemaker can do infinitely better. On the other hand, we do not necessarily need a Grand Canyon but can extend the idea of filming a subject in depth unlimited. We may indeed film children, nature, travel, sports, and all of the other activities we have the pleasure to indulge in during relaxed hours of vacation time.



EDUCATION • TRAINING • STUDENT CINEMA • TECHNICAL • ANIMATION • FILM LECTURING



### Introducing a Comprehensive Study

A recent series of Bolex advertisements urged audio-visual movie makers to "Make a hem, make a film," "Make a radio, make a film," "Make a display, make a film." There's strong evidence to suggest that numerous instructional movie makers are doing just as the ads urge. And considerably more.

From the traditional academic classroom all the way to the dark and mysterious world of illusion and magic, moviemaking for instructional purposes is reaching a new sophistication and maturity. And, as the reference to magic and magicians reveals, it's not just the "audio-visual" cameraman who is shooting films that inform. It's anybody and everybody, from those who use their finished products to support academic courses to those who "Make a film, make a living."

This issue of the *Bolex Reporter* is devoted to an extensive presentation of the efforts of some of the more notable instructional movie makers working with Super 8 and 16mm film today. As the table of contents implies, contributors are as diversified as they are distinguished.

A film revolution that began several decades ago is now building to very substantial proportions on high school as well as college campuses throughout the country. Several of our authors explain how and why. Peter Zakroff, himself a high school teacher, presents a primer for Super 8 production in the school and directs his remarks to all film makers, including those contemplating a "first" effort.

At the recent Stowe Film Festival in Vermont, young movie makers from all over the state gathered to shoot movies, discuss film techniques, and share movie inspiration. The results of their unique conclave are reported and analyzed by Film Festival codirector Elise LaTaille.

Documenting the film explosion on college campuses, Tom Fensch describes the directions college film producers are taking and analyzes several highly successful college cinema productions in an article detailing the very lastest developments in campus filming. (Note: Mr. Fensch's article is an excerpt from his new book, *Films on the Campus*, published by A. S. Barnes Company.)

But it's not only movies in the academic community that reflect the growing focus on educational and informative films. Saginaw, Michigan Film Festival prize-winner Donald Crafton explains how his film, "Dark and Whetted Soil," approximates the mode of poetical thinking to expand the communicating power of Super 8 film. And history buff Michael L. Autorino reveals the force of 16mm cinema in recreating the romance and realism of a glorious time past in "Proud Train to Promontory."

Veteran wildlife cameraman Charles L. Cadieux bridges centuries to chase the awesome falcon with a Bolex Rex as both man and bird are driven on by apparently ageless instincts. In a more commercial vein, Bolex movie maker Tom Speros, associate producer for a professional film production company, describes the valuable new emphasis for training films—entertainment.

Animation, one of the most highly specialized and exacting cinema challenges, numbers among its practitioners the ultraclever, but none moreso than Bill Utsman, art director for WSJK-TV in Johnson City, Tennessee, and Bruce Dods, professional animator, whose carefully detailed articles complement each other and form a concise "how to" handbook for aspiring animators.

"For Fun and Profit!" the old poster used to say, and no one takes the adage more seriously than Bill Kelley and Robert E. O'Reilly, two experienced Bolex film makers and professional film lecturers who put their productions on the line before live audiences and prove that good movies *are* enough to build a profitable career on.

Technical skill being the stock in trade of any genuinely successful movie creator, no discussion of educational film making would be complete without valuable professional advice. Joe Tiffenbach, veteran producer of documentary, athletic and travel films, Ed Becker, photo columnist, and Ernst Wildi, Technical Advisor for Bolex at Paillard Incorporated, Linden, New Jersey, provide detailed technical suggestions in their articles on movie editing, Minipod movie shooting, effective use of lenses, and shooting movies of the TV screen.

And finally, there's the "love story" from Mercer D. Helms, Jr., magician and illusionist. Faced with the need to create a high quality promotional film at exceptionally low cost, Mr. Helms hauled out his ancient Bolex 16mm camera (vintage unknown) and demonstrated the ultimate magic of a camera born to bear every educational and instructional filming load. Like all of the other film makers in this issue, magician Helms concluded that Bolex cameras lie at the heart of many of today's new "educational" films—whether they be shot on the most expansive college campus or in the littlest of "little theaters."

# Who, What, Where, When, Why, and How

### by Peter Zakroff

The word "film" is attaining a common place in the vocabulary of today's educators. Yet, expressions such as:

- "Sure, filmmaking is fun and interesting, but where and how can I use it in my classroom situation," and
- "We don't have much in the way of equipment, money or experience," still persist.

The purpose of this article is to answer the above statements and let the teacher know the Where, When, Why, Who, What, and How of filmmaking in the classroom. Two things should be made clear:

- 1. There are things filmmaking can and can't do, but you
- won't know what they are until you have tried them. 2. Filmmaking is not the salvation of education. It is but
- another tool to be used in the process of learning.

#### WHERE TO USE FILMMAKING:

Do you have one of those "non-existent" classrooms where your students don't appear interested in what you are trying to teach? Are your students tuning you out? Are you at a loss to find a relevant solution, besides keeping them after school or having them write a hundred words for homework? Do you teach in a ghetto or deprived area where many of your pupils can't read and act as if they don't care if they ever will?

Whether you teach in the city or in the suburbs, elementary or secondary, no matter the subject area, if your situation fits any part of the previous general description, there is a definite place for filmmaking in your classroom.

#### WHY USE FILMMAKING:

Filmmaking is presently the "in thing" with students of all ages. A filmmaking project can be the process by which a pupil masters a body of knowledge he was unable to understand through conventional methods. In making a film, a student cannot help but get involved. And to make a good film, he must understand his subject.

For those students whose abilities in reading and writing are not up to a teacher's desired standards, filmmaking offers an outlet for expression. Through a film a student can visualize his views and feelings; and what he learns from his film experience may instill a new desire for improving his other communication skills.

Filmmaking on a classroom scale develops an atmosphere of cooperation among the participants. Making a good film involves the help of many people. If you attempt a class film, everyone must be involved in a meaningful way. Some of the people needed in the production include:

- 1. Director (1) 7. Actors (1 to 10 +)
- 2. Writers (2-3) 8. Cameramen (2-3)
- 3. Producer (1) 9. Film Editors (2)
- 4. Artists (3)
  - 10. Fashion Designers (2)
- 5. Floor Manager (1) 11. Scripter (1)

6. Asst. Floor Manager (1) 12. Soundmen (2)

If several films are to be made each semester, pupils should take different jobs in each production.

#### WHEN TO USE FILMMAKING:

There is no exact time to use filmmaking in the learning process. A filmmaking project can be used at any time during the school year. It is a possible path through a problem when nothing else appears to be working; or, in many situations, it is an experiment. A word of caution is important, however. No one should use the making of films as a complete substitute for a year's work. As with other tools in the educator's toolchest, if overused, filmmaking can lose its effectiveness.

#### WHO CAN USE FILMMAKING:

As a teacher, you can use filmmaking in a variety of ways. You can produce a "single concept" film on some area of your discipline best illustrated by a motion sequence. If you are a science teacher, it could be a demonstration film or a movie on the growth of a plant or the dissection of a frog or a fish. No matter what your field, there is a meaningful film you can make.

There are students who will gain more from a film experience than others. If you have two or more classes at varying levels, your first thoughts might be to work with the "best" group. But are these the students who stand to benefit the most from it? Try and think of using filmmaking with those students who have the most to gain from the project in terms of motivation, communication, and cooperation.

#### WHAT TO FILM:

"The motion picture should be considered whenever motion is inherent in a subject or when you wish to show relationships ideas have to one another, to build a continuity of thought, or to create a dramatic impact."\*\*

Consider this statement as you decide upon your film topic. Don't make a motion picture of something that doesn't need to be on film. Filmmaking is an art and must be carefully planned just as each class lesson is planned and then executed.

#### HOW TO MAKE A FILM:

To make a film, you need a camera. Super 8 cameras vary in price from \$20 to \$1,000 depending upon make, model, and extras such as a zoom lense, variable speeds, and reflex viewing. Check with your district audiovisual coordinator or media center to see what materials are available locally. Teachers are often unaware of what their district has in the way of instructional media. (Note: Bolex Macrozoom Super 8 cameras have been especially designed for school use. With the ability to focus continually from as close as one inch from the subject to infinity, they are versatile enough for any type of school film. For more specific information on all three Macrozoom cameras—the 160, 155, and 7.5—write to Paillard Incorporated, 1900 Lower Road, Linden, New Jersey 07036.)

Besides a camera, the equipment needed to make a Super 8 film includes: a tripod, editor, splicer, and film. The trend in local production of films today is toward the Super 8 cartridge, which holds 50 feet of film, equal to three minutes and 20 seconds of running time. This may not seem like a great deal of film, but once you become involved in a production, it can seem like an hour.

At present, there are three types of Super 8 film on the market at the same price—Daylight color, Plux-X, and Tri-X. Daylight is standard color film and is for use outdoors; for indoor filming you need lights. Plux-X and Tri-X are black and white films. Tri-X is good under poor lighting conditions, such as night sporting events, while Plus-X yields a high quality picture under normal conditions. Don't rule out the use of black and white film; they can be very effective.

Behind every film is an idea. When you're working with a group of students, make the film idea "theirs". Letting the students pick their own topic will give them a greater interest in the film. For group production, have the class select a director and production crew.

After deciding upon the idea, develop it into a general outline. If you're filming a process such as an experiment, it's helpful to use "backchaining"—starting from the end and working forward, thus decreasing the chance of leaving out a step or scene.

Visualize your outline using a "storyboard"—a series of illustrations or pictures which help to visualize the subject matter to be filmed. From the storyboard develop your "shooting script"—the written plan for the film, including camera directions. Extensively involve your student crew in developing the storyboard and the script.

When you begin shooting the film, it's important to use a variety of camera angles and distances. No matter how simple your camera, you can always vary the angles of shooting and distances from the subject. The most widely used shots in filmmaking are the long shot, medium shot, and the close-up.

\*\* Kemp, Jerrold E., Planning and Producing Audiovisual Materials, Chandler Publishing Co., San Francisco (1963), p. 8. The long shot (LS) gives a distant view of the area where the action is taking place. It is often called the "establishing shot" because it is used to set the time and place of the action. The medium shot (MS) is between the long shot and close-up. If focusing on a person, it should include from the person's head to his waist. (Don't forget the head room in the top of your viewfinder!) The close-up (CU) shows fine detail such as a person's facial features. An extreme close-up (ECU) would include just the subject's eyes or another separate part of his face. These three shots, as well as the "pan" and "tilt," are valuable ingredients to any successful filmmaking adventure.

When the shooting has been completed and the film returned from processing, it's time to put your film together. View your film through the editor and cut into scenes according to your script. Don't view your raw film through a projector because it may become scratched, which could ruin your entire effort. After all the scenes have been cut and ordered, splice them together according to your script. If you plan to project your film a great deal, it would be best to have several duplicates made and to put the original away for sake keeping.

Most importantly, enjoy shooting your film. Let creativity and imagination blend to insure a meaningful and productive film as well as a memorable experience for your students.

Additional Sources of Information

- 1. Planning and Producing Audiovisual Materials, Jerrold E. Kemp, Chandler Publishing Company, San Francisco.
- 2. Shooting a Movie Story, Morgan and Morgan, New York, New York.
- 3. Movies with a Purpose, Kodak, Rochester, New York.
- 4. "There's an 8 mm in your Future," The Instructor, January, 1969.
- "Preparing a Film Course for High School Seniors," by Lillian Schiff, Media and Methods, Vol. 25-No. 5, 1968.
- 6. "Seeing it Like it is," by Edward Dubrowsky, Grade Teacher, December 1968.
- 7. "Teenagers Make Their Own Movies," by John Mac-Kenzie, Scholastic Scope, Feb. 1968.
- 8. The Bolex Reporter, Paillard Incorporated, 1900 Lower Road, Linden, N.J.
- 9. Filmmaking in Schools and Colleges, available from Filmboard NSEC, Consultants in Screen Education, 25 Steadman Street, Chelmsford, Mass., 01824.

### Filming "Dark and Whetted Soil"

by Donald Crafton

The author with his Bolex Macrozoom camera and Minipod.

A recent *Bolex Reporter* article described filming in its purest form as an extension of seeing. In my film *Dark and Whetted Soil*, however, I attempted to push the film medium even farther and make a film that was an extension, not only of seeing, but of thinking. Specifically, I wanted to approximate the mode of poetical thinking and create a work that was, in effect, an original lyrical poem that found its existence in the visual powers of the cinema.

Although 16 mm equipment and film was available to me at no expense, I decided to produce the film in the Super-8 format. This decision to choose the smaller film stock over the larger one may seem very strange at first. But, in fact, I felt that in addition to the usual reasons—greater economy and ease of camera operation—the subject matter itself dictated my choice in equipment selection. First, I wanted to capture a feeling of casualness and intimacy in the actual filming. Using a Super-8 camera meant I could, for example, follow—in extreme close-up—the movements of my model's hands, resulting in a fluid and sympathetic relationship between the audience (via the camera) and the subject. Super-8 even made it possible for me to hold the camera in my right hand and film my left hand. With the zoom lens adjusted to extreme wide-angle, some amazing shots resulted.

Secondly, I wanted this feeling of intimacy to be present at the actual screening of the film. The usual projecting of Super-8 is to a fairly small group of people, so the image size is relatively small. Both of these factors, in my estimation, would contribute to the feeling of intimacy which I was trying to achieve. The subject matter of the film also influenced my choice of soundtrack. I used a stereo tape recorder so that my sound effects could surround the audience and produce the effect of the "film" actually extending beyond the boundaries of the frame itself.

Long before production was started, I decided my film would be, as much as possible, an attempt to evoke a visual aesthetic experience, rather than follow a traditional narrative plot. So, instead of a script, only an informally sketched storyboard of shots was used. This storyboard was used as a rough guide, not as a rigid blueprint during filming, because I wished to keep my shots as spontaneous, flexible and "personal" as possible. Although there was no plot, there was much continuity achieved in this manner largely because shooting in such a casual way enabled me to sustain the same emotional values in my compositions from scene to scene. The visual images reflected in a consistent and unified manner my personal involvement in their filming and thus produced a kind of unconventional, but convincing, poetic continuity.

Since this film did not have a plot, its unity, as already indicated, depended for the most part upon visual style. Thus special effects, the quantity of which would have been showy and out of place in a conventional film, actually helped hold this film together. I felt free to use any visual effects my imagination could come up with to suit the mood I was trying to convey in a particular shot. In fact, there are only a few shots in the whole film in which reality is not distorted or at least tampered with a bit. Here are a few of the effects I used that could easily be duplicated by anyone with a Bolex Macrozoom camera, which focuses continually from one inch to infinity.

1. Since one theme in the film was the identity of man and nature, I showed an ultra-close-up of a plant stem dissolved to a waving blade of grass behind it—dissolved to a man on a hill in the distance—then zoomed slowly past him into the clouds and trees of the background. One gets the feeling that this man is indeed a part of this procession from the earth to the sky.

2. I used color filters and colored gels a great deal in the film. In this way I could use color to relate separate shots within a scene, or for contrasts such as splicing a blue toned shot to a deep red toned shot. One remarkable transition effect was achieved by transfocusing from a blue piece of plastic gel to a piece of red gel, both against a white background. The result is a dissolve from pure blue to pure red light, which I spliced between a blue filtered scene and one filmed with a red filter. Another effect was obtained by shooting through a piece of colored plastic which had been distorted by heating in an oven.

