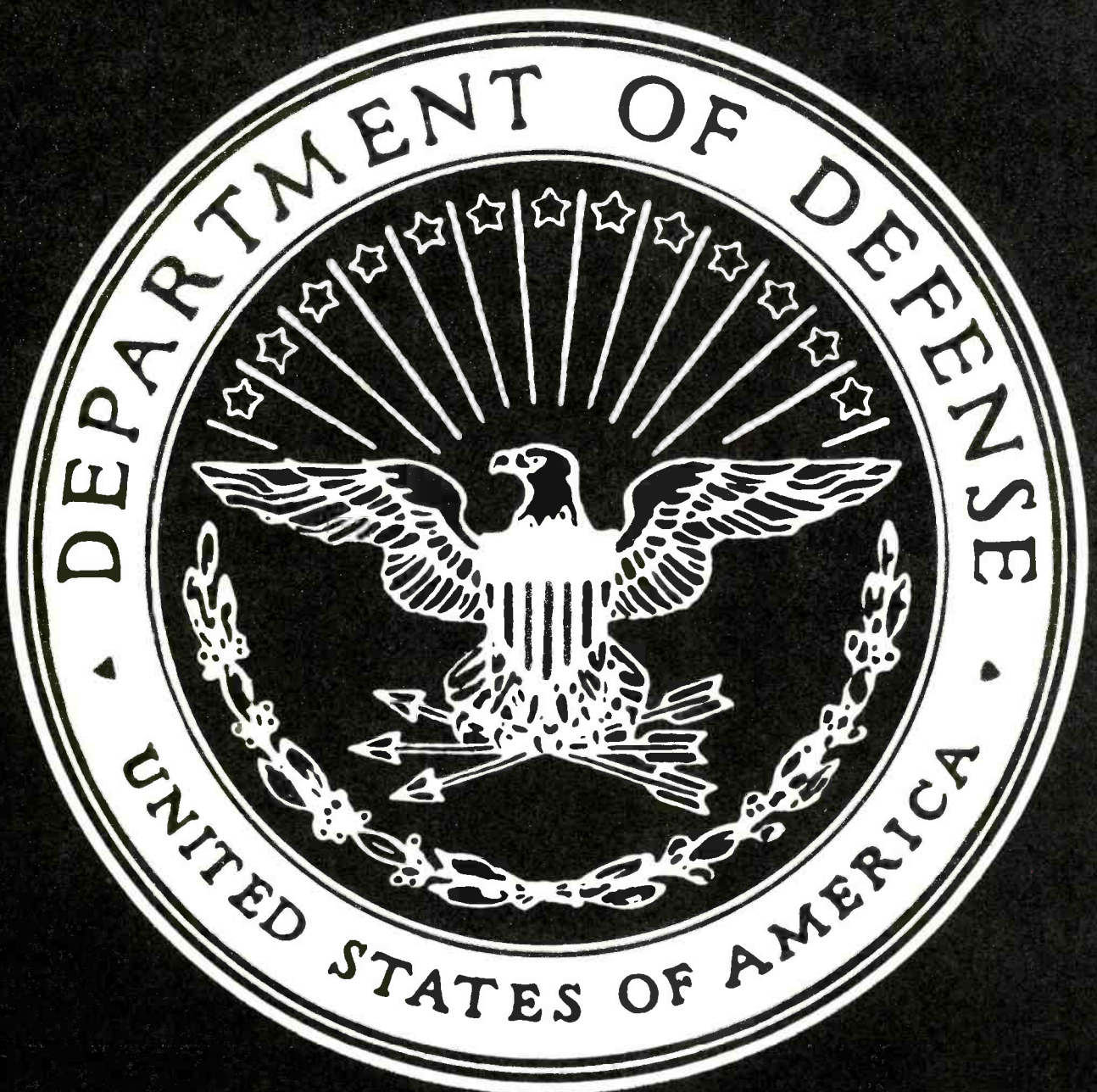
ARMED FORCES RADIO AND TELEVISION BROADCAST GUIDE

NETWORKS

Alaska Network (AN), Anchorage, Alaska
American Forces Korea Network (AFKN), Seoul, Korea
American Forces Network (Europe), Frankfurt, Germany
Caribbean Forces Network (CFN), Canal Zone, Panama
Far East Network (FEN), Tokyo, Japan



ARMED FORCES RADIO AND TELEVISION SERVICE

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Los Angeles 38, California

New York Office
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New York 19, New York

First Edition — 1951
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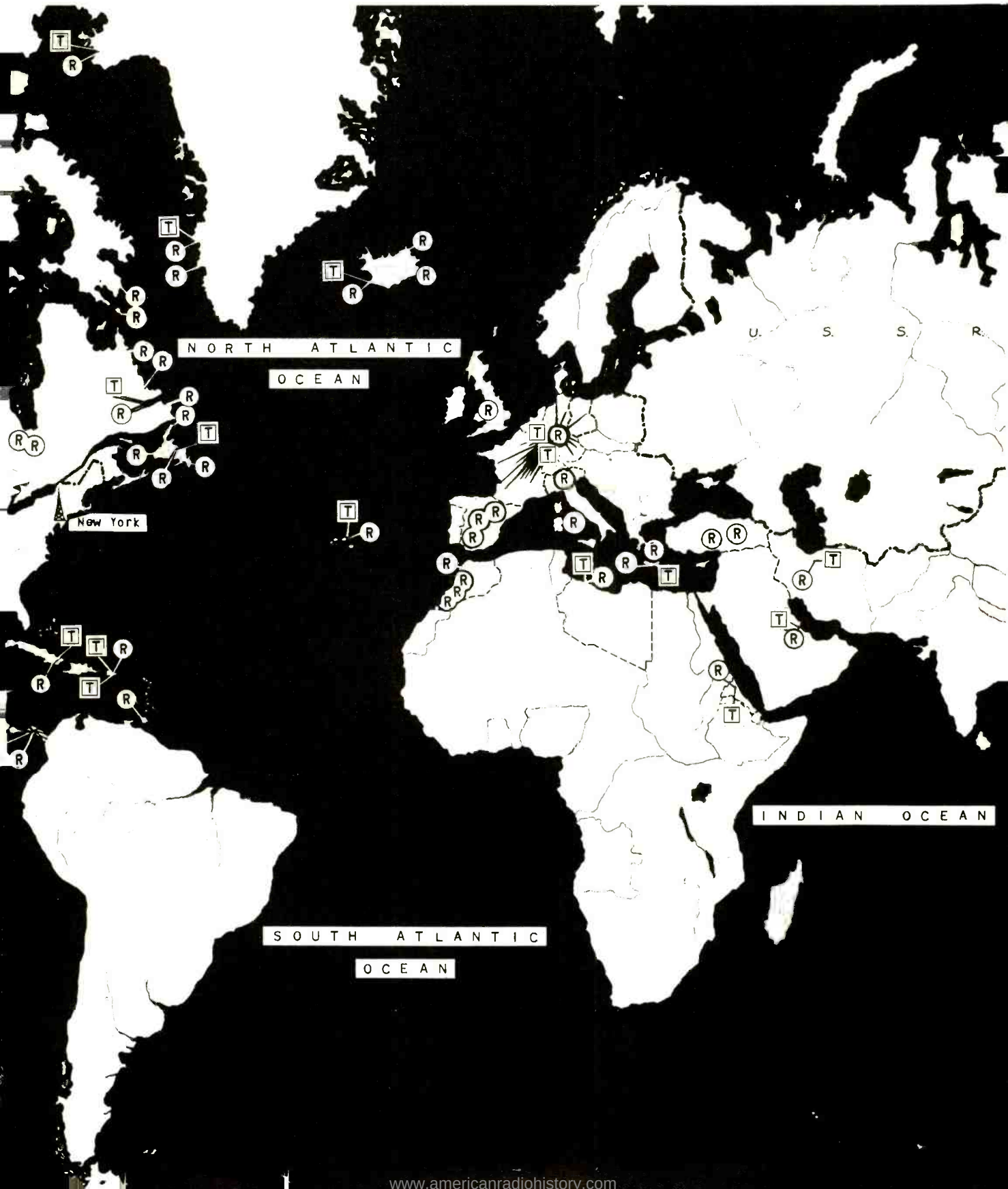
Adak, Alaska
Adana, Turkey
Andersen AFB, Guam
Argentia, Newfoundland
Armstrong, Ontario, Canada
Asmara, Eritrea
Athens, Greece
Bentwater, England
Ben Guerir, Morocco
Camp John Hay, Philippines
Cartwright, Newfoundland
Clark AFB, Philippines
Dhahran Field, Saudi Arabia
Diyarbakir, Turkey
Eniwetok
Finegayan, Guam
Fort Greeley, Alaska
Frobisher Bay, Canada
Goose Bay, Labrador
Guantanamo Bay, Cuba
Harmon AFB, Stephenville, Newfoundland
Hofn, Iceland
Hopedale, Newfoundland
Iraklion, Crete
Johnston Island
Keflavik, Iceland
Kodiak, Alaska
Kwajalein
Lajes AFB, Azores
Langanes, Iceland
Midway
Moron, Spain
Narsarssuak, Greenland
Nouasseur, Morocco
Okinawa
Pagwa River, Ontario, Canada
Port Lyautey, Morocco
Prince George, British Columbia
Ramey AFB, Puerto Rico
Ramore, Ontario, Canada
Ramstein, Germany
Resolution Island, Canada
Roosevelt Roads, Puerto Rico
Rosas, Spain
Saglek Bay, Newfoundland
St. Anthony, Newfoundland
Sangley Point, Philippines
San Juan, Puerto Rico
Sidi Slimane, Morocco
Sioux Lookout, Ontario, Canada
Sondrestrom, Greenland
Spangdahlen, Germany
Straummes, Iceland
Subic Bay, Philippines
Taipei, Taiwan
Teheran, Iran
Thule, Greenland
Torrejon, Spain
Trinidad, Port of Spain
Verona, Italy
Wheelus Field, Tripoli, Libya
Wildwood, Alaska
Williams Lake, British Columbia
Zaragoza, Spain

WORLD INDICATING RADIO AND TELEVISION

MAP
LOCATION OF
STATIONS AND NETWORKS



". . . impress upon the mind of every man, from the first to the lowest, the importance of the cause and what it is they are contending for."

George Washington

A DEDICATION

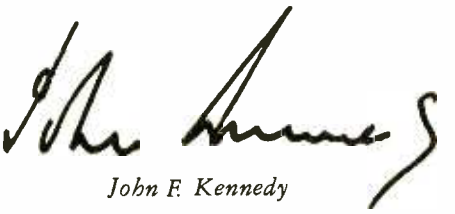
In the current struggle for the minds of men, radio and television are potent instruments for keeping United States military personnel the best informed in the world. In the final analysis — this is the complete and total mission of Armed Forces Radio and Television stations throughout the world.

As the leading example of democracy, the American serviceman is continually on trial in the eyes of the world. Each and every military man is a witness for the defense — a representative, not only of his country, but also of a democratic government.

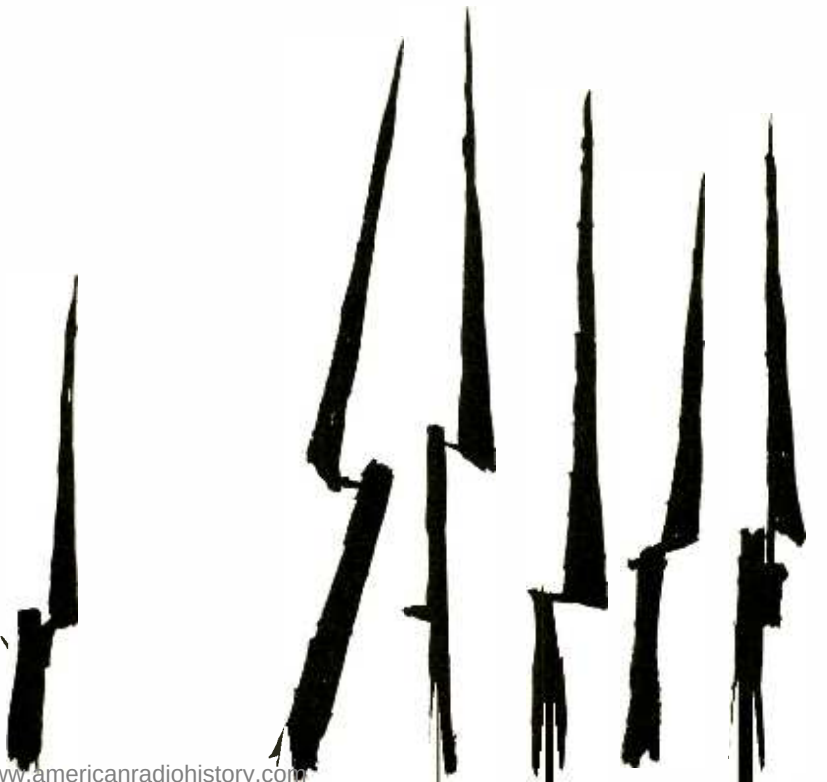
In his dual role as a voter and as a spokesman for democracy, the military man must know the details of his government's operation, the principles on which that government was founded, as well as the aims and objectives of Soviet Communism.

