VIDEO TOOLS 2
The deadline is approaching, work marathon has been going on for about a week. It's 5:30 in the morning and here we are resting on the floor of the Egg Store control room, watched over by machines. These machines and those displayed in this book are not God's answer to humanity's problems, not more important than anything else, maybe efficient tools for communicating with the too many people on earth. (We persever even though our lives for the past months have been consumed by video and Video Tools.)

The VIDEO TOOLS Project

The Video Tools project was started last year by Cy Griffin. We worked very hard (not really knowing what we were doing) and put together Tools #1, an attempt to provide some needed information to the thousands of people using video equipment.

The response to the first book motivated us to do it again. I'm pretty sure we have to put out Tools #2. Although there's lots of activity, grand plans and mad graphite, this is a small business when you come down to it. If Video Tools can pay for itself, or come close, we can keep doing issues, maybe even supplements.

The Tools project is not just putting out a book once a year. It has set up a structure (people) within CTL to gather and disseminate information. Please call or write.

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Chi Tien Lui started his business about five years ago in a loft at 146 Reade Street. Because Lui was willing and able to make special modifications for experimenters in the then infant medium, CTL Electronics grew quickly, attracting other talented video people.

As video moved from the lab to everyday use, our customer base has expanded to include producers and consumers around the world.

The publication you now hold is a product of our dedication to users of video.

About a year ago we started the Club—the idea was for us to order in greater volume and pass the discount on to our customers.

We sell V-30H Sony half-inch, 1/2 hour video-tape at $10.50; V-32 Sony half-inch, 1 hour tape at $19.00 (FOB-NYC). The Club discount is on all purchases of hardware, classes, and the use of our studio facility, the Egg Store. VIDEO TOOLS is free for Club members.

The Club is open to individuals and nonprofit organizations. There is a $10.00 membership fee (for one year)—this allows us to continue and expand such projects as Video Tools, Research & Design, the Egg Store, and the Central Tape Library.

To save us bookkeeping hassles, payment for Club discount purchases is required at the time of purchase.

When we started Tools #2 we were unaware of the fact that a big money problem was going to complicate our lives. But here we are with sinking dollars and floating yen, all the prices on goods manufactured in Japan have changed. As we go to print Shibaden hasn't gotten their new prices together. They have said that their prices would go up between 7 and 15%—so we added 10% to the old list price. If this seems a strange thing to do in a catalog we have three things to say: 1) Tools is much more than a catalog, 2) We are a little about getting it out, and 3) WE DON'T SELL ANYTHING AT LIST PRICE.

The change the software industry is going to make is that you'll really begin to separate the software from the hardware. When a record sells for $5 retail, you actually have the material cost of producing the record (about $0.30), with the label and jacket, wrapping it in plastic etc. Then you add in everybody's profit, including profit on the software that's there, but the basic cost of the hardware, the record that the software is on, is very low. So really, you're buying software when you buy a record. Then you buy a video-cassette, you're also buying a piece of hardware that costs $5 (club price). And if you try to build that into a profit structure to support your software producer on a percentage basis, it just gets unworkable. Indeed now, you have cassettes that are selling for $2-30. So, what's going to happen is that you're going to separate the cost of the software, and you're going to charge someone for access to the software. They rent it, or they rent it and make a copy of it, or they have you make a copy of it for them. They're paying for use of the software, to get it from the producer's head to their own, and if they want to go back to it, fine. It's theirs; I don't think they're going to exhibit it, because I think if the software's cheap, people aren't going to pay to go to a theater to see it, except in special events, software of centers. I think there will be a lot more live video events. And people will go to see those rather than something recorded.

The authorized duplicator is going to have a better-generation copy; and the price differential isn't going to be that great. It's easier and more practical to go to a legitimate distributor to get the record, than to go to somebody who's going to have a fourth- or fifth-generation copy. You've got to get close to your master with this kind of software.

The Central Tape Library allows any producer to put in a tape, with a form to put some handles on it so that people can find it and get it out again. As to what the producer wants to charge for access to that tape, it can be nothing, or it can be $10. The producer also has to supply a master, or sub-master from which we can dub. Our contract with the producer states that after X number of copies have been made on this master, in other words, after it's been sold X number of times, it will be returned to him in return for a new copy.

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Then the consumer has the option—he can rent it for that access price, and produce another copy, or he can have a copy made for him by the seller. Initially this would be very centralized, but as popular software becomes available, you'll find more and more decentralization. The record store of today with as many as 5,000 different titles in stock becomes the video-cassette store. The store owner can stock the same number of titles, but they can also continue to sell any title as long as they have raw stock in the basement—they don't have to order more copies, they've got the equipment there, and the masters on file. After this becomes more of a bookkeeping expense. Eventually this library system will become part of the computer-utility libraries that will appear in the early 80s, via the cable systems.

Central Tape Library

The Central Tape Library (as we've cleverly named it) is an expanded function of the Video Tools project and the Egg Store. We are collecting masters (or sub-masters) from people who would like us to distribute their video-tapes.

The hardware (cassette/cartridge, reel-to-reel, duplicating) is available at Club prices, and the software may have any price. Paula says we'd rather sell a tape ten times for $15 than once for $150.

We will publish an updated catalog of the tapes in the Library, and try to get your software to the many people who want and need it.

If you have software for the Library, write for an input kit (see loose page).
**TELEVISION** is older than you might think. Methods for transmitting pictures have existed for almost one hundred years. The following timetable gives a historical perspective to our favorite medium, and gives you all you date freaks a chance to get off.

John sez: I hate names and dates.

**1818**
Berselius discovered an element he called selenium. When this element was exposed to different intensities of light, its ability to conduct electricity varied. We call this the photoelectric effect.

**1830**
Michael Faraday proved that electricity could pass through "nothing"—a glass bottle from which air had been extracted. This showed that electricity consisted of a stream of electrons. Faraday's bottle led to the design of the vacuum tube.

**1868**
Philip Carey thought that since the photoelectric effect could vary electric current in proportion to the intensity of a beam of light, a picture could be broken down into various intensities of light and the light transformed to corresponding pulses of electricity which could be sent along a wire.

**1878**
Crookes' tube emitted rays which flowed from its cathode (negative terminal) through a vacuum to its anode (positive terminal). Cathode rays are an unhindered beam of electrons that can be manipulated by magnets.

**1880**
Maurice Leblanc suggested that if each part of the picture could be separately exposed to light in rapid succession and in sequence, the illusion of the entire picture could be created at the receiving end. This idea introduced the principle of persistence of vision upon which the television tube depends for its effect.

Paul Nipkow, a German engineer, designed a mechanical television, consisting of a scanning disk with a spiral pattern of holes which was set in front of a brightly-lit picture. The disk turned, the first hole crossed the picture at the top, the second a little lower, and so on. With a full revolution of the disk, each part of the picture would be briefly exposed in turn. The disk revolved quickly enough so that the complete scanning happened within one-fifteenth of a second (light striking the retina persists for about one-fifteenth of a second, because of delayed chemical reaction). Therefore a picture scanned at that rate would be retained long enough to be viewed as a coherent whole. Light passing through the holes in the disk was guided with lenses and mirrors to a selenium cell; a bright area caused a strong current to flow from the light-sensitive cell, a dark area caused a weak current. This fluctuating current was carried by a wire to a lamp. A second scanning disk was placed before the lamp, revolving at the same speed as the first. The lamp flickering through the disk reproduced the original picture. All that was lacking was a means of amplifying the impulses.

**1884**
Karl Braun added a fluorescent inner surface to Crookes' tube, producing a glow when struck by rays.

**1897**
Mechanical vs. electronic (electronic wins, Yaay!)

John Logie Baird made an apparatus consisting of an old tea chest carrying a motor which rotated a circular disk. The spindle was a drawing needle and the disk had holes cut in it over which were fixed bulls-eye lenses bought from a bike shop. The projection lamp was housed in a biscuit tin. With this, Baird successfully transmitted an image of the Maltese Cross a distance of 9 feet. In September of 1929, Baird started experimental transmission ($1.50 per hour per week) from the Oxford Street Transmitter of the BBC. His total number of viewers was under 30. Baird was not all that successful; by 1932 he said that only 500 sets were in use, not counting people who might have built their own. In the summer of 1933 the BBC broadcast a request which read:

The BBC is most anxious to know the number of people actually seeing this television program. Will those who are looking in send a postcard marked "Z" to Broadcasting House immediately.

At about this time, things start getting really complicated as far as who invented what, and who was to be transmitting. Zooxilla at RCA was vying with Philo T. Farnsworth, who conceived the basic features of today's electronic TV system in 1921, while still a high school student. EMI now realized that the future of television lay with an electronic system. EMI, composed of the former Gramophone Co. Ltd., Columbia Gramophone Co., and others, merged in 1934 with Marconi to form Marconi Television Co. Ltd. Baird and his slender resources didn't stand a chance against EMI, which had already demonstrated an electronic system to the BBC with three times as many lines (4065) and twice as many frames (50).

Baird decided to try to keep up with the times and started experiments with the cathode ray tube, borrowing the system developed by Farnsworth. Farnsworth had already done a ten-day demonstration of electronic TV at the Franklin Institute in Philadelphia. He formed the Capehart Farnsworth Electronics Co. In 1949, ITT bought the company and a new corporation, ITT Farnsworth Research Corp., was formed, which later became ITT Laboratories of Ft. Wayne, Indiana.

**1923**
Television was invented in San Francisco in 1926 by Dr. Philo T. Farnsworth—despite what you may have heard from RCA (who used Dr. Farnsworth's invention even though he held all the patents).[Phil Gietzen, Video Navigators]

**1955**
In 1955 Ampex demonstrated the first videocassette recorder, making instant replay possible.

**1968**
Sony marketed the first 1/2" videotape recording system (VTR). VTRs went portable in 1970.
A monitor is a high-resolution television designed to accept a direct video, and in some sets audio, signal.

In American standard TV systems there are always 525 lines running from left to right. Horizontal resolution is measured by the amount of dots on each line, for imaginary vertical lines to cross.

The back of the Bell Telephone TV receiver of 1927 consisted of hundreds of wires, each connected to a different segment of the pattern of neon tubes on the face of the receiver. A motor-driven commutator, synchronized with the scanning disk, sent current through each wire in turn. Electronic scanning and picture tubes eliminated this clumsy apparatus.

In 1883 cartoonists were still having fun with the "impossible" dream of transmitting distant views by some kind of electrical apparatus.

The process of recording a television picture is called kinescoping. Before the invention of videotape in 1955, a TV station that wanted to record its programs had to shoot off a studio monitor with a 35mm camera. The TV picture stored on film was called a kinescope. To broadcast a pre-recorded program, the kinescope had to be played through a film chain.

In 1925 John Logie Baird and his apparatus, 1925

In 1925 cartoonists were still having fun with the "impossible" dream of transmitting distant views by some kind of electrical apparatus.

Dr. E. P. W. Alexanderson of General Electric was one of the leading pioneers in the early days of television. He appears here (right) with an assistant, Ray D. Bell, inspecting the mechanical scanning disk during experiments in Schenectady, N.Y. in 1927.

Early television experimenters in 1925, using a mechanical scanning disk. The engineer holds the image in his right hand and operates a control button. The image was picked up through the rotating disk by a light-sensitive cell on the top of the cabinet.

4 HISTORY
A television monitor or receiver operates by reversing the process that took place in the camera. The electrical signal coming from the camera is changed back into a visible picture which is displayed on the surface of a screen.