3. To achieve a feeling of vastness of scale, a large amount of close-up photography was employed. Cutting between a tiny element of nature and a similarly composed shot of a stretching landscape gives the audience this idea. One of the



best close-up shots was completely unplanned: an inchworm crawling along a gravestone provided a chilling shot, with symbolic overtones.

4. Many special effects were produced by shooting into a mirror placed at an angle to the camera. Thus two scenes may be combined in one shot, the mirror scene in one part of the frame and the "real" scene in the other part. It is impossible to tell, in the projected film, which is which. I found that if the edge of the mirror is placed on the edge of a tree, for example, the result looks almost like a laboratory-produced matte shot. I also found that when the camera pans across the mirror, the effect of a wipe may be simulated. The mirror can be held vertically, horizontally, or at an oblique angle by means of a Minipod (small, highly portable tripod) and a set of spring clamps. Some startling and surreal mirror shots may be made with a relatively simple set-up.

5. To structure the film, much use was made of cameraproduced rhythms. These included repeated camera movements—pans, tilts, and zooms—and meaningful repetitions of wipe fades. In addition, movements of the actors were repeated for effect and sometimes filmed in slow motion at 32 fps simply by using the slow motion button built into the Bolex Macrozoom camera.

When edited, after about two months of filming, *Dark and Whetted Soil* ran eleven minutes. Approximately four hundred feet of film was shot; only about one hundred and fifty was used. I do not consider the unused film as being wasted, however. That quantity originally shot allows me to be highly selective, even ruthless, in my editing, ensuring a film of maximum pictorial quality.

In its final form, the film consisted of twelve parts, perhaps corresponding to stanzas, separated from one another by black leader. Each part, while stylistically independent of the other sections, reflects thematically the ideas of the film as a whole: Man's oneness with nature and his paradoxical inability to communicate with nature.

The soundtrack produced for the film consisted of music and sound effects, reproduced in stereo, that complemented or counterpointed the visual elements of the film. Like the visuals, the sounds were highly stylized and abstract. During the shot of the worm, for instance, several voices humming (played at double speed) suggests the buzzing of insects.

Since the soundtrack had to be roughly synchronous with the film, I had to devise a way to start the two together. Here is my solution that anyone may try. First splice about eight seconds of black leader onto the head of the film. (It takes about this long for the projector speed to stabilize.) Next count eighteen frames back from the start of the film onto the leader and punch a small hole in the center of the frame with a pin. Do the same thing thirty-six frames and fifty-four frames from the start. On the tape place a mark on the leader exactly where you wish the tape to begin (or use the leader-to-tape splice as a mark). Place this mark directly over the playback head and have the machine ready to play. Start the projector. When the light spots appear on the screen, count "three seconds, two seconds, one second, go" and start the tape. The tape will then begin to play immediately with the first frame of the film, synchronization will be maintained.

This is an easy and accurate way to achieve roughly synchronized sound (that is, not lip-sync) providing the same projector and tape player are always used. This method is also excellent for transferring synchronized tapes onto magnetically striped films for a permanent sound film, one which anyone may screen on a projector such as the Bolex SM8.

How did my film turn out? Did it achieve my original goals of making a piece of cinematic poetry? Was my conscious choice of equipment that was suggested by the nature of my film justified? Do audiences like the finished work? I think the answers to these questions are all positive. The visual style of the film has been compared to the engravings of William Blake, who also attempted to express his poetry visually. The film is abstract, stylized, even surreal at times, but at the same time its images convey something of the ease and intimacy of lyric poetry. Most importantly, I feel the equipment lent itself to use as a tool for self-expression and enabled me to put a bit of myself into that film. After the film was finished, viewing it became a continually rewarding experience. Encouragement that other people enjoyed it too came when it won a top prize at the Saginaw Film Festival. One of the judge's comments was that the film really did succeed in putting something in the literary mode onto film.

I think everyone should try, at least once, to make a personal film of this sort. Start with only a rough idea of how the finished work will appear and let your ideas work themselves out in the film. Such an experience not only teaches a person how to see and record the world around him, but teaches him how to translate onto film the world within. And, considering the inexpensive Super-8 format, all it takes to make such a film is a camera as versatile as the Bolex Macrozoom and a little imagination.

# Proud Train to Promontory

#### by Michael L. Autorino

May 10, 1969 was the Hundreth Anniversary of the completion of the first transcontinental railroad in the United States. In 1869, much of the same boldness, imagination, and ingenuity that today results in the aweinspiring Apollo space voyages culminated in the driving of the historic Golden Spike at Promontory Point, Utah. There the Central Pacific from the west, and the Union Pacific from the east were joined in the final link that united the broad expanses of the Union in the days shortly following the Civil War.

This year at the Golden Spike National Historical Site nearly twelve thousand persons gathered to witness a reenactment of this milestone in the nation's history. National and state dignataries were present to participate in the Centennial Celebration. Among them was the principal speaker of the event, Department of Transportation Secretary, John Volpe.

Special excursion trains were operated to the historical area shortly before the celebration itself. Probably one of the most notable of these pilgrimages was by The Golden Spike Centennial Limited. The train, itself, was a fourteen-car steam powered express that was put on the rails by The High Iron Company of New Jersey with the cooperation of several major railroads and the blessing of the Association of American Railroads.

Locomotive power was provided by a refurbished steam giant of the rails, a former Nickle Plate Road Berkshire-type engine built in 1944. This train began its trek to Promontory from New York's Grand Central Station on the morning of May 3rd. It was scheduled to stop at various locations enroute for local festivities and lodging for its passengers.

At these stopover points, The Golden Spike Centennial Limited was welcomed by official ceremonies. Townspeople turned out to view the train, especially the mammoth steam locomotive. For many it was a first experience. For others, it was a nostalgic reacquaintance of the sight, the sound, and the smell of years past. The arrival of this notable train was invariably reported by newspapers, and by the local-area radio and television stations.

Aboard the Limited were two television camera crews. They were on hand to record the rare journey across the continent and the restaging of the historic union at Promontory. One group was from France, while the other was representing a TV station in Pennsylvania. This latter crew was filming footage for a National Educational Television program documenting the historic event.

While these two teams were on board the blue, silver, and gold train as it raced across the country, it was this writer's desire to record the passage of this rare train on a 16 mm color and sound film from trackside.

Of course, before the task could be effectively carried out, prior planning and the necessary equipment were needed. Probably the most formidable obstacle was how to keep ahead of the speeding express (which at times would be traveling at seventy-five miles per hour), set up the equipment, film the scene, and then move to the next planned location and repeat the sequence, all in advance of the train.

First, a map indicating both road and rail routes was consulted and intersecting points enroute selected as filming spots. Alternate points were chosen as well. Consideration was given to routes paralleling the railroad's that would allow for more rapid speed in an automobile. At times the selected path was not the closest to the rail line but rather one that was quicker picture point to picture point. Prior knowledge of locomotive refueling stops afforded an additional time advantage that could be utilized. It would then be possible to film the special at one location, and while it was being serviced, move on to the next spot with ample time available for setting up.

Another method of obtaining a time advantage was also possible. This involved the engineering and construction of a railroad as opposed to that of roadways. Rail lines were frequently surveyed to follow natural courses such as valleys and rivers. This was done to minimize the amount of gradient change on the railway with its concommitant savings in locomotive fuel costs. It would naturally be more expensive to haul trains over steep grades, so the lines were usually engineered to follow the more level, albeit longer routes. Highway engineering adhered less to this principle and consequently road mileage between two points is less than paralleling railroads. This, of course, is accomplished at the expense of maintaining easy grades on the roads. The above-mentioned difference in engineering philosophies allowed for an additional time advantage in certain areas along the route of The Golden Spike Centennial Limited.

Finally, in addition to checking maps, profile charts of the rail routes illustrating the terrain and grades found were examined. These charts served a twofold purpose. One was to provide information showing where The Limited would be climbing a grade and traveling at a relatively slower rate of speed. The other was to indicate where the steam engine would be "working," a potentially more photogenic location for filming than one where it would be coasting. A steam locomotive is far more dramatic and impressive putting on a display of power than when it is just leisurely maintaining speed.

With these considerations made beforehand, the main problem remaining at that time was to assemble the necessary equipment and supplies. A Bolex Rex V together with an Angenieux 12 to 120 mm zoom lens would be used for the bulk of the filming. This combination would be augmented by 10, 25, and 75 millimeter Switars. Their inherent larger apertures and greater light transmission qualities made them extremely useful in lowlight conditions.

The Rex V's spring motor drive would be used to the greatest amount possible as it would allow for the highest degree of portability and provide sufficient time for most scenes. For longer scenes, such as train startings, which had to be included for their dramatic value, a Unimotor with its attendant battery were added. A tripod was included as well, as hopefully all scenes would be shot with the aid of this item. Twelve thousand feet of color reversal film served as the necessary filmstock.

Wild sound recording would be employed to obtain the memorable sounds of the steam-powered train. This naturally would provide the basis for the intended film's sound track. A Sony 200B quarter-inch tape recorder served to fill the bill in this phase of film production.

The day arrived to start the hectic race across the eastern part of the United States. First stop for The Golden Spike Centennial Limited was Rensallaer, near Albany, New York. This was a service point. The replenishing of the locomotive's fuel and water was a drawn out operation. This condition existed because the Penn Central Railroad no longer had coaling or watering facilities. All its trains are, of course. hauled by either electric or Diesel motive power, which require none of the steam engine's familiar coal or water. Hence, the latter liquid had to be pumped aboard the thirsty engine's 22,000 gallon tender plus an auxiliary tender by the local fire department's pump engine. Similarly, coal had to be loaded aboard by means of a crane equipped with a clamshell bucket from an adjacent hopper filled with the bituminous black fuel. This, and subsequent servicing required an hour. Before the total operation was completed, it was time to curtail filming and travel to the next location in the heart of the Mohawk Valley, bucolic Fonda, New York.

There was captured what the motion picture was to be about: the romantic excitement of main line steam power as it raced high speed across the countryside. Others, too, were there with both still and movie cameras; many, though, were there with nothing but themselves to catch a glimpse of The Limited as it sped through Their Town. It was a scene that would be seen again as the train passed through Canestota and Batavia that sunny afternoon enroute to Buffalo.

From the actual filming standpoint, different angles and dissimilar-looking areas were picked to provide the least boring approach to the shooting of what was, in essence, the same subject material. Cutaways, also, would alter the similarities of footage taken. Since the travel was westward, the train was filmed from the left side of the direction of movement to provide screen direction in the conventional right to left manner. In order to protect against failing to do so, headon or tailaway shots were included in the planned filming for transitional scenes for possible changes in screen direction.

That night and the following morning were spent in Buffalo. Here general station scenes were obtained. The portability of the Bolex equipment and the tape machine were



appreciated especially during the times when one had to relocate among masses of people, set up, film, and move to the next angle/location. All of this had to be accomplished before some interesting action stopped.

At times interesting rail locations were almost inaccessible from any road. One usually thinks of rail lines as man-made extensions of civilization; steel ribbons that unite the country and as easy to get to as that young boy that uses them to walk home from a playground ball game makes it appear. Nothing could be further from the truth. In rural locations the rails are on steep, high embankments, in deep, rock-walled cuts, or across the other side of drainage ditches, streams, or rivers. When one attempts to obtain a desirable filming spot, particularly in the spring and summer seasons, he frequently must traverse the ever-present thick foliage that surrounds a railway. The ease at which the equipment could be carried was recognized again during such difficult movements. This type of situation was typical of that found in the rolling mountainous terrain that was later encountered in Pennsylvania and Maryland.

Cleveland was the end of that day's running. Some footage at dusk was shot at that Ohio city's Union Terminal. It was the end of a long, hurried day filled with a respectable amount of filming and an extensive number of miles traveled.

While filming in Cleveland, an attempt by a thief was made to steal this writer's automobile. Fortunately, all the equipment was stored in the vehicle's trunk at the time as all filming for the day had been accomplished. Only the tape recorder, hidden under clothing, was in the passenger compartment of the car. One can assume that the burglar inadvertently found the machine and it was stolen. Why did this nefarious person fail to take the car? It was equipped with a hidden ignition ground switch and the hood of the vehicle was padlocked. The former precaution makes it impossible to start the engine even with a key and the latter, of course, renders the engine compartment inaccessible without a disproportionate amount of effort.

The lesson is, naturally, that one should avoid placing any equipment within the passenger compartment of an automobile. This is particularly critical if one uses a station wagon for his transportation while he is engaged in filmmaking. Also, invest in at least one anti-theft device for the car in use. This is cheap insurance against the loss of irreplaceable film footage. Insurance policies cannot provide such restoration. The importance of such measures are further amplified if one films as a one or two-man crew and has a minimum quantity of time to guard equipment.

The filming done the following morning was the last while The Golden Spike Centennial Limited was westbound. It was a fitting finale to this documented segment of the excursion. The early morning sun reflected brightly on the boiler of the steam locomotive as it lifted the blue train up an almost two percent grade with a magnificent display of billowing steam and echoing exhaust. The historic train now headed for the rails west. On to Decatur, to the Mississippi, to Kansas City, and finally, Ogden, Utah near the National Historical Site at Promontory. The next shooting location would be south of Pittsburgh some two weeks later with the steam special on its return trip.

The Allegheny Mountains provided a majestic backdrop for the filming of the homeward segment of the 5,600 mile journey. Many suitable scenes were recorded on film in this area of the United States. Probably one of the most memorable film takes was one in which the setting sun provided an interesting, romantically colorful background silouetting the train as it rolled across the view of the Rex V's reflex finder. This shot was even more noteworthy in that it was successfully obtained with scarcely more than fifteen seconds setup time.

With the completion of the transcontinental trip and the documentary camera work done, it was time to enter into the post-filming aspects of the work. Accompanying titles were made in the camera. The superimposed, "burn in" method was employed. First, the required screen time of background was filmed. Extension tubes coupled with the 25 mm lens enabled the copying of thirty-five millimeter transparencies for this purpose. Perfect exposure was determined after a test film was made. Secondly, the actual title words were constructed with dry transfer letters and shot against a black opaque background. Both images were combined for inclusion in the finished work. The Bolex had shown that it was equally at home on a railroad cut's fiftydegree slope or on the titling rostrum.

Rough editing and fine editing were undertaken next. Sound was transferred from the quarter-inch magnetic tape to 16 mm magnetic film by means of a synchronized projector-interlock system. All the sounds except those stolen in Cleveland were those from the actual filming locations. The missing effects had to be dubbed from tapes acquired at other times and filming spots. Once the sound and picture aspects were synchronized, they were sent to a lab to be united into composite optical prints.

The documenting of one of the most fantastic rail journeys in American history was successfully done. The sight and sound of The Golden Spike Centennial Limited as it rushed. through the tiny towns, spanned the high bridges, and whistled in the distance had been captured on film as a particularly eventful moment in the history of American railroad transportation.

### Bolex Macrozoom Super 8 Movie Cameras

With continuous focusing from as close as one inch from the subject to infinity, Bolex Macrozoom cameras offer every Super 8 film maker absolute versatility and freedom. No shot is "too close" for the unique Macrozoom lens, and no title, special effect, or scene transition is "too difficult." In fact, Bolex Macrozoom cameras meet any filming challenge automatically—from perfect exposure through the lens with a built-in, fully automatic exposure meter to professionally smooth power zooms with the brand-new Bolex 160 camera.

