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FALL 2012 VOLUME 4 ISSUE 4

QUARTERLY

THE OFFICIAL PUBLICATION OF IATSE LOCAL 695





"MAGNIFICENT AND MOVING. YOU DON'T JUST WATCH THIS MOVIE, YOU LIVE IT."

PETER TRAVERS, RollingStone

FOR YOUR CONSIDERATION IN ALL CATEGORIES FE OF P



Features

The 64th Annual Emmys 16 Congrats to winners & nominees
International Sound Technician21 A backward glance
The Cable Connection

Table of ARTERLY Contents

Volume 4 Issue 4

Departments

From the Editors We are a community From the President Giving thanks on Thanksgiving	4 6
News & Announcements	10
Education & Training	13

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AUDIO DEPARTMENT



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From the Editors

As members of Local 695, we are a community but we often perform our tasks in isolation from our fellow brothers and sisters working the same disciplines.

If you are fortunate to be on one of the major studio lots, you might have the time to stagehop and visit with fellow associates. Otherwise, the other members of your own team are likely to be your only contact with fellow 695 professionals.

Fortunately, the Internet has created a larger community and given us a place to connect virtually. More fortuitously, it has also created the famous NAB "RAMPS Party" held each April in Las Vegas, the Annual Kriky-Seth BBQ and more recently, the "Mixers Out Socializing."



These have all proved to be wonderful opportunities to socialize and become friends in a relaxing and noncompetitive environment. It has reinforced our sense of community and this issue of the 695 Quarterly gives a major hat's off to the organizers of these events and all who attended.

The Quarterly is also a part of our sound community. We aspire to be the link, giving you informative articles that both enlighten and bring us all closer together.

We appreciate your readership and the continuing contributions from every craft represented by Local 695.

Fraternally, Richard Lightstone, David Waelder and Eric Pierce

FOR YOUR CONSIDERATION -

BEST SOUND MIXING

PRODUCTION SOUND MIXER: RONALD JUDKINS RE-RECORDING MIXERS: ANDY NELSON, GARY RYDSTROM

SOUND DESIGN: BEN BURTT SUPERVISING SOUND EDITOR: RICHARD HYMNS





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DREAMWORKS PICTURES

BEST SOUND EDITING

participant Touchstone

From the President

GIVING THANKS ON THANKSGIVING

As I sit here writing, so much of the world is in a hurricane. Sandy batters the East Coast where most of my family is. The presidential election is days away, swinging its razor pendulum. Likewise, international turmoil is in an uptick and uncertainty reigns in the land.

This year has been a tough stretch for many of us. In some ways, the toughest many of us have ever seen. And yet I'm constantly delighted and warmed by the camaraderie, perseverance and intensity of commitment I come across in my contact with fellow members. Never was this more clear to me than during the lovely get-together in Burbank, as described elsewhere in this issue of the 695 Quarterly. What a great gathering of a terrific community.



A voice inside brings calm as the refrain "this too shall pass" reverberates, inviting me to an inevitable sense of gratitude:

On this day, my children are healthy as is my loving wife of 32 years. My parents, well into their seniority, (92 and 86, respectively) are still independent and I have been blessed with some of the dearest friends a human could ever hope for. Further, I get the opportunity to do what I love (filmmaking) when invited, to some pretty interesting projects. So after 36 years in this freelance life, with all its ups and downs, what more could I ask for?

The answer is continued safety and security for my family and friends and the renewal of sustained prosperity and security for my beloved professional family of IATSE Local 695.

My message this issue is very simple: I thank our committed team in the office and the Board of Directors for their insight, caring and wisdom, and I thank you-the membership-for your friendship, support and professionalism. It is easily the proudest association I have been blessed with in my professional life.

I wish you a Happy Thanksgiving and healthy holidays to you all.

With heartfelt fraternity. Mark Ulano President, IATSE Local 695



I.A.T.S.E. Local 695 **Production Sound Technicians, Television Engineers**, Video Assist Technicians and **Studio Projectionists** Certified & Chartered September 15, 1930 A California Nonprofit Labor Corporation Incorporated July 31, 1951, State of California Affiliated with the A.F.L.-C.I.O., California State Federation of Labor, and L.A. Central Labor Council

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A FILM BY TIM BURTON

"Frankenweenie: An Electrifying Book" download the book for FREE at /itunes.apple.com/us/book/frankenweenie-electrifving/id557041056?mt=1



From the **Business Representative**



In Perspective:

Fred and Marvin

Deep and somber affection compels this communication. During the past quarter, two of our valued members passed away. Fred Johnston died on September 19

at age 58 and Marvin E. Lewis passed on September 22 at age 69.

Both men represented the finest gualities in their profession as production microphone boom operator technicians.

They leave an exceptional and profitable body of work that shall be enjoyed by millions in years to come. Their industry contributions required physical stamina, technical expertise and long hours of employment away from family.

The preliminary reports my office received concerning Fred is that he contracted a lung ailment known as Valley Fever, following his work on production. Fred failed to recover despite the medical attention he received.

Marvin retired after 40 years of capturing actors' scripted dialog on production. Continuous use of a "fishpole" had caused injury to his back and necessitated knee replacement operations in both legs; he could no longer continue the work.

Memorial services for Fred with his family were, like Fred himself, personable and quiet. His ashes will be disbursed in the wind.