This is a serious responsibility, indeed, a grave one. It is imperative that Armed Forces Radio and Television Stations implement this information responsibility to the utmost in this great struggle of our time — the clashing concepts of Democracy and Communism.

"In these challenging times, it is vitally important that all citizens of the United States be fully informed about the critical issues facing the Nation."



John F. Kennedy



FREEDOM'S TRAIL

In times of national danger, informed and aroused Americans have always marshaled the resources necessary to preserve our freedom.

What resources are needed today? To meet the total threat, they must include mental and moral as well as physical resources, for the enemy may not be in uniform, his weapons may not be visible.

Today's ideological conflict, if it is to be won, must be aggressively pursued with as much vigor as we would employ in an armed conflict. Knowledge is an essential weapon, for the Communist challenge in its varied aspects can be met only if the nature, aims, and methods of communism are known.

Because our defenses are global, our Armed Forces represent the United States in many areas of the world. To promote good will toward the United States — an important part of their duties overseas — it is imperative that they understand and respect other peoples and cultures.

To fulfill their obligations as citizens, members of the Services must know the nature of these obligations. To appreciate fully what it means to be an American — and to convey to peoples overseas the simple truth about America and our peaceful national objectives — they must have a living belief in American principles and ideals. Whether serving in the United States or abroad, they need to keep informed on national and international issues.

Only since 1950 has our Nation had to maintain forces in such great strength and in such a state of readiness at so many points on the globe during a period that can rightly be called neither "wartime" nor "peacetime." What does this mean in terms of the most important element of strength in our Armed Forces — the human element?

It means that a big effort must be made to maintain a high state of morale in millions of Service personnel, a large number of whom are living under trying conditions in many parts of the world. To keep them eager, or even willing, to serve is no easy task.

For a long, indefinite period, we must combat every potential cause of low morale in our forces — inaction, homesickness, isolation, discomfort, lack of familiarity with the immediate organization or mission, and inadequate understanding of why we must be ready to fight whenever and wherever called.

FOREWORD

This edition of the Armed Forces Radio and Television Broadcasting Guide is published for the information and guidance of personnel operating military radio and television stations.

In addition to being a practical field reference book covering basic principles of radio and television broadcasting, it has been designed with a view toward instilling in both the seasoned broadcaster and the recruit a realization and an understanding of the responsibility and mission of an Armed Forces Radio or Television Station.

Manning an Armed Forces Radio or Television Station is more than a job. It is a daily trust, a dedication to broadcasting standards, a new dimension and scope to the assigned mission.

CONTENTS

DIAGRAMS

"This is the United States Armed Forces Radio and Television Service—The Voice of Information and Education."

HISTORY OF THE ARMED FORCES RADIO AND TELEVISION SERVICE

Radio was first used as a coordinated Army information medium in 1942. The typical inventive characteristic of the American serviceman helped create the concept of what has become the "Armed Forces Radio and Television Service."

American soldiers on lonely Kodiak Island, Alaska, assembled a low-power radio transmitter in late 1941. Using phonograph records, local voices, and unreliable short-wave signals actually intended for Central and South America, these servicemen operated a small radio station for many months before its operation came to official attention of the Army.

Concurrently, the need for maintaining the morale of service personnel in other remote outposts where American fighting men were being rushed following the attack on Pearl Harbor, became obvious.

First coordinated efforts in this field by the military consisted of the issue of radio receivers and turntables to troops, including half-hour transcriptions (with commercials). Limited general broadcast of these commercial shows was made through foreign radio stations having coverage of our troop concentrations. A few Army-produced shows were made available at this time to commercial stations in the United States, for the entertainment of servicemen in nearby stateside military camps and bases.

In the spring of 1942, a special "Morale Branch," later known as Special Service Branch, was created by the War Department. Subsequently, Special Services was divided into two morale units: One concerned with purely recreational aspects; the other dealt with the mental attitude of our service personnel. The latter came to be known as the Morale Services Division. Under its aegis, the Armed Forces Radio Service was born.

Los Angeles was selected as headquarters for Armed Forces Radio Service because of its proximity to talent and mass recording facilities. Worthy of special note here is the fact that mass recording and re-broadcast techniques demanded by the rapid growth of overseas outlets, and developed by AFRS, were later adopted in post-war years by the commercial radio industry in the United States.

Later, in 1942, the "all-service" complexion of Armed Forces Radio Service began to emerge, when the Navy assigned personnel. Later, an Assistant Commandant was named from Navy ranks. Almost concurrently, Marines, Coast Guardsmen, and Air Corps talent from the Services swelled the ranks in Los Angeles and at stations overseas. An ever-growing quantity of program features were produced by men and women in uniform, especially conceived for AFRS broadcast use: Command Performance, Mail Call, GI Journal, At Ease, Sound Off, Sports Round-Up, Hymns from Home, to name just a few. Special timely informational and educational features were subsequently added to the lengthy list of decommercialized network programs and those produced by servicemen for servicemen.

Armed Forces Radio Service remained under Army Morale Services Division until late in World War II, when Troop Information and Education Division was formed to supervise and better coordinate the overall activity of keeping the serviceman informed. Then, as a result of the Unification Act, the Office of Armed Forces Information and Education (OAFIE) assumed top echelon responsibility for all Services in the Department of Defense.

The first official Armed Forces Radio Service station was Kodiak, Alaska, the charter station in a chain of 177 overseas radio outlets, manned by uniformed personnel, stretching virtually around the world.

Helping to span the global combat theaters, the Armed Forces Radio Service organized a complex network of powerful shortwave transmitters on the East and West Coasts, beaming timely news, sports, special events, informational, and decommercialized programs directly from stateside to American servicemen throughout the world. This activity, from San Francisco and New York, included the innovation of longer dictation-speed newscasts as a basic news source for AFRS outlets, camp, and theater newspapers. These shortwave broadcasts were regularly re-broadcast by overseas outlets, direct to troops and personnel manning their battle stations on the high seas, and to airmen flying combat missions. Some of the latter frequently "homed" on AFRS signals. Special efforts were made to deliver shortwave programs in the target theater areas at times convenient with the specific listening habits of military personnel stationed there.

At the peak, 126 programs were recorded each week, on 21,000 transcriptions for shipment overseas. In addition, a basic transcription library, with periodic supplements, was furnished to the individual outlets, ships at sea, and to service hospitals for closed-circuit "bedside Networks."

In the post-World War II period, between 1946 and 1950, Armed Forces Radio Service stations declined to 45. With the organization of the Department of Defense in 1948, thirty of these stations remained under Army direction. Others passed to Navy and Air Force, all coordinated by OAFIE. With the Korean action, and redistribution of troops in both the Far East and European areas, stations again increased to 79.

Integration of television into Armed Forces Radio Service, following World War II, paralleled, to a great extent, the same evolutionary pattern as the growth of Armed Forces Radio Service stations. Initially, a need developed at remote Strategic Air Command bases for a morale-building element, both for service personnel and their dependents. Sub-standard recreational facilities and the very environment of remote SAC bases created the vacuum television helped to fill.

First military television outlet was a low-power, all film facility at Limestone Air Force Base in Maine, shortly after the Korean conflict. Supervisory direction for military television was delegated to OAFIE in 1952 and AFRS became the "Armed Forces Radio and Television Service" (AFRTS). Other remote SAC bases, and various service installations, received low-power television facilities: Tripoli, Dhahran (Saudi Arabia), Azores, Keflavik (Iceland), Bermuda, Panama, Alaska, Korea. These were primarily film program facilities. Commercial networks, advertisers and producers provided unedited commercial film and kinescopes. Later, procedures for decommercializing film were developed by AFRTS. Limited film production responsibilities were assigned AFRTS in 1954-1955, and in 1956 they produced and distributed IE "shorts" for world-wide distribution.

Personnel procurement for SAC-based television outlets originally followed an informal pattern. OAFIE was later given responsibility for television personnel procurement. OAFIE, in turn, implemented that responsibility through the various services and commands.

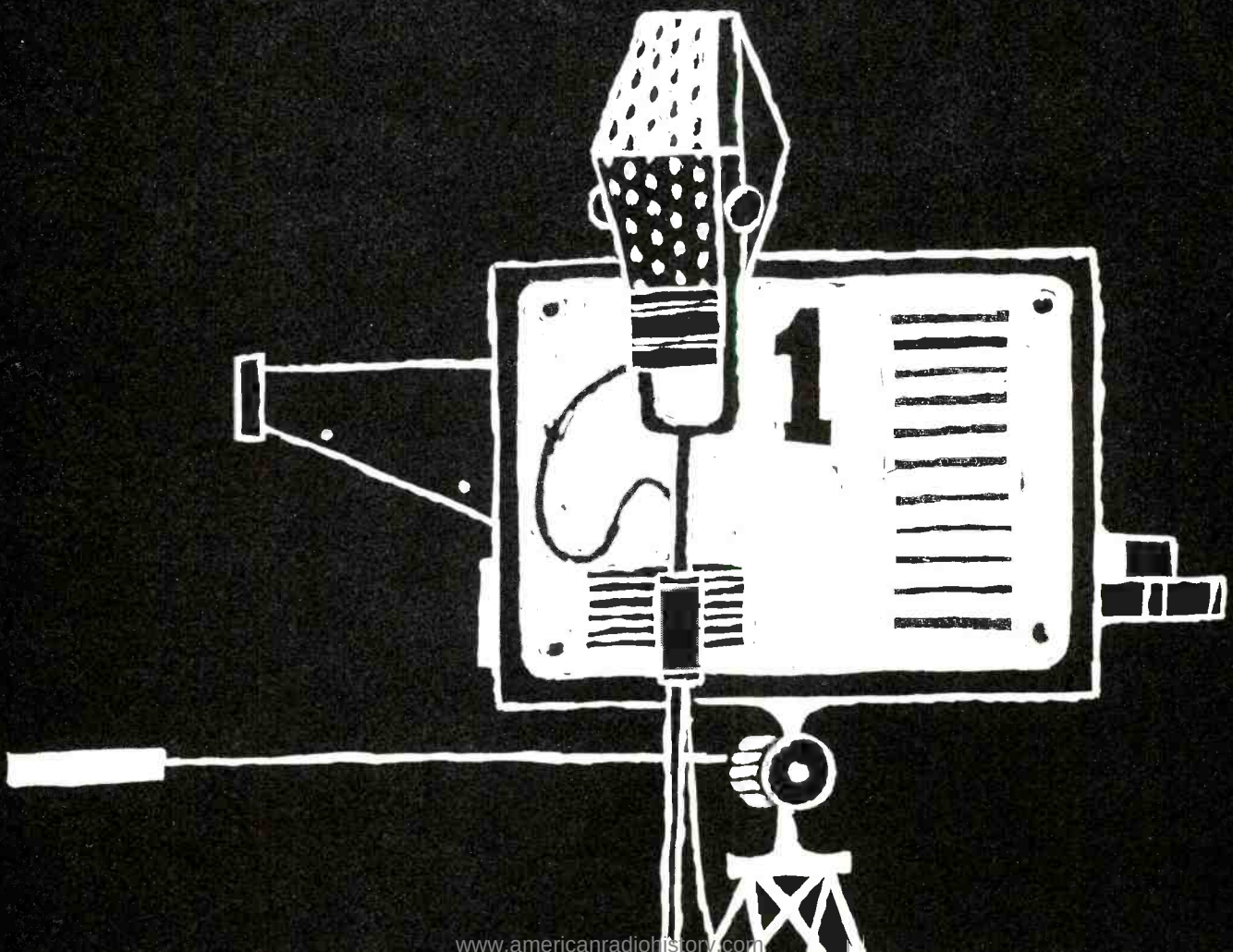
Securing qualified personnel was a major problem in the early World War II history of AFRS. This task absorbed precious hours of effort and time that might otherwise have been devoted to creative program service. Accordingly, in October 1952, over a dozen Army Overseas Radio units were authorized and established within the various Defense

"Ready-Reserve" programs in the Z. I. Three types of stations were created: Network Headquarters, Network Affiliate, Independent. Complete station equipment and transmitters with dummy antennas were supplied to these Reserve units. A well-integrated Reserve drill schedule and summer training program was laid out. This serves as a potential AFRTS "Ready-Reserve" manpower pool in the event of Mobilization.

The development of overseas AFRS networks in World War II, and later in Korea, and the work performed by individual outlets and personnel, cannot be summarized in a brief history of the organization. The Armed Forces Radio and Television Service, and overseas networks, have been the recipient of many unit honors and commendations since the award in 1944 of the first Distinguished Service Award to a stateside noncombatant command. The original standard of extreme high quality in radio and television programming and production has been maintained by these stations associated with AFRTS.

In World War II millions of men discovered radio's work. It was a priceless link with home. Home became less remote. Today, radio and television continue to "serve" the mind and heart of the individual wearing the uniform. Necessity conceived AFRTS. Imagination, ingenuity and work continue to perpetuate this comparatively new organization in the best traditions of the military service.