All three Bolex Macrozoom cameras—the 7.5, 155, and 160—feature the revolutionary lens that lets even a beginning movie maker shoot professional looking films—complete with titles—with no editing required.



# Training Films That Entertain

### by Tom Speros

Most of us who produce or use non-theatrical motion pictures have learned that exposing the stock, recording and mixing, editing and ordering prints are, usually, fairly simple technical matters that can be learned without too much difficulty. It is one thing to "produce a training film" and quite another to create something that will interest and thereby teach the viewer, rather than bore or irritate him. This is particularly true if the subject is a "loaded" one—in which case propaganda and persuasion are as important elements as the specific training task.

Vantage Productions is an independent film company in San Francisco specializing in the use of modern psychological and educational techniques to solve personnel, sales, and public relations assignments. A "loaded topic" was exactly what we faced when we decided to produce (on our own) "Is He or Isn't He?", a film about alcoholism in industry.

In spite of the publicity that brands alcoholism a disease, that reveals it costs industry over one billion dollars a year, and that suggests any company with over 100 employees that denies it has a drinking problem isn't paying attention to the facts, the whole area of alcoholism remains cloaked in mystery and moralistic thinking. Supervisors who are normally expected to stay "on top" of the situation are reluctant to confront their men or women who show signs of problem drinking, and no amount of training or issuing company policy statements seems to have helped.

Our research indicated that most supervisors were reluctant to pin labels or condemn their employees. They saw the issue as too big to handle, so they tried to ignore it. The problem, then, was to make a film that was so constructed that some of the supervisors' reluctance to even admit the problem could be overcome. After lots of talk, philosophy, and coffee, it was decided to use one of the earliest film forms: the silent slapstick comedy.

From this point on, the script practically wrote itself. The story concerned a supervisor, Tim Lawson, who observes one of his men, Ed Gragg, demonstrate the most common signs of problem drinking as reported by "enlightened" supervisors. For the first twelve minutes of this fifteen-minute film we showed nothing but comic exaggerations of such symptoms: absence, poor quality control, drinking on the job, accidents and emotional outbursts. Our original ragtime piano score helped set the period and style. The subtitles were rubber stamps in Gragg's personnel folder. Only during the last three minutes did we get "heavy". A stop sign flashed on with the words "DON"T LAUGH." After this we rushed Gragg through recovery, from the initial conference with Lawson to his final rehabilitation; surely this must have been one of the fastest "cures" on record.

Much of our job was made easier by our equipment and stock. A Bolex H-16 Reflex, with a Pan Cinor zoom lens and with variable speeds from 8 to 64 fps (almost all of which were used for various comic effects), proved versatile, rugged, and small enough to get into some pretty tight places: our cameraman had to duck traffic while shooting in the middle of one of San Francisco's notorious intersections, shoot unobserved in a bar, and ride down a conveyor belt on his stomach. Our raw stock was GAF high speed reversal (ASA 200) very outdated (most of it was eight years old) black and white film which proved to be grainy enough to look like a "classic". We also decided against using a matte box because the small light reflections also helped the film.

Although we shot in black and white, our release prints are on color stock. For our reversal prints we used two thicknesses of Chocolate Brown cellophane to get a good strong sepia tone (none of the gels gave the right quality). We are now making positive prints from an internegative where we can use gels instead of cellophane—in this case a combination of yellow and blue to get the same effect. The higher contrast positive film is also a plus in helping to create a



film that looks as if it has been pulled from someone's archives.

The results so far are encouraging. Without the aid of a regular commercial distributor, we are fairly busy with prints, and we've had several requests to show the film as an entertainment short, rather than a training film. On the other hand, companies that have purchased the film and are using it in their training of supervisors report a much improved attitude toward problem drinking. Supervisors found that after laughing at the symptoms they can face them with less anxiety. And their whole attitude toward the film was different by far from that usually shown toward "documentary" films.

The above is an example of the way the film maker, if he really wants to accomplish his purpose, can take a subject and present it in an entertaining way. (Most films about alcoholism are soap operas.) In fact, he not only can do this, he *must*—especially for propaganda and persuasion. Much of the creativity of the film unit or production company can be seen in the way it attacks the assignment. Anyone can take a photographic record, or film a lecture—there's no art in that at all. But we can all rise to the challenge of finding something fresh, funny, exciting and relevant; to attract the eyes and ears of the viewer rather than assault them—and to do it without merely tacking on superfluous gimmicks or technical tricks. This is the exciting part.

At Vantage we spend as much or more time in preproduction planning as the rest of the time together. No one will learn, buy or change as a result of a film if that film didn't interest or entertain, and this can best be assured by planning. This is also an economy: planning the film thoroughly eliminates many of the problems that would otherwise have to be wrestled with on location or in editing rooms—and paper is still pretty cheap.

In brief, our advice to all beginning film makers is—know your craft well, and learn it early. Your films will need all the skill you can acquire. But that will mean nothing if what you film does not attract the viewer. And entertainment as an integral part of the film is the best way to accomplish this.

The Quiet Revolution On Campus:

**The Film Revolution** 

by Thomas Fensch

Editor's Note: This article is an excerpt from the book Films on the Campus released Spring, 1970 by A. S. Barnes Co.

"Create a film revolution," the National Student Association urges and students throughout the country have responded to that plea. They have dramatically changed film instruction and film-making on college and university campuses everywhere. It is a cliche, but nonetheless true, that there has been an explosion in film interest on the nation's campuses which will not only continue, but increase, in the coming months and years. It is a phenomenon not easily paralleled in the history of American higher education. Film studies programs have proliferated at an amoeba-like rate. The demands for film courses and financing for equipment have come from the students, instead of from university administrations. In the past, when a new department or area of study was needed on campus, the word came from the administration. Committees were formed to study curricula and begin courses. Textbooks were compared and chosen by faculty members and degree requirements were established by executive fiat.

In the past few years, however, the impetus for film study has come from students. They have *demanded* to be able to major in film making. They have forced university officials to hire professors to teach film courses. And when deans claimed that there wasn't enough money in the university budget to buy cameras, students have bought their own.



The statistics are surprising: applications to the film program at the University of Southern California have doubled in the last five years; the film enrollment at the University of California at Los Angeles has more than doubled to over 450 students in the last four years. Boston University had 125 students in its film program in 1965, 250 in 1967. Northwestern University has doubled its enrollment in film every year for the past three years. The University of Iowa had 40 students in 1964; it now has nearly 100. Similar examples can be found at many other schools.

There are many reasons for this increase in campus film interest. Film is currently in vogue, and with good reason; in the past, students who wanted to be creative had to settle for writing or painting or music. They would squirrel themselves off in a campus apartment, with a typewriter, cigarettes, and coffee, and hope to create a lasting American classic. Alone, often discouraged, they had to work for months and months. Often their results were discouraging, pathetic, hopeless; their work, completed finally, was usually rejected by faculty members and refused by magazines and book publishers.

Now students can buy their own film and cameras, or rent the cameras, or borrow them and make short films in a matter of days, or even hours. Instead of working alone, they can involve their roommates, their girlfriends. They can film bedroom scenes, if they like, blatant sexuality of the girl next door (most university film departments allow nudity in student films as long as the nude scenes are revelant to the film). Most don't bother with sexual scenes, however. They are too busy with personal statements and film philosophy. Best of all, they can have their film processed overnight in some cases and judge the quality of their creative efforts immediately. It is not unusual to find an undergraduate campus film maker who has made dozens of short films in 8 mm and Super 8 (home-movie type film) with his own camera, before entering college.

Faculty members of the emerging film departments often have backgrounds in non-film areas. Dr. John Fell, of San Francisco State College, holds degrees in English and Sociology. Harry Breitrose, at Stanford University, began his college work in English. Don Norwood, at West Virginia University, holds a master's degree in music. Arthur Barron, newly-appointed head of the film department at Columbia University, has an earned doctorate in Sociology; George Manupelli, at Michigan, a doctorate in art. Jack Ellis, head of the program at Northwestern University, has a doctorate in Education. Colin Young, at U.C.L.A., has a master's degree in philosophy. All have moved into film easily; they have found their backgrounds in other arts helpful to filmmaking and film instruction.

Students too, enter film programs from a panorama of other fields. Chris Parker, at the University of Iowa, originally majored in comparative literature. He was drawn to the film department at Iowa because of the foreign films he had seen and admired, by directors such as Fellini, Antonioni, and Jean Luc Godard. That background in literature and Parker's interest in foreign film ideas can be seen in his films. His second film, Cut, was described by Time magazine as "... a difficult abstract work, with no apparent plot of sequence, which talks eliptically of Greek myths and their significance to film makers . . . Montages of images cascade across the screen for 21 minutes . . . The Chaos is astonishingly well photographed and edited and . . . displays a debt to the nonstyles and nongoals of the cinematic underground." Parker has said, "I want to make films which will make audiences feel the same way, cut off from their spectres at least momentarily, so that they will leave the theater having their egos annihilated, not reinforced, their eyes turned inwards, not outwards." And he adds, "one wonders if such a thing is possible, can happen, in the United States, in the twentieth century, to us . . . "

Parker received a \$2,500 grant from the American Film Institute for his next film, Whitey. Of this film, Parker said, "I want to make a film which will probe what I take to be the central dynamics, the nerve center, or primary dialectic of our world—what it means to be a human being in our time, and the meaning of those tensions, contradictions and ironies which make that simple goal so extraordinarily difficult to realize. As a film maker, this means that I must ask myself, and invent a form that will ask itself, what it means to make films in 1970. In order to unite form and content, medium and message, I have decided to build my film around one of the most basic oppositions in our society, in the natural world, and in the film medium—the opposition between black and white, day and night, Nigger and Whitey.

"This will not be a film 'about' the Negro problem, nor will it express any political or social sentiments in general. That is not my aim. My objective is to make a dramaticexperimental film, as close to a work of art as I am able, which will be revelant to our times in so far as it pushes, broadens and expands those public concerns into a new perspective. The point of the film will be that every man is both black and white. What is being derogated by the epithet 'whitey' is a frame of mind—and another point of view of the film will be that this frame of mind does not 'belong' to any one man or group of men, but that it is a kind of allpervading beast which infiltrates and controls the lives of all men."

George Lucas, a recent graduate of U.S.C., had plans of majoring in English or perhaps art. He was, however, accepted in the film department at U.S.C. and thereupon began a career which took him from the U.S.C. campus to the Warner Brothers lot in Burbank. Lucas, at 23, made a science-fiction film, THX-1138-4eb, while on the campus at U.S.C. He "borrowed" white uniforms from the U.S.C. Dental Department, used the facilities of the university computer center to simulate a computerized world, and enlisted the aid of Navy cameramen who were taking additional courses at U.S.C. Lucas used such effects as shooting futuristic scenes in the deserted corridors of the Los Angeles International Airport at night, and he also used television monitoring cameras and animation for special effects.

Before the film was completed, the title (which is meaningless at best) got to be a joke, crew members pronounced it with a lisp, making it *thicks*—1138-4eb, but the film itself is no joke. It is the best science-fiction film ever made on a university campus. In scope it rivals Stanley Kubrick's expansive 2001: A Space Odyssey. In camera technique, it surpasses all of Lucas's previous work and he is best known as an excellent cameraman.

THX-1138-4eb concerns a citizen numbered 1138 who attempts to escape from a futuristic computer-controlled society. He runs and runs, through the deserted airport passageways, attempting to evade the all-watchful eyes of computer-monitor cameras. Constant checks are made of his whereabouts by programmed scanners, scenes which Lucas ran through the TV monitors and re-shot on film. At one point in the film, 1138 takes an elevator, and Lucas's crew filmed the scene down through the open emergency door in the cabin. Citizen 1138 is nearly killed with highfrequency sound waves in the elevator, but escapes and continues to run down passageways and through doors into different levels of the city. He kills a pursuer with a Flash Gordon-type ray gun and eventually escapes his Brave New World-1984 existence. At film's end, 1138 is shown running through deserted fields into the sunset. And the sound track announces, presumably to his wife, "1138 has destroyed himself. You are free to choose another mate on Level Seven.'

THX—1138-4eb won awards of excellence at the National Student Film Festival, and festivals in Edinburgh, Scotland and Oberhausen, Germany. But more importantly, on the basis of his student film, Lucas got a job with The Coppola Production Company to make a full-length version of the same film for release by Warner Brothers. Lucas is now producing the film in San Francisco, Los Angeles, Tokyo, and New York.

Lucas's boss on the project, Francis Ford Coppola, is perhaps the leading success story in the campus film world. Coppola persuaded Warner Brothers to finance his master's thesis project (in graduate film departments, a student may make a film as his degree project, instead of writing a thesis). Coppola's project was the film, You're A Big Boy Now, which was widely and successfully released several years ago. On some prints of the film, just before the credits are shown, the U.C.L.A. seal appears, as evidence that it was a student project at U.C.L.A. Coppola has since produced Finian's Rainbow and The Rain People for release by Warner Brothers.

The success of Chris Parker's films and those made by George Lucas and Francis Ford Coppola are not unusual. They are among the thousands of students who are finding careers and interest in film. With the death of the Hollywood extravaganza, it is film-makers like Parker, Lucas and Coppola who are re-shaping the world of film.

They, and students like them throughout the country, are literally creating a film revolution.

### **Stowe Film Festival**

#### by Elise LaTaille

Many times during the frequently hectic Vermont State Film Workshop ("Mrs. LaTaille, *where* is the key to the supply room?" "Mrs. LaTaille, I've lost my lunch tickets.") there were moments when I asked myself what I was doing this for.

Now that the 120 students who attended are safely home over icy roads, the \$5,000 worth of equipment purchased for the workshop safe and undamaged with the State Board of Education in Montpelier, and articles left by the students mailed to them, I feel in a better position to answer my own questions.

Four years ago a Stowe resident treated the community to a free showing of *Birth of a Nation*. I had never seen it, and, as a history teacher at Stowe High School, I naturally encouraged my students to attend. It was the pure visual impact of the film rather than history which made its impression. All of us were fascinated by how much Griffith was able to say with a camera and without sound.

On the strength of this experience, several of my students

were anxious to attempt a film of their own. Soon a group of them were up to their elbows in wallpaper paste making sets for *The Mummy's Curse*, a story of the opening of King Tut's tomb in the 1920's. They had to borrow a camera (and return it to the owner between reels so he could keep up with family birthdays, etc.) and do all of their work after school hours.

From the start, what impressed me most about this venture was the students' willingness to put in hours of work despite every kind of inconvenience, the amount of research they did unbidden, and, perhaps most of all, the types of students who involved themselves in the project. The ten who made the film represented every range of academic and artistic ability and every status level of the school community—and they worked together in complete harmony.

From the moment the film was completed, there was an interested group of film makers in our school. Unfortunately, their attempts to go farther were constantly frustrated either by their inability to borrow a camera for any length of time, or by ideas for which the students lacked both technical skill and equipment. I requested equipment from the school board, but invariably other things came first.

Still, groups of two or three continued to make short films, and during this period of two years we became aware that students elsewhere in the state were making films. Last year a member of the faculty at the Stowe School, a boy's preparatory school in the community, knew enough about film making to give students in his English classes proper instruction and each student was required to make a film for this course. News travels slowly between a public school and a private school, but, when we learned of this late in the year, we invited the boys to bring their films to our school so that we could see them.