The cathode ray tube (picture tube, or CRT) of a TV monitor consists of a scanning electron gun, a deflection yoke which contains horizontal and vertical pulse generating coils, and a screen with its inside surface coated with a phosphorescent material. In a closed circuit system, a coax carries the video and sync signals from the camera to the cathode ray tube of the monitor. The incoming video signal drives the monitor's electron gun and the incoming sync drives the coils in the deflection yoke. The electron gun then scans the phosphorescent screen exactly in sync with the original scanning pattern that took place in the vidicon tube of the camera. The phosphorescent screen emits more light where higher voltage strikes it, and less light with lower voltage. Therefore, the highest points of the video signal correspond to the brightest parts of the picture. What the video signal actually does is vary the voltage of the electron gun of the monitor.

These same signals can be transmitted through the air and picked up by an antenna for home reception. Cable TV transmits the signals over very long coaxial cables using a series of amplifiers to keep the signal from degrading.
Our own experience has been in alternate television. Using low-cost portable videotape cameras and recorders (porta-paks) and related hardware, we have been able to work almost wholly outside the structure of conventional television.

Freed from the studio environment, we have generated a style which, at its best, surpasses the spontaneity of television's early days. While none of our work is as slick as conventional TV, the best of it is a rudimentary rediscovery of what television is all about. Until now, however, our experiments have been piecemeal.

We have now decided to produce a total model of what we'd like television to look like. Our plan is to produce a four-to-six hour package of programming which integrates the best techniques of alternate television into a new format of TV programs.

We have named this event Primetime, and anticipate that it can be transmitted simultaneously on select outlets across the U.S. as a kind of "network-for-a-night."

PRODUCTION STRATEGY

Primetime will be produced in three stages, each with a discrete budget and a usable outcome. By establishing goals for each stage, we will avoid the need for immediate large-scale funding, while retaining an overall conceptual direction. Moreover, our energy will not be gambled on an all-or-nothing scheme.

The three stages are:

1. SURVEY: We will canvass new hardware and software developments in the U.S. and Europe and compile a print and video report which can be shared by people interested in a new operating system for television.

2. PROTOTYPE: After the survey, we will produce a one-to-two hour show which integrates the best existing videotape available with special production. The prototype will be distributed to recoup its production costs, and to generate further financial and audience support.

3. PRIME TIME: On the basis of what we learn doing the prototype, we will produce an entire evening's alternate television.

Primetime is being organized by TVTV, the same group which produced the Top Value Television convention videotapes. TVTV began as a loose-knit coalition of members of Raindance and Ant Farm, two experimental video groups, along with members of other video groups and individuals from around the country.

Primetime and TVTV are based in San Francisco. The people who prepared this proposal are:

Chip Lord
Doug Michels
Hudson Marquez
Allen Rucker
Michael Shamberg
Curtis Schreier
Megan Williams
Tom Weinberg

In the context of a print culture, libraries have a long, proud, and hard-won tradition of providing free and open access to knowledge. Traditionally this information has been predominantly in the form of print. Today people seek information via the TV tube; they are users of electronic information assemblage. For the majority of Americans are literally turned on to television. And this is not just a matter of one communications format being superior to the other. It's a matter of recognizing the power of the moving image and sound.

Walter Dale
Video Project Director
Port Washington Public Library

Film Library Quarterly, 1972
The AV-3400 is the machine that really started the video revolution. It has proven itself to be reliable and has been used to produce some of the most exciting television since the medium's invention.

PANASONIC

Our experience with the new Panasonic portable is limited due to its newness. Much to our surprise, you cannot use the Sony portable deck with the Panasonic portable deck; in other words, interchange of components is as yet impossible. One advantage that's immediately evident is its lightness and narrower design. The viewfinder screen is slightly larger than the one in the AVC-3400, showing a brighter image. The function controls are push levers for easier operation. There is a power switch which starts the heads turning, so you get a still as soon as you turn the machine on. The pause lever doesn't cause you to get the power switch to get the heads up to speed and leave your hands free. Unfortunately, they have designed the camera so that the handle cannot be removed.

Panasonic 1/2" 32 min 22 lbs electronic in 450 lines 300 lines zoom

Most people are aware of the short duration of the gel cell battery that comes with the portapak. The 12-hour battery pack is both expensive ($129.70) and sometimes dangerous (i.e. large numbers of them are exploding). The solution is to adapt a standard 12-volt motorcycle battery. When properly hooked up, it will provide 4 to 8 hours of power, depending on the size of the battery.

Equipment:
1 12-volt motorcycle battery  $12.18
1 Sony car cord, DCX-999 19.50
1 cigarette lighter well 2.00
1 1/2 amp trickle charger 5.00
1 plastic bag 1.00
1 carrying case 5.00

The battery is hooked up to the cigarette lighter plug. Positive goes to the center pin, negative to the surrounding sheath. Caution: The battery cannot be directly hooked into the deck. Voltage surges can blow the deck! The Sony car cord is used to hook the cigarette lighter pin to the portapak. The car cord is used because it has built into it a voltage regulator and fuses in case of surging.

The battery should be charged approximately once every two weeks. If it is left standing, uncharged for long periods of time, the battery will corrode. A plastic bag with absorbent paper towels should be fastened to the battery rundown valve to catch any excess battery acid that might spill.

The finished battery can be stored in a camera case (something that makes it to resemble the camera's size), and can be carried over the shoulder when using the portapak.

Total cost: $43.50

Alan Miller
AEP VIDEO

PORTABLE SYSTEMS 7

BATTERIES

- BP-20 internal battery, 40 minutes of power, requires 4-hour charge. (With AC-3400, the BP-20 is a lead acid battery, called a gel cell because the acid is in gel form for safety. This battery cannot be overcharged, because the charges automatically shut off the incoming power when the battery is fully charged. Lead acid batteries should be recharged as soon as possible—they should not be left in the cold when they are not charged.

- BP-30 external battery, 3 hours of power, requires an 14-hour charge. The BP-30 is a nickel cadmium battery. These batteries have a longer lifetime. They can store more power in less space than a gel cell; a nickel cadmium battery is more efficient, 12-volt motorcycle battery can give you 90 minutes of power. This battery cannot be overcharged. With an AC-3400 adapter, use the charger that comes with it. Do not charge it for more than 16 hours. When overcharged, these batteries have been known to explode.

- Panasonic TY-355C (pair) internal battery. Same as BP-20, but without the fancy package or cord.

- After a time you will find that your BP-30 won't give you a full three hours of power. So re-energize the battery, keep your deck in standby in deck stops, with a matchbook cover (or the like) putting pressure on the automatic shutdown switch (see VTRs page 8). This will completely discharge the battery. Recharge for 15 hours.

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A time lapse deck compresses information by skipping frames (the Javelin records 1/6th and skips 5). In playback each of the stored frames is repeated a corresponding number of times.

When using the slow motion control on standard VTRs you get lines across the picture. This is because the change in speed affects the angle at which the tape hits the heads. In the Javelin, the tape guide moves to change that angle, compensating for the change in speed—and eliminating the noise bar.

The Javelin switches between two sets of heads during slow playback, so that a clean signal is available even when the main heads are scanning the area between two tracks.

The Time Machine

Video heads are actually small electromagnets with a small space between the poles. When a magnetic material is placed in or near a magnetic field, the molecules of the material are reorganized, producing a magnet. In magnetic tape, the material is tiny oxide particles. The magnetizing device, called the head, is a number of turns of wire coiled on a core. In the record mode, the core becomes magnetized by the record current passing through the wire. As the tape passes the head, the varying magnetic fields lay down a magnetic pattern on the tape, directly proportional to the coil current. A direct reversal of this process occurs during playback.

In effect the VTR reads the arrangement of the oxide molecules.

The feed reel is slightly higher in position than the takeup reel, so that when the tape passes across the heads it is descending, causing the video tracks to be slanted.

To the left of the video heads (drum) there is a full track erase head which is only activated when the machine is in the record mode. This means that when recording you are also erasing any information previously on that tape.

To the right of the video heads (drum) is another head assembly which records the audio and the control or sync pulses. Both are recorded longitudinally, audio at the top of the tape, control pulses at the bottom.

The capstan is the device which pulls the tape along from the feed to the takeup reel. In record or playback the tape is pressed against it by the pinch roller.

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**VTR**

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<th>VTR</th>
<th>TAPE WIDTH</th>
<th>WEIGHT</th>
<th>DIMENSIONS</th>
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**TIME LAPSE**

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<td>dropout compensator</td>
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**COLOR**

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<th>VTR</th>
<th>TAPE WIDTH</th>
<th>WEIGHT</th>
<th>DIMENSIONS</th>
<th>ET/1 STANDARD</th>
<th>HORIZONTAL RESOLUTION</th>
<th>POWER CONSUMPTION</th>
<th>SPECIAL FEATURES</th>
<th>LIST PRICE</th>
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<tr>
<td>Sony NV-3600</td>
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---

8 VIDEO TAPE RECORDERS
The Shibaden editing machines made the most perfect half-inch edits we have ever seen, but only for a few hours. Shibaden (as Number 3) really tries harder, so they have taken back all the machines they have sold recently, to correct the problem.

● Editing - Video editing is an electronic process rather than a physical one, as in film. The editing process is essentially playing back scenes from your master (original) tape and recording them onto a second VTR, assembling one scene after another, unaltered in any way. In order to get clean cuts (no glitch or rollover) the second VTR should have a capstan servo mechanism. With this the motor speed of the capstan is controlled by the vertical sync pulse, so the tape is pulled along in sync with the incoming picture.

The editing procedure is as follows: Cue the playback machine to the start of the scene that is required next. The recording machine is then cued to end of the last scene. Both machines are then backed up (6-10 seconds, since it takes most VTRs 6 seconds to come up to speed). There are various methods for backticking, the most accurate is to use a stop watch, though this is very time-consuming. Another is to use a grease pencil, or Dan Dhabu’s editing guides (by far our favorite method—it is very quick and in no way affects the tape, as grease pencils do—write to us and we'll send you the editing guides). These guides are taped to the takeup reels on both machines; Dan has calibrated the number of revolutions the reel must make to move 6 seconds. After backticking, both machines are put in the pause mode, to start the heads turning. Both machines are then started simultaneously in the playback mode. When the edit point is reached, the record deck is switched from playback to record and an edit is achieved.

● Insert editing mode is used to insert new information within the confines of an existing recording. The insert mode utilizes the existing control track.

Underscanning the monitor enables you to use the skew control to improve the quality of your edits. You are in fact partially correcting the horizontal time base instability problem that is inherent in 1/2” video. The horizontal time base instability is caused by the stretch on the tape; the skew controls the tension from the feed reel.

How to use the skew - You will notice that when the monitor is underscanned the vertical lines at the bottom of the picture are broken and skewed to the right or the left, how far depending on how much the tape has been stretched. You should adjust the skew before making an edit. Make this adjustment from the playback mode. By widening the left, in the broken line to the rest of the picture, you are matching the bottom of the field and are looking at the top of the next field.

How to underscan the monitor - In the back of your monitor you will find a number of screws. The screw marked height or size is the underscanning control; turn it slowly until you see a black bar (that’s the vertical blanking) at the bottom of the picture.

Making video inserts that retain the old audio is also simple. Andy Mann says on the 3650, put the deck in forward, then press edit. Keep the edit button depressed with one finger and then press record. The edit button must be held down for the duration of the insert to keep the old audio.

On the 3130 both the full erase head (to the left of the drum) and the erase portion (left half) of the double head must be covered. Make your insert in the usual fashion. The old audio will be retained.

Whenever you cover heads with tape, be sure to clean the heads thoroughly after removing the tape.

● On the Sony AV-3650 there is a sound lag at the beginning of each edit because of the distance the tape has to travel to get from the erase head to the audio record head. The Panasonic NV-3130 gets around this by putting the audio and erase heads together on one double head (to the right of the drum).