Memorial services for Marvin were held on October 6 at the Angelus Funeral Home. More than 200 friends came and were part of a very touching service. It was absolutely clear to me that Marvin was loved and embraced by many.

Local 695 members attending included Executive Board members Elizabeth S. Alvarez, Andy Rovins, myself and many other members who took time to share in that moment.

WaltDisneyStudiosAwards.com ©2012 Disney/Pixar



The Industry Wide Labor-Management Safety Committee is collectively aware and investigating matters that, I believe, contributed to physical distress our members have suffered and continue to endure.

Neither Fred nor Marvin shall be forgotten as we pursue reasonable work hours and safe work environments.

lames A. Osburn, CAS **Business Representative Executive Director**



NEWS & ANNOUNCEMENTS

California Tax Credit Program **Extension Signed Into Law**

Assembly Bill 2026 and Senate Bill 1197 were signed into law on September 30, 2012, by Gov. Edmund G. Brown Ir. to extend funding for California's Film & Television Tax Credit Program. The two-year \$200 million extension ensures that tax credits will be available through fiscal year 2016-17. More information can be found at http://www.film.ca.gov/Incentives.htm

New Soundstages to Be Part of NBC/U's Extension

Local 695 Business Agent Jim Osburn accompanied Local 80 Business Agent Thom Davis and a delegation of IA reps at a recent hearing in L.A. City Council chambers in support of NBC/Universal's \$1.6 billion "Evolution Plan." The project, now approved by the City Council, will include new and improved production and post-production facilities, two new soundstages, new media-related office space and enhancements to the Universal Studios Hollywood theme park and CityWalk, along with hotels and retail and dining facilities.

Additionally, a Project Labor Agreement has been reached between NBC/Universal and Southern California construction unions that is expected to create about 13,000 construction jobs during the 10-year project. More information can be found at http://nbcuniversalevolution.com

Local 695 Building Debt Paid Off

The Local made its last payment in June on a second mortgage loan that was taken out in 1992 for funds in order to make much-needed earthquake repairs. The building is now owned free and clear by the membership.

Bridge to Health

The MPTF program "Bridge to Health" offers limited healthcare services to members who have not accrued enough hours to qualify for the Motion Picture Health Plan. Available to members and their dependents age 13 and up, office visits cost only \$25 and lab services and X-rays are free when performed at the Motion Picture clinics. For complete details and eligibility information, see www.mptvfund.org/page.aspx?pid=528

🛠 In Memoriam

FRED IOHNSTON Boom Operator Oct. 2, 1954 - Sept. 19, 2012

MARVIN E. LEWIS Boom Operator Aug. 18, 1943 - Sept. 22, 2012

Mixers Out Socializing

More than eighty members of the local sound community attended the MOS gathering (Mixers Out Socializing) at the Gordon-Biersch Brewery Restaurant in Burbank on September 8. Proposed and organized by Michael Miramontes, a local sound recordist, the event was promoted on the online discussion forum operated by our own Jeff Wexler and attracted considerable support from other sound professionals and equipment suppliers. Rich Topham, a native of Los Angeles and now president of Pro-Sound in New York, came west for the event and generously contributed both lunch and a donation to support the Wexler forum. Swag from many sources was distributed freely. Anyone who left empty-handed was probably not paying close attention to the raffle announcements. More importantly, sound professionals had an opportunity to meet others working in the same field, match faces to names and exchange experiences. Special thanks to Whit Norris for handling the raffle chores and to his wife, Kathy, for signing everyone in and keeping the event running smoothly.



Clockwise, from above: Agamemnon Andrianos, Zack Allen and Chase Yeremian

Michael Miramontes with a raffle item

Whit Norris raffles prizes from The Audio Department, Denecke, Lectrosonics, Location Sound, Neopax, Olsen Audio Group, Petrol, Redding Audio, Sanken, Schoeps, Sound Guys Solutions, Trew Audio/Coffey Sound, and David White Services

Rich Topham and Whit Norris

Bob Schuck. Agamemnon Andrianos. Ed Moskowitz Courtney Goodin and Richard Lightstone





"THE MOST ORIGINAL FILM IN YEARS." -CBS-TV, Bryan Erdy

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by LAURENCE B. ABRAMS



Tom Vanasse at the "Digital Asset Management and Workflows" training session conducted at AbelCine in Burbank

Standing between an ARRI Alexa and a RED Epic on October 20, 2012, at the "Digital Asset Management and Workflows" training session conducted at AbelCine in Burbank, and with an array of ingest and processing software installed on nearby computers, Local 695's Tom Vanasse began the day by ominously announcing that "Some of what you see and hear today will almost certainly be obsolete tomorrow." That's not very encouraging but new product introductions coming from a wide assortment of manufacturers are announced almost every week. And there are nearly as many on-set production workflows as there are productions, with many shows opting for entirely unique and often experimental approaches ... part technology and part improvisation.

There's much at stake on a motion picture and television production set and it grows increasingly more difficult to stay abreast of this rapidly changing state of the art, but it turns out that the Local 695 engineers who work with and develop these new technologies relish the challenge. Maybe that's because it was the tinkering inventive egghead pioneering spirit that brought many of our members to this business in the first place.