Many of the films were excellent and showed clearly that these students had mastered techniques which our students had not. At some point during one of these sessions, when Stowe School students were answering questions and students were forgetting old rivalries long enough to discuss the films, the idea of a high school film festival was first mentioned. Wouldn't it be great if high school students who had made films could come together and see each other's work and ask questions and discuss, just as we were doing?

In the spring I discussed this idea with Mr. Donn McAfferty, Consultant for Social Studies and the Humanities in the State Department of Education. He was most receptive and enthusiastic and set about immediately to draft a proposal for a grant. The grant from the State Department of Education was awarded in August, providing funds for speakers and necessaries for a program and \$5,000 for equipment—cameras, lights, projectors, tripods, etc. which were to be used for the festival and which afterward would become a permanent "bank" from which high school students in the state of Vermont could request the loan of equipment.

With the awarding of the grant, my first concern became the need for a group to share in the planning; no experience necessary, just zeal and endurance. Our happy experience in the spring made it obvious that the Stowe School and Stowe High School should co-sponsor the project and, hopefully, bring the two institutions closer together at the same time. Our first break was the awarding of the grant; the second was J. Harry Feldman, a faculty member from the Stowe School who agreed to be co-chairman with me. Zeal and endurance.

We agreed immediately that we should involve students in the planning of the festival so that it would truly reflect what students might want, not what we thought they might want. When school opened in September, we called a series of open meetings between the two schools at which we showed student films to create interest, and at which we discussed ideas for the festival. After three of these meetings, the students elected a student steering committee to work closely with us. This they did, working tirelessly, making key decisions, and assuming great responsibility.

Early exploration revealed that it was either going to be very difficult to identify student film makers or that there were still very few in the state. Unsure of where to go from here, we began to consult people in the film and camera in-



dustry. Gradually, we saw our plans changing from a film festival to more of a film workshop. The possession of the "bank" of camera equipment seemed to indicate that our goal should include initiation for beginners as well as providing an outlet and stimulus to more experienced student film makers.

What will we teach and how will we teach it? Planning on an absolute maximum of 150 students, we realized that numbers would allow students little opportunity to handle equipment or *do* much, except listen. For this reason we decided on a series of workshops which students would attend on a rotating schedule. Mr. Ernst Wildi from Paillard Incorporated suggested to us the titles for the workshops: (1) Planning the motion picture, (2) Basic camera handling, (3) Advanced and creative use of the camera, (4) Production of special effects, (5) Animation, (6) Writing motion picture scripts and narration, (7) Editing and splicing, (8) Methods and techniques of adding sound.

In identifying teachers for these workshops, we felt that we needed some professional people from the camera companies who would naturally be best prepared to demonstrate and teach the use of the equipment which we had purchased. Mr. Wildi from Paillard conducted the workshop on advanced and creative use of the camera, while representatives from Kodak conducted two of the other workshops. In addition to the professional teaching, we acquired the assistance of film making professors at two of the colleges in the state and rounded out our instruction with three student film makers from The New York School of Visual Arts.

We contracted to hold the workshop at Jack Straw's Inn in Stowe. This inn contains a movie theater and provided space for workshops as well as dining facilities. This proved to be an excellent setting and many students who attended commented on the fact that they appreciated our decision to use commercial facilities—that it felt "less like school" and more adult.

We arranged to have students housed with local families, who demonstrated real community spirit and cooperation with our appeal for beds. Each host family provided a bed and breakfast for two nights.

In a howling early April snow storm, 125 students from all over the state and their terrified faculty drivers arrived at Jack Straw's Inn, more or less on time considering road conditions, for what we believe is the first state-wide film workshop in the country. Even the untrained eye could discern that it was an interesting group. As one student described it to me later, "half of us were hippies and half of us weren't but we got along just fine."

At registration each student was assigned a one-word film topic such as *reflections*, *doors*, *feet*, *grass*, and was assigned to a film group with whom he would plan and make a film on that topic. He was also assigned to a workshop which would initiate his progression through the eight workshops (i.e., if he started with number 8, his next workshop would be number 1).

Our plan was for students to attend workshops Thursday afternoon, shoot a film Friday morning, and complete their workshops Friday afternoon. We had made arrangements to have the exposed film flown to Boston Friday noon, developed that afternoon, and flown back in time for students to view their films Saturday morning.

The weather continued almost biblically foul, and conditions were so difficult Friday morning it would have been impossible to fly or drive the film to Boston, not to mention



the difficulties of filming out of doors. This, of course, was a tremendous disappointment to us and to the students, but spirits lifted when we issued them their equipment. This unexpected block of time on Friday morning was most probably as useful as it was disappointing, for it provided the students with time to handle and become thoroughly familiar with their equipment, and to plan their films carefully. Friday afternoon the workshops resumed and that night we gave a party for the students with food, The Liberty Blues Band, and a light show provided by one of the students from the New York School of Visual Arts. The right ingredients for a good time.

Saturday morning the elusive sun broke through at last, (after every one had learned that this is *not* the most desirable condition for filming), and students poured out of Jack Straw's scattering in all directions—tripods disappearing into the woods, the local stores, the town dump. In the course of the morning vast areas of Stowe and any number of residents and tourists were immortalized forever. A number of students remained at the inn where they had worked out sequences for animation. Almost unbelievably, by noon the students were back, their equipment was checked in, suitcases were moving out, and seven months of planning was over.

A large number of students lingered long enough to voice personal thanks to members of the steering committee and spoke hopefully of "next year." The evaluation forms they filled out for us before they left were both very critical and very positive. Since then, the steering committee and the State Department of Education have received many letters of thanks, and, more important, the words, "we're making a film . . ."

# The Bolex Multimatic Projector

Cartridge projection in the Super 8 film format is no longer new, especially not in the audiovisual field, where its advantages, convenience, and simplicity have been proven for a number of years with the projection of educational and sales promotion films.

What is brand new? Multiple cartridge projection, which combines the convenience and simplicity of cartridge projection with full projection versatility and complete flexibility in film programming. This complete and versatile projection idea is offered by the Bolex Multimatic—the Super 8 projector which holds not one, but six cartridges and changes cartridges automatically with practically no interruption between films.

The Multimatic is a projector a child can operate, yet it offers two normal speeds in forward and reverse, two slowmotion speeds in forward and reverse, and still projection, as well as instant cartridge rejection—all pushbutton controlled.

This combination of simplicity and versatility makes the Multimatic not a one application machine, but a cartridge projector that is ideal everywhere Super 8 films are to be projected: in the home, the classroom, in industry, in sports training, and for individual instruction as well as projection of sales promotion films.

Multimatic films are broken down into relatively short sequences of fifty feet or less, making it easy and quick to find the film sequence you want to see without wasting time looking through long lengths of film material. This feature is especially valuable for teaching or projecting sports films.



The football coach who wants to show a certain play need not go through an entire four hundred foot reel. He simply selects the appropriate cartridge from the six to eight cartridges taken of that game. When the desired section of film has been seen, the film needs not be viewed to the end. It can be rewound automatically at any time simply by pressing the "reject" button. The 50' cartridge also offers the possibility of making each

The 50' cartridge also offers the possibility of making each film program a desired length. Show one cartridge, or continue to add cartridges as long as the audience wants. A cartridge that proves to be particularly entertaining can be reinserted and shown again.



Multimatic cartridge projection permits making each film program different from the one before. Film cartridges can be rearranged or selected to fit an audience. Every Multimatic roll of film starts projecting where it should—at the beginning—because Bolex Multimatic films are automatically rewound before they come out of the projector, and they are rewound without the projectionist being aware of it.

Bolex Multimatic cartridges are ideal for storing Super 8 films, not only for the amateur, but even more so for the film library in a school, industry, hospital. Bolex cartridges are small, square and flat and can therefore be filed in the most convenient fashion. Each cartridge has a special place for a label. (Even the label is supplied with each cartridge.) And the subject of each film can easily be seen with a simple glance over the rows of filed cartridges. Multimatic movie projection is ultra-neat, too. Once the reel of film is in the cartridge, the film never needs to be touched; therefore there is no possibility of finger marks or other damage. The Bolex Multimatic is a universal, not a special Super 8 projector, because it can be used both for original and library Super 8 films. Films can be placed into the cartridge or removed from the cartridge within seconds at any time and by anyone—an amateur, teacher, coach, housewife, even a child.

A Bolex cartridge film must not necessarily be projected on the Multimatic. The reel can be removed from the cartridge and projected on any Super 8 or dual 8 reel projector. After rewinding, the film can be quickly put back into the cartridge.

Project anybody's films in the Multimatic—not just your own. If a viewer no longer wants to keep a Bolex cartridge film, he simply removes the film from the cartridge and discards it—using the same cartridge for another film, without any cost for removing or refilling the cartridge.

The Bolex Multimatic is true cartridge automation—the same type of automation which revolutionized 8mm filming.

# **Steady As She Goes!**

#### by Ed Becker

My twenty-odd years as a professional photographer have taught me many things. One of the primary and basic problems that any "shooter" must master (regardless of format) is holding the camera as steady as possible. With diverse equipment, the use of a *firm support* is not only indicated, but mandatory, if the exposures are to have a chance of yielding sharp, creditable, and ultimate images. Hence, I have used or tested virtually every type of tripod, unipod, support, brace, clamp, vacuum base, etc., that has been accessible and available.

These endless and limited varieties ranged from the smallest of table-top models to the big husky studio-styled specialized versions, which, although sturdy enough for ONE basic application, were either too dainty for practical usage or too heavy and bulky for non-tiring field work. In short, none of them afforded the portability and flexibility that is needed for on-location work—nor the versatility that I desired . . . until I discovered the Bolex Minipod!

Prior to obtaining the Minipod, I was always forced to compromise lugging about unwanted and cumbersome weight and increasing my difficulties and restricting my creative usage. I was *anchored* and *impeded*—rather than reinforced and freed. I longed for a tripod that could do many jobs dependably; be light enough to go anywhere I chose and provide me contortive functions of several tripods—all rolled into one.

I thought of designing my own. . . . Bolex saved me the time, trouble, and expense and added new dimensions to my shooting scope when they brought out the Bolex Minipod. How could a one pound, six ounce engineering enigma supply a remedy that not only eliminated my early dilemmas but added fresh photo angles that would have been impossible before? Not only was I able to mount 35 mm cameras (using slow shutter speeds that would have obviated handheld exposures), but I was also able to position my cameras in places where no other tripod could stand! I began to rely on its stability and entrust my 2¼'s, Movie Cameras, and even my 4 x 5. The Minipod became indispensible with my Bolex 155 Macrozoom. With my assortment of cable releases, I not only could set up my rig in terrain where other tripods couldn't maneuver, but I was able to operate a remote control and obtain footage that just wasn't possible any other way

I began to "branch out"—setting my Minipod in the forks of trees (for bird work) and improvising all sorts of auxiliary clamps and ancillary grips to transfix it in places where no other support could be trusted or positioned. I used it in my car—on bumper, dashboard—occasionally shooting through rear and side mirrors unobtrusively. I borrowed my son's Peugot and reared-up through the sun-roof, grinding away while my Minipod staunchly held my Bolex Macrozoom camera—recording footage and supplying a vantage point that were unobtainable with conventional tools. I even made a small stand of plywood and bolted it to the handle where my spotlight had formerly glared; I mounted my Minipod and it nestled, sentinel-like, clutching my Macrozoom and allowing me to pan it and follow any action.

For the first time nothing could outrun me laterally either! The Minipod was more than a *third* and *steadier* hand—it was a peerless ally that quickly began to show and suggest limitless new performances. I took the Minipod to my boat and began trying it in various positions from prow to stern. I could extemporize and use it on the guard rails and the sill of the wheelhouse. I grew bolder and screwed in some special cleats fore and aft—in this fashion I was able to safely fire away from any angle, getting photos and footage of the spray and swells and fins and just about everything that came from and out of the seas and bays—at levels that I wouldn't dare before! I could catch surfers and skin-divers and anything floating or fleeing with a surety and security that my camera was braced and embraced by the Minipod—riveting my lenses, so to speak, in such a manner that maximum resolution was obtainable from inconceivable angles and positions, surfaces and speeds. The remote cables linked up firm, fresh new "leashes" on life, working in tandem with the rigid reliability of a stable tripod-mate that left me free to explore with ease and confidence. My films began to show not only increased clarity and innovation, but realistic and special effects that were insurmountable until I got the Minipod doing its "thing!"



I resumed hunting for further ways to take advantage of what appears to be boundless uses (including a very substantial copy stand). With a few clamps and some hesitancy, I cradled it between the handle-bars of my motorcyclerunning a short release from my Macrozoom to the throttleside. I've been wheeling "bikes" since my first Indian. With my current Yamaha, I would start the Bolex whirring and zig-zag and rear-up (wheelie-style) with the 155 grinding away-"vised" in the proud and steady hug of the Minipod creating films that gave my audiences "reactions" and thrills! With a coterie of cyclists, I would have them speed towards me-veering left and right and coming down my Bolex's throat. . . . Impact! Lordy, the Minipod never wavered-but it was fun watching my viewers duck. Riding bumpy roads and on mountain climbs (uphill rallies to the uninformed), the Minipod clung-on, hung-on as my Bolex hummed along, recording all the chills and spills. For stable bracing for the pro or amateur on the go, the Minipod is the firmest "clutch" I know!

> On the following pages: Spectacular views of the Grand Canyon. (Story on page 2.)















# **Animation Techniques**

#### by Bill Utsman

Of the many factors involved in producing an animated film, I would consider time one of the most relevant as far as the one-man or small operation is concerned. No doubt many TV artists have a basic knowledge of film animation and would like to apply this knowledge for the purpose of enhancing TV, I.D.'s, spots and promos. With this in mind, I would like to illustrate how a one-man department can produce effective animated films by utilizing certain techniques and shortcuts.

First of all, I would suggest that the artist photograph his animation and art work himself. The artist is more familiar with his drawings and by doing the photography he eliminates any need for elaborate exposure sheets or instructions for someone else to follow.

To do animation photography for TV, one must have a 16 mm movie camera with a single-frame release. Reflex, or through the lens, viewing is also very helpful. I use a Bolex H-16 Reflex camera with an f 1.8 25 mm Pan Cinor lens. I also have a Pan Cinor f 3.8 17-85 mm zoom lens. When photographing animation drawings with the Bolex, I set the speed control at 8 frames per second and utilize a shutter speed of 1/25 of a second. I have never failed to get even frame to frame exposure.

Some sort of registration pins or pegs are also a necessity. I constructed my own pegs by threading two 1/4'' bolts into a metal bar. The bolts must have about 1/4'' of smooth surface between the thread and head. The head and excess thread on the other side are sawed off. The pegs can then be filed to a smooth, round surface.

The camera must be firmly mounted over the artwork to be photographed. A copystand can be used for this. Of course, there must be some sort of glass platen over the artwork to hold it flat. If there is any problem with light reflection, a shade can be made by cutting a hole for the lens in a piece of flat black illustration board and placing it between the camera and the artwork.

A \$10,000 animation stand isn't necessary to produce animated films of good quality. My animation stand was designed and built by my father and me especially for the Bolex camera. It has an air-operated glass paten, which is controlled by a foot pedal, and a pan-bar, which is calibrated to 1/32 of an inch. It has all movements including a  $360^{\circ}$ turntable and a pantograph for plotting and following movements. The motor driven camera unit is calibrated so that the camera's position in relation to the artwork is shown by means of a transparent field grid overlay and a scale showing the distance from the film plane to the glass platen in feet and inches. The lights are colortran mini-lite six with 650 watt lamps.