● Sound-overs without a mixer

If you want to make audio dubs and retain the old sound you need some way to turn off the audio erase head. This can be done with a switch or simply by covering the erase head with a piece of paper or masking tape cut to size. On the 3650 you need only to cover the full erase head on the left of the drum. To make the audio dub, put the deck in forward, press edit and then press audio dub hard, so that the edit button pops up.

On the 3130 the left half (erase portion) of the double head must be covered. To make a sound overs that retains the old sound, put the deck in assemble edit mode, start play and push audio dub.

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Whenever you cover heads with tape, be sure to clean the heads thoroughly after removing the tape.
The Panasonic video cassette machines NV-2120 and NV-2110 use 3/4" tape. They have 2 tracks for audio, and a built-in RF adapter for channels 3 and 6. The NV-2125 has a built-in tuner for recording off the air. Max. record/playback time 60 minutes. NV-2120 list $1550. NV-2110 list $1350.

**CASSETTE**

Our experience with the cassette machines has been very good. They use high-energy tape, therefore increasing the signal-to-noise ratio. The color is great. If you record on the cassette format you will need to transfer material onto reel-to-reel format in order to edit. It costs more to do, but it works out really well for color. Also, because of the nature of the equipment, you should not put the cassette in, or pull it out, unless it's at the beginning or end of the reel. To get the tape off the cassette, you must rewind it. The Sony video cassette machines VO-1600 and VO-1200 use 3/4" tape. They have 2 tracks for audio, and a built-in RF adapter for channels 3 and 4. The VO-1600 has a built-in tuner to allow recording directly off the air. Max. record/playback time 60 minutes. VO-1600 list $1,525.00. VO-1200 list $1,095.00.

The Panasonic cartridge machines NV-5120, NV-5120, NV-5110 use 1/2" (EIAJ #1) tape. Each has a built-in dropout compensator and RT adapter. These machines automatically rewind. Maximum record/playback time is 30 minutes. The NV-5120 has a built-in tuner. The Shibaden SV-530U has a built-in dropout compensator and automatic rewind; RF optional. NV-5120 list $1,050.00. NV-5110 list $950. (see prices page 2)

**FOR USE WITH VO-1600**

**SONY**

**CT1 modification** For automatic rewind-replay - $200.00

**DR. CALEXC GATTENNO (OF EDUCATIONAL SOLUTIONS)**

Excerpts from an interview, December 1, 1972

- Only awareness is educable in man and awareness is an alien notion for 90% of the people. If you make tapes on awareness, either you should be able to enlighten those who are concerned with awareness or exercise that people are engaged in. I want to blow people's minds using this medium. I am a student of awareness, therefore I have a responsibility to show what I do to me, what my ear does to me. I am interested in making video tapes that uncover areas that have never been looked at. I cannot teach anything, my teaching is not passing on information, it changes people, it forces the mind to focus on one aspect. I teach languages silently; this is heresy to all the teachers of language.

- Adults have all learned from words, when they are part of a visual culture.

- There is a new role for teachers. I don’t want to replace teachers, I want to make television the teacher in the home. Schools have to do something else. If you watch television and you only get soap operas or news, you are not using the totality of the medium. Since this medium will be with us for generations, at some point people will want to use it properly, that's when they will come to me, if I'm alive, and say "Give me a program that can blow the mind."

- I have a whole series of scenarios which start with almost nothing, a dot on the screen, and this dot becomes, with explosions through dogmas, a star, and so on. The film or tape shows you what I want you to become aware of, not what is there, but the way the dot becomes a star which goes in all directions. I put maybe 80 such lines, there is space around the edges. When the dot moves, I can go up, and down and right, until the star covers the blank, so you can think of the plain as being a new star with an infinite number of rays. Then it returns, goes back until I have only a few rays remaining of the dot that can sweep the screen, one of them is representing the infinity, so when you see one you can see infinity. You can force you to see infinity. You can see infinity when looking at only one thing. And that, of course, is the power of the medium.

- Education has been through words, words are slow. They take a lot of energy. While with television, we get so many impulses at once. I have spent years reducing centuries of knowledge to seconds of impact. It's a new way of using our minds which does not conflict with the previous one. I cannot say I love you through television, I have to be there. You have to use words. The purpose of speech shall remain in the purpose of speech, we shall know it better because we will know its limitation.

- Television can do a great deal more when it's coupled with computers, which is another of our creation. Because man has created the tool, it becomes an extension of man. It's not a substitute for man. It allows us to get into areas, because of its speed and its memory, where we are prevented by our slowness. Now that we have the technology, let's use the education that is compatible with it. If you know your power, you use them; if you can walk, you carry yourself around, so let's try to use these new powers.

**10 CASSETTES & CARTRIDGES**
The endless loop cartridge is for real-to-real machines. Five or ten minutes of information will continually replay until the machine is stopped. This loop cartridge cannot be used on a portapak.

SONY

Catalog Playing Tape Reel List
Number Time Size Size Price
V-30F 10 1/2" 4 5/8" 50.00
V-300 20 1/2" 4 5/8" 15.00
V-30m 30 1/2" 5 1/8" 20.00
V-31 30 1/2" 7" 20.00
V-32 60 1/2" 7" 40.00
V-12-30 30 1" 8" plastic 40.00
metal 50.00
V-12-60 60 1" 8" plastic 60.00
metal 70.00

KAREX silverchrome

Catalog Playing Tape Reel List
Number Time Size Size Price
S-1 14-20 1/2" EIAJ 4 5/8" $18.95
S-2 32 1/2" EIAJ 7" 21.97
S-2A 32 1/2" EIAJ 5 1/8" 21.97
S-3 64 1/2" EIAJ 7" 39.95
S-8 32 1" SONY metal reel 38.00
S-9 63 1" SONY metal reel 59.95

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metal 50.00
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metal 70.00
Available picture size: 50" measured diagonally (40" width x 30" height at 50" screen)

Audience area: viewing area: 10'-10'/at 50" screen

Optimum seat arrangement: approx. within 40 degrees from center

Dimensions:
- Video projector: 15" (W) x 27" (H) x 19" (D)
- Video screen: 45" (W) x 36" (H)
- Video screen with stand: 45" (W) x 59" (H) x 16" (D)

**SONY Color Video Projection System**

<table>
<thead>
<tr>
<th>Part</th>
<th>Description</th>
<th>Price</th>
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<tbody>
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<tr>
<td>VPS-500</td>
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<tr>
<td>VPP-2000</td>
<td>PROJECTOR</td>
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</table>

**Sony TRINITRON Color CRT**

In conventional color TV tubes, there are three electron beams, one for each of the three primary color spots. These are set up in a triangular formation. The convergence of the three beams is very critical, necessitating complex adjustments. The Trinitron system uses a single electron gun and a color-selec-
dition device called the aperture grill. Three beams in a line come from the gun; the grill separates the beams. There are fewer controls for convergence, adjustments are greatly sim-
plified. American TV manufacturers are switching to the Trinitron (in line) system for color TV's up to 19".

**Audio**

- Video screen with the optional floor stand.
  - Sound waves come from the speakers built into the video screen stand VSS-01.

**Video**

- A wall-mounted video screen. Sound waves come from the built-in speakers of the projector and are reflected, with the picture, from the screen.

12 MONITORS  CTL VIDEO TOOLS
<table>
<thead>
<tr>
<th>Monitor</th>
<th>Screen</th>
<th>Connector</th>
<th>Audio</th>
<th>APPROX</th>
<th>APPROX</th>
<th>SPECIAL FEATURES AND STANDARD ACCESSORIES</th>
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<tr>
<td>Hitachi (Hitachi)</td>
<td>17&quot;</td>
<td>UHF</td>
<td></td>
<td>16-1/2&quot;h</td>
<td>19-5/8&quot;h</td>
<td>40 lbs 550</td>
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<tr>
<td>Sony</td>
<td>18&quot;</td>
<td>UHF</td>
<td>XLR</td>
<td>17-1/2&quot;h</td>
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<td>Yes 8 pin connecting cable</td>
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<td>RCA</td>
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<td>black metal cabinet finish</td>
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<td>Bell Bros</td>
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<td>UHF</td>
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<td>22-1/2&quot;h</td>
<td>99 lbs 800</td>
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**COLOR**

<table>
<thead>
<tr>
<th>Monitor</th>
<th>SCREEN</th>
<th>CONNECTOR</th>
<th>AUDIO</th>
<th>APPROX.</th>
<th>APPROX.</th>
<th>SPECIAL FEATURES AND STANDARD ACCESSORIES</th>
<th>SHIP</th>
<th>LIST</th>
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<tbody>
<tr>
<td>Sony</td>
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<td></td>
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<td></td>
<td></td>
<td>rack mountable - under-scanning switch</td>
<td>800</td>
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</table>

**CTL VIDEO TOOLS**

- Sony PVM-4200
- Shibaden VM-502
- Panasonic TN-63
- Panasonic TN-533
- Sony CVM-550
- Panasonic TN-93
- Panasonic TN-95
- Panasonic TN-950
- Bell Bros TU-8
- Bell Bros TE-9
- Bell Bros TE 9 AT
- Sony PVM-3300A
- Sony CVM-112
- Panasonic TR-513Y
- Shibaden TU-120
- Bell Bros TU 12
- Bell Bros TU 12
- Shibaden TM-124 (CCTV)
- Shibaden TM-171
- Bell Bros TU 13
- Bell Bros TU 13
- Hitachi (Hitachi) TM-172
- Sony CVM-192U
- Panasonic TR-19S
- Shibaden TU-2000
- Panasonic TR-200U
- Panasonic TR-220 V
- Shibaden TU-230L
- Ball Bros TU 23

**MONITORS 13**
The color signal is made up of 3 primary colors: red, green and blue (RGB).

Initially, all color cameras used 3 pickup tubes, one for each of the primary colors. In a 4-tube camera, one tube is for luminance, or white, which gives detail.

It is unnecessary for the color signal to be really sharp in order for the picture to be viewed as sharp; the human eye is not sensitive to detail with color information. So, to make color cameras lighter and less expensive, just the proportion of color at each area of the picture is encoded, rather than exactly where the edges of color are.

POINT SEQUENTIAL SYSTEM - In cameras with two vidicons (like the DXC-5000), one produces the Y or luminance signal, the other produces point sequential color signals (RGB). Incoming light is split at the back of the zoom lens assembly to be focused on the faceplates of both vidicons. There is a stripe filter in front of the chrominance vidicon to perform color dissection. As the electron beam scans the image formed by vertically-aligned striped filter, an output signal is produced in this sequence: black, blue, red, green. The stripes then go through the sample-and-hold process. This is done with three chroma gates which open one at a time in sequence. After the black pulse, as the blue stripe is being scanned, the first gate opens, measures the color and holds it until the other colors are measured. This is done to provide a continuous output.

PORTABLE COLOR

*AKAI CVC-150 is the first handheld color camera to be introduced in the U.S. As with all vidicon color cameras, it is necessary to use very flat lighting to achieve an acceptable picture. Thus, although the camera is light and easy to shoot with, unless you have lights set up, you can’t walk into a room and start shooting.

The quality of the picture is a little worse than the DXC-5000 Sony color camera, but I feel it is acceptable for 1/2" video. The thing to remember is that the technology exists to take any video image and run it through a computer to produce broadcast-quality signals. At this point it is very expensive to do this, but the cost of the hardware and software is getting lower.

Although the Akai CVC-250 is the first, several other companies are developing similar products in this price range. The most important breakthrough is the Charge Coupled Device (CCD) color camera. The CCD camera uses a flat solid state matrix of light-sensitive spots to translate the image into an electrical signal. This will eliminate the vidicon tube, which is the major cause of weight and unreliability in video cameras. Experts are predicting a CCD color camera (of 1/2" quality) before the end of 1973, and a broadcast color camera within two years.

In conclusion, if you must "get it done" now, buy the Akai. If you are planning a system for future purchase, or if you are buyng now with limited funds, and black-and-white will do the job, give the technology a little more time to develop.