Way back in the spring of 1953, Local 695's engineers were doing their own sort of pioneering, experimenting with ways to bring this new thing called "video" to a world that for the most part had not seen it before. Even as their small static-y rolling image gradually found a place in living rooms across the country,



Digital Asset Management

there were many who continued to predict that television would not last ... much like those who decades earlier predicted the demise of radio and decades later, the demise of 3D. But Local 695 member Murray Jarvis, writing in an article for the March 1953 issue of Local 695's International Sound Technician magazine, saw it differently when he offered these remarkably prescient words:

"While the Video magnetic recording process is still in the experimental stage, great progress is being made toward its perfection by its enthusiastic developers. The resolution of the visual image produced by this process in its present form has restrictions, however the industry is watching this development with anxious interest

EDUCATION & TRAINING

for it has the potentiality of revolutionizing the entire motion picture technique as we know it."

The black-and-white ABC TK-10 camera Murray Jarvis appears beside in this 1953 photo could be used only for live broadcasting and the Ampex VR-1000 two-inch helical scan recorder, the first recorder capable of capturing a video image, wouldn't appear in TV studios until 1957. Even so, Jarvis'



Local 695 Engineer Murray Jarvis in the March 1953 issue of Local 695's International Sound Technician magazine.

vision for the future was extraordinarily accurate. Sixty years have passed ... Kodak no longer manufactures film stock ... and virtually all studio production, whether for motion picture or television, is recorded in video format. larvis' nascent video technology truly is responsible for "revolutionizing the entire motion picture technique as we know it."

Thus has been the ongoing evolution of the electronic audio and video recording chain, pioneered by Murray Jarvis and his contemporaries and carried forward by successive generations of Engineers, Broadcast Technicians, Videotape **Operators and Video Assist Technicians** of IATSE Local 695.

Tom Vanasse's October training session at AbelCine represented one more step in that ongoing evolution. In this particular class, Tom explained to Local 695

Thus has been the ongoing evolution of the electronic audio and video recording chain, carried forward by the Engineers, Broadcast Technicians, **Videotape Operators and Video Assist Technicians of IATSE Local 695.**

members in attendance that even though tools and workflows vary from job to job, and many of those tools and workflows in current use will most certainly face obsolescence before very long, the basic building blocks of digital video production ... recording and re-recording ... can be directly applied or adapted for almost any modern production environment. Training begins with these extensible building blocks.

Using this premise as the structure for the training session, Vanasse took the class step by step through the entire production chain. The choice of camera, from a DSLR to the widely used ARRI Alexa, stands at one end of the process while the varying require-



Tom Vanasse teaching step by step.

ments of post-production stand at the other. In between is the domain of the Local 695 engineer, recording full resolution RAW or multi-codec output live during shooting, re-recording video data

from the camera's source media to magnetic hard drives or LTO tape, generating additional backups and archives, transcoding to deliverable formats and meeting any additional requirements that are requested before the handoff to post.

The benefits and requirements of many of the connection standards were reviewed, from eSata, SAS and fiber to Thunderbolt and Firewire800. Discussion and demos covered the range of available external recorders and the rapidly evolving software tools that are currently available, including Black Magic's Davinci Resolve, Assimilate's ScratchLab and Adobe's Speedgrade.

> Of particular interest to the group was the new Codex Vault. which was demonstrated by Codex Digital product specialist Stephen Ceci. The Vault is a modular location-based media management environment that performs fast transfers by way



in all formats required for dailies review, post-production and archives. Additional capabilities are expected as new stackable modules are released.

The video recording and re-recording technology used by Local 695 engineers has been improving continuously since the first helical scan recorder arrived in 1957 but never has the technology evolved at such rapid pace as it does today. New developments in resolving power, data processing and throughput are introduced almost continuously. As equipment and workflows evolve,



Codex Digital's product specialist, Stephen Ceci, explains the modular components of the Vault.

overall performance increases, guality gets extraordinarily better, cost efficiencies of production and distribution improve dramatically and with it, the entertainment industry finds new opportunities for growth by expanding markets for the products we create.

Celluloid takes its place in history and not without a good measure of nostalgia but now-60 years later-on soundstages and location sets around the world where video electronic recording has almost totally replaced film, we can say with certainty that the revolution envisioned by Murray Jarvis WILL be televised.

com und. www.lmcso

Image courtesy of



LOCAL emmys

Congratulations to the recipients and nominees and their production sound teams for the 64th Annual **Emmy Awards** in the category of **Outstanding** Sound Mixing.

COMEDY OR DRAMA SERIES (HALF-HOUR) & ANIMATION











WINNER: Modern Family "Dude Ranch" ABC Stephen A. Tibbo CAS, Dean Okrand, Brian R. Harman Production Sound Team: Preston Conner. Dan Lipe

ALSO NOMINATED: Entourage "The End" HBO

Tom Stasinis CAS, Dennis Kirk, Todd Orr Production Sound Team: Dave Pattee. **Damon Harris**

Nurse Jackie "Handle Your Scandal" Showtime Jan McLaughlin CAS, Peter Waggoner Production Sound Team: Brendan O'Brien. Michelle Mader

Parks and Recreation "End of the World" NBC

Steve Morantz CAS, John Cook, Peter Nusbaum Production Sound Team: Dirk Stout. Mitch Cohn

30 Rock "Live From Studio 6H" NBC Robert Palladino, Martin Brumbach, Josiah Gluck, William Taylor

COMEDY OR DRAMA SERIES (ONE-HOUR)

WINNER:



"Blackwater" HBO Ronan Hill CAS, Mervyn Moore, Matthew Waters, Onnalee Blank

Production Sound Team: Simon Kerr. James M.H. Atkinson. Mark Ormandy, Simon J. Willis, Matteo De Pellegrini, Luke McGinlev

ALSO NOMINATED:

Breaking Bad "Face Off" AMC Darryl L. Frank CAS, Jeff Perkins, Eric Justen Production Sound Team: Matthew Kabakoff



Episode 1 PBS Nigel Heath, Alex Fielding, Oliver Brierley, Keith Partridge Production Sound Team: Chris Ashworth, James Harris, Steve Hancock, Lee Sharp Homeland "Marine One"

Showtime





Person of Interest (Pilot) CBS Noah Timan. Frank Morrone CAS. Scott Weber, Keith Rogers CAS, Production Sound Team: Patricia Brolsma, Amanda Jacques Sober, Dan Guachione, Lukasz Janik

Production Sound Team:

Matt Fann, Jack Hill

Names in bold are Local 695 members



MINISERIES OR MOVIE











WINNER:

Hatfields & McCoys Part 1 HISTORY Dragos Stanomir, Christian Cooke, Brad Zoern Production Sound Team: Cozma Marius-Serban

ALSO NOMINATED:

American Horror Story "Piggy, Piggy" FX Networks Sean Rush, Joe Earle, Doug Andham Production Sound Team: **Dennis Fuller. Kriston Wilcox.** John Bauman

Game Change HBO David MacMillan CAS, Leslie Shatz. Gabriel J. Serrano Production Sound Team: Perry Dodgson, Lorenzo Milan

Hemingway & Gellhorn HB0 **Nelson Stoll CAS AES,** Lora Hirschberg, Peter Horner, **Douglas Murray** Production Sound Team: Fred Runner, Lou Wiskes

Sherlock: A Scandal in **Belgravia** (Masterpiece) PBS John Mooney, Howard Bargroff

Production Sound Team: Stuart McCutcheon, Abdulgader Amoud

LOCAL emmys

VARIETY OR MUSIC SERIES OR SPECIAL

WINNER



The 84th Annual Academy Awards ABC Paul Sandweiss, Tommy Vicari, Pablo Munquia. Kristian Pedregon, Bob La Masney, Brian Riordan, Thomas Pesa, Michael Parker, Josh Morton, Patrick Baltzell CAS, Larry Reed, John Perez

Production Sound Team: Eddie McKarge, Dan Vicari, Debbie Fecteau, Jeffrev Fecteau, Ric Teller, Hugh Healy, Dave Hewitt, Phil Gitomer, David Bellamy



ACM Presents: Lionel Richie and Friends—In Concert CBS J. Mark King, Paul Sandweiss, Biff Dawes, Dirk Vanoucek, Steven Anderson, Marc Repp, Chip Matthews, Christian Schrader, Jeff Peterson, Jason Spence, Jeffrey R. Fecteau





The 54th Annual Grammy Awards CBS Thomas Holmes, John Harris, Eric Schilling, Paul Sandweiss, Eric Johnston, Mikael Stewart, Ron Reaves, Tom Pesa, Michael Parker, Pablo Munguia, Bob La Masney Production Sound Team: Michael Abbott, Rick Bramlette, Jeff Peterson, Phil Ramone, Barry Warrick, Andres Arango, Hank Neuberger, Billy McCarge, Dave Rickmears, JP Velasco, Steven Anderson, Craig Rovello, Bill Kappelman, Pete San Filipo, Ric Teller, Damon Andres, Eddie McKarge, Paul Chapman, Dennis Mays, Bruce Arledge, Kirk Donovan, Dave Bellamy, Grant Greene, John Arenas, Matt Campisi, Jim Fav. Thomas Ryden, Hugh Healy, Max Feldman, Hardi Kamsani, Joel Singer, Charles Campbell, Anthony Catalano, Gary Epstein CAS, Mike Babbitt

NONFICTION PROGRAMMING

WINNER:



Skies A&E Tom Paul Production Sound Team: Eddie O'Connor, Sean O'Neil, Bernhard Marcus, David Hawkins, Christo Hattingh, Kevin Manas, Grav Burnett, Zakes Balovi ALSO NOMINATED:

Paul Simon's Graceland

Journey: Under African

The Amazing Race "Let Them Drink Their Haterade (Lake Manyara, Tanzania)" CBS Jim Ursulak, Dean Gaveau CAS, Jerry Chabane. Troy Smith Production Sound Team: Brian Allen, Bruce Beacom, Darren Brower. Phil DeTolve, Fernando Gironas, Burt Gregory, Mickey McMullen, Mike Ormsby, Ryan Sevy, Barry Weissman

Deadliest Catch "I Don't Wanna Die" **Discovery Channel** Bob Bronow CAS

Frozen Planet "Ends of the Earth" Discovery Channel Archie Moore, Graham Wild

George Harrison: Living in the Material World HBO Tom Fleischman CAS, Bob Chefalas



Production Sound Team: Garry Hamden, Dudlev Houlden, Mark Mandler, Danny Michael, Juan Nunez, Barry O'Sullivan, Frederic Pardon, Mike Reilly, Mark Rov. Susumu Tokunow, Mark Weingarten, Stuart Wilson

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INTERNATIONAL



n this issue of the 695 Quarterly, we take another look at the technology that helped form the basis of film sound recording as we know it today.