One question often asked is how closely do I space the drawings? The spacing of the drawings is determined by the speed of movement desired. The speed of movement of animated drawings is determined by two factors. These factors are the spacing of the drawings and the number of frames taken of each drawing. A knowledge of spacing can best be obtained by experimentation.

Full animation requires at least one drawing for each frame of film. However, in most animated films today, almost all of the animation is drawn to be exposed on twos. This simply means the number of frames taken of each drawing or combination of drawings in a specific action. In other words, one would take two frames per drawing instead of one, thus cutting work time considerably. I have carried this technique even further by exposing on threes. I realize that some professional people frown on this, but through practice and experimentation I now get very effective results. Of course, for extremely fast action some drawings will still have to be exposed on ones and twos. For example, a walk cycle drawn for exposures of ones or twos will have anywhere from 12 to 16 separate drawings. In figure one I have illustrated how to draw a walk cycle using only six different positions to be exposed on threes. Figure two shows a 6 drawing run cycle to be exposed on twos.

Another time and work saving technique in use today is the hold cel. This is a cel that is held still for several frames during some segment of an animated sequence. For instance, the body of a character may be held still for several frames while the head and arms are animated. Most artists and producers are probably familiar with the type of animation in which the original paper drawings are traced in ink on acetate cels and then painted. Since this is the most common or standard technique, I will not elaborate. For inking cels, I use a number 2 rapidograph pen with Pelican black drawing ink made especially for use on acetate or plastic. This ink etches into the surface of the cel. Opaque cel paint can be purchased in any quantity or color from the Cartoon Colour Co., 9374 Culver Blvd., Culver City, California, 90230. Punched or unpunched cels are available at Behrends of Chicago. The punched cels cost a few cents more.

A technique that I utilize quite often, especially when creating titles, is the one of double or multiple exposure. To do this, the camera must have the capability of being backwound to any given frame. The Bolex has this capability. For instance, one could shoot the desired background and then backwind the film and superimpose titles, credits, characters, etc. at any given point.

On one particular title that I did sometime ago I exposed the film three times. On the first exposure I filmed a moving background. I then backwound the film and superimposed two cartoon characters running in the foreground. On the third exposure I superimposed the titles. When doing this type work, care must be taken to compensate for the additional light which passes through the lens when the film is re-exposed.

The best way I have found to do this is to under-expose the background one f stop. Even though the image being super-imposed is filmed over a black background, a small amount of light can still be reflected. A glossy black background should be used instead of flat black. The best material I have found for this is a sheet of photographic paper which has been exposed to light and developed. A slow speed film is also an asset if not indeed a necessity. For this type work and all film work in which the original is to be projected, I use Kodachrome II. If the completed film is to have an optical sound track or if prints are to be made from the original, I use Ectachrome Commercial Film.

Suppose a character is to walk from screen right and confront another character center screen. Instead of showing the character take each single step from screen right, we could cut to a close-up of the character at center screen turning his head or eyes to the right to indicate that he hears footsteps or that he has become aware of something in this direction. After a pause of a few frames, we pull back or cut to a medium shot of the character at center screen to reveal the other character as he takes his last one or two steps into the scene.

If you are going to animate one or two characters and do not need a complicated background, I would suggest that it be done on a good 20 lb. bond paper. Then the original drawings can be inked in on the same paper and colored with felttip water color markers. This technique may seem a little less than progressive since animated drawings were first photographed on paper before acetate cels came into being. However, this technique has some advantages for the oneman operation. For example: (1) Inking the original draw-





Artwork from 60 second spot produced for Vocational Industrial Clubs of America (VICA).

ings eliminates the step of transferring the drawings to cels, (2) The ink and colors dry immediately so there is no storage problem while waiting for paint to dry, (3) The uneven drying of the water colors gives a texture and sparkle that cannot be duplicated by cel paint. The uneven color also adds to the illusion of movement.

When animating solid forms or lines, I frequently use Velva-Glo fluorescent paper and tape. The paper can be cut into desired shapes and sizes and then stuck to cels with double coated tape. Some very interesting effects can be achieved just by experimenting with fluorescent tape of different colors and widths on black card.

One effect in particular can be easily done by laying out some sort of intricate abstract pattern using 1/16'' or 1/8''fluorescent tape on glass. Then cut away the pattern about 1/8'' at a time taking 2 frames for each cut. When the film is processed, flip it over-heads to tails. When it is projected, the result will be the intricate abstract pattern growing slowly from nothing. Titles can then be superimposed over this. This technique can also be used to give the effect of letters writing themselves onto the screen. I have done this by laying the letters out in script. I then reverse the lettering and paint it on glass using tempra or fluorescent paint. The glass with lettering is now taped down firmly upside down and backward in relation to the camera. Then, using a wedge type X-acto blade, the lettering is scraped away starting at the end. Two frames of film are taken for each 1/8'' cut of the lettering until all the lettering is scraped away. When the film is processed, flip it over-heads to tails. When the film is projected, the result will be the script or any type lettering writing onto the screen.

An interesting experiment with cut outs can be done by cutting 8 or 10 triangles with equal sides and of different colors out of heavy paper on 6-ply card. Intricate patterns can be worked out in advance and sketched on paper. The triangles can then be placed beneath the camera lens and moved about, taking one or two frames for each small movement. The triangles can also be moved about at random to create different geometric forms,

For a smooth background pan, I move the background 1/32'' at a time, taking one frame of film for each movement. For a walk or run cycle over a background, the movements can be 1/8'', 1/4'' or more while taking 2 or 3 frames per movement. If one were to move the background 1/8'' or 1/4'' without something moving across this background, the result would be a stroboscopic effect.

A technique which is often used by local TV stations, TV networks, and advertising agencies is the animated still. This is a very effective technique especially for film promos and does not require a great deal of preparatory work as compared to animated drawings. Still photographs, drawings, objects, etc. can be given the illusion of movement through effective use of the movie camera. Zoom—pan—cut —3 frames here—10 frames there—throw in a moire pattern, some lettering, a catchy tune and you have a professional film promo.

I have only touched briefly on some techniques of film animation. The many techniques and styles of film animation are only as limited as your imagination. Film animation requires considerable hard work; therefore I would suggest that it be approached as much in the spirit of fun as work.



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## Special Effects, Animation, and Grog

#### by Bruce Dods

A special effect is the visual image that results from the process of photographing a scene which differs from the one it is intended to represent. A special effect is used when a scene either cannot be, or is not as easily, economically, or effectively photographed as is another that will produce the same visual result. The special effects particular value to the cinema artist lies in the unlimited range of visual images made possible through its use.

Of course, a motion picture image does not remain still; it gives the illusion of movement. So when a cinematographer cannot find or create a desired movement in reality, he will have to turn to the only branch of special effects cinematography which deals specifically with movement; he will have to create its effect where none existed; he will have to animate it. Animation is the process of creating the illusion of movement through the photography of nonmoving objects.

My own work in animation is mostly confined to stopmotion. A stop-motion animator deals with three dimensional objects. He achieves the effect of their movement by taking a series of photographs of an object, each exposure being made after the object has been moved into a new, slightly different position. My star "object" and current leading player is a grog—an animal I have best heard described as a cross between a gorilla and a pumpkin.

The grog model had to be constructed to meet the prerequisite for anything used in an animated film, the condition without which the illusion of movement could never be achieved; it is nonmovement, stability, which means that things have to stay where you put them. The grog has 20 ball bearings in its arms and legs, one in its mouth, and two in its eyes—*all* joining the various parts together. All of the joints had to be made moveable, yet tight enough to stay in place while each frame of film is shot, tight enough to resist the pull of the latex rubber "skin" covering the skeleton, but not so tight that changing the model's position becomes a major project.

The model is only one of many variables the animator has to contend with. They include everything visable within the movie frame and dozens of things outside of it. Starting with the camera, everything must stay where it's put. For a tripod, I use a Bolex, which isn't designed specifically for animation, but rather to be versatile and stabile. However, sometimes camera movement is desirable, to follow subject action, for example. To achieve this, the camera is mounted on a small grooved platform which slides along a two-foot long metal track attached to the tripod pan head. When the camera has to move, it is slid along a predetermined length of track for every frame of film exposed.

It is critical, for consistency in image brightness, that every frame of film receive precisely the same amount of illumination. If it doesn't, the results will vary, but all will be bad. One of the three factors governing consistency of exposure is the camera shutter. Although my Bolex Rex 5 is built with a single-frame shaft, when used with the manual control provided, the result can be a slight flicker on the projected film due to slight variations in exposure time. This problem was solved by the introduction of the Paillard-Wild Variotimer, which consists of an animation motor, which advances the film, used in conjunction with a control unit, which not only insures absolute consistency in exposure, but permits exposure times of up to 10 seconds per frame! (What this means to me, an animator working with miniatures, is that I can get more depth of field than I knew could exist in a 1-3 foot camera-subject distance by stoping down to f 22 and compensating for the additional exposure required by setting the Paillard-Wild timer for 2-4 second exposures, while using as little as 200 watts of light.)

The two remaining factors affecting exposure are the lens opening and light source. Not only must the light source remain stationary, but the intensity and color temperature (if color film is used) must remain constant as well. The use

of standard tungsten photofloodlights, which gradually darken with use, can result in a slow fadeout that isn't in the script. At first glance, the solution would seem to be an automatic diaphram which would compensate for any changes in light output, but the results are disastrous. Diaphram openings affect depth of field, and working closeup, as I do with miniature settings, lens openings must remain small to keep everything in focus. The result with an automatic diaphram and tungsten lighting is a gradual decrease in depth of field so that while the principal subject remains in approximate focus, everything else gradually goes out of it. This is very interesting to watch happen on the screen, but, like the fade-out, not in the script. The solution is the use of quartz-halogen lighting, which retains about 95% of its initial brightness and color temperature throughout its exceptionally long life.

• One final potential problem regarding light fluctuations is the voltage flow in the building housing an animation setup. When the voltage fluctuates, the lights fluctuate with it, an occurrence I haven't encountered to any appreciable extent. However, its fluctuations are considerable, and they necessitate the installation of a voltage regulator for best results. If variations in light intensity *are* desired, they can be controlled through the use of a rheostat, which controls the flow of electricity and therefore the light intensity.

After exposure considerations, the greatest number of variables I deal with relate to the forest settings which grog inhabits and the projection system used to create backgrounds for these settings. The set consists of one major unit, about  $3' \times 8'$ , and five smaller units, about 2' square each, which can be used singly or in any number of combinations. The construction is plaster on a styrofoam base placed on top of sturdy wooden structures. Plaster is helpful in maintaining stability because of its weight, and it is also excellent to carve textures in and to absorb water base paint. Tree tops and ground cover are created from lichen (small sponge-like vegetation chosen for its shape and texture), which is glued into place.

So far, no major problems. What requires special attention is the rear projection system of showing 35 mm slides on a translucent plastic screening material located directly behind the set units. The purpose of the projection system is to add the illusion of depth to the settings, which, if achieved by actually building additional set units, would necessitate more space, time expenditures, and lighting equipment, while strictly limiting versatility. The slides used may be shots of real forest settings, sunsets, etc., or in many cases, pictures of the set itself, thereby getting double use out of a modest amount of scenery.

The screen is a 6' square of flexible plastic mounted on a wooden frame. Five feet behind the screen, a slide projector throws a beam of light not perpendicular but parallel to the screen into a mirror angled  $45^{\circ}$  to the projector beam thereby reflecting the image onto the plastic surface. The mirror is used to save space. A projected image size is directly related to the distance of the projector from the surface onto which the picture is shone. The greater the distance, the larger the

1. The background in this setup is the result of a two-slide combination. The lake and distant shore are supplied by a slide in one projector, while the clouds and sun come from a slide in another.

2. Geographically, grogs are only found in imaginary portions of the world such as this early morning landscape. The setup consists of a set unit stationed directly in front of a slide projection. The slide is a picture of another set unit, which was photographed through a glass plate partially covered with white paint to give the scene a misty look.

3. Grog eats a breakfast of lichen with the assistance of a versatile clay tongue.

4. Animation filming with the Bolex H-16 Rex 5 and animation motor (left) and the Paillard-Wild Variotimer (right, on table).

5. The completed grog model stands beside the projected image of its skeleton. The egg shaped bulk of the body is wooden, as are the eyes, teeth, hands, and feet; all other parts are metal. The latex rubber "skin" was moulded from plaster castings of a sculptured clay grog.











image. When projecting into a mirror, the screen-projector distance is in effect the distance from the projector to the mirror plus the distance from the mirror to the screen. So, for example, the projector doesn't have to be ten feet of valuable space behind the screen to get a desired image size. It can be 5 feet behind the screen and 5 feet to the side of it. The resultant image size will be the same.

If the screen moves, the image will be thrown out of focus. If the projector or mirror move, not only will the focus change, but the entire image position will shift. Another factor affecting focus is the position of the slide in the projector, which is taken into account during the focusing procedure. Slides have a tendency to "pop," to warp slightly due to heat from the light source, causing a change in slide position and therefore a change in focus. Since any variance in focus of image position would be immediately evident on the projected film, again, all variable factors must be controlled. What is needed in the case of the projector is an auto-focus model in which a sensor detects any deviation from the slide's in-focus position and signals a lens focusing motor, which immediately corrects the situation. The source of slide illumination must be quartz-halogen for previously stated reasons. Desired changes in background color and light intensity are easily achieved through the use of colored and neutral density filters placed over the projection lens.

Versatility is increased (and variables multiplied) when two projectors are used. Elements of one slide can be combined with elements of another to achieve a desired background. Clouds, a sun, or a moon in one slide can be added to fill the barren skies in a landscape of another with a twomachine setup. The combination is achieved by projecting two slides on the screening material, adjusting the projectors to get the desired relationship of image size and positioning, correcting for any variance in light intensity between images with a neutral density filter, and finally masking any unwanted overlaping portions of the slides with black cardboard cutouts stationed in front of the projectors' lenses. In the interest of keeping variables at a minimum, I will usually take a still photograph of a two-slide combination from the front of the screen and use the resultant transparency for animation filming.

An elaboration on this system that intrigues me, though one I haven't tried yet, is the use of a movie rather than still projector to create moving backgrounds. The movement might be something simple, such as tree branches swaying in the breeze, or as complex as that of live actors. The result would be the combination of live action and animated movement on the same motion picture frame. This technique would necessitate the use of movie projector with still projection capabilities and perfect relative frame registration. The procedure would involve the advancement of the projected film one frame every time the animated foreground was changed and a new image recorded in the camera. The need for perfect registration would extend to the camera on which the background movie is shot; if it's less than perfect, the projected background will slightly shift position against its stable miniature foreground.

Faulty frame registration is one variable that can be the bane of any cinematographer's existence, live action or animation. The ability to produce a rock-steady image is one of the criteria for any good movie camera. But, if it is merely desirable in live action work, it is an absolute necessity in any special effect consisting of a combination of images such as dissolves, superimposures, or the background projection system described, where any shifting of images would be immediately, unpleasantly evident. The Bolex Rex 5 meets this criterion. I have always regarded the Bolex as an exceptional special effects and animation camera, with the fact that it is also excellent for live action documentation being merely an unneeded point in its favor.