John
In the image extension light is focused by the lenses into fiber optic tubes, which carry the light to a photosensitive surface. The photosensitive surface gives off electrons when struck by light. The phosphor screen, like a vidicon, gives off light when struck by electrons.

Before the electrons reach the phosphor screen they are accelerated by a 12,000 volt potential.

When weak electrons (from low light) get speeded up, they create a brighter light when they hit the phosphor screen. This brighter light is then focused onto the vidicon.

The Sylvania model 221 uses 3 intensifiers to give 3 stages of intensification. These intensifiers attach to most cameras (portapak included). Take C-mount lenses.

Lut says "The next best thing for shooting in low light is a silicium diode tube." (see pg. 16).
• The choice of a particular focal length lens is not only a matter of covering the field of view that is required. Lenses of different focal lengths also produce different perspective effects.

A short focal length lens (wide angle) makes an object that is moving toward or away from the camera appear to be moving much faster; it also has a greater depth of field. The higher the f-stop number (aperture closed), the greater the depth of field. Depth of field is proportional to the distance of the camera to the subject, the focal length, and the f-stop. (Camera shake is more apparent at a long focal length.)

SILICON DIODES are used for controlling light in both black-and-white and color. They can either be screwed directly onto the lens, or an adapter ring can be used. Neutral density filters reduce the amount of light that passes through the lens. These filters are often used to darken a blue sky so that clouds will be prominent.

Neutral density filters reduce the amount of light before it passes through the lens. There are different types of neutral density filters, such as the green, red, and yellow filters. Using a red filter which transmits the red and absorbs the green, the apple will appear light and the leaves dark. A green filter will produce the opposite effect. Yellow or red filters are often used to darken a blue sky so that clouds will be prominent.

Neutral density filters can be used to obtain that effect when there would otherwise be too much light.

Polarizing screens also darken blue skies. They minimize reflections from foliage, water and glass, etc. (not metallic surfaces). Two polarizing screens can be used as a variable neutral density filter by mounting them together and rotating one.

We have just touched on the subject of filters. If you're interested, Kodak publishes an info book called FILTERS for black-and-white and color pictures. You can pick it up at a camera supply store. It discusses the use of filters in still photography, most of the information is applicable to video.

This stuff is expensive, check on picking it up used. Also improvise, it can't hurt.
TOP VALUE TELEVISION (TVTV) began in early 1972 as an Ant Farm/Reinholdt fantasy project to cover the National Conventions, with the intention to include Videofreex and independent video people from New York, Chicago, San Francisco, and Los Angeles. As the world's largest TV studio, the conventions were an exceptional situation, and we hoped to thwart RF interference. (From what we've heard, the Grass Valley is not as effective as claimed, and the PCP-90 which is the huge holdout engineer who says he has trouble with it costs $35,000, but the AVR-1 for playback and thus should be able to work with half-inch."

However, they have experimented with half-inch color and find it unsuccessful, primarily because time-base instability is compounded by the complexity of the color system."

The camera uses one tube and a filtering system that is designed for process.
LIGHTING AND AUDIO

A shotgun, which would be used to pick up one person, or a small group, from a distance away. Shotguns have a very narrow pickup pattern; if you move away from the voice, the sound will not be as clear.

Electrovoice makes three really good shotguns. The superduper expensive one takes two people to carry.

Then, there are lavaliere mikes; these are small and hang around the neck. They have a sound response that's tailored to the fact that you're not speaking directly into it - it's somewhere under the chin. Lavaliere mikes are omnidirectional. Sony, Shure, and lots of other manufacturers make these.

The third type is hand-held, or stand-held. These are omnidirectional, or unidirectional (also called cardioid). Which you should use depends on the application. There's a really wide range of this type. Generally the best are condenser mikes; these require batteries. Dynamic mikes plug in directly without a battery, and are more durable.

A shotgun is a special type of microphone used in professional sound recording and broadcasting. It typically has a very narrow pickup pattern, allowing it to pick up a single speaker or group of speakers from a distance. The sound quality of a shotgun mike can be very high, making it a popular choice for everything from interviews to livebroadcasts.

When using a shotgun mike, it's important to remember that the microphone is highly sensitive to movement. Therefore, it's crucial to keep the microphone stable and still when using it. This can be achieved by mounting it on a tripod or other support system.

In addition to the shotgun, there are other types of microphones available, such as omnidirectional and unidirectional mikes. Each type has its own unique characteristics and uses, and it's important to choose the right one for the job.

SOUND

MICROPHONES - HAND AND STAND HELD

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<thead>
<tr>
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<th>635A</th>
<th>Omni, Dynamic</th>
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MICROPHONES - LAVALIERS

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MICROPHONES - SHOTGUNS

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CABLES AND CONNECTORS

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<tr>
<td>EC-1M</td>
<td>Mic. Extension Cable 16'</td>
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<td>EC-3M</td>
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<td>EC-15M</td>
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<td>RE-15</td>
<td>Mini Male/Mini Male cable</td>
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<td>PC-2</td>
<td>Plug Connector (regular to mini plug)</td>
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<tr>
<td>RC-3</td>
<td>Plug Connector (mini to regular plug)</td>
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<td>AX-1</td>
<td>XLR Male/XLR Female Connector 5'</td>
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<td>XLR Male/XLR Female Connector 5'</td>
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<td>AX-14</td>
<td>XLR Male/XLR Female Connector 32'</td>
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AUDIO CONNECTORS

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<td>A3M Male</td>
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<tr>
<td>A3F Female</td>
<td>3-pin microphone cable, some monitors</td>
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<tr>
<td>Mini M</td>
<td>Sony decks and small monitors</td>
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<td>Mini F</td>
<td>Sound extension cables &amp; adapters</td>
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<tr>
<td>RCA M</td>
<td>Panasonic decks, most stereo amplifiers</td>
<td>.55</td>
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<tr>
<td>RCA F</td>
<td>Panasonic decks &amp; adapters</td>
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<tr>
<td>Telephone</td>
<td>Older microphone mixers, line input on</td>
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ATLAS MICROPHONE STANDS

<table>
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<tbody>
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<td>MS-10C</td>
<td>10' Boom Stand 34'</td>
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<td>88-1</td>
<td>Baby boom adapter</td>
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<tr>
<td>85-36</td>
<td>Boom stand to 72'</td>
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<tr>
<td>85-36</td>
<td>High 52' boom</td>
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<tr>
<td>36-36</td>
<td>As above w/wheels</td>
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</table>

It's advisable to stick with low impedance audio equipment, primarily because there is no problem with using long extension cables.

Alan

LIGHTING AND AUDIO

SOUND
There is a No. 512 adapter to permit the use of the S6 leg. The Model K2 Kit consists of 3 lights with a total of 1800 watts, complete outfit No. K2B (with 3 barn doors)...

Two-channel sound can be recorded on the Sony F-11 1/4" tape machine, on the U-Matic 3/4" cassette machine. Another way of doing this would be to replace the original audio head on the deck with a small stereo audio head, adding an audio recording amplifier to handle the stereo audio track. The recording amplifier can be built inside the machine, Lu says this modification would be $450.00. No TV will play back two-channel by itself. Sound should be plugged into stereo amplifier. Lu says better sound can always be achieved by plugging into a stereo amplifier system. Small TV monitors have only 2-3" speakers which are not quite adequate for good quality sound.
The most complete book we have found explaining the principles of television is The Focal Encyclopedia of Film and Television Techniques by Focal Press. This book is expensive ($37.50) but worth it. Hastings House will take your money and send you the book.

Thanks to the British Bureau of TV Advertising Ltd. for Puch's Promata, a short history of television. The pamphlet has information and pictures (see p. 3) on early experiments with TV done in England.

Thanks to Parry Teasdale for recommending The Pictorial History of Television by Settell and Laas. This book has a good bit of background info and lots of TV stars. It is filled with great pictures (some on p. 3). Published by Grosset & Dunlap $7.95

PORTABLE VTR CAMERA ADAPTER
This adapter allows you to use a portapak camera with a table model VTR.

SONY CAMERA ACCESSORIES
AV-3100 viewfinder for AVC-3200, 3210 $216.00
CD-1 sync generator, pulse/square wave 100.00
VCS-31 camera selector to operate up to 3 cameras with one VTR 55.00

PANASONIC CAMERA ACCESSORIES
WJ-320P sync pulse generator $250.00
WJ-346P pulse distribution amplifier $250.00
WV-650 power supply for tally lamp $55.00

NEW BODY (CAMERA) BRACE-A little expensive, but well worth the money. Far superior to any others we have seen. Completely adjustable, folds up. $95.00

still good stuff

GAFFERS TAPE 2" ROLL $4.50

SONY

VCT-1 Monopod $12.00
TD-300 Tripod, dolly and cam link head $34.00
TD-20A Tripod $16.75
TD-1 Dolly $5.00

by Charles M. Sutcliffe

20 ACCESSORIES

CABLES:

<table>
<thead>
<tr>
<th>Model</th>
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<th>Length</th>
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<td>CF-110</td>
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<td></td>
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<tr>
<td>560</td>
<td>100'</td>
<td></td>
</tr>
</tbody>
</table>

NOTE: half bolts at joints DF, DC, DC', and EF. All others require a nut and 1/8 bolt.

NOTE: Pad to suit with 2" x 2" foam rubber.

Drawing by Joseph C. Nelson

Carrying Case for Cassette Machine
Sony LC-200 for W-5000 player
LC-300 for W-1600 recorder

Panasonic
PC-210 for NV2010 player
PC-220 for NV2120 recorder

COAX

A COAXIAL CABLE consists of three elements. In the center runs a copper wire which is surrounded by an insulating layer of polyethylene foam, which accounts for the major portion of the cable's diameter in cross section. The insulation is surrounded by a tubular shield of braided copper wire or a seamless aluminum sheath.

COAX BY THE FOOT
1'-99' $0.10 per foot
100'-up $0.06 per foot

20 ACCESSORIES

CTL VIDEO TOOLS II

Radical Software is an on-going publication started by Raindance. Issues are now being prepared by other groups as well. These books (8 so far) cover a wide range of subjects related to alternative television. They cost $1.95 or $3.00 depending upon the issue. Write to Radical Software, Suite 1304, 440 Park Ave. South, New York, N.Y. 10016. Or buy them at CTL.

BATTERY CHARGER/AC ADAPTER for use with portable VTR

- Sony AC-3400 $81.00
- Panasonic NV-B-40 $95.00
- CTL-3400M $50.00

CARRYING CASE FOR PORTABLE ENSEMBLE

- Sony LC-3400 $70.20
- Panasonic PC-100 $70.00
- CTL-3400M $50.00

DAVIS & SANFORD TRIPODS:

[The best for the money]
1) CW/C4 $165.00
2) NM/CC $233.00
3) NM/CC $284.00

Lynda says check out a TOTE-A-TOT--it is a backpack made to carry a 24 lb. baby (or portable VTR). It has a seat and bar to keep the baby (or deck) secure. I got mine at a sporting goods store, they cost about $20.

BATTERY CHARGER/AC ADAPTER for use with portable VTR

- Sony AC-3400 $81.00
- Panasonic NV-B-40 $95.00
- CTL-3400M $50.00

ACCESSORIES

VEC25
50 UHF m to UHF m coupling 25' video cable 10.00
100

400 6-pin m to 8-pin m 20' 25A25 extension cable for W-2100P (color camera) 25.00
50
100

4761 6' tally intercom cable for W-2100P (color camera), & WJ-3800P (color SEC) 18.00

NV-C26 8-pin m to 10-pin m 10' monitor cable for portable to monitor 22.00

10025 10-pin m to 10-pin m 25' with W-250P, 340P, 360P, video 30.00
50 100

1925 10-pin m to 10-pin m 25' extension cables for 10G series, video 35.00
50 100

VEC25 50 UHF m to UHF m coupling 25' video cable 50.00
100

3785 10-pin m to 10-pin f 32' for portable VTR 39.95

CTC VIDEO TOOLS #2

CTL Video IN & OUT 10-pin m to 2 UHF m 10' for feeding composite video in and out of AV3400 27.00

Jim mini m to matching transformer 10' RF output of portable to VHF antenna terminals on TV 10.00

Rodger IN & OUT 10-pin m to 2 UHF m 10' portable to deck or monitor 30.00

[Cover: Drawing of a TV set and a VTR, with various accessories and tools listed inside the book.]