ESTABLISHING THE ARMED FORCES RADIO AND TELEVISION STATIONS



CHAPTER 1

ESTABLISHING ARMED FORCES RADIO AND TELEVISION STATIONS

An Armed Forces Radio or Television outlet is a radio broadcasting station, carrier current station, audio distribution system, telecasting station, television booster station, television translator station, or wired television system authorized by the Office of Armed Forces Information and Education, Department of Defense, and operated in accordance with the pertinent directives issued by that office, and the applicable military department regulations of the command in which such facility is located.

Depending upon availability of land-line and/or microwave relay facilities, a radio or television facility may be a network affiliate, an independent outlet, or even a key network headquarters type of station. Programming, production, technical lay-out and facilities, personnel, space requirements, etc., will be governed largely by the type of station planned and approved for the area.

Subject to the limitations set forth below, Armed Forces Radio or Television outlets may be established wherever a military requirement for such communications can be demonstrated.

STEPS TO ESTABLISH

A commander, on determining that there is a need for an AFRTS outlet, radio or television, shall forward his request for its establishment (or major modification of an existing outlet) to his military service department, through the commander of the unified command, if such a command exists. The request will include the following information:

1. Essentiality — to include number of Armed Forces personnel who will benefit from the outlet contemplated.

2. Designation of the command that will exercise immediate operational control of the station.

3. Physical location.

4. Plan for staffing the outlet, including military and civilian personnel requirements.

5. The plan for providing logistical support for the operation and maintenance of the outlet.

6. Availability of an operating frequency, or suggested operating frequency, including extent of preliminary clearance with military command, the local sovereign government (when involved), and the unified command.

7. A brief description of the required facility, together with a list of any equipment available in the command for the project.

In considering any request for a new Armed Forces Radio or Television outlet, the department concerned will apply the following criteria:

1. The outlet will not cause interference, as determined under the rules of the Federal Communications Commission (FCC), to broadcast stations licensed by the FCC, or to stations in other countries in contravention of outstanding treaties or agreements.

2. The outlet will not restrict or preclude the use of any broadcast frequency by a station licensed by the Federal Communications Commission in accordance with its rules and standards.

3. Armed Forces Radio and Television outlets are intended to serve the United States Armed Forces and will not compete for listeners with other broadcasting stations.

4. A request for the establishment of a translator or booster station will be considered by the Office of Armed Forces Information and Education only if the site is outside the continental United States and the program to be received is in English. This does not preclude the military departments from establishing translator or booster stations to relay programs within the continental United States, using available funds and with proper authorization from Government agencies and the commercial interests involved.

In areas where the jurisdiction of the Federal Communications Commission is involved, the military department concerned will apply the criteria above in determining the acceptability of the Armed Forces Radio and Television outlets for which concurrence has been requested. Where applicable, the military department will insure required coordination with the Joint Communications Electronics Committee of the Joint Chiefs of Staff, through its department representative on this committee. In those instances where an application to the Interdepartment Radio Advisory Committee for frequency provision is essential, the military department concerned will submit its request to the Office of the Assistant Secretary of Defense, Supply and Logistics (OASD/S&L), for approval and transmittal to the Office of Defense Mobilization (ODM). ODM will obtain the views of the FCC and will indicate to the military applicant, through OASD (S&L), when a frequency application may be processed. OASD (S&L) will furnish a copy of that communication to the Office of the Assistant Secretary of Defense, Manpower, Personnel, and Reserve, (OASD/MP&R). Final approval cannot be given by the Office of Armed Forces Information and Education until requisite clearances are obtained from the sovereign government.

The request, when properly completed in accordance with the procedure indicated above, will be forwarded by the department concerned to the Office of Armed Forces Information and Education for policy approval. If that office concurs, it will be returned to the department originating the request. The department will then complete the clearance of an operating frequency, in accordance with established directives, and will proceed with steps to procure a "bill of materials" and physical installation of station.

Assigned radio frequency and power will not be deviated from, except by approval of the assigning authority.

First appraisal of details above may cause one to anticipate complications. The military and government agencies named above are generally familiar with most of the problems attendant to setting up a radio or television facility. Information not readily available to a commander can be secured. It is helpful to reflect that the construction of a commercial outlet in the United States, where information, supplies, and equipment are quite readily available, requires diligent effort over a period of time before a construction permit is granted. It is the responsibility of the FCC and other agencies concerned with military broadcasting, to similarly allocate and approve a frequency and broadcast equipment that will properly cover the designated target area, without interference to an existing outlet and with resultant broadcast fidelity that meets prescribed standards.

The first step, therefore, in the establishment of a radio or television facility, is that the commander for the area desiring the military outlet forward his request for its establishment through proper channels, in the manner shown above. The major command level will appoint a qualified television or radio project officer who will, upon the receipt of a request for a station facility, be assigned to complete all plans for the installation of the station. To accomplish this, a television or radio site survey will be completed by the major command project officer, or his assistant. The commander of the area for which a facility is being requested will usually appoint a project officer in his own command to work with the major command level project officer.

EXAMPLE OF A FLEXIBLE PLAN FOR TELEVISION PROJECT

The following is submitted as an example of a flexible plan which can be used by the major command level project officer in the accomplishment of his responsibility for completion of a television site survey:

1. TDY to proposed base, Project Officer and assistant, for location survey — to include:
    a. Essentiality survey
    b. Engineering survey
    c. Building facilities survey
    d. Station location survey
    e. Local government approval
    f. Listening, viewing habits
    g. Personnel requirements and problems
    h. Television receivers
    i. Television station programming
    j. Technical problems
    k. Area problems
2. Return to Headquarters, Project Officer and assistant:
    a. Submission of Operational Plan, which will include:
        (1) Engineering survey information
            (a) Maps
            (b) Photographs
            (c) Equipment location
            (d) Studio location
            (e) Power
            (f) Available electrical supplies, etc.
        (2) Engineering problems and their solutions
        (3) Equipment requirements

(4) Equipment costs

(5) Local government approval and frequency authorization

(6) Personnel required

(7) Funds

(8) Programming

(9) Contracting

b. Immediate action and coordination on

(1) Funds

(2) Contract specifications

(3) Contract award

(4) Personnel procurement

(5) Programming

(6) Television facilities planning

(7) Training

(8) Final local government approval and frequency authorization

(9) Television receivers

c. After contract award by military service having command jurisdiction of proposed station:

(1) Contact and coordination with television manufacturers

(2) Completion of television facilities planning

(3) Completion of:

(a) Personnel procurement

(b) Programming

(c) Engineering requirements as applied to local situation

(d) Film distribution

(e) Airlift and transportation

(4) Exact target date for delivery

(5) Equipment on way to delivery

d. TDY to site — Project Officer and assistant:

(1) Equipment arrival

(2) Station personnel arrival

(3) Installation of equipment

(4) Inspection and acceptance of equipment

(5) Final coordination on engineering activities

e. Prior to airtime:

(1) Thirty (30) days' program planning in advance

(2) SOP written for Station Operation

(3) SOP written for procurement of entertainment, live or film

(4) SOP written for maintenance of equipment

f. Airtime: Opening of fixed base television station:

(1) PIO coverage

(2) Outstanding entertainment (live — film)

(3) Miscellaneous

It is also important to remember that there are prescribed steps for a major alteration or discontinuance of a radio or television installation.

PROCEDURE FOR DISESTABLISHMENT OR MAJOR REDUCTION IN SIZE OF AFRTS OUTLETS

When a commander determines there is no longer a need for an existing station in his command, or that its size should be reduced, he will forward his request, together with an inventory list, to the military department having jurisdiction over the outlet through the commander of the unified command. Upon approval, the department will forward an information copy to the Office of Armed Forces Information and Education, Department of Defense.

Upon receipt of authority for the disestablishment or reduction in size of the station, the commander will insure that equipment and maintenance records are handled in accordance with the following procedure:

1. If the AFRTS equipment can be used elsewhere within the area of the unified command, the command disestablishing the station will, without reimbursement, ship the equipment and pertinent maintenance logs to the command designated.

2. If no use exists within the area of the unified command, such parts and equipment will be reported through channels to the military service concerned, for disposition instructions.

RESPONSIBILITIES

Responsibility for Armed Forces Radio and Television is assigned as follows:

1. The Office of Armed Forces Information and Education is responsible for developing and supervising programming policy for Armed Forces Radio and Television Service.

2. In areas where jurisdiction of FCC is involved, the Assistant Secretary of Defense (Supply & Logistics), in coordination with other offices of the Department of Defense, has responsibility for technical policy matters necessary for the approval of Armed Forces Radio and Television outlets.

3. The military departments are responsible for the implementation of policy.

4. Military departments are responsible for the administration, operation, and support of Armed Forces Radio and Television outlets within their jurisdiction.

5. In unified commands, operational and administrative control of Armed Forces Radio and Television outlets may be delegated to local Army, Navy, Air Force, or Marine Corps commanders, under the implementing policies established by the commander of the unified command.

6. Except when there is a joint agreement for other arrangements, each military department is responsible for budgeting and funding in accordance with the policies of its department as follows:

a. Civilian personnel for the operation of Armed Forces Radio and Television outlets within its jurisdiction.

b. Administrative and housekeeping supplies and equipment for the operation of Armed Forces Radio and Television outlets within its jurisdiction.

c. Supplies and material required for the establishment of new outlets.

d. Supplies and material required for major changes in existing outlets.

e. Supplies and material required for replacement, repair, and maintenance of existing equipment.

f. Engineering services.

g. Orientation of the technical operating staff of each new outlet, and reorientation of personnel at existing outlets.

Office of Armed Forces Information and Education, Department of Defense, is responsible for:

1. Budgeting and funding for AFRTS-LA and AFPRTS-NY.

2. Providing programming materials to all Armed Forces Radio and Television outlets; securing clearances from such interested unions, associations, owners, or sponsors, as may be deemed necessary.

3. Contracts and agreements with the American radio, television, and recording industries, and their allied unions, for program material and services essential to the successful operation of Armed Forces Radio and Television.

POLICY OF OPERATION

Policy of Operation must initially recognize the military requirements of the command, while considering the daily habits of the potential military listening or viewing audience — their duty hours, recreational habits, and general attitudes. The hours of work and leisure present an individual problem in each command. Attitudes, though variable, are apt to fall into normal American listening and viewing patterns, as the American military audience represents a fairly typical cross-section of the American public back home. In general, they still remain an "American radio or television audience," and any policy of operation criteria must attempt to cater to those tastes and desires.

PROGRAMMING SERVICES

Complete Armed Forces Radio and Television program service may be authorized only for approved Armed Forces Radio and Television outlets. Service will consist primarily of audio tapes, transcriptions, kinephoto recordings, and 16-mm motion picture film.

Partial Armed Forces radio program service may be authorized for certain approved military and veterans hospitals. Request for this service for military hospitals will be made through the respective military departments to the Office of Armed Forces Information and Education, Department of Defense.

SPECIFIC OPERATIONAL POLICIES

Direct Communication

Armed Forces Radio and Television outlets or networks, overseas commands and military departments may, on program matters, communicate directly with AFRTS-LA and AFPRTS-NY.

Station Identification

Armed Forces Radio and Television outlets will identify themselves at prescribed regular intervals, in compliance with international regulations. If call letters have not been assigned, identification may be made as follows: "This is Armed Forces Radio (or Television) Station ....." (followed by the name of the city, post, geographic location, or code designation).

Outlets which are a part of local network may use their affiliation twice daily, at sign-on and sign-off, as an "Affiliate of Armed Forces Radio and Television Service, the Voice of Information and Education." Networks will not be identified unless they exist in fact, and then they will be identified as being operated for the benefit of the Armed Forces, not for a single military Service.

Station identification will be made at the beginning and at the end of each individual program segment, except in cases of variety programs, athletic contests, or similar programs of longer duration than thirty minutes. Station identification, in these instances, will be made at the first interruption of program continuity or, in any case, at least hourly.

Custodianship

All transcriptions and films distributed by the Office of Armed Forces Information and Education, and its field activities, remain under the custodianship of the Department of Defense and are to be used only on authorized AFRTS outlets.

Use or reproduction of AFRTS tapes, transcriptions and films, in whole or in part, for private or commercial purposes, is prohibited.

Armed Forces Radio transcriptions and films, or duplicates made therefrom, will not be retained by governmental agencies, except as authorized by the Office of Armed Forces Information and Education.

Restriction

Recordings made by Armed Forces Radio and Television outlets, or Armed Forces networks, will not be made available to commercial or private radio stations or networks, or their representatives, without prior approval of the theater commander or the commander whom he delegates to be responsible, and then only through normal public information channels.

SPECIFIC PROGRAMMING POLICIES

Clearances

Clearances will be obtained by the Office of Armed Forces Information and Education

from such interested unions, associations, owners, or sponsors, as may be necessary.

Negotiations for new radio or television program material is the responsibility of the Office of Armed Forces Information and Education, AFRTS-LA and AFPRTS-NY.