Some of the specifics mentioned do not pertain to all work in animation, but they serve as an indication of the importance of their common denominator, the variable, and suggest some of the effects possible once it has been controlled. The time and effort invested in acquiring even a few basic special effect skills will pay the artist dividends in the form of increased control over his work, and the possibility of increased control is always a matter worth investigating.

### **Effective Use of Lenses**

by Ernst Wildi

To understand and learn proper and effective use of lenses, it's necessary to divide lenses into three groups: normal (25 or 26mm), short (18mm and less) and long (50mm and over) focal length types. Even when working with a zoom lens, one must be aware that a zoom lens can be used as a short, a normal and a long focal length lens. Focal length is selected depending on the desired result.

Most filmmakers know that lenses with a focal length shorter than normal are called wide-angle lenses because they cover a larger area than the normal from the same position. Lenses longer than standard are called telephotos because they work somewhat like a telescope, bringing distant subjects closer. What they actually do is record a smaller area on the same frame size and therefore magnify distant subjects.

Using different focal length lenses to cover smaller or larger areas without moving the camera is a good reason for having and using different lenses and is undoubtedly the major application in the hands of most photographers.

Film sequences frequently consist of long, medium and close-up shots of the same subject, and it would appear natural to film these 3 shots from the same position by simply switching lenses, or changing the focal length in a zoom lens. While this is possible and necessary when filming action, it is not a recommended procedure.

This approach results in a jumpy, disturbing scene transition, looking as if the camera suddenly jumped from one place to another. This jumpiness between cuts is particularly disturbing with stationary subjects. With moving subjects, the movement somewhat bridges the gap, but the procedure still should be avoided whenever possible. Whenever a subject is filmed with several framings, the camera angle must be changed between each take, and not only the lens or the distance.

Shooting a subject from different angles not only results in a smoother scene transition, but also in a more interesting sequence because each scene shows the subject from a different view. When shooting with a handheld camera, it is always best to use the shortest focal length possible and go close to a subject rather than filming from farther away with a long lens. The shorter focal length minimizes camera shake and results in a steadier, more pleasing screen image.

### **Controlling Perspective**

The lens does not determine and control the perspective. What determines the perspective is the shooting distance. Different focal length lenses are, in most cases, however, necessary for creating a certain perspective in pictures, and it is the combination of shooting distance and area coverage (or focal length) of lens which gives the photographer great control over perspective and allows him to produce unusual pictures. Perspective is the ratio in size between subjects close to the camera and far away. Visualize a model standing in a park with a skyscraper perhaps one-quarter of a mile away in the background. Photographed from a distance of 20 feet with the standard lens, the model nearly fills the frame from top to bottom, and the building in the back appears of equal size. We can also photograph the model with a 10mm wide-angle and fill the negative. All we need to do is go somewhat closer, down to about 8 feet. Even though the model is of equal size, the picture is not the same because the building has now shrunk to a size where it is hardly visible-in effect, it appears to be much farther away. We can also photograph the model with a long 75mm lens and make her appear the same size if we change the shooting distance to about 60 feet.

The distant house has now been enlarged so that you can see only one-third of it; it appears much closer. All of these are different perspectives—different pictures—and all that is necessary is to take a few steps forward or backwards while changing the lens.



Comparative scenes photographed with wide angle and telephoto lenses.

Don't fall into the habit of looking at things only through the lens that appears most logical or practical. Many times a more striking shot can be obtained with a lens that is not considered the "normal" for a given situation.

#### **Perspective With Moving Subject**

Short focal length lenses increase the illusion of distance between subject and background, while long focal lengths seem to make the distance shorter.

This characteristic has an effect on subjects moving toward or away from the camera. The subject's size increases much more rapidly when filmed with short focal lengths; and, since we relate size of a subject to distance, the subject seems to move fast, even faster than it actually does, especially when it gets close to the camera. A person walking toward the camera, filmed at a long focal length setting, on the other hand, changes size little and, as a result, creates the rather strange effect of getting nowhere, even though the body, arm, and leg movements indicate that the person must be walking.

The creative filmmaker can use this characteristic of different focal lengths to enhance his films. He can emphasize a movement toward the camera and make it more dramatic with a short focal length, such as in the scene of an animal jumping or a speeding car.

The opposite effect—the movement that does not get any place—obtained with long lenses—is generally amusing and is often used just for this purpose. The filmmaker must also beware of overusing this effect.

Car races, horse races and similar events are usually filmed from different angles and shooting positions. As long as the speeding cars or horses are filmed from the side, or are followed with a moving camera, it really makes no difference what focal length is used. Not so, however, in head-on shots. At long focal lengths, the cars appear to be slowed down, the feeling of speed is lost, and the effect is disturbing when such scenes are intercut with those shot from the side or with head-on shots made at shorter focal lengths. Every time the head-on tele shot comes on the screen, the cars appear to be moving slower than in the preceding shot, and the effect is disturbing.

#### **Selective Backgrounds**

With different lenses, backgrounds are magnified more or less, and, at the same time, the size of the included background area changes, all of which creates another interesting and valuable application of lenses for producing more effective pictures.

Long lenses can be used for cutting down the background area, thereby eliminating distracting, ugly details which we find so often destroying the beauty of things. On the other hand, one may run into a situation where a large background area is necessary to get the proper feeling, or to identify a location. The wide-angle lens is the choice because it gives us this area coverage without changing the subject in the foreground.

#### **Background Sharpness**

With a variety of focal length lenses, the photographer has almost unlimited control over background sharpness. By filming at a short focal length, he can have backgrounds in sharp focus or just slightly out of focus—ideal when the background is used to indicate a location.

By filming with the same diaphragm opening at a long focal length, the photographer can have backgrounds completely out of focus, forming a subdued, undisturbing backdrop behind the main subject. The long lenses are obviously ideal when it is desirable to eliminate distracting background details, or to make background details so indistinguishable that the location of the photograph can no longer be recognized.

What has been said about background sharpness applies also to subjects closer to the camera. With proper use of lenses, a foreground can be relatively sharp or become a patch of diffused color somewhere in the picture area. And this can make the difference between an ordinary photograph and something that looks "created."

In all cases, the groundglass of the Bolex reflex cameras lets you see the degree of sharpness or unsharpness anywhere in the scene. While viewing on the groundglass, you can open and close the diaphragm, or change the focus, and see exactly how the picture changes. You see the image as it will appear on the film; consequently, the groundglass becomes a means for evaluating the artistic value of a picture before you take it.

#### **Correcting Verticals**

The vertical lines of a building, for instance, can be vertical and parallel to each other only when the camera is level. As soon as the cameras are tilted upward or downward, the verticals slant towards each other. In some cases, especially when shooting almost straight up, the effect can be very striking. In a straightforward architectural shot, for example, this procedure usually results in the disturbing impression that a building is falling over. The more the camera is tilted, the more exaggerated the effect becomes.

How much the camera needs to be tilted depends on the distance and the lens used. Knowing this, the filmmaker can either enhance or reduce the slanted verticals. Instead of shooting the building, or whatever it might be, from a relatively short distance with a normal or wide angle lens, which requires excessive tilting of the camera, he can change to a longer focal length lens and move farther away from the subject to cover the same area.

Even though the camera is at the same level, eye-level for instance, in both cases the longer shooting distance requires a smaller degree of tilting, or no tilting at all, and the lines now appear as straight—or nearly straight—verticals.

#### Zooming

Zooming must be considered a special effect, rather than a standard approach, and as such must be used sparingly and only when there is a specific reason. When used properly, it can be a most effective approach, but straight zoom-in on a stationary subject is frequently ineffective. At the end of the zoom, the audience sees little more than at the beginning, mainly because the subject is seen from the same angle from beginning to end and the audience is quick in recognizing such zoom shots as unnecessary, therefore a waste of time and film.

Zooming is basically a slow approach and frequent zooms slow down the pace of a film and become monotonous.

Zoom outs are usually more effective because new things come into the scene while zooming out. In a zoom out you start with a close-up of a detail—the eye of a person, a hand dialing a telephone—and let the zoom out gradually reveal the person.

For most normal scenes, a zoom lens is best used like a fixed focal length lens—at a fixed short focal length for covering wide areas, at a long focal length when it is necessary to get a close-up of a distant subject. When scenes are to be recorded at a "normal" perspective, keep the zoom lens at about 25mm focal length.

(Note: Don't forget to use the different focal lengths of a zoom for effective recording of a scene, for controlling perspective, verticals, background sharpness, and background area coverage.)

### Film Lecturing as a Career

by Robert E. O'Reilly

Would you like a job that requires you to travel to foreign countries each year or two, filming interesting and exciting places and people? Then, after putting your color footage together into a 90-minute film, spending seven or eight months each year traveling most of the USA and Canada just showing your film to travel and adventure minded audiences? Then become a film-lecturer, that is, one who presents travelogues as part or full time occupation. I've been doing it for the past five years.

It's interesting, fascinating and HARD WORK. Yes, hard, because it entails the planning, production and presentation of a salable product to the paying public, many of whom have traveled extensively and all of whom are interested in travel and/or traveling.

In a film-lecturing career, one's age is unimportant, but the sooner you start the better off you'll be. However, a separate means of income is necessary for about the first two years of this new career, as much of this time must be spent planning, researching, filming, editing, taping background music and learning the film narration for at least two complete film-programs.

Your programs must then be sold. Bookings are usually made many months or even a year in advance for the travelogue circuits; less booking time is possible for use on TV and for school assembly groups, though. We shall presume you have a basic knowledge of motion picture filming. The most important need then is for good equipment: a 16 mm camera with several lenses—standard 25 mm; a wide angle such as 10 mm; and a 50 mm telephoto. All lenses should be color matched so color rendition will appear the same from lens to lens and scene to scene. A high quality zoom lens with smooth action could be substituted for the other lenses if necessary.

Over the past two decades I have filmed many lands and seas-all types of conditions and terrain and during extremes of weather, both hot and cold. Many years ago, after having tried numerous well known brands of 16 mm cameras, I chose the Bolex Rex system for all future use in production of my professional travelogue films. I only wish I had "discovered" this very excellent equipment sooner. It is, and has been these past years, the most dependable, rugged, yet precise camera equipment I have ever had the pleasure to use and own. You'll also find that the reflex viewing of the Rex is so necessary for interesting close-up filming of your travelogue scenes. I would suggest the use of Bolex matched Switar lenses. Be sure to include the fine Macro Switar 50 mm, as it is "wire sharp" from 15" to infinity and will allow you to fill the screen with sparkling close-up scenes of flowers, faces, etc.-all so important in this facet of filming.

Another very important piece of equipment is a sturdy tripod, as a steady picture is an ABSOLUTE necessity for success in this field. Again I chose the Bolex equipment as the tripod is compact, strong, yet readily portable.

Color film must be used. The question whether it is best to produce the travelogue using original film stock such as Kodachrome II, or Commercial Ektachrome #7255 and then projecting a color corrected and timed print made from the 7255 original is still unanswered by the majority of successful lecturers today. I have done it both ways. Each has advantages as well as disadvantages, which we haven't space to discuss here. I'll be glad to help answer questions about this if you care to write.

In addition to filming equipment, you must have—or have access to—film editing equipment, a good projector, a sturdy projector stand and preferably a rugged tape recorder, as most lecturers use some pertinent background sound effects or music during their presentations. (I prefer the new Bolex film splicer for use in editing my travelogues as the beveled-













1. and 2. Filming falconry by wildlife moviemaker Charles L. Cadieux.

3. Typical scene from Bolex-made 16mm movie presented by film lecturer Robert E. O'Reilly.

4. 5. and 6. 'Round the world views from film lecture by Bill Kelley. end splice goes through the projector filmgate so smoothly that the audience is not aware of the splices.)

A successful film-lecturer must be able to walk out onto a platform before a large audience and face them with ease. He will need interesting delivery, good diction with a clear voice, and some degree of showmanship.

Remember, there is nothing new under the sun. So, you as producer should aim to tell your story of the chosen area with more excitement through a fresh approach, technical or otherwise. Originality is the key to success.

Research of your travelogue area or subject is an absolute necessity before a single frame of film is exposed. You must include some historical or educational information, visually, in your production as well as normal scenics. Remember also that people are always interested in other people, so plan to include considerable footage showing people of the area, at work, recreation, etc. Include tight closeups, not just general or overall group coverage.

Before you leave home enroute to your filming area, be sure to make a list of specific scenes, interesting occupations, or people and places you have learned about during research. Additions and possibly deletions will probably be necessary once you start filming, but a preplanned list will save much time and also afford you more complete film coverage. If your film is to be produced in a foreign country (including Canada), be sure to check into any restrictions or regulations and requirements regarding such filming. Some areas have limitations as to the amount of film and equipment that can be taken in or out of the country. Here again Bolex equipment is ideal in that it is professional in quality but not bulky or cumbersome to transport.

After filming is completed (approximately 6,000 to 9,000 feet of film will usually be required) comes the Herculean task of editing it into a 90 minute (approximately 3,000 feet) story with some continuity and an interesting format. It has been said that editing will make or break any film. That is certainly true. Take all the time necessary to make your film during this process, whether you personally spend the endless hours of editing, as I do, or have someone else do it for you.

Titles or captions and some maps are essential to the success of your film. These may be simple or complex, depending upon your creativity. Your audience must see where they are going or have been in the film. Here, too, your Bolex Rex will prove invaluable—with the single frame, reflex viewing features as well as the variable shutter features you can produce eye catching and animated titles, maps, etc.

Your travelogue is now finished. But where do you go from here? As in any other business, the film-lecturer must recoup his investment and make a reasonable profit. That is, if he expects to stay in business.

There are several avenues open to you: make your own bookings; hire an agent to do it for you; or, as I do, work through an established booking agency. Agents and agencies as well as potential customers can be found in the bible of this lecture field—*Program* magazine, published by Platform Publishing Co., 54 West 40th Street, New York, N.Y. 10018. If you hire an individual agent who works on a percentage basis, be sure to first approve all advance bookings as it's possible to pay the agent, gasoline companies, airlines and motels and have nothing left for your own efforts.

Get all the experience possible showing your film and perfecting your delivery. I prefer to "digest" the narrative information rather than memorize it, and I constantly personalize it to each particular audience. I never use notes or cue cards during presentations. At first, present your film before all types of audience, small and large, some of which pay very little—or nothing—such as service clubs, PTA, church groups.

At last you'll be ready to go on the road with your program. You must be willing to face the hardships and inconveniences of traveling, preferably by automobile because of strict time schedules and carrying of heavy (and expensive) equipment. You'll be expected to be on the road day after day during the worst of weather conditions from mid September to May, the normal travelogue season.

Film-lecturing is hard work, but the rewards are many. In addition to the financial remunerations, you can have a comfortable living and the opportunity to meet many interesting people, as well as visit exciting places throughout this wonderful world.

# 'Round The World Amateur

#### by Bill Kelley

Would you like to get a better insight into people, art, foreign countries, politics, religion, world events, literature, history, geography, nature and human nature? Then buy a movie camera. Luckily, I made this decision with the purchase of a 16mm camera in 1946 when I was assigned to Cairo, Egypt by an international airline company.

With the limited supply of film then available and a desire to record "action" with "reality" in my world travels, I hoped that when I returned others might enjoy the experiences and knowledge to be gained in an exciting post-war era in the Middle East. I fulfilled this desire via an extended six-year assignment abroad, and, in addition, had the opportunity to travel around the world visiting 38 countries.