While today's microphones are smaller and lighter compared to the monster ribbon and condenser mikes used during the early years of film sound recording, the issue of how to get those mikes where they need to be is one that still vexes us. With this in mind, it is interesting to take a look back at an article authored by William R. Edmondson of M.G.M., titled "Evolution of the 'Mike' Boom," excerpted from the November 1953 issue of the International Sound Technician (the forerunner of the current Quarterly). In this article, the author outlines the daunting task faced by studio sound engineers in their quest to respond to the needs of film production, which required microphone booms and rigging systems designed to follow the actors on set.

In this fascinating look at the early attempts made by studio sound technicians, you will find photos and references to the early boom designs that later became the basis for the Mole-Richardson Model 103B studio boom, as well as the amazingly lightweight (for 1953!) J.L. Fisher Model 2 location boom, designed by James Fisher while he was on staff at the Republic Studios sound department in the early 1950s.

Sixty years later, many of these booms (with some modifications and upgrades) are still in daily use on soundstages around the world, a testament to the skill of their designers. While not as prevalent as they once were during the early years of film and television production, when a scene calls for a mike that can be moved easily around a set and rotated on a continuous 360-degree axis, there is nothing that can substitute for a perambulator boom with a good operator.

EVOLUTION of the "MIKE" BOOM

by William R. Edmondson (M.G.M.)

With the advent of sound in motion pictures, there came the need of a new tool in the trade. From the voice to the theater horn, there was one outstandingly weak but all important link; that of properly orienting the microphone to the moving voice source. True, there were the weaknesses of infancy throughout the recording system but no electronic advances could displace the primary need of correct pickup. A recent picture, "Singing in the Rain," featured some of the more comic aspects of the microphone placements in that first hectic era.

Prompted by the success met in the radio studio in placing the microphone on a stand in front of the actor, similar tactics were first employed in pictures. Obviously, unable to use a stand for photographic reasons, the soundman props behind which to hide microphones. This was fairly successful as long as the actor would remain in a fixed position, half hidden by the scene stealing prop, but these were moving pictures.

Music recording had proven best



turned to bushes, furniture and other FIG, 2-The first Mole-Richardson boom on which is mounted a condenser type microphone.

head position. Why wouldn't it work many as ten mikes hung from catwalks, for dialogue?

Aloft went the "Mike Men" to suspend fixed mikes above the main positions of the actors in each scene. It when the microphones were in an over- was common for a mixer to have as

ceilings, overhead construction, etc. He was required to know the script dialogue and cues as well as the cast knew them. The "Mike Men" handling the microphones dropped on lines from overhead would adjust the height to suit the cameras top frame lines. On certain cues various mikes had to be lowered or raised and as these men were up above the scene, it was almost impossible to keep from occasionally dropping a mike into the picture. Many retakes were made necessary for this rea-

The mike shadow problem was new to the cameramen. Heretofore, the only shadows cast upon the actors' faces were intentional. They were effects desired for photographic purposes. The coming of sound and the hanging mikes which were often swinging caused the cameramen new headaches.

It became obvious to soundmen everywhere that some contraption had to be made to control these mikes and to move them on cues. They were thought to be too sensitive to move but experiments proved otherwise. Soon long poles were used to move the mikes attached to long drop lines. These were the forerunners of the modern boom.

Booms were first built of wood which could be operated from platforms or

from the floor. They were a great improvement although they could be "panned" only. To go in or out they had to be pushed, so their platforms were mounted on wheels, 3 inches or 4 inches in diameter with hard rubber tires, They weighed from 500 to 600 pounds, From these were developed the mechanical wooden boom (Fig. 1) a clumsy, noisy, creaking affair. There was no counter-balance and Herculean strength was needed to operate them. They left many problems to be solved. The old type condenser mike weighted 10-12 pounds and if the contraptions holding them were inadequate they often toppled over. Several attempts were made at the different studios to construct steel booms that would overcome the deficiencies of the wooden boom. The first successful one this writer every saw was the "Mole-Richardson" (Fig. 2). This boom could follow the actors in the set but no provision was made for facing the mike. The vertical height was stationary and



FIG. 5, below-Boom operator Paul Franz of Paramount operating their light weight boom during a process shot for "Alaska Seas." Note tiny German microphone.





FIG. 3-Dave Moriarty, Republic boom operator, showing comparative size of their new location boom to standard boom.



FIG. 4, above-Paramount light weight boom. Length retracted 12' 6" - length extended 20' 101/2". Total weight 49 lbs. 14oz.

no type of movable counterbalance was used. It was impossible to get the boom in many sets unless it was taken apart. The wheels were somewhat larger (6 inches or 7 inches) but still with hard rubber tires and to lift them over cables or up on platforms was quite a chore for several men.

Many refinements in design were made on this boom by the various studios such as mike facing devices, movable counterbalances, adjustable height booms for different purposes, better rollers, pneumatic tires and quieting apparatus. Many of these booms are in operation today.

The location booms during this early era were of many different types. Each studio developed its own and each boom operator had his favorite. Some of these contraptions were fairly light in weight and some required two men to lift them. (They couldn't be too light with a 10 or 12 pound mike at the end.) Some were complicated and some nothing more than large bamboo poles. Some required a man with bulging muscles to operate and some a contortionist.