Inquiries or requests from overseas radio and television outlets will not be directed to commercial interests in the United States, such as film producers, networks, recording companies, owners, sponsors, and individual radio and television stations. All inquiries and requests will be addressed to Office of Armed Forces Information and Education, AFRTS-LA or AFPRTS-NY. This policy is based upon request from industry for centralized control over such requests from military services and overseas radio and television outlets.

Use of programming materials (phonograph records, tapes, or films) secured directly from commerical sources, post exchanges, or private sources, is prohibited.

News

Armed Forces Radio and Television outlets will broadcast news programs as frequently as is consistent with good programming standards and local needs. News material will be selected on the basis of objectivity. It will be balanced as to coverage and will not contain editorialism, analysis, commentary, or sensationalism. When opinions are expressed, the person or source will be identified. News will be factual, accurate, impartial. News broadcasts will be based on reports provided by commercial press services, shortwave news broadcasts from Los Angeles and New York, or other accredited news gathering agencies, including authorized military news media and official press releases emanating from major command headquarters. News will be in good taste.

Armed Forces Radio and Television outlets shall make available to military personnel stationed overseas, factual and impartial political news from the United States. Such news must be obtained from nationally recognized news media. Great care shall be exercised in maintaining a well-balanced coverage of political news, without comment, criticism, analysis, or interpretation of an editorial nature.

Presidential Campaigns

During national presidential campaigns, AFRTS-LA will supply outlets overseas with transcriptions and films of addresses by presidential candidates of the major parties, and AFRTS-LA and AFPRTS-NY will broadcast a balanced coverage of campaign news and addresses by shortwave. Addresses by presidential candidates will be scheduled by local outlets during the most advantageous listening hours. Equal time will be allotted to addresses by candidates of each major political party and adequate advance notice of the date and hour of each broadcast will be given.

Religious Programs

Religious programs released to overseas radio and television outlets are selected by the Armed Forces Chaplains' Board.

Questions concerning selection of religious programs released by AFRTS-LA or AFPRTS-NY will be referred to the Office of Armed Forces Information and Education, for coordination with the Armed Forces Chaplains' Board.

Foreign Language Broadcasts

No Armed Forces Radio or Television outlet will broadcast any radio or television

program sponsored by a foreign government, except those programs supplied by Armed Forces Radio and Television Service. This prohibition does not apply to live broadcasts of local sports and special events that are prepared initially for broadcast over Armed Forces Radio and Television outlets and are presented by, or under the supervision of, staff members of those outlets. In certain instances, events or ceremonies broadcast by a foreign government or agency may be deemed of sufficient cultural or informational value to warrant rebroadcast by Armed Forces Radio or Television outlets. In such cases, major commanders are authorized to rebroadcast such programs. No rebroadcast of this nature, however, shall be made without the express permission of the originating agency.

Broadcasts in other than the English language are limited to:

Those designed to satisfy the needs of U. S. troops speaking other than English, for example, a Spanish language program for Puerto Rican troops.

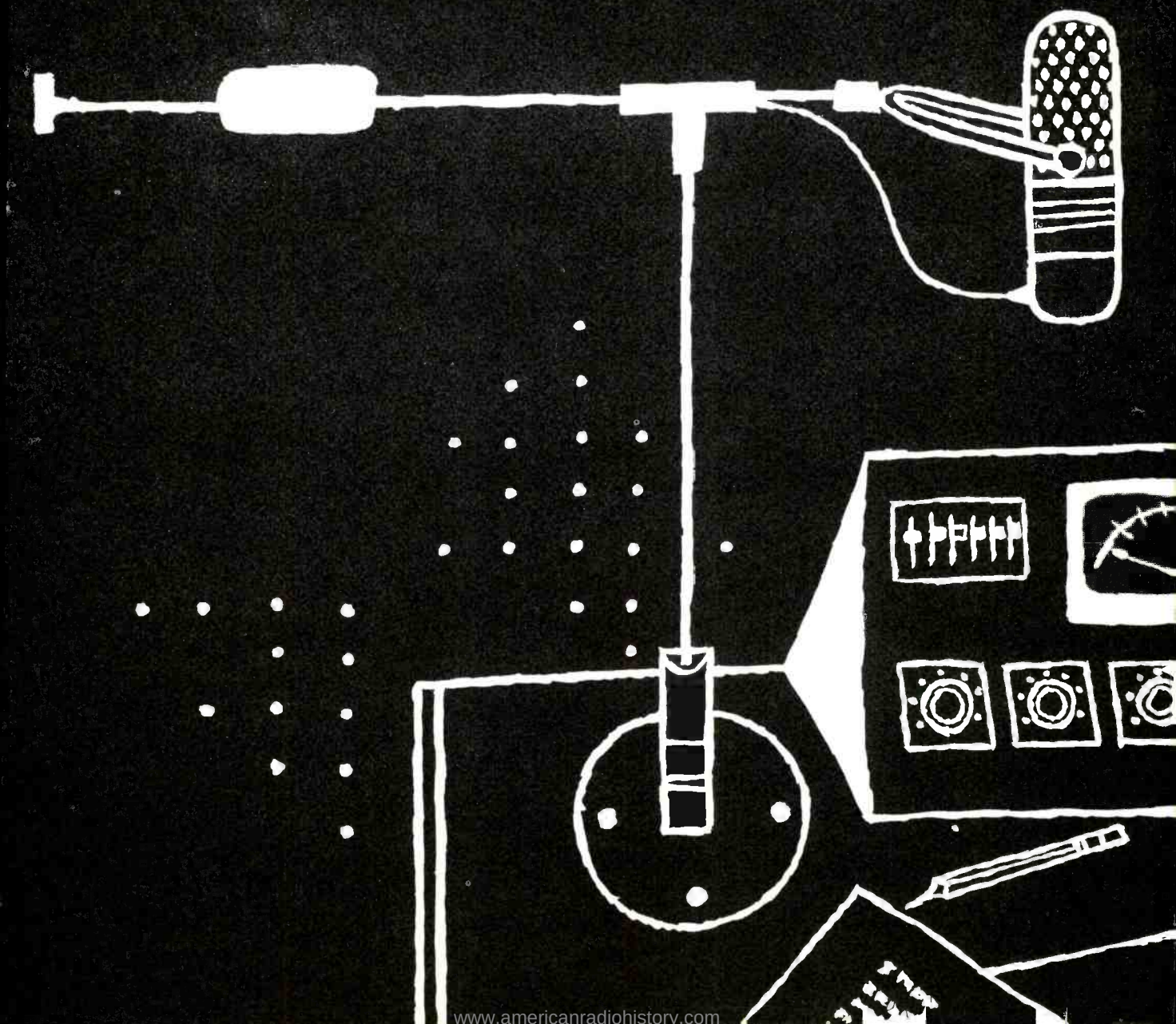
Radio or television courses in the language of the host country, addressed specifically to the serviceman, in order to increase his knowledge of the language.

Broadcasts addressed specifically to the serviceman, designed to increase his appreciation of the host country, its customs, background and people (such as panel discussions or interviews with indigenous people where translation is required).

Those designed to assist the host government, as it requests, in contacting its civilian population during emergency conditions, such as, storms, floods, hurricanes, or earthquakes.

INSTALLING

THE ARMED FORCES RADIO STATION



CHAPTER II

INSTALLING THE ARMED FORCES RADIO STATION

Installation of the Armed Forces Radio Station will be carried out either by military electronic technicians or civilians specifically hired by the command for the project. This is a highly technical job, requiring trained engineers, but general information, useful in the installation of the radio station, is incorporated in this chapter.

While each radio station will vary somewhat in equipment requirements, there are three general types of Armed Forces radio installations. These three types can be generally categorized as follows:

1. **Class A:**

   A station with a transmitter power of 1,000 watts or more.

2. **Class B:**

   A station having a transmitter power of less than 1,000 watts, but not less than 100 watts.

3. **Class C:**

A station of less than 100 watts transmitter power, a carrier current station, or a wired audio system.

EQUIPMENT FOR A RADIO STATION

The technical equipment for a radio station can be divided into three (3) major parts:

1. The studio and control room, with audio and transcription equipment.
2. The transmitter and allied monitoring equipment.
3. The antenna installation.

The studio may be located at any place free from external vibration and noise. It is not necessary to build a studio in the same building that houses the transmitter. Some installations have the studio separated from the transmitter by several miles. This is desirable in areas where a large number of troops are billeted or transmitters of large power are used. The recreation hall, or any other centrally located building, serves adequately as a studio location. However, in most installations of 1000 watts or less, the studio is included in the same building with the transmitter. Local needs will generally determine the best approach. Either way will prove technically satisfactory.

THE STUDIO BUILDING

The following features describe the ideal studio building and will serve as a guide to be followed insofar as circumstances permit:

1. Control room console should be located outside the studio proper, near one end of the studio, and isolated from it by a double glass, sound-proof window immediately in front of the console. This allows the operator a clear view of the entire studio.

2. Acoustical treatment of studio and control room should be achieved by proper

use of sound absorbent material. Unpainted celotex, soft drapes, burlap, or blankets may be used to destroy the hollow or echo effect caused by sound reflection, prevent outside noise from reaching the microphone, and reduce possibility of feedback from control room monitor speaker.

3. Partitions between control room and studio should be sound-proofed by means a double wall stuffed with some absorbent material, such as glass wool or rock wool. Sound-proofing of the double window should be accomplished by imbedding it in resilient sound-absorbing material, such as felt or sponge rubber, leaving several inches of air space between the two sheets of glass to prevent sound from leaking through.

4. Adequate space for production, technical, and administrative operations should be provided so that, when necessary, the following activities can be conducted simultaneously without interference:

a. Program broadcast

b. Program rehearsal or audition

c. Script writing

d. Technical maintenance and repair

e. Newsroom activities

f. Clerical and administrative overhead activities

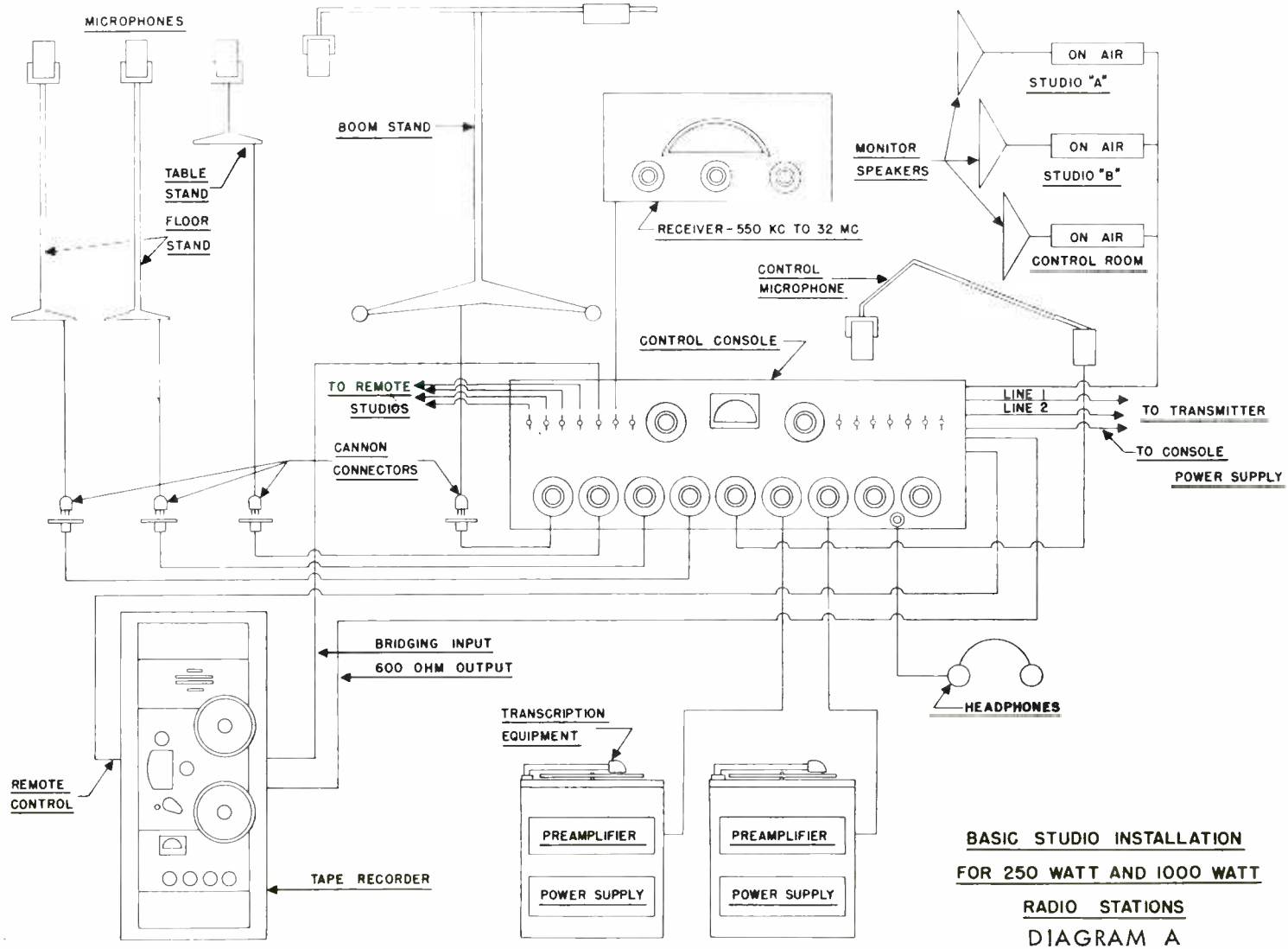
g. Library storage

The selection of proper studio equipment is the first important step in planning an installation. The basic studio installation pictured in Diagram "A" on page 13, and the equipment listed in the following bill of materials, are recommended as minimum essential requirements. Each new station will have equipment problems peculiar to its location and mission. These will, no doubt, necessitate additional equipment and thus require some modification of the recommended bill of materials, but the following should be helpful as a guide:

BILL OF MATERIALS FOR DIAGRAM "A"

BASIC STUDIO EQUIPMENT

QUANTITY	DESCRIPTION
1 each	Console, speech input
2 "	Turntable assemblies
1 "	Recorder, tape, rack mounted
1 "	Recorder, tape, portable
1 "	Receiver, 550KC to 30 MC, rack mounted
2 "	Microphone, velocity, ribbon
3 "	Microphone, pressure
1 "	Stand, microphone, boom type
4 "	Stand, microphone, floor type
1 "	Stand, microphone, desk type
1 "	Stand, microphone, universal mounting
2 "	Headphones, high impedance
3 "	Speaker, loud, in cabinet



BASIC STUDIO INSTALLATION
FOR 250 WATT AND 1000 WATT
RADIO STATIONS
DIAGRAM A

QUANTITY	DESCRIPTION
3 each	Lights, "ON AIR"
4 "	Connector, cannon, type XLR3-35-2G wall mount
2 "	Connector, cannon, type XLR3-11C
9 "	Connector, cannon, type XLR3-12C
1 "	Rack, cabinet type
500 feet	Cable, two-conductor, shielded, audio channel
100 "	Cable, microphone, 2 conductor, shielded
1 each	Meter, tester, vacuum tube
1 "	Meter, multimeter
1 "	Meter, vacuum tube voltmeter
1 "	Oscillator, audio
1 "	Oscillograph
1 "	Amplifier, cue
6 "	Cord, patch, 3'
1 "	Amplifier, remote
1 "	Tool kit, electronic maintenance type

NOTE: The maintenance shop may be located with either the transmitter or studio equipment, depending upon local space conditions. Where the complete station is housed in a single building, it is usually desirable to locate the shop there also.

THE TRANSMITTER

Transmitters of relatively high power, 1,000 watts or more, are usually located away from congested areas in order to avoid undue interference with tactical and command radio communications systems. The transmitter, itself, may be located at the communications transmitter farm or at outer edge of troop concentration areas. Locating the broadcast transmitter with communication transmitting equipment solves the power source problem, but may cause some interference difficulties to communications personnel. The optimum transmitter installation is one that is separated from all other radio frequency radiating equipment by a minimum of three miles and has its own source of power and assigned transmitter station personnel.

The selection of equipment for a radio broadcast transmitter station is as important as the selection of studio equipment and should be carefully studied. The following table gives an approximation of the area covered by transmitters having various power outputs, assuming normal antenna efficiency and barring geographic obstacles:

WATTS	RADIUS IN MILES
1,000	23-60
500	19-50
250	15-42
50	10-26

The above coverage radii are computed for an assumed frequency of 1,000 kilocycles. The actual coverage depends greatly upon the frequency used. The lower frequencies are more desirable, if a good antenna and ground system is available.

A properly designed antenna system and a lower operating frequency are more desirable factors than higher transmitter power.

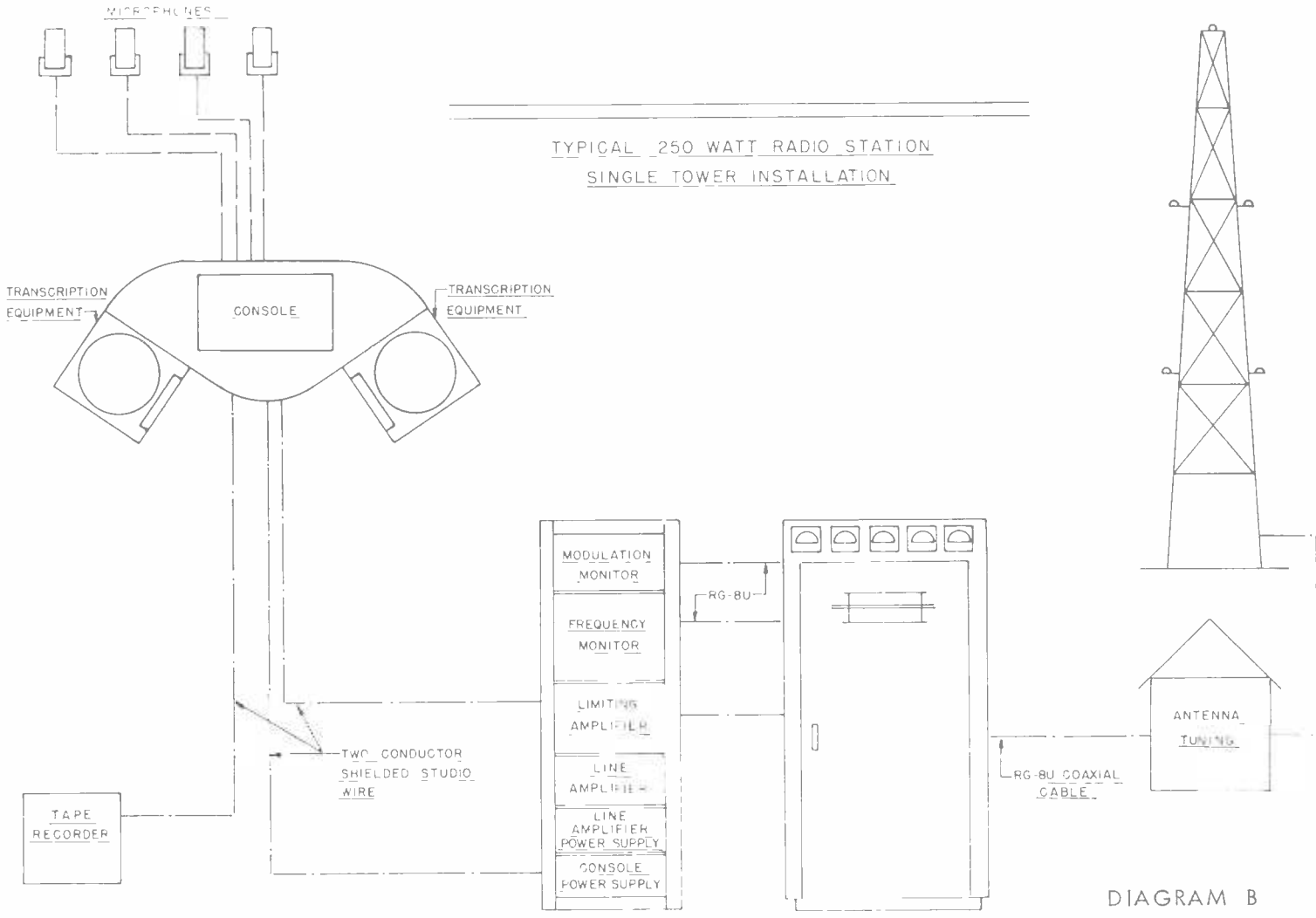


DIAGRAM B

Associated equipment, such as monitoring and Limiter devices, is to be included. Recommended minimum requirements are outlined in the suggested bill of materials for Diagram "B." Notice that studio equipment and antenna installation are included in Diagram "B" on page 15 . This is done to present a clear picture of how the three separate parts of a complete radio station are tied together. The following bill of materials, however, lists only those items peculiar to the transmitter installation:

BILL OF MATERIALS FOR DIAGRAM "B"

BASIC TRANSMITTER EQUIPMENT

QUANTITY	DESCRIPTION
1 each	Radio transmitter, amplitude modulation, complete with operating tubes, spare tubes and crystals, and spare parts 250 watt transmitter to be supplied for 250 watt installation 1000 watt transmitter to be supplied for 1000 watt installation
1 each	Monitor, frequency, complete with crystals and spare tubes
1 each	Monitor, modulation, complete with spare tubes
1 each	Amplifier, limiting, complete with spare tubes
1 each	Rack, cabinet
500 feet	Wire, two-conductor, shielded, studio type
50 feet	Cable, coaxial, type RG8U for inside cabling
1 each	Speaker, loud, in cabinet

THE ANTENNA

The function of a transmitting antenna is to radiate radio frequency energy efficiently over given geographical areas. In this discussion we are mostly concerned with vertical or broadcast-type antenna. The antenna mast should be designed and located so that when a radio wave leaves the antenna it will spread itself evenly over the area being served by the radio station. The efficient propagation of a strong ground wave depends upon how the antenna is constructed, where it is installed, how it is loaded, and the type of ground system used. If it is necessary to assemble the mast, it should be remembered that each joint must be bolted down tightly, or welded, to form a rigid, one-piece tower, preferably not less than 200 feet high. Any loose joints will result in the radio frequency voltage arcing to produce interference along with the radiation. To achieve best results, the tower should be erected within sight of the reception area. Obstructions, such as hills and mountains, in some instances, will discourage good signal coverage.

The antenna should be located in as moist an area as possible. When a choice is necessary between a low moist area, surrounded by small hills, and a hill-top site, the low moist area is usually preferable.

The transmitting antennas can be as near the transmitting building as is desired, but should not be more than about 300 feet away. The type of transmission cable generally used for powers up to 1,000 watts is RG-17-AU. Type RG8U can be used as an alternate at a power of 250 watts or less.

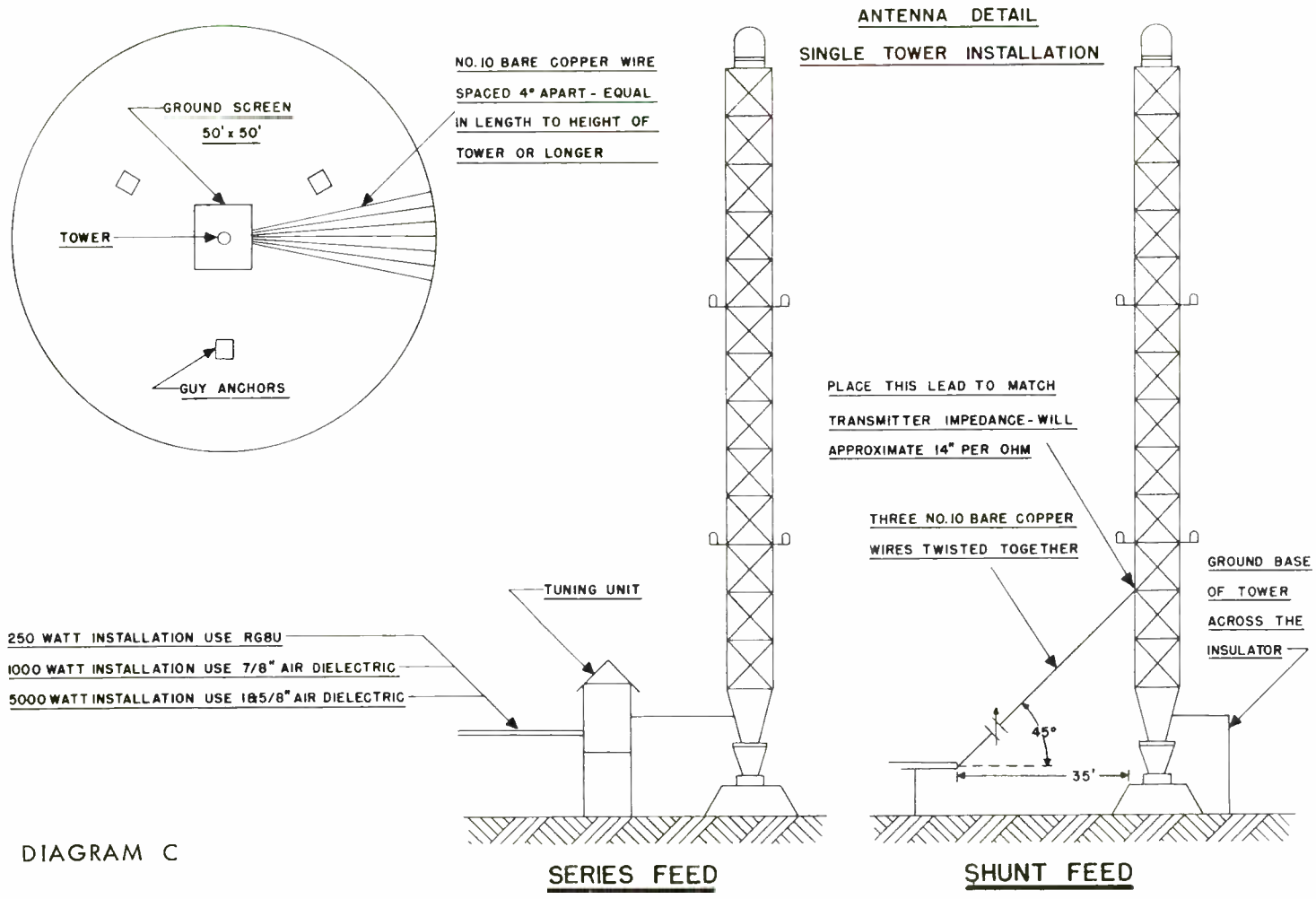


DIAGRAM C

Either the shunt fed or series fed tower can be used, as shown in Diagram "C" on page 17 . The diagram showing the shunt fed tower does not include an antenna tuning unit. This is optional. If harmonic radiation problems with nearby communications transmitters is anticipated, it is well to include an antenna tuning unit.