While working in Hawaii, I received a call from the Lions Club program chairman, saying that the scheduled speaker's flight was delayed in Los Angeles, and "please substitute" by showing personally-shot films on life in the Middle East countries. This launched travel programs for the following two years plus several radio interviews. This also proved that being an amateur cinematographer opens a new world for "anyone" who wants to be a perpetual student of world adventure.

I am editing my Middle East footage now for a New York television show on world travel. Basically, this will portray people of the Middle East, including scenes with such world leaders as Sheik Ahmed of Kuwait, King Paul of Greece, former Kings Abdullah of Transjordan and Ibn Saud of Arabia. There will be action at the Sphinx and Pyramids, shipping on the Nile, Mosques in Baghdad, craftsmen working their trades in the small villages and life in this multicultural part of the world.

"Peace through understanding" or peace by visual and audio communications make the movie camera something besides a precision instrument. I believe the creative film market has opened a new vista to the amateur with vision and perception. New films, lightweight cameras and allied equipment, jet transportation, and a desire to understand our world neighbors has motivated amateurs to produce a new concept in movies. This new movie concept has been a result of a sophisticated and knowledgeable audience desiring to see single concept movies.

The Museum of Modern Art in New York has helped to make this concept popular and certainly has encouraged the amateur to enter in the lecture series, as well as the production of low budget films.

If you believe you must know everything about movies to produce a good lecture, you will never "push the button." Recently I read a small book on how to paint a picture. In essence, it said to go out and paint as you see it. Sounds easy. Try it. Parallel this idea with a movie camera and you really get results. I think it's easier than with a brush. Aided by informative publications such as *American Cinematographer*, *Film Culture, Business Screen*, the *Bolex Reporter*, and monthly photography magazine movie sections, the amateur is provided with excellent ideas and techniques for every phase of cinematography.

I am now convinced that there is an open field for the qualified amateur movie-maker to give lectures before live and television audiences. He can earn a reputation producing high caliber movies without the influence of Hollywood.

With this in mind and a small advertising budget, I organized a travel agency and built its reputation on travel lecturing with movies. The publicity received via the newspapers and radio, if purchased, would have been prohibitive.

The endorsement advertising and public relations received from these lectures, plus the opportunity to deliver programs to Rotary, Kiwanis, Lions clubs, university groups, medical groups, and church groups was not only promoting my travel agency but personally very rewarding.

By keeping a  $3 \times 5$  file on each lecture, I noted audience reaction to tested techniques. This gave me an idea for filming a 12,000 mile air trip around South America. To prepare a script for this three-week jet trip, I invited a diversified group of local architects, school teachers, photographers, artists, world travelers and writers for a critique of films on South America already produced by the airlines and steamship companies. Each individual wrote his impressions on each film viewed with the stipulation that he write his views on "how to make a travel movie that would create the desire to travel to South America" in addition to the normal entertaining features of a travelogue.

For this trip to South America I purchased my first Bolex 16mm camera on the recommendation of the photo dealer who attended this critique. From the results of this critique I prepared my shooting script. From color travel folders I prepared a selection of stock shots of major points of interest in loose leaf form on the countries to be visited. I later loaned this booklet to my clients taking photo trips to South America as it saved them time and research. A planned script, advance research, and an eye for the unusual makes a good travel movie for home viewing or travel lecturing.

To keep abreast of the photography market, attend the photography shows, film lectures, read the photo section of your newspaper, and use the facilities of your local library for research. Most libraries have audio-visual departments with a good selection of films and reference material.

By the time this article is published, I will be showing "Around The World in Fifty Minutes," a travel movie in the jet age. Hopefully, this movie will prove that an amateur can produce a dynamic, creative movie.

### **Filming Falconry**

by Charles L. Cadieux

"You have to be ready, it happens fast," Nels Bernard had just warned me. I carried the Bolex Rex over my shoulder with the tripod legs folded together. The motor was fully wound, and the Electric Eye would take care of exposure settings on my 86EE Vario-Switar. How could I be more ready?

Tom carried a German Goshawk on his gauntleted right wrist. The bird was alert, staring intently ahead with cold, yellow eyes as it rode along. When a small bird would flit out of the weeds, the hawk would hunch forward then relax. We were after bigger game—blacktailed jackrabbits, which would outweigh Tom's goshawk more than two to one.

Suddenly a long-legged jackrabbit bounced out from underfoot. Tom yelled as he pitched the hawk ahead. There was a blurring flurry of wings, the bird slammed into the running rabbit so hard they both flipped over in several somersaults—then the hawk was "walking" its very dead prey, grabbing deep into the carcass with its long talons. The dust was settled and Tom was accepting Nelson Bernard's congratulations on a beautiful kill. Then I realized that I hadn't even started to put the camera into action!

There are many modes of falconry, but this one — where the hawk is carried until game is flushed and then tossed after its speeding target—is all over in split seconds! Now I knew what Nels meant when he warned that I'd have to "be ready".

After shooting a few feet of the falcon holding the dead rabbit, I watched Nels add this "kill" portrait to his already impressive collection of falconry stills. Then I got ready!

I opened the legs of the lightweight aluminum tripod and planted it in front of me. I prefocussed the 86EE at 100 feet, which is where the action had happened before. I turned the zoom handle to about 50mm. I figured that this wide a field of view would allow me to find my hurtling target and still provide enough magnification to bring the action close to the screen.

Then I locked the tripod in extended position, picked it up by the legs, and carried it in front of me, ready to drop it into shooting position in a split second.

The other falconer carried a redtailed hawk, a larger bird than Tom's goshawk. It was the redtail's chance next. We had gone half a mile farther down the ditch bank when a second jack went hurtling away. The redtail slammed in after him, but scored a near miss as its outspread talons jerked fur out of the scurrying bunny's rump. The fortunate rabbit dodged under a pile of brush to safety. The hawk flew back to its handler's fist in response to the chirping whistle. Each bird is rewarded with a tiny bit of meat every time it comes to the fist.

On that flight, I had succeeded in aiming the camera and fired a burst of about two feet of ECO 7255 at 24 f.p.s. Then it was all over! I began to wonder if I'd ever succeed in filming the excitement of the chase and the kill. I didn't want to go to slow motion filming just to get a lot of footage for projection. The exaggerated motions of the high speed filming weren't what I wanted. I hoped to be able to get enough normal speed footage to convey to the viewer the feeling of extreme speed-the sudden burst of action over almost before it starts-that epitomized falconry to me. It was rather discouraging to learn that expert photographer Bernard had only gotten off one shot with his still camera. He was using a 135 mm lens. He would have liked to use the longer lens, but the difficulties of finding the speeding target and focusing rapidly were too much when multiplied by the longer focal lengths.

Another rabbit got off scot free when the hawks seemed not to be interested. They flew only a short distance and lit on the ground. "Getting a little tired," Tom said.

But the goshawk didn't seem tired on the next run! It made a beautiful dodging attack, shooting between two strands of barbed wire that the frantic rabbit was using as a defense . . . then slamming sideways at the rabbit just as it dodged! The hawk hit the ground, and . . . as usual . . . refused to take flight after the fleeing rabbit again. He glared indignantly at us, as if daring us to criticize him for the miss.

I had gotten a good length of film through the Bolex that time and hoped that it was all in focus. At least I was sure that the exposure was correct. That was done *for* me.

Then the goshawk made a beautiful kill, slamming into the fleeing rabbit after a long, arrow-direct flight. Rabbit and hawk stirred up a big cloud of dust. There was only one thing wrong... a row of thick weeds between my lens and the action. I got a nice sequence showing the hawk chasing a completely invisible rabbit, diving down into nothing, and then emerging from a cloud of dust as he stomped his prey!

Later attempts to shoot the excitement of falconry have led me to a few conclusions. A zoom lens is a must, to enable you to follow the action—find the fleeting target—focus on it in the least possible time—and still be able to use enough telephoto to bring the action in close.

Slow motion is interesting and allows the viewer to see the efficiency of the feathered assassin—but it loses the realism and the sense of excitement.

It is possible to cover the scene about half of the time, if you use two cameras. Each photographer trails the falconer, about twenty feet behind and ten feet to the side. One camera or the other will have the action in its viewer—most of the time.

The hawks make wonderful actors. Their fierce mien, imperious manner, and complete fearlessness—remember that they are attacking an animal that outweighs them two to one—make them a joy to photograph from any angle, at rest or in violent action.

I'm going to keep on trying to film falconry. Sooner or later, it will happen . . . I'll get the complete attack and kill sequence, all in perfect focus, all perfectly centered on the frame. Right now the only thing I'm not worried about is the exposure. That's always right.

If you're going to try it, I can offer only one bit of advice —the same advice that Nelson Bernard gave me—"Be Ready!"

# The Magic of Number 20710

by Mercer D. Helms, Jr.

This is a love story. It features a young entertainer, his wife, and a venerable, aged lady whose number is 20710.

The husband and wife are the heroes, and 20710 made it all possible. Number 20710 is an H-16 Bolex so aged that the Paillard office in New Jersey has no record of its manufacture date and no idea when it became a United States citizen.

I am the husband—a professional magician. My wife and I perform throughout the United States, primarily for industries and convention groups. Few people realize that more live entertainment appears daily in this field than in all our nation's theaters and night clubs combined.

Recently, we developed a new act—designed to be highly visual, very colorful, and quite unusual. It is shorter than the show we had been performing, lasting 11 minutes, all in pantomime, and done to music. All of this painstaking development still left us with the basic problem any business faces: how to market our product. Here is where 20710 enters the picture.

We had acquired the camera about a year before to use as a television recording device. It worked quite well for us, and we were able to make films of every major magician of the moment. (Our profession operates much like the ancient European guild. Information is passed along from man to man. The films are a valuable record to study.)

The motion picture camera is a valuable marketing device, well proven by all of our major industries. Film can present a fact situation as no other medium can. We decided to adopt the industrial attitude and produce a film that would sell our act.

Our only worry was the age of our camera. I examined the newest Bolex cameras, listened to their quietly buzzing shutters, and admired their beautiful appearance. Then I dragged out 20710, pressed the start button, only to hear an alarming clatter issue from its rather worn case. Television news cameramen were impressed. "I have never seen anything like it," one remarked kindly. Another said, "It should be in a museum." He was very polite about it, and offered to buy it for \$40.

"I collect antique cameras, and have a Kodak at least as old." That was his parting shot.

We knew that the camera could produce an image because of the TV recording. We did not know how steady the image was, because TV is not too steady anyway. We decided to proceed, so I "fixed" the camera.

"Fixing" the camera involved glueing the leather back in place, straightening the bent wind-up crank, capping the vacant lens sockets in the turret, and shining the whole thing to a beautiful patina. It still made noises, but it looked better.

All of our doubts were resolved, however, when we priced the professional cost of producing an 11-minute movie of the act. Montgomery's Little Theater is very well equipped, and Manager-Director Bill Strait was kind to let us use the stage between theatrical productions. As it worked out, we had a two-day period when the stage would be vacant.

Our film, Ektachrome EFB 7242, was purchased from a local TV station. Charles Caton, News Director of WSFA in Montgomery also agreed to handle processing for a reasonable fee. This made the two-day schedule feasible, as we would be able to shoot test film and view it immediately.

The act lasts just 11 minutes, so that was our projected film length. Scripting was easy, as the film story was already organized. Basically, it was a question of where to put the mid-range and close-up shots. It took the better part of a day to organize the script into 56 scenes, block out the camera angles, and mark all distance measurements.

Our first night on the set was spent arranging lights. The lighting available onstage turned out to be 20 foot candles, enough for an exposure at f 4 at 24 FPS. So, we had to add in supplementary lighting until we could bring the illumination up to 40 foot candles for an exposure at f 2.0. We needed

that aperture for depth of field, and to try to reduce "fuzz" resulting from wide open shooting. (I wish I had one of those new Switars, but I am a very stingy man.) Later, on the first night, we shot a test roll, and held our breath.

First thing the next morning, I was peering into the processing machine at WSFA. Paul Zukoski, the station's chief film technician said to me: "If you get any closer, Mercer, you will be caught in the rollers and pulled through the bleach."

As it turned out, the film was beautiful. The framing was exact and steady. Old 20710 would jump exactly to speed, and shut down precisely on the frame. Incredible as it may seem, none of our footage ever showed a flashed frame. A cameraman nearby took another look at 20710, and said, "I see you took our advice and got another camera." I have never told him the truth.

The following night found us again at Montgomery Little Theater, ready to shoot. Judith, my wife, was manning the camera for long shots, and supervising makeup, lighting, and the constant technical checks for exposure and distance.

A friend, Joe Martin (who had never touched a motion picture camera before), stood by to handle the mid-range and close-up shooting.

"What do I do?" Joe asked.

"Hold the camera very steadily and don't move it around," we said. We knew Joe was very steady because we had seen some still work he had done in Viet Nam while serving there recently. His night scenes were incredible. We decided if he could hand hold for an eighth of a second exposure, he could hold the Bolex. (Too, Joe looks somewhat like a tripod.)

For the long shots, we used a tripod placed well back into the theater. As it worked out, our framing area called for a camera-to-subject distance of 41.5 feet—exactly the hyperfocal distance for our 25 mm lens at f 2.0.

Armed with 500 feet of film, we began. Three and a half hours later, everything was in the can, and the dreadful clatter of 20710 was quiet. The silence was deafening, in fact. We packed up our lights and went home to spend a sleepless night. We knew if we had failed, we would not be able to use the stage again for another two months.

The next morning I did get my finger caught in one of the processor's rollers at WSFA. Also, as I examined the film at every step, I got a nose full of chemicals—clearing my sinuses completely and adding immeasurably to my general health. Paul Zukoski said (at least a dozen times), "If you don't stop that fiddling around my machine, I'll throw you out of here!"

Like a doctor, Paul kept assuring me that the film looked good. Later, when we spliced it together and viewed it, we found it *did* look good. Fourteen hours later, I finished editing and we viewed our masterpiece. Amazingly, the action matched, scene direction was good, and the continuity was there. We had a winner.

I made one technical error. I did not compensate my exposure when filming close-ups. Film density was a little less there than in the long shots. Exposure was good for all shots, though, so we knew a good printer could correct this.

The next day was spent on the phone, booking the film for showings in agency offices in Chicago, New York, Atlanta, and Washington, D.C. I also called the print lab, advising them of the varying densities between the long shots and close-ups. Prints were drop shipped to our buyers 24 hours later. Results so far have been good. I consider the film to be a success.

What does all of this mean to us? Briefly, it means we were able to sell a show by audition for a fantastically low cost. Magic is difficult to depict. Still photography cannot show magic being done. Stills are valuable only because they can show your face, your costuming, and your props. On the other hand, a motion picture can show your posture, facial expressions, presence—and most important, it can show magic being done.

Our production cost was \$80 for film and processing. The corrected, balanced prints cost \$56 each. In other words, the entire project cost less than a round trip to New York.

We shot a total of 600 feet of film, including a 100 feet test roll. Our finished product was 410 feet, including titles.

Titles, by the way, were shot through the camera's viewfinder. I had noted that the viewfinder serial number is also



20710, which means the factory had aligned it for use with that particular camera. As it turned out, shooting at 23 inches the finder was absolutely accurate.

Our ratio of film exposed to film used was  $1\frac{1}{2}$  to 1. This is tight shooting by professional standards. I have heard that many travel films require at least a 5 to 1 ratio of film. However, our tight script, advance planning, and stable lighting reduced film waste. (Most of our out-take footage was discarded because of performer error, not because of technical insufficiency.)