[Drawing of a tripod, a carrying case, and other equipment related to video production.]
A genlock allows titles and effects from live cameras to be added to previously recorded tapes. The cameras may be from the pre-recorded control pulses.

The Panasonic WY-922A Genlock SEG is recommended for systems utilizing existing cameras. The back panel can easily be re-wired for Sony CV and AV cameras. Instructions for wiring changes can be found in Video-Tuts, or write to Paula.

All Sony and Panasonic SEGs have built-in sync generators. These should be used where simplicity and ease of interconnecting are required.

Viscount and Shintron SEGs require external sync generators and junction boxes for camera connection. These feature vertical interval switching.

Vertical interval switching: circuitry designed to switch only during vertical blanking period (between frames).

A fade is a reduction of the video signal produced by a fader (similar to a volume control in audio) which can be moved gradually, allowing a slow transition from full picture to black.

For a dissolve, or cross fade, the output of two faders is added together so that the two input signals are superimposed. Usually, on an SEG, the faders are mounted so that pushing both faders up turns one signal completely off and the other completely on. As the faders are pulled down together, the first input increases at the same time the second input decreases, so the total video signal is always one volt. The faders can be operated independently (called a split fade) to go to black with both signals, or to compensate for inputs at varying levels. If both faders are turned to their full on positions, the output (the sum of the two inputs) will be much higher than one volt, and will produce distortions when recorded.

A wipe allows you to separate the screen into sections with a separate input showing in each section. The controls for the wipe are a series of push buttons to select the pattern, and two sliders, for vertical and horizontal progression of the pattern edges.

<table>
<thead>
<tr>
<th>Model</th>
<th>Height</th>
<th>Weight</th>
<th>Inputs</th>
<th>Outputs</th>
<th>Key</th>
<th>Sync</th>
<th>Generator</th>
<th>Color or Monochrome</th>
<th>Special Features</th>
<th>Price</th>
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<tr>
<td>Sony 65-1</td>
<td>9 lbs</td>
<td>15-1/2&quot;x10-1/2&quot;</td>
<td>Sony 6-pin</td>
<td>1 program</td>
<td>2:1 interface, external</td>
<td>mono</td>
<td>negative image switch, 6-pin plug for external sync, tally light circuit</td>
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<td>595.00</td>
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<td>Panasonic ex-922A</td>
<td>22 lbs</td>
<td>19&quot;x13&quot;</td>
<td>Panasonic 10-pin, Panasonic 6-pin-easily modified for Sony-Eng</td>
<td>2 preview</td>
<td>2 interface, external, VTR</td>
<td>mono</td>
<td>negative image switch, gen-lock for VTR, tally light circuit</td>
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<td>405.00</td>
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<td>19-1/8&quot;x14-3/4&quot;x16-1/8&quot;</td>
<td>Sony 6-pin, Sony 10-pin for AVC-6000 with JB3</td>
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<td>2 interface, external</td>
<td>mono</td>
<td>line out to camera tally, intercom, return video with junction box JB3</td>
<td>40</td>
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<td>19&quot;x13-1/4&quot;x10-3/4&quot;</td>
<td>Panasonic 10-pin</td>
<td>2 preview</td>
<td>2 interface, line, external</td>
<td>mono</td>
<td>genlock, rack capable, intercom &amp; tally lights, negative switch, keyer</td>
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<td>1 external only</td>
<td>mono</td>
<td>vertical interval switching, tally light switching</td>
<td>12</td>
<td>990.00</td>
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<tr>
<td>Panasonic WV-580</td>
<td>22 lbs</td>
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<td>UHF</td>
<td>1 preview</td>
<td>1 external only</td>
<td>color</td>
<td>built-in intercom and tally, soft wipe, circle wipe</td>
<td>26</td>
<td>1095.00</td>
<td></td>
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<tr>
<td>Sony SEG-600</td>
<td>14 lbs</td>
<td>10-3/4&quot;x8-3/4&quot;x6-1/4&quot;</td>
<td>UHF</td>
<td>1 preview</td>
<td>1 external only</td>
<td>color</td>
<td>diagonal, circle, soft (horizontal) lines, built-in colorizer, tally light and vertical interval switching</td>
<td>31</td>
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<tr>
<td>Shintron 830</td>
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<td>UHF</td>
<td>2 program background</td>
<td>external only</td>
<td>color</td>
<td>diagonal, circle, soft (horizontal) lines, colorizer, tally light and vertical interval switching</td>
<td>24</td>
<td>1496.00</td>
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</table>
TIME BASE CORRECTION

A big problem with the half-inch video signal is time base instability (the thing that makes people think that you couldn’t broadcast stuff recorded on half-inch). You can think of time base as a clock. Every sixtieth of a second, a vertical sync pulse is supposed to happen—every 15,750th of a second, a horizontal sync pulse. If the timing of a vertical or horizontal pulse is anything less than exact, a slow motion problem (top of the picture bent) develops. Time base instability is often called time base error, because tape attack changes the relative positions of the sync and video signals. Skew distortion shows up on home TV sets—these have a time base made to correct only sync pulses.

A time base corrector makes the broadcast of half-inch production possible. The machine has the ability to delay (store) a line of video as it occurs. When a signal is fed into a TBC, and the sync pulses are too close together, it stretches out the time it takes for the line of video to happen.

TIME BASE INSTABILITY

Since the half-inch video signal is scanned diagonally (helical scanning), any stretching of the tape moves the sync pulses out of alignment with the sync pulse at the beginning of the next field. This is called time base instability.

PROCESSING AMPLIFIERS

* A proc amp (processing amplifier) allows you to make adjustments in the video signal prior to recording. Some are designed to adjust an already recorded signal.

A proc amp gives you a pretty wide range of controls:

1) It strips off old cruddy sync and generates nice clean sync. (It will not correct the time base, however. If your original sync pulses were off-timers, the new ones will be too.

2) You can vary the size of blanking (see How It Works, page 4)

3) Video gain control allows you to raise the level of the whitest white, and pedestal control lets you lower the level of the blackest black. So a picture shot in poor light can be brightened and sharpened up.

4) Color capable proc amps like the 3M let you regenerate burst and chakra and adjust chakra phase.

We have had experience with the Ball Bros. Mark II, the Dynasciences and the 3M DP-100. These have all been designed to work with one-inch format machines, but they will work with half-inch some of the time. We are presently working on the Ball Bros. to make it work with half-inch. The 3M which gave us the best results of the three, will probably need only minor modifications. Most proc amps are in the $2,000 price range. Call us for more info.

IMAGE ENHANCERS

* An image enhancer is a device that reduces noise or improves the resolution in a picture. The most sophisticated enhancers are based on large computer systems and are capable of restoring out-of-focus images, replacing missing information, and other corrections. Simpler units use delay lines for storage of a line of video, so that it can compare each point on the picture with the adjacent points. It uses this information to determine the brightness level of that point.
Image Processor

- (Presently "optimized" for video signals...)

- a number of a special class of educational machines called a design-tool-2-learning machine...

In brief, the IMAGE PROCESSOR (I-P) is a patch programmable general purpose analog computer optimized for the real-time processing of images. I have been designing and building it over the last year...

The I-P accepts naturalistic images, modifies and combines them in complex ways and displays or stores the result. A television camera, film-chain, video tape recorder or similar device can be used to decode moving images into a form which the I-P accepts. A television monitor decodes the signal and displays the modified image. The instrument is programmed by routing the image through various processing modules and then out to a monitor or video tape recorder. The modules are designed to maximize the possibility of interconnection, thereby maximizing the number of possible modifications of the image.

This description of the image processor may sound like a sophisticated special effects board in a television station. There is, of course, a similarity. A good analogy would be to compare a desk calculator to a general purpose digital computer: both the desk calculator and computer can add and subtract numbers. However, the computer can also store and execute a program which it executes in time...and more importantly, the computer can modify its program based on results of the program.

The image processor has, in addition, the power to execute a program in time, and more importantly, to modify what it is doing based on the content of the input image and the program. The image processor is a general purpose machine and the special effects generator is not.

**Design-Tool-Learning Machines**

**Motivation** - The user is able to do what he considers to be something worth doing, i.e. a problem or project of his own choice...

**Direction of Action** - The user acts on the machine by structuring it to do a desired task...

**Availability of Structure** - The structure of the machine is accessible to the user, allowing him more control of the learning situation...

**Pacing of User** - The user is in control of pacing; he may take as long or as short as he likes, he may investigate any area in depth...

**Input to Machine** - Large and varied repertory, including keyboard, joy sticks, biological and environmental sensors...

**Feedback, Machine Output** - Immediate, multi-sensory, unambiguous and varied; includes colored kinetic events, tactile audio and environmental information...

At yet another level the image processor and similar machines are designed for the express purpose of modifying consciousness, increasing awareness, centering, learning non-linguistically, etc.

Machines whose primary function is this "consciousness modification" are not new; a musical instrument is a good example of a machine designed to modify consciousness~what else is it used for?

At the most immediate and final level, it has been a joy working with the instrument; I have learned a great deal from it.

The image processor is not yet finished, but it is functioning; still restricted to black-and-white images and not many input devices have been built. Expansion is slow but steady.

---

Image Apeassoup

The Bananas Association of Japan has purchased 6,000 Panasonic VTRs model NV-3120 to keep their many customers busy watching video while waiting to have their hair cut.
colorizers

Black-and-white camera plus colorizer does not equal color camera. The colorizer works on a principle of converting different gray levels into different areas of the color range. This range is manually adjusted to suit, so that according to the position of a knob, one might affect the colors, so that the well-lighted areas were red, and the shadows blue, or that the light areas were blue, and the shadows green, etc. The simplest colorizer has four controls: one is straight voltage, to control saturation level. Then there is one for the red, one for green, one for blue. Color television works on the principle of combining colored light, not pigments. Therefore the three primary colors are red, blue and green—not yellow. One achieves yellow by mixing red and green.

The effects of the colorizer look like a psychedelic poster. You soon get to thinking about what was supposed to be so wrong about the color television receiver, with the colors misadjusted. Why is it that with all of the many possible combinations, there should only be one correct setting, and that the others are all incorrect? Nevertheless, a poor colorizer soon grows to be boring. If the saturation is turned too high, it makes the color break up into red, blue, and green bands, with no correspondence to the picture, or it can be difficult to use all three colors simultaneously. However, I have worked with excellent colorizers, in which there is a chroma-keyer, allowing different colorizer settings, which one can switch into instantly. Also, with the keyer, it is possible to colorize two different signals separately, so that very close areas, of similar light level, can be colorized individually.

I usually don't colorize an original tape, because a colorized tape will not look as good on black-and-white monitors--there is a polarization effect that decreases the detail. Also, for an original, a colorized tape will not copy well, whereas a black-and-white tape can be copied a number of generations successfully. Therefore, I generally prefer to colorize a tape live, or to colorize each copy individually, as opposed to trying to copy color.

Dimitri Devyatkin
324 E. 19th Street
New York, N.Y. 10003

We have duplicated colorized tapes with no problems, so it can be done.