(See Fig. 6 known as the Bear Trap) These booms, many of them now just memories, are the models for today's assortment of portable location booms. The speed of location setups, the terrain to be encountered and many other factors had to be considered in designing a practical, all around, ideal location boom. Some are mounted on jeeps or pickup trucks, some on dollies



FIG. 6—Stan Cooley seems to be caught in the "Bear Trap." early type portable location boom used at Paramount, designed by Lorin Grignon.

and lamp stands and some just carried as fishpoles. No two boom operators seem to agree on the best type. The early heavy Mole-Richardson booms were carted by some studios to locations and a crew of "grips" moved them from setup to setup. In soft

FIG. 7-Arthur Piantadosi demonstrates the lightness and portability of Republic's location boom designed and built by James L. Fisher.



FIG. 8-New type light weight boom manufactured by "Vode" soon to be placed on the market.

ground the wheels were apt to sink and falling booms were always a hazard.

The modern mike booms are the result of evolution to meet rigid demands and most changes have been made gradually. The new Mole-Richardson eems to be used more than any studio's design, Each studio, however, makes refinements, changes, adaptations, etc. to meet their particular needs. (Smaller booms are being used more and more since the studios are using the smaller. have adjustable steps. These booms are lighter weight mikes.)

mike boom developed by the late Miles are all equipped with pneumatic tired

Williams (Fig. 9) is very practical and easily operated. It has many good features. It is sturdy, quiet and for most purposes very efficient. The boys at Fox swear by this one and for a medium size boom it is hard to beat. The use of duralumin instead of steel in many places has contributed to its lightness.

Other studios have built types similar to the Fox boom. Some have platforms that rise with hydraulic lifts and some all satisfactory and are a great im-The 20th Century-Fox light weight provement over the older ones. They

FIG. 9-The late Miles Williams standing beside the light weight "Mike" boom which he developed for 20th Century-Fox. Note simple hydraulie lift.



wheels and are easy to move around the sets.

The Paramount light weight boom (Fig. 4) accommodates the German mike very well. It can be used on a light stand, a regular Mole-Richardson base or on a special support mounted on the camera crane as shown in Fig. 5. The boom weighs 49 pounds. It has a reach of 20 feet 10 inches. These booms are now standard equipment on the Paramount lot.

Republic Studio is rightfully proud of their new light weight boom which was designed and built by James Fisher, one of their sound engineers. (Fig. 10) It is very versatile as can be seen in the accompanying pictures. It can be mounted on a Ford stake body truck with platform over the hood or on a boom base developed by Fisher. This base has a hydraulic elevating mechanism with a minimum spread of 29 inches making it easy to move through narrow spaces, a maximum spread of 66 inches and weighs 220 pounds. (Fig. 11) The boom head without balance or mike weighs 28 pounds and will handle a mike that weighs up to 51/2 pounds. It has an extended reach of 131/2 feet. (Fig. 7) A comparison between the standard size Mole-Richardson boom and Republic's Fisher location boom is shown in Fig. 3.

A new type light weight practical boom for most purposes is being manufactured by "Vode" and will soon be available. This boom (Fig. 8) has a minimum height of 6 feet 6 inches and maximum of 9 feet 6 inches. It can pan



FIG. 11-Republic's Fisher boom mounted on hydraulic perambulator extensible base.

360 degrees and has a base minimum width with wheels retracted of 30 inches which extends to 66 inches. The mike facing control is in the handle and it can be turned 360 degrees. The platform height and handle are adjustable. The telescoping tube is square to avoid swinging the mike. The one shown here expert microphone boom operator.



FIG. 10-Republic's portable "Mike" hoom mounted on platform over hood of sound truck being used on location.



is for the light weight mikes and a larger tube is used for heavier mikes.

These "light weights" are coming more into use every day. For flexibility of action, portability, and simplicity of operation they represent a decided advancement as a tool in the hands of the

The Cable Connection Part 3



Diagram by Laurence Abrams

Interconnecting your battery-powered equipment with other department's (or your own) AC-powered units is another major trouble spot. Hard-line feeds to video assist are the main offenders. Their AC power often leaks back and produces a hum or buzz in your audio. A supply of 1:1 line-level audio isolation transformers should be in your kit. They are also useful when tapping into the output of an existing house P.A. system. (Sescom offers units with plastic housings, so the previously-mentioned problem of grounded connector shells is nonexistent.)

by Jim Tanenbaum, CAS

A video hard-line feed to your cart can also cause a problem, but video isolation transformers are available to correct it (though they cost considerably more). IMPORTANT: Do not confuse video isolation transformers with video hum-bucking transformers designed to eliminate disturbances in the video image caused by AC power leakage, as many of them do not provide isolation of the output signal from the input.

In general, isolation transformers should be inserted as close to your cart as possible, both to reduce the capacitive loading of the secondary and to minimize pickup of additional interference with the cables on your side of the transformer. Additionally, this practice reduces the chance of other departments accidentally collecting your transformers along with their gear during wrap.

You may require mike-level splitter/isolation transformers if you need to get a separate feed from a particular mike before it goes into the house mixer board (or if their system is too low quality). Remember that a splitter transformer will drop each output -3 dB from the input, so the house mix panel gain will have to be adjusted accordingly.