We shot everything during one night, with no chance for repeat filming. Even if we could return, months later, the stage settings would be changed. The footage had to be right the first time. Nothing could have been saved from the original footage because the background would be different the second time, and the film would not have edited properly.

A few thousand feet later, 20710 is still grinding along. I don't know what the noise is, but have peered into the shutter from time to time when the pressure pad was out for cleaning, or when the lens was off. A bright green fungus covers the shutter disc in a smooth layer, so I know it is not banging around as it spins. If it were, I would see scratches in the fungus.

Incidentally, our camera has been adapted (with a file) for single sprocketed film. This will allow a later addition of a soundtrack to the master, and to the prints. Bolex was quite farsighted in placing the advance claw on the proper side for "B" wind, single sprocketed film.

It occurred to me that our experience might be valuable to other people. Auditioning via film is not new in the entertainment business, but I doubt if a film of the quality we achieved has ever been done at our cost.

This is an era of great mobility. We are able to live in Alabama and work in a national market. This would not have been possible ten years ago. And our audition film will reduce our marketing costs even more. Motion picture film is the least expensive sales tool we have ever used. And the expense of the camera? I would have made a profit if I had accepted the \$40 offered for it.

Schools, hospitals, social groups, civic organizations, small industries, sales organizations, and a host of other people can benefit immeasurably from film. If they do as we did, the cost of the benefit becomes negligible. The simple truth is anyone with a message to deliver, or with a product to sell, can market inexpensively via 16 mm film. With the continuing development of new, faster, fine-grain emulsions, the industrial cameraman is ever more free of studio-type conditions. He can film anywhere, in any light, and his film will possess the degree of quality until recently associated only with 35 mm.

Number 20710 is balanced on top of a stack of *Bolex Reporters* here in my office as I add this final note. Next to it is a letter of acceptance from a large industrial company which saw the film audition.

It's a couple of thousand feet later, yet the old lady continues to grind along without a quiver. She is as alarming as ever with her noises, but she sure does take good movies. Eventually, we plan to have 20710 cleaned and oiled, and add one of the new, more powerful, spring motors, a Unimotor "B," and a magazine saddle. This will allow us to film live performances on location. Otherwise, if things continue as they are, I doubt if the Bolex people will ever sell us another camera. Ours is just too durable to be replaced.

# Shooting Movies of the TV Screen

#### by Ernst Wildi

With all the time we spend in front of the TV set, it is not surprising that many moviemakers have shown interest in filming some of the happenings seen on this great entertainment medium.

The home TV set certainly can bring some new possibilities to our moviemaking hobby. It permits us to record in motion, events which we personally cannot attend, or to obtain a film sequence of a personality we could never come close enough to film otherwise, or possibly even to shoot a souvenir of that once-in-a-lifetime chance when someone we personally know is invited to participate in a TV program.

It is not possible to obtain perfect motion pictures of TV screens without a special camera that is synchronized to the scanning of the TV set. With any ordinary motion picture camera, horizontal bars moving up or down the screen will be visible. However, they are generally not too objectionable since members of the audience usually are fully aware that they are looking at a TV picture.

The speed and width of the bar depends on the running speed of the camera. As we know, in most cases we have no choice since the running speed of the camera should be the same as the speed of the projector when the film is shown: usually 18 or 24 fps. Otherwise, the subject moves at the wrong speed when the film is projected.

If we have a choice of camera speeds, that is, if both camera and projector have a continuous speed adjustment, the horizontal bars are least objectionable at 15 fps. With cameras having a continuous speed adjustment, therefore, setting the governor just below 16 fps is most satisfactory. With Super 8 cameras like the Bolex 155, having set speeds of 18 fps or more, you simply shoot at regular camera speeds. Zoom or regular lenses are satisfactory. Most motion picture lenses can cover home TV screens without any close-up accessories.

The use of a tripod is recommended to make the filming easier. Place the camera to cover the desired area. In most cases this means filling the finder with the TV screen. While viewing the TV image through the camera's finder, check to see that there are no room lights or window lights reflected off the TV screen.

Color or black and white film can be used for filming from either black and white or color TV sets, but the use of high speed films (160 to 200 ASA) is recommended. Such films, at least in black and white, are available for Bolex 16mm and Super 8 cameras. With slower films, a film test should be made to determine whether the screen brightness is sufficient. With color films, the daylight emulsion should be used or the daylight conversion filter inserted with a Type A film. Before starting to film, set the TV image to the normal viewing brightness but to a slightly lower contrast than for direct viewing. Of course, with the Bolex 155, which has automatic exposure control, you don't have to worry. The camera makes its own adjustments to the prevailing light of your TV screen. If you do not have automatic light adjustment, an aperture of f/1.9 to f/2.8 should provide correct exposure with a 160 to 200 ASA film. With slower films, make a film test at f/1.9 or, even better, at f/1.4.

Filters should not be necessary for color or black and white. Should you find, however, that color pictures come out too blue, film the next roll with a skylight filter.

Filming from a TV screen is obviously easy, yet it can provide completely new enjoyment in your moviemaking.

### Editing Is Not Hard to Learn

#### by Joe Tiffenbach

Movie camera advertisements in today's photographic magazines tell you that your movies can be better than ever. They are bigger and brighter, and so easy to make. All you have to do is load a camera and shoot. It's so simple a fouryear-old can make one work. All moviemakers are now able to shoot beautifully exposed film.

Yet, why is it, with all the automatic features on the new cameras and carefully shot film, home movies still drive their audiences up the sides of the walls? You can't blame it on that four-year-old.

To say that a lack of editing is the main cause of many bad home movies would not be unreasonable. In practically all cases, home moviemakers do not like to edit their films, or they simply think it is too hard to learn. Worse yet, many think any subject they aimed their camera at doesn't need editing.

A great number of reasons are heard about why editing is so difficult to learn. Some say, "It's too hard to see," "The film is too small," or "It tangles up like spaghetti." Other excuses like, "I could never learn to edit," or "It's too hard to learn," are just as bad. In reality, none of these excuses is valid—interest and effort can overcome them all.

Since many movie makers don't seem to know what editing can do for their films, how to begin the process, or what is necessary to accomplish it, perhaps a definition of what editing means would help them understand some basics. For our purposes, "editing" means to prepare for, order, or set in order. Sometimes the simplest kind of editing can improve a roll of film immensely.

Probably the easiest editing is the removing of all the "goofs" in the roll such as edge flares, caused by careless loading or unloading; over and under exposure; false starts, such as pushing the start button, then stopping and beginning again; very fast pans, and most important of all, a lot of waving of hands or people looking into the camera asking, "What do you want me to do now?"

What this will do to your movies is begin to make them acceptable to view. Nothing is so dull and boring as staring at bright lights flicking throughout a film, or film so dark you have to explain each time that, "This is too dark but Alvina is standing next to the bears we took in Yellowstone."

Pruning this junk out of a roll of film will give your family and friends the idea that you know how to shoot with a camera because all the goofs have been edited out and, naturally, they won't see them.

However, if it is the first roll of film you ever shot with a movie camera, the best thing to do is project it, then put it away where you can occasionally look at it whenever you think your camera technique has improved. You'll often be surprised.

A Hollywood movie is normally shot by highly skilled and talented people. The film editor has a script to follow, and he skillfully puts the filmed scenes together with continuity and tempo. He does not have to spend a lot of time trying to figure out what the cameraman shot or wants him to do. It's usually in the script. Home movies are usually shot without a script or even an idea, and by the time they are ready for editing the original intent of the film has been forgotten or ignored. The unrelated shots mixed among scenics would probably drive a professional editor out of his mind.

There are two main types of film which amateurs shoot: scenics; and film records of their vacations, holidays or personal events, which would include shots of the family, relatives and friends.

Scenics, in general, and more or less unrelated shots of family, friends, and relatives, can be put together in almost any order as long as someone is able to narrate a story as the film is projected. Editing this kind of film involves removing the goofs already mentioned.

In the beginning, this kind of editing is simple and quite easy to do—providing the cameraman-editor doesn't think every frame he shot is a little cameo. After several rolls of film have been edited and viewed a few times, the filmer will learn that if he had shot a certain scene from a little different angle, or possibly, closer to the subject, his film would have more interest and be more entertaining.

One other very important thing quickly learned about this point is that long pan shots, or very fast pans, are not easy to manage. They take far too much time on the screen. Simple static shots are better.

Another camera technique beginners attempt is to shoot everything in one shot. If the camera has a zoom lens on it, he'll zoom in and out. Then, without stopping for a new angle, he will pan across a scenic or a group of people from face to face. If he misses little Junior, he'll go back and down to the little rascal, zoom in on him, and keep on going. This is called "garden-hosing" and doesn't need any explanation other than to say it's pretty rotten to look at.

When this sort of footage is viewed, an editor will begin to realize that something is wrong. It is very difficult not only to narrate but even harder to edit. The best thing is to cut it out of the roll like an over-exposed scene.

Even though this is an article about simple film editing, it is necessary to make a few remarks about camera shooting. The cameraman should know what some of the basic camera shots are and what they can do for him. The better a movie has been filmed, the easier it is to edit into a pleasing film.

Here is a description of some basic shots that are simple to take with an 8 mm movie camera:

The Long shot. This is usually an establishing shot. It tells the audience where it is, or shows them vast areas such as a mountain or valley, a river, or an ocean. Large groups of people can be established, too.

The Medium shot. This takes the viewer closer into a scene, or introduces people in the group shot. A medium shot of people is usually above their knees. When two or three persons are photographed together, these are called "two" or "three" shots.

The Close-up. Close-ups are exactly that. In order to get close on a person's face this shot is used. Normally, it will include the entire face but does not have to. Close-ups are also excellent to show an audience objects too small to be seen in medium shots. Medium shots are also effective for cutaway shots or reactions. An extreme close-up is also useful for special effects.

A majority of the newer cameras have zoom lenses. Too many zoom shots can make an audience dizzy, or make their eyes rotate faster than a one-armed bandit in Las Vegas. Using zooms as a substitute for a dolly or trucking shot can get you into a lot of trouble when editing. The best feature about a zoom lens is its ability to allow you an infinite number of focal lengths, which will give you a marvelous opportunity to change angles and image size.

There are many other kinds of camera shots, but most amateur filmers won't use them until they begin to experiment and become accustomed to their camera. Knowing how to use your camera correctly will give you many additional choices of shots to use when you put together a planned movie. But never be afraid to try new angles or ideas. If they don't succeed, they are easily edited out of your film.

Assuming you have several rolls of film on a recent vacation trip, or some film on a party or holiday, you have a good reason for editing this into one continuous film. Since it was probably shot as it happened, it would seem that all you had to do was to splice the rolls together in sequence. This would certainly make it easier to show and there would be a lot less rewinding. Still, you wouldn't have a film.

The mere fact of splicing all the rolls together doesn't make you an editor. Planning an order for your scenes and editing them to an outline or script will give you satisfaction in creating your own movie, and by doing this you are learning to edit film.

The actual process of editing doesn't require elaborate viewers or splicers or expensive equipment. Some people have learned to use their projector to edit their films.

With the idea of a movie of your vacation, the first thing you would do, after cutting out any goofs, would be to decide how your film will open. Will the first scene be a long shot of the mountains where you vacationed, or will you use a closeup of the name of the place first? Your decision of which scene to use is an important part of editing.

Following either of these scenes with a medium shot of the family looking at the mountain will give you continuity of action. As you go through your film, you'll find the story practically cuts itself.

Of course, having long, medium and close-ups to arrange in order is an ideal situation. Very few amateurs would shoot film this way, or have enough experience to add cutaway shots to cover missing scenes or bad angles that don't match.

It would be impossible to cover every solution for correcting bad filming here. However, by using some carefully thought out plans for future movies, both from the camera and editing points of view, your films can improve.

The editing of these planned ideas will allow you an additional choice of the various scenes, their length, and effective angle shots.

There is nothing that says a scene must be one foot long, or four feet long. Scene length is determined by the action of the scene itself. If every scene were the same length, your movies would be very monotonous.

After you have shot your film, as an editor, you can change the length of a scene to suit your needs. As you vary the length of a scene, you can build your story in tempo to give it a nice rhythm as it is projected.

To make your editing easier here are some filming hints: If you use a pan shot, move the camera slowly enough in order that you see everything through your viewfinder. At the end of the pan, let the camera run a few seconds longer. This allows the pan to finish before you cut to the next scene.

When you are following any action, such as someone feeding some animal in the mountains, or at the zoo, take the entire action in a long shot. When you move closer for a medium shot or a close-up, let your subjects feed the animal long enough so that you can match the action from the long shot to the medium shot or close-up.

Try to shoot a number of signs or other names to use in your films as identification or cutaway shots.

If you are shooting a waterfall, shoot it in several static shots rather than pan from the top to bottom or bottom to top. Several shots like this will allow the audience to actually see the waterfall.

Pan shots are very good if you are following a person walking along a trail, or riding a bicycle.

When shooting someone who is walking, allow him to go out of the scene and hold it for a second.

Occasionally, a cameraman will move to a different position when shooting a subject going from left to right. It is possible that when moving, his next shot of the same person will have them going from right to left. This can confuse an audience. If the cameraman realized his error, he could shoot a cutaway of a bird, tree or some other object nearby, and save the sequence by cutting the additional shot in between the walking shots. This wouldn't absolutely correct the mistake, but the audience would probably accept it without wondering what happened.

Film is easy to edit and learning how comes with some experience. Combine your shooting with a plan for editing later and you'll begin to have smoother films.

Shooting and editing go together like turkey and dressing. You can't have tasty dressing without the turkey, and if you try and make a movie without good editing you'll get cold turkey. Editing is really not hard to learn—just give it a try.

### How do you know when you're ready for 16mm?



If you think in terms of making films, rather than taking pictures, you're ready for 16mm with its vastly superior picture quality (the 16mm frame is 3 times larger than a super 8 frame and 4 times larger than regular 8).

If you intend to show your films to an audience larger than your family, you're ready for 16mm with a projected image big and bright enough to fill an auditorium screen. 16mm is the perfect size for documentaries, lecture films, instructional films, even features.

If you want to be able to sell your films, you need the professional quality of 16mm. It enables you to duplicate your films faithfully, and project them on professional equipment.

More people in your position have chosen Bolex than any other 16mm camera in the world. Bolex provides such perfect picture steadiness that your films can even be blown up to 35mm for theatrical release.

Bolex is more than a 16mm camera. It's a 16mm system. With Bolex you never have to buy more camera than you need. You can always add more capacity later on.

You might start off with a 100foot Bolex, and later add a 400foot magazine with motor drive, for synch sound shooting.

You might start off with an allpurpose zoom lens (with or without automatic exposure control), and later acquire specialty lenses for your turret, (including macro lenses with pre-set diaphragm that focus as close as 1" and lenses as fast as f. 1.1).

With your Bolex you can make animated films and time lapse studies. Fades, lap dissolves and other effects can be made right in the camera.

And Bolex is easy to use—it even has automatic film threading—so you can concentrate on your film instead of your filming.

Whichever Bolex you choose, you'll find it a model of reliability and ruggedness. A camera you can count on whether you're shooting in the frozen Arctic, the steamy jungles or the wilds of your own living room. For a free 32-page catalog, sample copy of The Bolex Reporter (together with subscription information) and list of Bolex dealers near you, write to address below:



Paillard Incorporated, 1900 Lower Rd., Linden, N.J. 07036. Other products: Hasselblad cameras, Hermes typewriters and figuring machines.