TheCTL Graphic Colozizer (CTL GC-1) is here. Developed by ace engineer George Brown, the GC-1 is an 8-step colorizer. Each step is discrete with separate red, green and blue color controls.

The input gain and pedestal controls allow assignment of gray levels to varying input signals. The clusters of red, green, and blue sliders allow infinite color selection for eight mattes which are keyed into the eight gray levels of the original video. The direct/derived control allows mixing of original and synthesized luminance.

The GC-1 is especially effective in the control of feedback loops because output levels can be shifted infinitely from white to black. The discrete nature of the output signal improves regeneration allowing a camera-monitor loop to be used for short term storage.

Another use of the colorizer is for shooting titles from monochrome artwork, freeing a color camera for studio shots. The GC-1 can add color to selected portions of black and white photographs and negatives. With the colorizer, low resolution material (such as medical x-rays) can be processed for greater clarity. The optional key driver output allows you to insert video using another keyer.

GC-1 video in - loop through - UHF video out - 2 NTSC 75 ohm RGB output - optional key driver output - optional $1495.00

The CTL Graphic Colozizer

CTL VIDEO TOOLS #2

VIDEO TOYS 25
EDITING SYSTEMS

FAIR
Sony AV-3400 to AV-3650 or NV-3130
Portable VTRs are not stable playback decks.

GOOD
Sony AV-3600 to AV-3650 or NV-3130
Sony AV-6800 to NV-3130 for color editing.

BETTER
AV-3650 or NV-3130 to AV-3650 or NV-3130
Two servo capstan decks will give you an easier shot at good edits.

BEST
AV-3650 or NV-3130 to EV-320F
(see editing page, 9 for info on 320F)

FOR MULTIPLE SCREEN DISPLAYS USING REGULAR TELEVISION SETS, The splitter divides the RF signal. With just a splitter the signal can be sent to as many as four TV sets. To send the signal to more than four TV sets you will need an RF amplifier.

2-way splitter $2.45
4-way $4.95 A1104 (4 outputs) 24.75
8-way $13.70 A120 32.75

SONY 10 pin cable CCJ

1 Hot - yellow/gray-video out
2 Ground - red/video ground
3 Hot - gray/vert. sync
4 Ground - common ground
5 Hot - blue/orange-sync
6 White - remote control
7 Purple - green/gray-microphone
8 Ground - audio ground
9 Purple - audio out-red
10 Red - audio out-white

26 WIRING DIAGRAMS
UHF and mini jacks can be added to a monitor with an 8 pin connector, as shown. Be careful to mount connectors in a place where they will not interfere with other circuits or wires.

Junction cable. A V-splitter distributes the video signal from a deck to two monitors. Only one of the branches of the cable can be longer than 15 feet, and the monitor at the end of the long cable must be terminated. (The same applies to the use of a T-connector.)

Termination. A video signal traveling in a coaxial cable can go in two directions. If the signal bounces back through the system it can cause ghosting or multiple images, and a noisy picture. A 75-ohm resistor is put onto the end of the line to absorb the signal energy so it doesn't reflect back to the line.

Bill says: "Extension should be spelled extension."

**WIRING DIAGRAMS 27**
Some Preventive Care Tips for Non-technicians

1. A large proportion of equipment breakdowns come from the fact that most video groups subject their half-inch gear to more continuous use than it was built to take. So there is an extra incentive to minimize dust, dirt, ashes, excessive vibrations and jolts, and unnecessary handling. Be particularly careful when packing gear for travel and when working in crowded situations.

2. Annoying minor design problems in the Video Rover: the camcorder’s when the geckos are liable to break off if treated roughly.

3. Other vulnerable areas: cables and their connectors. Always place multi-pin connectors in their sockets very gently. They can be forced in incorrectly even if there is only one comfortably fitting position. When connecting, do not pull on the cable itself. Particularly susceptible to damage from this are the 10-pin camera connector and the one. Make it a habit to wrap up cables in a smooth loop: no knots or twists; a break in the middle of a cable is much more bothersome than a loose connection.

Miscellaneous Information

4. Clean the heads and take-up reel as a daily routine, as well as before particularly heavy use. Many taping or playback disasters result from dirt on the heads or in the brushes. Never use Q-tips to clean the heads or in the brushes. Never use Q-tips! Use a very small slotted screwdriver--they usually aggravate the original problem.

5. Thread the tape quickly but never in a hurry. Wind the tape if it is re-threaded in exactly the same way as well as before particularly heavy use. Many taping or playback disasters result from dirt on the heads or in the brushes. Never use Q-tips to clean the heads or in the brushes. Never use Q-tips! Use a very small slotted screwdriver--they usually aggravate the original problem.

6. To preserve video tape, store it in cool, low-humidity locations. Always store tape on end, one next to the other, like a shelf of books, since stacking will still record properly but only play back that middle of a cable is much more bothersome than a loose connection.

7. Batteries will perform optimally if they are kept well charged. Make it a habit to put your battery in a cool, low-humidity locations. Always store tape on end, one next to the other, like a shelf of books, since stacking will still record properly but only play back that middle of a cable is much more bothersome than a loose connection.

8. There are a lot of techniques that are applicable to special situations but soldering and screwing, well, they’ll get you a long way.

Perry Tendale
(Video for Media Bus)

Keep a Clean Head...!

Security Information

Unless you have a new AV-3400 do not set the deck on its side (vertically) with the tape running on the spools. Pressure from the cover will cause the reels to stop, resulting in tangled tape around the capstan. What Sony did recently, you can too. Put a bracket on the deck so that the cover can’t be pushed against the reels.

Paula - Here’s all I have on file on the fuse replacer, I lent you. Grown from a mold by the Videofreex/Media Bus.

Drum Speed Check for AV-3400

Tools
1. A television or monitor/recorder (in TV setting) which gives strong signal 1 meter from pre-recorded tape

Put the monitor and TV next to each other, touching. Turn on the television and play your tape through the monitor. The monitor you will see a line across the screen. If the speed is properly the line will be stationary (a slight drift is acceptable). If it is moving up or down on the screen, you should adjust the speed.

Speed Adjustment

Tools same as above

Small phillips screwdriver very small slotted screwdriver

Cup to hold screws

Remove the SF-20 and SF-20 adapter. Keep the cover completely. The deck up on its back so that the back is facing you (tape, drum, etc, away from you). Remove the screws from the back, front bottom, and front sides (do not remove the tape accessor). Now you should be able to pull the works out of its case by the handle. Find a piece of orange paper behind where the SF-20 goes. To remove it just loosen the screw on the other, like a shelf of books, since stacking will still record properly but only play back that middle of a cable is much more bothersome than a loose connection.

Paula - Here’s all I have on file on the fuse replacer, I lent you. Grown from a mold by the Videofreex/Media Bus.

keep a clean head...!
The bottom plate is covered by the hand grip, so take that off first. Then to remove the two small flat head screws underneath. The bottom plate will slide down and dangle on camera cable. The hole is large enough to permit removing it from the cable over the 10 pin connector.

**TURN CAMERA ON**

- Remove lens and replace ornamental ring.
- Replace lens.
- Zoom out without changing focus.
- Push the flange back tool sideways to focus. Reinsert if necessary.
- Repeat steps 5-7 until camera stays in focus throughout zoom.
- Remove lens and replace ornamental ring.
- Insert lens.
- Remove ornamental ring.
- Replace lens.
- Replace lens and replace ornamental ring.

**VIEWFINDER**

- The viewfinder brightness and contrast controls are similar to those in a TV set. If you adjust for best image when shooting in low light, the viewfinder will be too constrictive by the light, so you should readjust according to the shooting you will be doing.

**VIDICON**

- Replace with 98944 2/3" tube (see page 16). The vidicon should be replaced when it shows poor contrast, graininess or permanent burns.
- 1) Flip cover, remove top and bottom cover from camera.
- 2) Remove lens.
- 3) Farm ornamental ring counterclockwise and remove.
- 4) Remove 3 large screws from vidicon retainer and lift off.
- 5) Push the vidicon out from the socket in the back and pull straight out through the front of the camera.

**BEAM & FOCUS**

- The beam and focus controls are part of the high voltage board, so be careful when sticking a screwdriver inside for adjustments. There are voltages up to 3000v on the H board, and although the current in the camera is too low to cause permanent damage to humans, being thrown across the room by a shocked human can cause permanent damage to the camera. Wrapping the shank of the screwdriver with a layer of Scotch # 33 brand black electrical tape will help protect both the adjusting and adjustee from accidental short circuits. If your camera is being used by yourself and other persons who have read this, cutting out the grill in the bottom cover (see diagram) will save time in making beam and focus adjustments. The electron focus control is adjusted while observing the picture on the viewfinder or (better) a monitor. Adjust both the focus control and the lens until the sharpest picture is obtained. The beam control is turned fully clockwise and then turned slowly counterclockwise until blooming (big blobs of light areas) disappears. If the beam is adjusted for shooting brightly lit scenes, lag (trails) may appear when shooting in low light, backing off the beam control slightly will help.

**MAINTENANCE 29**
30 Studio Set Ups

CTL CUSTOM CABLE COLOR

- 2 color cameras - WV-2100P/8200P (control unit) with pushrod lens 18-105mm and 25' cable.
- 2 tripods - Davis & Sanford A54/CS
- C color test pattern and sync generator with genlock - Tektronix 146
- D subcarrier phase shifter - D.A. WJ-1700P
- 1 color SEG - WJ-922
- 2 triple monitors TN-633
- 1 calibrated 12" color monitor (Trinitron tube) Tektronix 650-1
- E NTSC vectorscope - Tektronix 602
- F waveform monitor - Tektronix 545
- 4 racks, including 1 console, 1 patch rack
- 1 microphone mixer - Shure M67
- 4 intercom heads
t- 1 camera-B 6 W-colorizer input-MV-240M
- 1 tripod - Davis & Sanford CGM/C4
- 1 junction box - WJ-900P
- 1 camera cable - 15025
- 2 lighting kits - Colortran 150-110
- 1 colorizer - CTL GC-1 (see pg. 25)
- 1 cable harness installation (wiring 6c.)

$35,000.00

This is a sample studio. The price will vary with specific requirements. Call or write to John at CTL.
There are basically two types of CCTV surveillance systems. The RF systems use camera signals modulated onto standard channels. RF is mostly used in conjunction with cable or master antenna systems in apartment buildings. In industrial systems, unprocessed video signals are carried directly to special monitors which offer improved resolution.

CTL designs and installs custom CCTV surveillance systems. Call Jack at CTL for an estimate based on your specific needs.
The Video Access Center

Hello,

It's time we get together. We are all basically in the same boat. We are trying to link our communities through public access television.

The Video Access Center opened on September 19, 1972. It was set up through the Alternative Media Center at NYU. AMC contracted with Sterling-Manhattan Cable Television Co. for the donation of equipment for the use of an access facility. About $15,000 worth of equipment was provided, including 9 portapaks, AV-9600 editing decks, 1 AV-3600 and a special effects generator. Sterling-Manhattan agreed to maintain this equipment and also to provide the center with 7½ hours of 12-hour tape with a new reel to be substituted for each tape used more than five times. In order to actually set up the center, AMC had to find other funding. This came from a grant from the Fund for the City of New York.

At the beginning, a group of about 15 people volunteered substantial amounts of time. Meetings were held regularly to develop policy and procedure. One of the first decisions was to limit the use of the center to people living in the Sterling-Manhattan area. Classes were started immediately to train people in the use of the equipment. By the end of three months, close to 100 people had taken cards designating them as qualified to check out equipment. This began to put a tremendous strain on the 4 portapaks; one of the four was almost always in for repair.

The volunteers then decided to work for quality, with the hope of getting more and better tapes into the center.

The municipal channels (A & B) will start production as soon as an origination point is decided upon and the signal is fed into the system. Because Austin, a college town (60,000 students, 1/3 of the population), they are pushing to be operational by the new school term this fall.