An <u>audio</u> ground loop problem area concerns the "duplex" cables run between the cart and the boom operator. The cable contains two circuits: a feed from the boom mike and an audio return to the operator's headphones. A typical duplex cable has two individually-shielded 2-conductor cables inside. The shields are covered with a plastic jacket so they are insulated from each other. Duplex cables are often terminated in 5-pin XLRs, or in some cases, the boom operator's end is permanently attached at the connector box. This box has a 3-pin female XLR to receive the fishpole plug, and a quarter-inch phone jack for the headphones. If the duplex cable is not attached directly to the box, there will be an additional female 5-pin XLR for the cable and a male panel connector on the box. The most common wiring scheme is:

Pin 1 = Both Shields Pin 2 = + Mike Pin 3 = - Mike Pin 4 = + Phones Pin 5 = - Phones Shell = Connected to Pin 1

For starters, the line-level headphone return is about 60 dB (1,000x) above the mike signal. Next, headphones are unbal-

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Jim Tanenbaum teaching in Viet Nam; saga to be covered in a future issue.

anced, using a TS plug. Finally, the metal connector box has the metal collar (sleeve contact) of the phone jack mounted directly to it, and also the shells of the XLR-3 (and the XLR-5 if used) connected to it. Usually, this scheme works okay because the boom operator is being fed the same audio coming from the mike, so any ground-loop-induced crosstalk is inaudible. Or at worst, it adds a small amount of additional high-frequency boost from capacitive coupling, which can easily be dealt with a little HF roll-off on the mix panel.

I wasn't aware of any of this when I first encountered the problem. It was on a show where I had two boom operators, each receiving a common mix headphone return. When I PFLed (soloed) each boom mike. I could hear a faint crosstalk from the other mike. I immediately knew it was capacitive coupling, because the low frequencies were missing, but wrongly assumed it was occurring within my mix panel. I quickly unplugged one of the duplex cables and the crosstalk disappeared, so my suspicions were confirmed (wrongly). Murphy was insidiously at work here-the duplex cables were easy to reach; the 3-pin XLRs at the rear of the mixer were not. Fortunately, the next thing I did was to pull the mixer all the way out and move the 2nd boom from Channel 5 to Channel 1, leaving the 1st boom in Channel 6. To my surprise, this didn't affect the crosstalk. Then I unplugged the mike from Channel 1 and left it unconnected—when I listened to Channel 6 again the crosstalk was still there, unchanged. Aha! The crosstalk is in the duplex! As a check, I plugged the 2nd boom back into Channel 5 and unplugged the 1st boom. The crosstalk was in that duplex too.

Here's what happened: the IR drop in the two wires of the headphone circuit, which has much more current as well as much more voltage, was raising the far end of the headphone feed above ground. Since the headphone jack effectively connected one side of the circuit (the sleeve) to the metal housing of the connector box, the excess voltage drove a ground loop current back down both shields to mix panel on the sound cart, where the headphone was also grounded to its chassis. This was the signal that was capacitively (and slightly inductively) coupling from the shield to the inner conductors of the mike cable. The mike circuit was balanced, but balanced circuits are never perfect

> The solution was simple— I replaced the headphone jack with one that had a plastic mounting collar and "floated" ... the headphone ground. No more crosstalk.

(see the circuit diagram on page 26). The solution was simple—I replaced the headphone jack with one that had a plastic mounting collar and "floated" (insulated from the metal housing) the headphone ground. No more crosstalk. (Naturally, the plastic jacks are not as durable and reliable as the metal ones. If you have the room, however, you can enlarge the jack mounting hole from 3/8inch to 1/2-inch diameter with a stepped single-flute drill bit, and insulate the metal jack collar with two 3/8" x 1/2" plastic shoulder washers, one on each side of the mounting surface.)

If you send a stereo feed to the boom headsets, using the two inner conductors for the left and right channels and their shield for the common, insulating the jack will only work if the cable is wired directly into the box, so the headphone circuit shield can be kept isolated from the mike shield. If there is a 5-pin XLR at the box, and both shields are connected to Pin 1, insulating the jack won't make any difference, because the headphone circuit shield and the mike circuit shield are connected together at the connector. You can, however, float that end of the mike circuit shield, which will help somewhat, because now the headphone shield will have to capacitively couple to the mike shield first, reducing the amount of voltage on the mike shield. Also, there will be no headphone return current flowing down the mike shield, so there will be no IR drop, and thus, even less voltage. (Of course, since now the headphone current is only flowing down one shield instead of two, its IR drop will be twice as much, but the crosstalk to the mike circuit will still be less.)

For me, this is now all academic, because I use radio links coming and going, and there is no longer any possibly of ground loop crosstalk. Or so I thought.

Recently, I had another crosstalk problem. Because the various pieces of equipment on my cart are still connected with cables, I wasn't home free. Eventually I found the problem, using the techniques described below. I'd made some mistakes early on when building my cart, and never thought to go back and look for potential trouble spots after I learned more.

SOUND CART CONSTRUCTION **TECHNIQUES TO MINIMIZE PROBLEMS**

1. (Assuming your sound cart has a metal frame.) Make sure that all portions of the structure of your cart are firmly bonded together. Welding or brazing is best, but securely tightened bolts and nuts will do-be sure to use lockwashers under the nuts. (Or elastic-insert nuts that are inherently vibrationresistant.) Periodically inspect fasteners for looseness and retighten. If your cart has portions that fold on a hinge or pivot, especially if there are non-metallic anti-friction washers in the rotating joint, bypass it with a short flexible wire



jumper, as described in Item 6 below. If you are using a plastic rack mount case, make sure all rack mount strips are solidly bonded with heavy wire jumpers to any separate connector strips or other metal panels containing circuit components or devices. This is especially true for RF or video circuits.