A good ground system is imperative. The usual system consists of 120 radials of No. 8 copper wire, 200 feet long, equally spaced, as shown in the diagram. This is 24,000 feet, or 1,200 lbs., of wire. In addition, 6 sheets of copper ground screen are brazed together and placed flat under the tower. The radials should come all the way to the center of the tower, cross the mat, and be bonded securely at several points. If possible, the entire ground system should be about 6 inches underground.

The following bill of materials for Diagram "C" is recommended for an average antenna system:

BILL OF MATERIALS FOR DIAGRAM "C"

BASIC ANTENNA INSTALLATION

For

SERIES FED ANTENNA

QUANTITY	DESCRIPTION
1 each	Antenna, steel tower, minimum height 200 ft., vertical guyed, complete with insulator, guy kit, and installation hardware
1 each	Kit, lighting
1 each	Tuning unit, antenna
1 each	Kit, antenna metering, remote
*300 feet	Cable, coaxial, complete with installation kit
1200 lbs.	Wire, copper, bare, No. 8, for radial counterpoise
6 sheets	Screen, ground

For

SHUNT FED ANTENNA

QUANTITY	DESCRIPTION
	Same material as above, except omit antenna tuning unit and add:
1 each	Condenser, variable, ½-inch spacing, 200 to 500 mmf capacity
*NOTE:	300 feet of coaxial transmission line is recommended as a maximum. Actual measurements should be made to determine need. Only amount needed should be requisitioned.

SIMPLE METHOD FOR TUNING SHUNT FED BROADCAST ANTENNAS

1. **Definition:**

   A shunt fed broadcast antenna is of the Marconi type. It is made up of a vertical tower as the main radiator, the ground end of which is physically and electri-

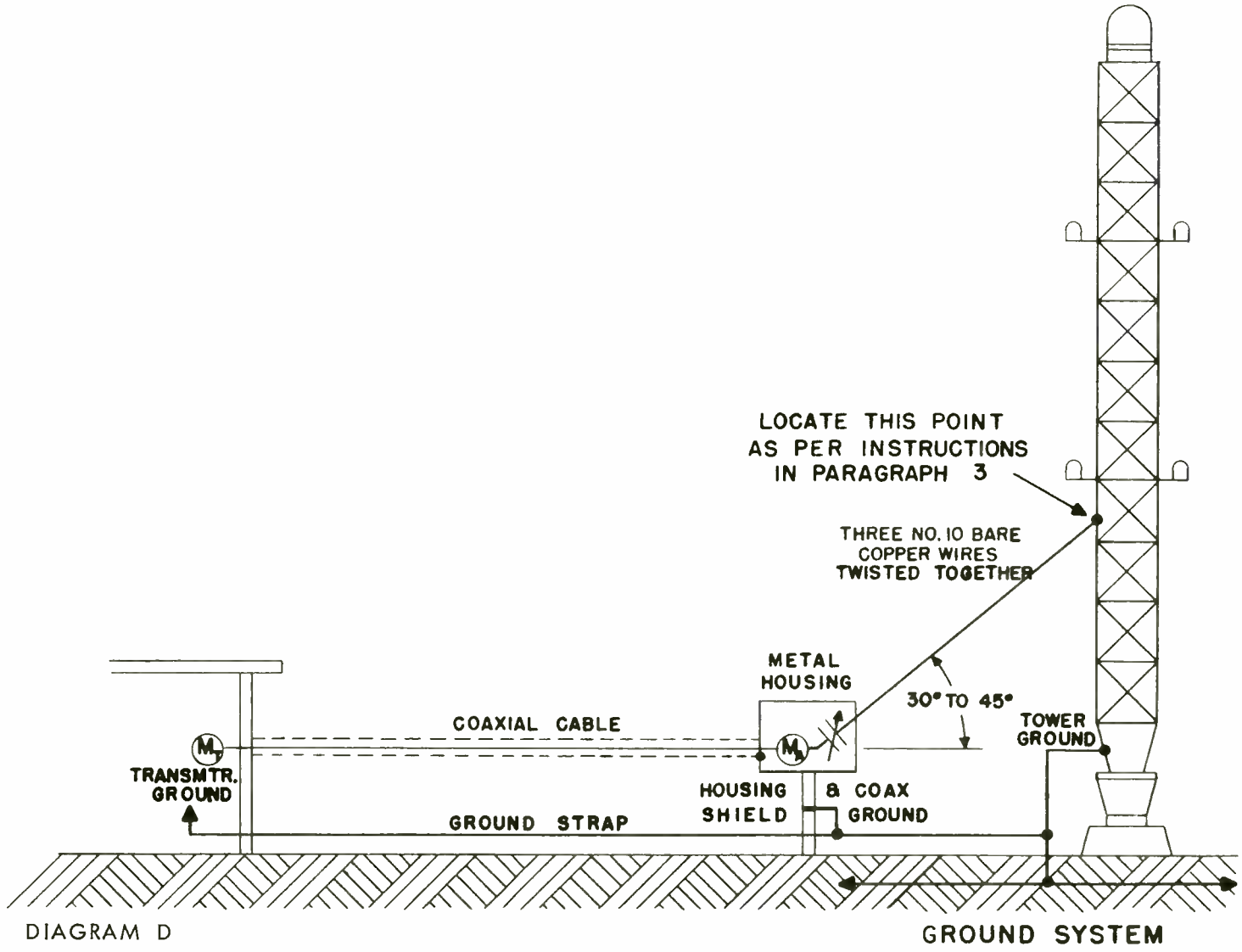


DIAGRAM D

GROUND SYSTEM

cally connected to ground. The method of excitation consists of using the lower portion as a common impedance to energize the entire antenna system.

2. **Characteristics:**

   a. No base insulator on tower.

   b. The excitation wire is connected from the center conductor of the coaxial cable through a variable condenser to the tower at an angle of not more than 45 degrees, or less than 30 degrees, from the horizontal. The antenna feed wire is always an inductive element and consequently must be tuned with a condenser.

3. **Tuning:**

This is a very simple antenna system to tune. If two RF meters are available, one should be connected at the input of the coaxial cable and one at the output, according to Diagram D on page 19. When both meters indicate the same current, the coax is matched to the antenna. To achieve this condition the antenna condenser is varied until the antenna current is maximum.

If the antenna meter reads HIGH, as compared with the input meter, slide the matching wire (the conductor between the antenna condenser and the tower) UP the tower, and retune the antenna condenser. If the antenna meter reads LOW, as compared with the input meter, slide the matching wire DOWN the tower and retune.

The transmitter should be periodically checked during this tuning procedure to see that the output circuit remains tuned to minimum plate current.

After the proper leading point on the tower has been discovered, a simple inspection will indicate whether or not the feed wire is within the 30 to 45 degree limitation. It may be necessary to move the antenna end of the coax toward or away from the tower.

A good starting point for these tuning adjustments is to make the initial connection one-third of the way up a ¼ wave length tower.

4. **Meters:**

To determine the proper meter size, use the following formula:

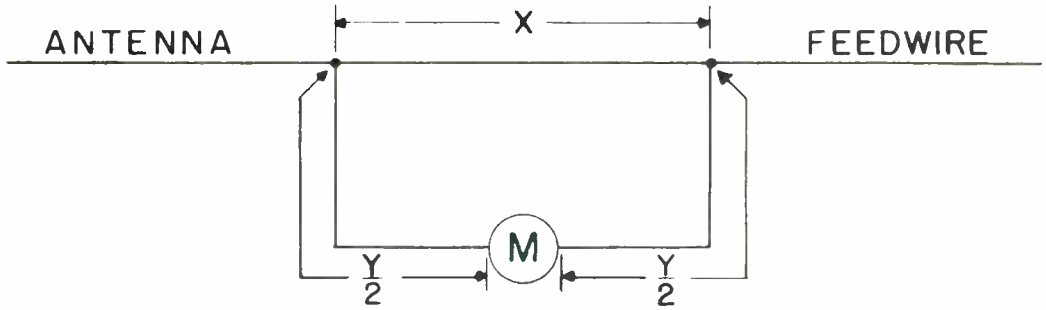
$$I^2R = W$$

I = RF current
R = Coax characteristic impedance
W = Transmitter power in watts

Substitution will show that for a 50 ohm coax, 250 watts require a 2.4 amp meter; 1,000 watts require a 4.8 amp meter; 5 KW require a 10 amp meter. The meter used should be of such a size that the above readings will fall between the mid-scale point and two-thirds of maximum. In practice, we find that a 5 amp meter will serve for 250 watts, a 10 amp meter for 1,000 watts, and a 15 amp meter for 5 KW.

In case the RF meters available are too low in current rating to operate at full power, an effective RF shunt may be made by extending the RF meter leads across a link until the meter reading drops to a suitable value, as indicated on Diagram E on page 21. Spreading the meter leads connected across the link

METER SHUNT DETAIL



$$M_1 = \frac{X}{Y}$$

EXAMPLE; IF RATIO $\frac{X}{Y} = \frac{1}{2}$, THE METER WILL READ $\frac{1}{2}$ OF THE TRUE RF FEEDWIRE CURRENT.

THE FACTOR Y IS THE SUM OF THE TWO LEGS $\frac{Y}{2}$.

DIAGRAM E

section of the feed wire will increase the reading by reducing the coupling between the meter leads.

When the meter leads are connected to a common point on the antenna feed wire, the meter should read ZERO. If it does not, stray capacitive effects to ground are present. These effects should be minimized by insulating the RF meter brackets, etc.

If the antenna meter is a thermocouple type, with DC leads running to a remote DC meter, it is very important that the DC leads from the thermocouple contain suitable RF chokes, and that the DC meter movement be by-passed with a 0.1 mfd. condensor to avoid meter burnouts by RF energy.

The meter should be calibrated with the chokes and DC cable in service, as the presence of resistance in the DC circuit will change the meter scale. The scale tends to become more linear and the amplitude tends to drop off as the resistance in series with the DC meter is increased.

WIRE LINES

Wire lines play an important part in the installation of any radio equipment. All studio equipment must be tied together with good quality shielded wire. The same holds true for transmitter installation. However, wire lines, as referred to in this chapter, indicate those lines tying the studio installation with the transmitter equipment. These are balanced telephone lines over which program material is passed. A few suggestions in the installation of balanced program lines are as follows:

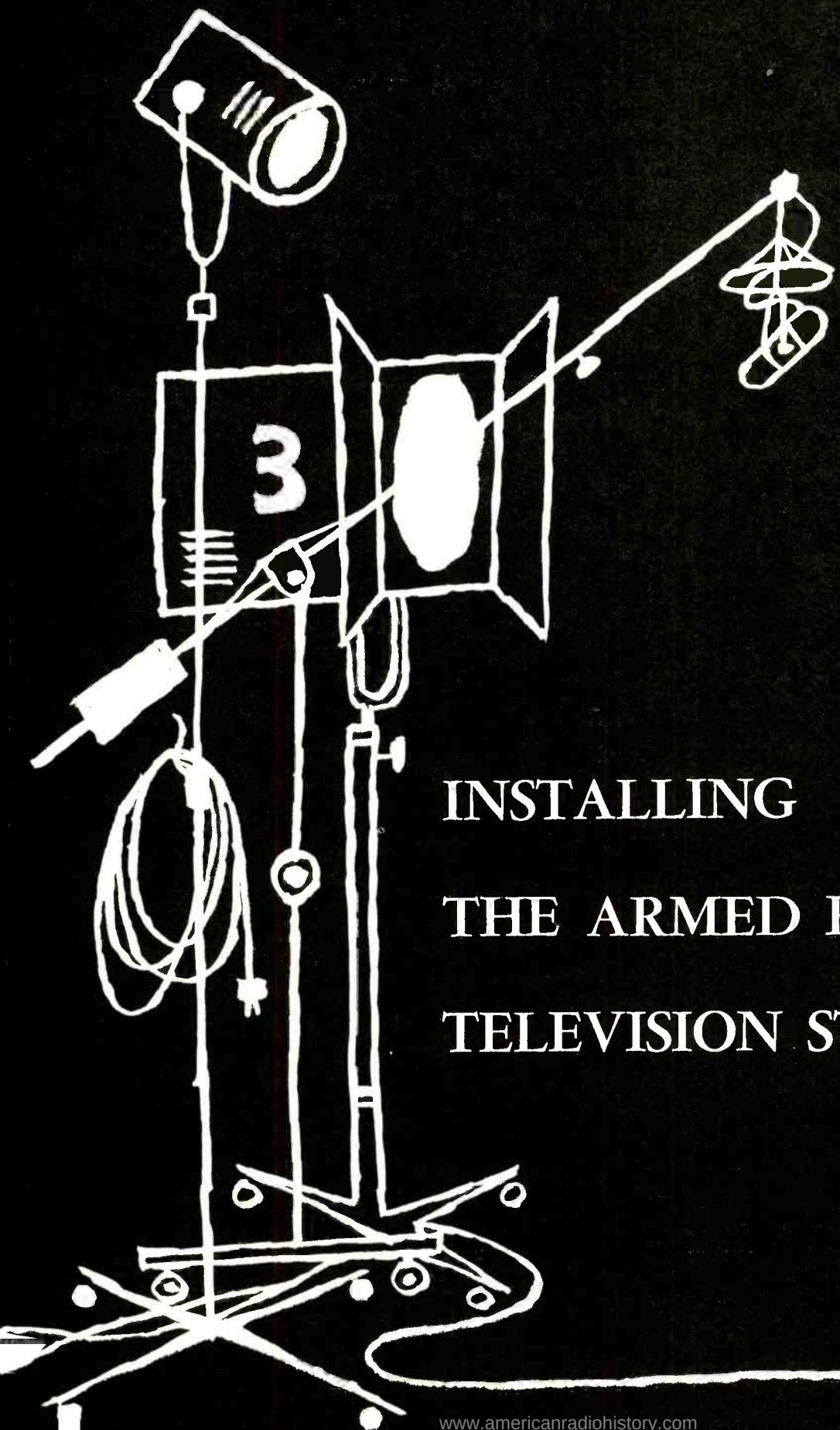
1. Routing to avoid noise induce by telephone ringing, intercommunincation sets, electric motors, keying, and other control circuits.

2. Routing to avoid passing through any telephone exchange equipment, such as coils, transformers, or switchboards.

3. Two alternate lines, over different routes between the same terminals, should be used to permit selection of the one providing better transmission at any given time and to provide a reserve line in case of breakdown.

4. An accompanying direct telephone line should be used between the two locations for communication during testing and use of program lines. A desirable facility for immediate transmission of local activities is a series of remote pick-up telephone lines between the studio and such key spots as athletic field, gymnasium, bandstand, service club, theatre, and radio receiving station. Such remote pick-up lines require the same characteristics as program lines for satisfactory transmission.

In a review of the preceding paragraphs, it is found that in planning an Armed Forces radio broadcast station it is necessary to plan the three contributing parts and tie them together to form a complete operating unit. (See Diagram "B" on page 15 . Both studio and transmitter may occupy one building, or can be separated into two locations. Either way is satisfactory — depending upon the area the radio station is to serve and available facilities necessary to support the radio station. A detailed study of each diagram and each accompanying bill of materials will provide some idea of what is necessary to meet minimum requirements of a small or medium sized radio broadcast station.



INSTALLING THE ARMED FORCES TELEVISION STATION

CHAPTER III

INSTALLING THE ARMED FORCES TELEVISION STATION

Installation of the Armed Forces television station will be made by specially trained engineers from one of the Services or, in some cases, by civilian contract engineers. A television station presents a more complex problem than a radio station because larger facilities are necessary. Specific plans for installation layout cannot be provided since each television installation will be an individually different problem. However, general information for guidance in installing television equipment is provided in this chapter.

There are three general types of Armed Forces television installations. These three types can be generally categorized as follows:

1. **Class A:**

   A station with two or more studio cameras, as well as a telecine camera (film chain camera).

2. **Class B:**

   A station with one studio camera, in addition to the telecine camera.

3. **Class C:**

   A station with a telecine camera which has a provision for station breaks and other minor types of local origination.

Changes to bills of material listed in this chapter should be made according to the type of station authorized. A further change can be made in the equipment list for audio as outlined in Chapter II, since a Class B or C station can effectively reduce the requirement for audio equipment in terms of audio console size and other components involved.

EQUIPMENT FOR A TELEVISION STATION

The technical equipment for a television station can be divided into six (6) major parts:

1. Video equipment
2. Transmitter and antenna equipment
3. Film equipment
4. Studio lighting equipment
5. Test and maintenance equipment
6. Audio equipment

Equipment requirements for each installation will vary to some degree. It should be noted that a television station is really two stations in one. To provide the audio for television, a complete radio station, exclusive of transmitter and antenna, is required. The equipment lists for a radio station, contained in Chapter II, can be used as a guide by deleting the transmitter and antenna equipment. To supply the video channel, additional equipment in the form of television cameras and controls, additional test and monitoring equipment, studio lighting equipment, and the television transmitter and antenna equipment is required.

It should be noted that the following bills of material contain only the necessary minimum essentials. Some new and existing stations will find that local command operational use of television will require additional equipment. Such additional equipment made necessary by local circumstances or operations should be shown separately on a project request, with detailed justification.

BILL OF MATERIALS

VIDEO EQUIPMENT

QUANTITY	DESCRIPTION
1 each	Synchronizing generator, complete with tubes
1 "	Sync switcher panel
1 "	Video distribution amplifier, 5 channel, complete with tubes and power supply
1 "	Video patch system
2 "	Camera, vidicon, complete
3 "	Camera, control unit, complete
1 "	Switching and fading unit
1 "	Studio line monitor
1 "	Program monitor, 21" receiver, modified for separate video and sound
1 "	Master monitor, with "A" scope
1 set	Console end sections
2 each	Camera tripod, with friction head on dollies
1 "	Camera lens ½" F/1.5
2 "	Camera lens 1" F/1.5
2 "	Camera lens 2" F/1.9
2 "	Camera lens 3" F/2.5
2 "	Film projectors, 16mm, with dousers
1 "	Film camera mounting pedestal
1 "	Slide projector, automatic
1 "	Pedestal, slide projector
1 "	Multiplexer, complete with stand
5 "	Headset, intercommunicating system
1 "	Case, filing, for 35mm bound slides
1 "	Slide tray, interchangeable
1 "	Tele-cine Camera (Film chain camera)
1 "	Intercommunications system, electronic, complete with master and two (2) sub-stations, with cables
3 "	Clock, electric 14"
2 "	Max Factor Theatrical make-up kit
3 pcs.	Camera cable, 50'
1 each	Kit, interconnecting cables
1000 feet	Cable, coaxial JAN RH-59/U
1 each	Polarizing filter for use with 3" lens on TV camera, when used for film pickup
30 "	UG 273/U connector for making up video patch cord
1 "	Kit, spare parts for all video equipment
1 "	Kit, spare tubes for all video equipment

BILL OF MATERIALS

TRANSMITTER AND ANTENNA EQUIPMENT

QUANTITY	DESCRIPTION
1 each	TV transmitter, with one set of tubes, crystal and side band filter
1 "	Antenna, ring type, gain approximately 0.6, matched to transmitter
200 feet	Transmission line, type RG17/U
1 each	Tower, steel, 14 gauge, with guying kit

BILL OF MATERIALS

FILM EQUIPMENT

QUANTITY	DESCRIPTION
6 each	Reel, spare, 2000 feet, 16mm
4 "	Reel, spare, 1600 feet, 16mm
1 "	Leader, white, reel 16mm, 1000 feet
100 "	SVE slide binders
2 "	Watch, stop, filmeter (16mm)
1 "	Preview projector, TV film
1 "	Screen, preview, TV film
1 "	Viewer, 16mm
2 "	Rewind, 16mm, 2000 feet, geared end with brake
1 "	Rewind, 16mm, 2000 feet, geared end without brake
1 "	Rewind, 16mm, 2000 feet, motor driven without brake
1 "	Film polisher and cleaner, 16mm
4 quarts	Fluid, film cleaning and processing
3 pkgs.	Tissue, optical lens cleaning
2 each	Brushes, camel hair, for optical lens cleaning
1 each	Splicer, film, 16mm, hot
1 quart	Cement, film, all purpose
1 each	Cement applicator set
48 each	Bulbs, 1000 watts, for preview projector
24 each	Lamps, exciter, for preview projector

BILL OF MATERIALS

STUDIO LIGHTING EQUIPMENT

QUANTITY	DESCRIPTION
1 each	Light meter, G.E. DW-68 TV Production type
2 "	Spotlight, 500 watts, 6" adjustable
2 "	Scoop, 1500 watts, 18" adjustable
1 "	Scoop, baby type 15", 500 watts
2 "	Roller caster stand, 25" base, standard height
1 "	Roller caster stand, 19" base, low height
2 "	Roller caster stand, three section, 30" base

QUANTITY	DESCRIPTION
2 each	Diffuser frames, standard scoop
1 "	Diffuser frames, baby scoop
2 "	Diffuser frames for spotlight
1 "	Spun glass diffuser, 3' x 12"
2 "	Barn door, 2-way for spotlight
2 "	Box, portable connecting plug-in
1 "	Cable, power, A.C., extension 35 feet
4 "	Cable, power, A.C., extension 25 feet
12 "	Bulb, 500 watts, for baby scoop
24 "	Bulb, 500 watts, for spotlight
24 "	Bulb, 1500 watts

BILL OF MATERIALS

TEST AND MAINTENANCE EQUIPMENT

QUANTITY	DESCRIPTION
1 each	Film, 16mm, audio frequency alignment 400 feet
1 "	Oscilloscope, Tektronix, type 524-D
1 "	Bar generator (if not included with sync generator)
1 "	Generator, sweep, television frequencies
1 "	Generator, radio frequency calibration TV channel frequencies
1 "	RTMA test chart
1 piece	AC cord, heavy duty, 100 feet length
1 each	Kit, tools, electronic, for installation and maintenance of TV station equipment
3 "	Kit, tools, TV repairman
1 "	Kit, recommended spare parts for TV transmitter
1 "	Television textbook

BASIC CONTROL ROOM

All TV installations, large or small, are alike in many respects. The difference in size, for instance, is mostly a matter of the number of cameras and studios involved. The single studio of a small station and its associated control room may be almost identical to one of the studios and associated control rooms of a larger station. Thus, the general arrangements of the equipment for the control room may also be quite similar. Moreover, the equipment for all stations is made up from the same basic units. And, finally, the basic control system used in all of them performs the same functions.

However, this chapter would be incomplete if it failed to point out that there are various deviations in arrangement of studio and control room facilities, to suit special conditions and personal tastes. For example, it is not necessary that video control operators be able to see into the studio, since their primary function is to maintain control of the picture signals emanating from a camera. It is more important that the program director be able to see the production.

It would be possible to place a program director's console directly in front of the studio window, and locate the camera controls at one side, or even in a different room,

if the switching unit and a picture monitor for each signal source are located in a console on the platform directly in front of the director. In some large stations, all of the camera controls have been placed in master control. This, of course, centralizes all the operational equipment in one spot but requires remote video relay switching and fading to be effective in saving personnel and avoiding many long cable runs. The program director also has control of switching either directly or indirectly. The audio operator should also be able to see the studio action to be able to ride gain properly.

On the other hand, for economic reasons primarily, some stations may require that the camera controls be located in front of the studio window in order that the program director in the back of the control room, who generally is located on a raised platform, may see both the studio action and the associated monitors at a glance. This arrangement requires fewer monitors, but causes the view of the program director to be restricted by the presence of the video operators.

In smaller installations, all controls may be located where a view of the transmitter, projection room, studio and announce booth is possible.

STUDIOS AND ANNOUNCE BOOTHS

The TV studio should be large enough to provide for as many sets as possible, commensurate with the class of station involved; control rooms should be made large enough to admit additional equipment, as the station grows.

BASIC STUDIO EQUIPMENT

The television equipment units, in addition to the familiar studio and film camera, include video control consoles which are made up of standard sections referred to as camera control units. There is one of these control units for each studio camera and one for each film camera. Each unit contains a picture monitor showing, at all times, the picture picked up by the associated camera. It also contains an oscilloscope for "wave-form" monitoring and the necessary controls for adjusting brightness, contrast, and electrical focus. The video operator uses these controls to keep the several camera pictures in optimum adjustment at all times. Thus, the technical director, or switching operator, is free to concentrate on the action without being concerned about the camera adjustments. However, regardless of the location of individual sections, the output of each studio or film camera is fed into the video switching and fading console. At this console position, the video signals from the cameras are mixed (or switched) in the same manner as microphone and transcription inputs are mixed at the audio console. From the video switching console, the picture signal is fed either directly to the transmitter line or to a master control room, together with signals from other studios when applicable. In practically any TV station setup, the supervision of the individual camera signals is exercised by the video operator who sits at the video console.

BASIC AUDIO EQUIPMENT

The audio equipment used in a television station is very much like that used in a standard broadcast station. There are, however, several minor differences. One is occasioned by the fact that microphones are usually kept out of sight and that performers must work farther from the microphones. This usually requires more microphones or the use of elaborate boom mounts.