Although none of the major Texas cities are cable, Houston, Dallas, Ft. Worth and San Antonio are all in the process of drafting and awarding franchises for cable systems. Whatever happens in Austin will have a great effect on the way things are set up in the other cities. Any information you can pass on will be greatly appreciated.

We would also like to establish a tape exchange network with access elsewhere. Please contact any of the above organizations that are government-funded which already have TV equipment.

The Video Access Center 528 LaGuardia Place NYC (212) 598-3586

The Municipal Access Center

The municipal channels (A & B) will start production in the spring. The role of executive producer is expecting their programs to come from city and state agencies. The New York State Council on the Arts, the Cultural Affairs Department, the Human Resources Administration and others will get into TV. It appears that the city intends to avoid putting any money into this project, but will instead involve organizations that are government-funded which already have TV equipment.

Capitol Cable Co. (owned by Bird Lady Johnson) was approached recently by Austin Community Television to start doing something with public access or real program origination. Because the company is a grandfather system, they aren't required to do anything about public access. But amazingly, they agreed to give prime time on an ABC channel. Up until now, Capitol got ABC from San Antonio and from Austin. Now, the St. Anton' ABC station will go off from 7 to 2 p.m. for public access programming, then return five minutes of network news and be returned to ABC for the remainder of the night. The cable co. will provide the means of getting the p.m. signal to their head-end (microwave or cable) from its origination point. An advisory board has been set up that will be responsible for getting and keeping the armadillos fed. On this board are representatives from the Texas State Council on the Arts, the Hawaii Cable Consultants and Space City Video, an independent group from Houston.

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The Municipal Access Center
Community Involvement

If a look at citizen and institutional participation in Massachusetts cable development would never reveal that cable is one of the most important elements of a community's life, schools, hospitals, libraries, banks and community organizations that have been created since cable's new wire has traditionally been made only by the local government and the cable company. That is the subject has usually received less attention than contrasting for garbage collection system or locating a little league field, unless reception of the Bruins was at stake.

It is possible to determine in advance how much money a cable system could make in any community. By combining this knowledge with a needs assessment of the community, the local government will know what it can reasonably expect for at the beginning and in the future. Any city or town which knows its rises, needs and potential before granting a license is bound to bargain for a better deal. For instance, a city might request use of a channel to interconnect all of the doctors in the city instead of permitting that channel to be used for made-for-TV movies. Drawing up the license in advance and advertising for applicants who meet the city's standards will benefit both the city and the company. Each will know the other's expectations and limitations before they are legally bound together for 15 years.

Institutions and special interest groups have been very slow to get involved in cable licensing. Schools, libraries, hospitals, banks and community organizations such as churches and sports associations have sought to participate in the decision to license or locate a little league field, etc. They have recently purchased a Sony VTR for their occasional use of prerecorded videotapes in your community. The time will come mostly from Parker Towers, the three complexes wherever we can. If your community is owned by a parent corporation, the franchise will be one of the best public relations devices they can develop.

Getting it on cable...

Since you are reading this issue of VIDEO TOOLS, you may be interested in producing videotapes in your community. The time will come mostly from Parker Towers, the three complexes wherever we can. If your community is owned by a parent corporation, the franchise will be one of the best public relations devices they can develop.

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The fastest way to get a favorable response is through economic pressure. Since you are reading this issue of VIDEO TOOLS, you may be interested in producing videotapes in your community. The time will come mostly from Parker Towers, the three complexes wherever we can. If your community is owned by a parent corporation, the franchise will be one of the best public relations devices they can develop.

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Community Access Video

H. Allan Frederikson - 2895 Broadway

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The future...

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Broad Band Communication

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The cost of paperwork created by business in the United States is estimated at tens of billions of dollars annually. Should this more than double within the next decade as expected, this mass of paper will be sufficient to fill the average American home.

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By 1980, the development of interactivity will foster the application of man-machine systems for shopping, banking, self-writing, and utilization of information services from the home. These computer-like display devices will block communication channels as they now exist. If we assume a continuing proliferation of Third Class mail to consumers superimposed upon the business volume, it becomes apparent that physical transfer as we now know is going to become obsolete.

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The use of computers has largely been confined to in-plant operation, but time sharing of centralized computers is now becoming a widespread concept. In the near future the development is expected to be greatly increased because of the high-speed computers used in high-speed computers together. Broad-band (or “broadband”) networks will be vital to these functions...

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Several people had negotiated with the University to finance a cable system which would wire up the campus. When bids from commercial cable companies were submitted, they decided to build the system themselves. At last summer, this core of about ten people pulled cable throughout the campus and in some cases, they learned the Synapse dedication ceremony:

Leonard Crow Dog at the Synapse dedication ceremony:

...let the people hear, let the people know...

In December 1972, applicants to the Creative Artists Public Service Program (CAPS) were invited by Cy Griffin (CAPS video consultant) to attend a 10-day get-together at Syracuse University. Videastream, as the gathering was called, would provide the grant applicants the opportunity of learning about each other’s work and proposed projects, as well as about the operation of a cable system.

Synapse provides open access to their one-inch color studio—which includes the slide, film and message chains, a color effects board, and half-inch equipment (nine portapaks and more). They also provide a chance to find out firsthand how a cable system works. They want people to see where to share information, which means, so that their system is a constantly flowing information pool. This includes increasing their library of programming, trying to find ways to make tapes available—both through information retrieval systems at the University and through the creation of distribution networks.

One of Synapse’s major tasks has been to create an audience. When there’s no feedback from the community, it’s an enormous job to do interesting programming. During the week we were there, the cable was being used to show the CAPS tapes, and that was the most continuous programming that they had ever had—but still no real community involvement.

Saturday night, we started doing some cable-casting ourselves, figuring out a schedule of tapes, announcing the next program and punching it up. Just trying to keep a program going. It was good to realize that all the information we were trying to get through the week was culminated in doing what Synapse meant for people. It was being used to show the CAPS tapes, and that was the most continuous programming that they had ever had—but still no real community involvement.

We thought that the experience of seeing eighty people putting their ideas on videotape was like saying that everybody is different, everyone sees the world differently. And it was interesting, after viewing the tapes, to see what the applicant was proposing to do. Lynda’s tape of last year’s CAPS panel deciding on who would get grants caused discussion. We decided that it was impossible to guess who would be awarded commissions this year—the panel members change every year and the decisions are based on their individual feelings about the tapes entered. That’s why Cy always told people who didn’t receive commission one year to apply again the next. As an experiment in information exchange, Videostream was very successful, and we hope that it will be a continuing tradition.

Rick Shain

Teenage video

The camera as pen, a concept which so excited Alexander Astruc in post-war France may turn out to be a Sony 3000 unit rather than a movie camera. At least, my experiences working in media with teenagers lead me to think so.

At the New York Public Library Videotape Workshop for Teenagers at the Inwood branch, upper Manhattan, run in conjunction with the Adult Services and Film Library has been exploring the possibilities of videotape workshops with teenagers, operating out of a library...
The greatest asset in using videotape for environmental fieldwork is the video in a specific environment. The promise of this kind of production is unlimited, both in Alaska and elsewhere.

Dan L. Moore
Education and Media Coordinator
Alaska State Museum
Pouch PM
Juneau 99801

Video as an Organizing Tool

For the past two months, we have been traveling across the country for the Youth Citizenship Fund of Washington, D.C. We were hired to do a video documentary of their voter registration activities with youth in minority communities, as well as experiment with video as an organizing tool.

The video usually served as an entreé to the various communities that we visited. It gave us a way to talk to people who ordinarily would have been hostile and uptight with outsiders in their community. But what interested us the most was the community’s response to video and public access/local origination channels. Communities were especially interested in using video as a way to exchange ideas and information with other people around the country who share their problems.

We used all Panasonic equipment. We shot with a NV-9090 (10 portable, no playback), which weighs 5 1/2 pounds, and the deck, NV-3030, weighs 15 1/2 pounds. The relative weight difference as compared to the Sony AV-3400 became an important factor. It allowed us to shoot handheld and carry the deck for two and three hours with consistently steady camera work and without a break. Although the Panasonic deck did not have the capabilities of the Sony 3000, the camera was in every way comparable. Appar-ently, the weight was not an issue. It was put on the market meets all Sony features with the weight difference. We were also satisfied with the durability of the equipment. We transported the portable deck, along with our editing decks, a 3020 and a 3028SE, to California and back by every conceivable transportation: van, train, bus, plane, and car, with not one breakdown in equipment. We also shot in all climate conditions and, except for the need for a longer warmup in colder weather, the equipment was not affected by weather. We shot some very interesting tapes which were edited at the Egg Store. The tapes will be used for political education as well as to convince political officials of the necessity of changing the registration system of the country.
Dear People:

In writing this letter for many reasons, mainly, to become a member of the CTL video club ($10.00 enclosed). But, since I am also a member of San Jose's Focus on Media group, I was going to mention a few of the problems we are having, getting off the ground, and was wondering if you might be able to make a few suggestions about them.

1. Equipment is one of our main problems. Portapaks go for $1695 in this area—no exceptions! No used equipment seems to be available without a trip to Los Angeles. We have borrowed a portapak from Santa Cruz (Johnny Videotapes), but it was returned for use. It is really frustrating. Right now we are thinking about sending someone to New York to see what is available in their budget range. There is, however, a large amount of CV series equipment here, up for grabs. We are wondering about converting it to EIAJ format—is it possible or even worthwhile? [Paula says: There is no way of converting CV equipment to EIAJ standard. Too bad, eh?] Units are selling for about $250 each. One reason for the high prices here, seems to be the difference between the "fair trade" regulations in New York and California.

2. Another problem is money sources. Groups like Project One, in San Francisco, are financed by government grants, due to the large variety of trips they are into. So far the best we can do is writing letters to anybody for contributions. This brings us to the last and final problem.

3. San Jose has one newspaper, one TV station, and one cable TV company—all are either owned directly or indirectly by Bidder Publications (which also owns 15 other newspapers and part of the Minnesota Vikings). We have just barely managed to get access to the community access channel on cable TV, and were refused use on one of the new videotapes), for "technical incompatibility of equipment," coupled with this, is the education about cable TV that is severely corrupted in this area; people still remember the Subscription Television fiasco (pay TV) that was going to invade this area in the early 60s, that supposedly would have made that was going to invade this area in the early 60s, that supposedly would have made it to invade this area in the early 60s, that supposedly would have made it. It is really too early to make a real statement about the new portable, but let me say that by the looks of it...that is, if it operates in the long term as well as it has in the short time we have had it, it is going to blow Sony's JV08 out of the market.

I'm sure nothing needs to be said about the JV130 as it seems to be recognized as the best 1/2" editing deck on the market. We only wish something could be done about the audio pop. [Ace Editing Systems, page 9.]

We found a slightly better deal on Sony equipment, the reason we decided to go with Panasonic (besides liking their hardware) was that we were able to meet with management-level personnel who eased open to working with us and establishing a good long-term relationship. They have already agreed to accept us as a client and to supply us with tape and equipment and they may be able to get us some promotional money.

If you are interested in knowing about what's happening with video in San Jose, I think we are the people to contact.

John Birchard
L.A. Public Access Project
411 Lewis Rd. #188
San Jose, CA 95111

L.A. Public Access Project

I am writing to you for the L.A. Public Access Project. We have been able to meet with management-level personnel who eased open to working with us and establishing a good long-term relationship. They have already agreed to accept us as a client and to supply us with tape and equipment and they may be able to get us some promotional money.