- 2. If equipment added over the years has resulted in a rat's-nest of cables, it's time to disconnect everything and rewire neatly. Keep power cables away from audio ones, and timecode or other digital signal cables away from analog signal ones. Keep video and RF coax cables away from everything else. Interconnecting cables should not be any longer than necessary, but take into consideration that you might have to pull a unit out for troubleshooting or maintenance while it is still connected.
- 3. Unfortunately, there is no standard among the various equipment manufacturers regarding the wiring of their audio input and output connectors. Some of them tie Pin 1 to the chassis/ case of their equipment, and some do not. You can check each connector with an ohmmeter—a reading of 0-1 Ω indicates a solid connection and a reading over 10 M Ω indicates no connection. Also unfortunately, you will often get a reading of 10-100 K Ω or higher, or a reading that initially is near zero, but quickly kicks upscale to some high value. These two conditions obtain when there are electronic components con-

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nected between the circuit ground and the device's chassis, usually for RF interference suppression. When you first set up your cart, you can treat this situation as a floating ground.

- 4. If you have a patchbay for mike-level signals, be sure that the backside is shielded by being completely enclosed in a metal housing.
- 5. "Empty" braided shielding is available from professional electronics parts distributors. It comes as a flattened-out tube, and in this form, is often used for high-current jumper or ground straps. You can open it up and run cables that need to be shielded through the central opening, to keep interference either in or out as the case may be. The hollow cylinder of shielding increases to its maximum diameter when the ends are pushed together, and decreases to its minimum when they are pulled apart. Maximum flexibility occurs somewhere between these two extremes. I shield all my powering cables this way, with the shield grounded to the equipment case and floating at the battery or power supply end. (To be hon-

If you don't have rack-mounted equipment, ground all your equipment enclosures to the frame of your sound cart.

est, for low-current devices I simply use shielded heavy-duty 20-gauge mike cable instead.)

- 6. If you don't have rack-mounted equipment, with the front panels securely bolted in place, ground all your equipment enclosures to the frame of your sound cart. (Or to each other if you don't have a metal cart.) You can use one of the device's enclosure screws to make the connection. Use the shortest possible length of 12-gauge or 14-gauge stranded cable with terminal lugs crimped on each end. I use a "ring" terminal for security on the cart end, and a "hook" terminal at the equipment end so the screw just needs to be loosened rather than removed completely (with the possibility of being dropped and lost) to disconnect the cable. Then insulate all of the enclosures where they might touch the metal frame of your cart (see Item 8 below).
- 7. Additional shielding is occasionally required. Aluminum foil tape (used for sealing metal air ducts) is readily available from heating and air-conditioning equipment dealers in 2-inch or 3-inch widths. This can be used to seal joints in equipment cases where interfering signals are entering or escaping. It can also be wrapped around a bundle of cables that are permanently installed in your cart. The only problem is in securing a good ground connection to the foil. Several inches of tape at the end of the wrap can be folded over to make a tab which

is then screwed to the grounding point. Unfortunately, aluminum oxidizes and becomes an insulator, so the screws will have to be periodically loosened and retightened. Using copper foil adhesive-backed tape solves this problem, because copper oxide is not an insulator. Also, ground wires can be soldered directly to the tape. The only drawback is that the copper tape is difficult to find, and may have to be bought online.

- 8. An often-overlooked source of static comes from rubbing metal contacts near sources of RF energy such as Comtek or radio mike transmitters. An equipment chassis or even an isolated piece of metal, especially if it has a dimension close to a quarter-wavelength of the RF, will pick up some of the radiated energy. Now, if this piece rubs against another piece of metal (whether grounded or not), there will be tiny (invisible) sparks between them that will re-radiate the single-frequency energy as wideband static, and this can infiltrate the wiring on your cart. Rubber or plastic mats on the metal shelves of your cart will help to prevent this, but two metal objects on the mat that touch each other can still cause trouble. I first experienced this with two large screwdrivers sitting on a wooden workbench next to a radio mike transmitter I was testing. They produced static in the audio whenever their shafts touched. The RF noise they radiated was picked up by the transmitter's audio circuits. NOTE: Some car seats have internal metal springs that rub, and cause static in radio mikes worn on the actors' back. Relocating the transmitters to the front of the actors' body usually eliminates the problem as well as increasing the radiated RF power.
- 9. One other insidious RF problem occurs because of the "skin effect" in which RF energy rides along the outside of cable shielding without penetrating into the inner conductors. Whatever is feeding the transmitter may be affected by this. The audio input to a Comtek transmitter is a good example. The factory-supplied input cable incorporates a ferrite RF choke (which acts like an inductance) at the transmitter end, but you can buy ferrite hollow cylinder chokes from electronic parts dealers for making up your own cables. With an existing cable, you can either remove the connector at one end to slip on the choke and then reattach it, or buy a "split" choke where the ferrite cylinder comes as two halves in a plastic housing that snaps around the cable.
- 10. The RF bypass capacitor and resistor combination mentioned earlier can also be used on specific cables to deal with pickup from transmitters located on the cart.
- 11. Secure all the loose cables with nylon cable ties. For ease of servicing, you can purchase reusable ties with manual release tabs.

The next issue will provide specific troubleshooting advice for crosstalk and also address safety considerations. This will conclude the series.

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