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John Birchard
L.A. Public Access Project
411 Lewis Rd. #188
San Jose, CA 95111

Movidex, Incorporated was founded in March of 1972. The name is based on our letterhead's description of the work we do: "Motion Pictures on Film and Video for Delivery to the Customer." The current limitations of 1/2" technology precluded as polished a job as we were able to put on film, but the tape has that feeling of immediacy--of happening now that can only be captured in the video medium. We feel that this immediacy is a very exciting compensatory value in exchange for some of our film's trickery.

We're not fantasizing an overwhelming flood of color tape orders in the immediate future. The cost of equipment, both recording and playback, is geared more to industrial than to private usage. (Movidex's commercial division has already lined up several prospective clients.)

What we do envision, however, is that with the advent of standardization, increased marketing competition and the resulting consumer-oriented pricing of videocassette home playback systems, it will be very few years until videotape becomes the home medium of the future.

Movidex, Inc.
2001 Henry Hudson Pkwy
Riverside, N.Y. 10966

1-5 year olds using video at the Bellevue Day Care Center.

36 SURVIVAL

CTL VIDEO TOOLS #2
So far our experience has been that while there are a few video groups around that have "made it"--they have equipment and at least a little bread--most, especially in Colorado, have not. We are still struggling at a pretty basic level. In order to staff an office, pay video tape and stamps--a minimum amount of bread is required--trying to knock down that little bit takes about as much energy as trying to get the big ones--so there aren't any. However, you have to do both at the same time--and you're still got to survive. People in similar trips--non-profit org's not video groups estimate it takes a month of their time to raise the bread to continue for another year. Moral: Video groups try to find a community organizer/Scrounger--his/her input will be invaluable. We've found that group support personnel is as important as production techs and equipment freebie. Of yes, it is nice to have somebody who can strip down a portapak blindfolded so you don't have to pay to have equipment fixed when all that is wrong is a blown fuse. Save the jack for the tile problems.

Many folks attracted to community video seem to have had little or no TV or film experience. Which is good and bad. We've been getting many of the local video production/hardware companies in town to run workshops for us. It really is fun to "give"--people get their itch in touch with the jargon and reality of 1/2" production. A good source here is Steve Dock's new column in Filmmakers Network. Also plug into WorkSpace (formerly Vocations for Social Change), Box 19, Canyon, CA 94516--will give a good idea of what other community-minded folks are doing--it's good reinforce-

MONEY--a major hassle--just to keep going try church, civic, etc. groups. Also try to get into college, community college to teach community video production courses--use their equipment.

Talk to hardware people--see if they will loan equipment on a scheduled basis. Write to video tape companies for evaluation samples of video tape. If the cable has arrived in your area, try to get support from the cable company. They will give you equipment if you have a workable concept, but some community pressure on them.

Go non-profit/get tax exempt status--go to local foundations--rap/escrow/rap some more --talk to everyone and anyone--then decide whether you want to talk to them again--get names and go to the top people in organizations--be specific--organized--up front--but you don't have to say everything--be sensitive to others' needs, fear, distrust--also don't forget your own.

Bill Pratt
Denver Community Video Center
1400 Lafayette
Denver, Colorado 80218

The Kitchen is a multi-use media theater, part of the Mercer Arts Center complex of theaters and workshops located in the southern part of Greenwich Village in New York City. With the support of the New York State Council on the arts, we have opened the space to artists working in all aspects of the electronic media, from experimental music to live and taped half-inch video. The presentation and workshop space has also been the scene of events in a number of other intermedia areas including light art, slide shows, cinema, dance, bio-feedback works. Most of these events are free, some ask a small contribution.

(Paula says: The Kitchen is the only regularly functioning video theater in N.Y. where someone who can get involved who can get the space and equipment. Get on their mailing list, for a monthly calendar.)
SPACE TECHNOLOGY
SPINOFFS FOR LIFE AND DEATH

The products of American space research are finding their way into our daily lives. Miniaturized communications technology is being adopted by pre- and anti-life forces in approximately equal proportions.

Both the military and medicine are developing new uses for video, the former to build "smart bombs," the latter to aid in medical problems. NASA has set up a special Biomedical Applications Team at the Southwest Research Institute in San Antonio, Texas to apply NASA technology to medical problems.

One method of visual prosthesis involves direct stimulation of the cortex by electrodes implanted in the brain. Random stimulation of these electrodes produces phosphene flashes which are perceived by the optic nerve to the visual cortex of the brain. The brain recognizes the pattern of impulses and interprets them as an image. Certain kinds of blindness are caused by malfunction of the retina or the optic nerve. If either or both are not operating, the brain receives no stimulation.

In normal vision, light is focused by the lens on the retina. The retina transforms the light patterns into electrical impulses which are transmitted by the optic nerve to the visual cortex of the brain. The brain recognizes the pattern of impulses and interprets them as an image. Certain kinds of blindness are caused by malfunction of the retina or the optic nerve. If either or both are not operating, the brain receives no stimulation.

SIGN LANGUAGE - Sign language and signalling were invented by the deaf and dumb in the 18th century. It is a method of communication which has been used by the deaf and dumb for centuries. In 1785, a deaf-mute in France, named Nicolas de Saint-George, developed a system of signs for the deaf and dumb. This system was later improved by others, and became known as Sign Language.

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In the brain implant prosthesis, the basic problem is miniaturization. The present state of the art allows for 50 electrodes, 50 on each side of the brain. According to researchers, Prof. G.S. Brindley of National Hospital in London, the 150 points are sufficient to convey information on the shape of an object and the light and dark features associated with it. Brindley expects that advances in integrated circuits, the phosphene field, and implantation of enough electrodes to enable a blind person to read, will come with the next 50 years.

Another method of visual prosthesis stimulates the visual cortex directly with a kind of electronic braille. A scanning array of photodiodes is mounted on a pair of eyeglasses with a light source and a small lens. Each diode corresponds to an electrode placed on the skin of the user's abdomen. An image focused on the photodiode is transformed into electrical pulses which are transmitted to the electrodes. A blind person can "see" an image by feeling the location and intensity of the applied pulses.

The latest advancements in this technique include the use of 499-bit photodiodes and the development of a 40-50 degree field of vision, sufficient for walking and reading. Research is also being done on the feasibility of weaving the abdominal electrodes into a special garment.

Although this method doesn't actually let a blind person "see" the way brain implants do, it has the obvious advantage of convenience. To quote researcher, Dr. Carter C. Collins of the University of the Pacific, "If you were a blind person, what would you rather do, have a brain operation, or slip on a goggle-like garment?"

Another bit of hi-tech originally developed for the Army by ITT is finding an application as a remedy for night blindness. The tool is a pair of goggles which contain focusing lenses, a miniature image intensifier tube, and a small

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I like to think (right now, please!) of a cybernetic forest filled with pine and electronics where deer stroll peacefully past computers as if they were flowers with spimming blossoms.

I like to think (it has to be) of a cybernetic ecology where we are free of our labors and joined back to nature, returned to our normal brothers and sisters, and all watched over by machines of loving grace.

Richard Brautigan
The process of holography can be produced by sound and radio waves as well as light waves; this includes the following:

**ACOUSTICAL HOLOGRAPHY** utilizes a laser illuminating source, an acoustic lens, an acoustic detector, and a holographic plate as a medium to focus holographic images upon itself. An echo is produced as an acoustic image, which is capable of showing details which may go undetected in the optical image.

**MICROWAVE HOLOGRAPHY** is utilized by the armed forces; it is a scanning technique that captures all surfaces of an irregular terrain in the form of rows of photographic film. Unscrambling the microwave images produces high resolution radar 'photographs' with details of various land surfaces.

Three dimensional images are quite pronounced as holograms and the viewer quickly realizes that much more information about the scene is furnished by this process than by stereo photography or 3-dimensional photos using ridged lenses. The viewer can inspect a 3-dimensional scene not from just one direction, but many directions. Parallax is one of the outstanding features of a hologram; it is the ability to focus on the image sharply in all planes and to watch the object shift in its relationship between itself and the viewer. Holography also has the capacity of storing several hundred images in one film plate as compared to a film image which can store only one image at a time.

The large information content of a hologram is the consequence of the extremely fine fringe detail in the interference patterns of the recorded image. This detail, approximately 1,500 lines per millimeter, is far superior to the capacity of present television systems which employ such coarse line structure. The ratio between the pictorial information content of an 8-inch square hologram and that of a U.S. television picture is 360,000 to 1. Applications of holography include:

- Medicine
- Information Storage
- Display Graphics / Printing
- Stress Analysis
- Deblurring of Photographs
- Computer Memory Banks
- Microscopic Analysis
- Music

The phenomenon of holography is still in its infancy as a potential medium of communication. The applications of this process are unlimited. Holography can be applied throughout the field of medicine as a technique in examining microscopic imagery. It can produce high resolution readouts as well as 3-dimensional pictures, and can be applied to research as easily as it can be used in a doctor's medical examination to supplement an X-ray machine.

In industry, holography can be used to study the phenomena of stress analysis, and can quickly be used to pick out materials with structural flaws that could possibly break down or malfunction at a later date. In the field of communications, holography as a graphic display medium is virtually a whole new world of art that's waiting to be explored. The possibilities are infinite for sculpture, dioramas, and display arrangements with this process. And of course somewhere in your lifetime, you can look forward to 3-dimensional television and movies.

This article is from the Holographic Corporation of America resource and information access center. Our library contains much in-depth information including video tapes of the history and development of holography and the process of holographic production. We also carry the process of holographic kits explaining the various applications and uses of holograms. Kits are available for holographic production, consultation, exhibitions, lectures, demonstrations, and workshops. For more information, please contact:

Louis M. Brill
International Holographics
865 Broadway
New York, N.Y. 10003
(212) 865-2710
PRODUCTION - The Egg Store pioneered in 1/2" to 3" editing for transfer to 3" quad. Our VTRs are Sony, Panasonic, Javelin in the 1/2" format; Sony EV-320F 1" and Sony 3/4" cassette. Services include skm and color editing (by our editors or on your own), signal processing using a Ball Bros. Mark II proc amp, special effects and titles using a genlock SEG with keyer, colorization, sound equalization, air checks, 16mm film transfer and tape duplication in any helical format.

COLORIZATION - The new CTL graphic Colorizer is now available for production use at the Egg Store. We can colorize any recorded or live BW material. We believe this colorizer to be one of the best anywhere. Come down and see it. (More on CTL's colorizer on pg 25).

SCREENING - Screening facilities at the Egg Store provide closed circuit viewing for up to 30 people. We can play any tape recorded on 1/2", 1" or 3/4" Sony and Ampex 7800 formats. Monitoring facilities include the Sony color video projector with 50" screen.

POST-PRODUCTION - The Egg Store pioneered in 1/2" to 3" editing for transfer to 3" quad. Our VTRs are Sony, Panasonic, Javelin in the 1/2" format; Sony EV-320F 1" and Sony 3/4" cassette. Services include skm and color editing (by our editors or on your own), signal processing using a Ball Bros. Mark II proc amp, special effects and titles using a genlock SEG with keyer, colorization, sound equalization, air checks, 16mm film transfer and tape duplication in any helical format.

PRODUCTION - Our 30 X 30 foot studio space is equipped with 3 DXC-5000 color cameras, up to a black and white camera, including an image intensifier camera, for low light shooting. Viscount special effects board, 1/2", 1" and 3/4" cassette VTRs. All production hardware is fully modularized and can go on location. The Egg Store supplies a full production crew on location or studio shoots. You have the option of using your own crew in the studio for a greatly reduced rate. We also supply 1/2" portable equipment with operators for less complex field shooting.

Classes - John Brumage and other CTL staffs are offering spring video workshops and lectures at the Egg Store. Three regular courses and a series of workshops cover 1/2" videotape equipment from the simplest concepts to advanced techniques for editing, feedback or modifications (if you ask the questions, John has the answers). All courses have limited registration. For information, call Miriam, Paula or John at CTL (233-0754).