The boom operator, under the direction of the audio engineer, maintains the placement of the boom microphones for best sound pickup. He must also keep the boom and microphone out of the view of the camera. Good communication, therefore, must be maintained between audio engineer and boom operator.

Audio switching is normally tied in or interlocked with video switching. However, provision can be made to divorce the two functions, if necessary. The TV audio control operator, in addition to performing his normal job of riding gain, must maintain close following of the overall program and generally keep step with video control.

VIDEO SWITCHING

The location and arrangement of facilities for video switching varies widely with the type of set-up. A simple, but effective, arrangement consists of adding to the video console two additional monitor sections. One of these acts as a master (or program) monitor. On its screen appears, at all times, the picture output of the control room. There is a space in this console for a panel containing pushbutton switches with lap-dissolve levers, signal lights, etc. The technical director uses these controls to select the picture for transmission. The second monitor is used as a preview monitor. The technical or program director uses a set of pushbuttons to select any of the camera inputs he proposes to use. This allows him to monitor for quality and action, any upcoming shot. This monitor may also be used to take visual cue from a preceding program by switching to the video line from the preceding origination point.

The average local television program consists of a succession of camera pickups, plus the occasional inclusion of signals from other studios. A simple example of the latter is the insertion into the program of a station identification slide or short picture sequence originating in the film projection room. Thus, even though the major part of any one program will originate in one studio, with control of the program centered in its control room, some provision must be made for coordinated control of the remote signals, as well as control of the signals emanating from the projection room.

In almost any television station it is desirable to be able to switch from local to film signals in master control.

MONITORING CONSIDERATIONS

House monitoring is an important function and serious consideration of special conduiting before construction begins will make a neater installation. One simple and inexpensive method is to transmit the required signals by conduit to the required monitoring locations where, by disabling the "front end," a standard home receiver can be used as a monitor.

LIGHTING CONSIDERATIONS

In general, the two main classes of lighting considered are:

1. Lighting of plant operational and administrative areas.

2. Studio lighting. Basically, the lighting system for a TV studio is determined by the architectural properties, degree of flexibility desired, nature of the program material, and by the lighting requirements, both artistic and technical, of the TV productions to be staged. Details of studio lighting will be found in Chapter XI. Lighting of the plant for operational (other than studio) and administrative areas should be coordinated with the individual service agency responsible.

BASIC INTERCOM CONSIDERATIONS

Intercommunication and talkback facilities for a television station will be more elaborate than those required by most AM and FM stations. The intercom system, in even the most modestly equipped TV station, will be called upon to perform these functions:

1. Talkback — over-ride, carrying cue or orders to studio, projection room and announce booth — a function of the audio facilities.

2. Order-wire — telephone facilities to offices and to outside lines.

3. Headset intercom — to provide private and conference communications for production and for technical personnel.

The intercom requirements of the individual stations will vary considerably.

GENERAL CONSIDERATIONS

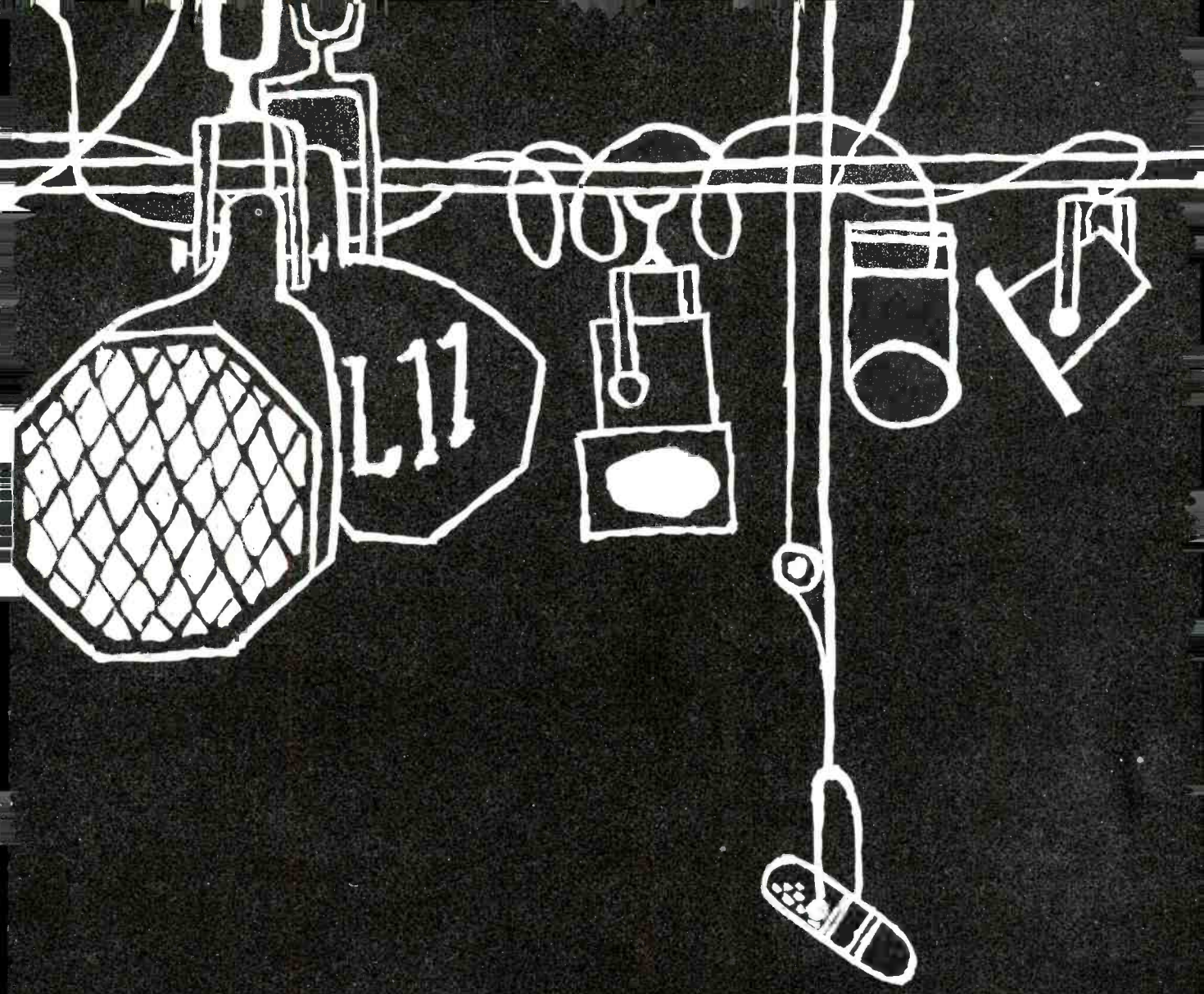
A good suggestion is to compare the sizes of doorways to those of individual components, to assure entrance of such items as transmitter cubicles and other major components.

In general, the planner should consider carefully both his present and future space needs and balance this with his planned expenditure. Usually, the provision of a little extra space will be more than repaid by the ease with which later expansion can be made.

JOINT RADIO AND TELEVISION OPERATION

Up to now radio and television outlets have been treated as separate installations. Actually, a radio and television station will probably be located together. This will call for some modifications in the plans. Studios, audio equipment, office and building service areas can be used for both, with very little increase over the basic requirements set down for a television station. The same personnel, with augmentation, can operate both outlets.

The development of an Armed Forces Television Station in an area will usually be preceded by a radio outlet, where facilities and staff will most likely form the nucleus of the television station.



PHYSICAL REQUIREMENTS OF THE ARMED FORCES RADIO AND TELEVISION STATION

CHAPTER IV

PHYSICAL REQUIREMENTS OF THE ARMED FORCES RADIO AND TELEVISION STATION

Since the physical requirements for radio and television stations are vastly different, they will be discussed in separate sections of this chapter. Many of the audio problems are the same for both radio and television broadcasts, but television adds many complex factors to the audio problem as well as the whole video system.

REQUIREMENTS FOR A RADIO STATION

The space required for the operation of a radio outlet falls into three categories:

1. Necessary space to house and control the program origination sources — this is the studio and control room area.

2. Space required for the transmitter and antenna.

3. Administrative space.

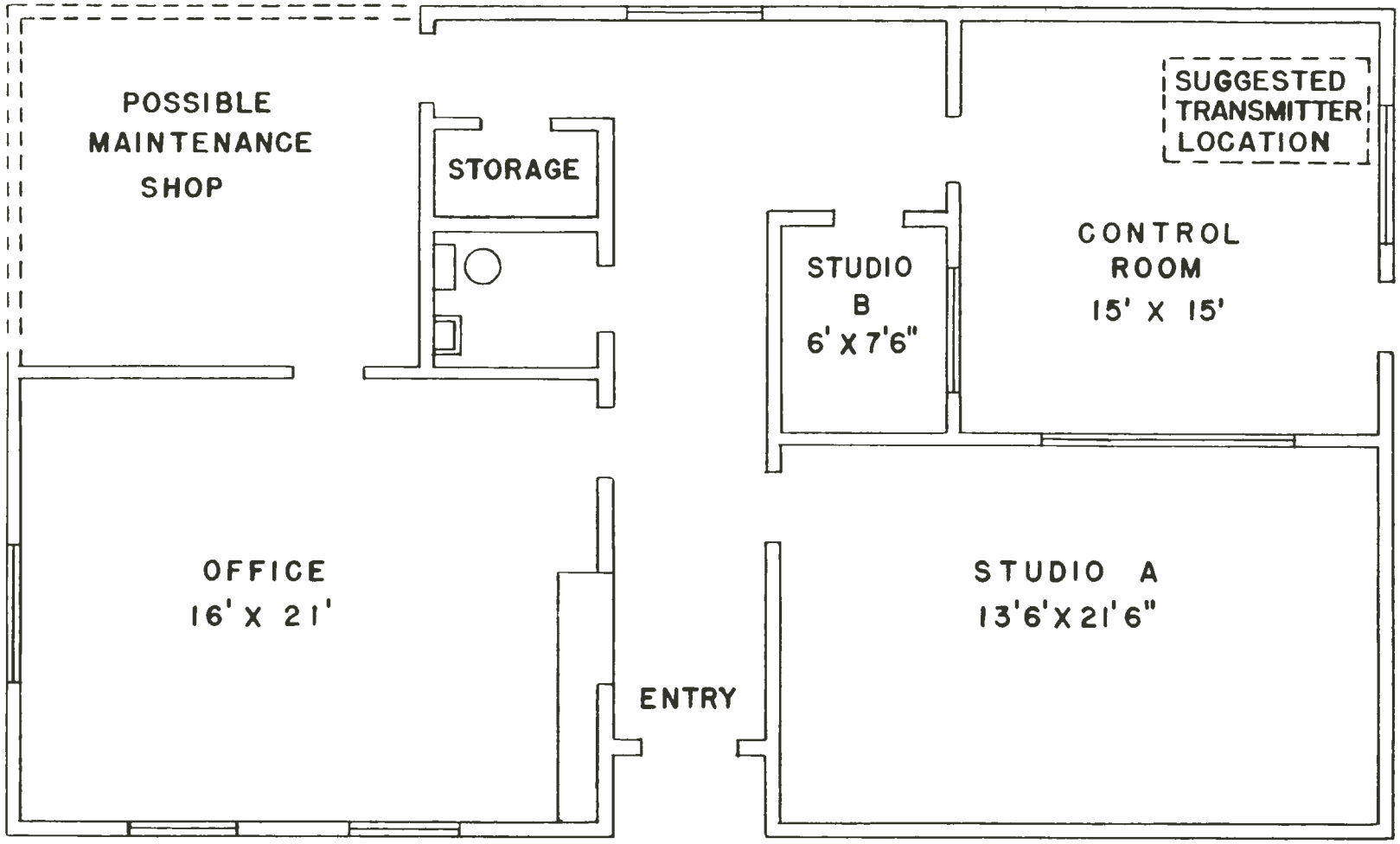
The number and size of the studios will depend largely on the type of programs to be broadcast. Usually, one studio and announce booth will serve the minimum requirements of a station. In addition, if further facilities are needed, the control room can be equipped for station break announcements and combination operation. As live programming increases, either in size or number of programs, the studio requirements will need to be modified. In general, studio areas should follow the desired proportions of 2:3:5 for height, width and length. Local conditions will determine what adjustments need to be made in these proportions. However, care should be taken to see that no two of the studio dimensions are the same.

Diagram "F" on page 32 shows a layout for a station which will producing small local live programs and will have its transmitter and antenna located at the same place as the studio. The studio is adequate for groups of 10 or 12 people. The announce booth is large enough to accommodate speaking programs with 2 or 3 people. The plan calls for a single control room serving both the studio and the announce booth. The approximate area for this layout is:

Studio A	300 sq. ft.
Announce booth	50 " "
Control room	225 " "
Music library	45 " "
Office	336 " "
Building service	315 " "

Another layout, not shown, is an arrangement whereby two different programs can be broadcast at the same time. By incorporating two control rooms in the plan, it is possible to be on the air from one studio and rehearsing or recording from the other. In dual station operation, each control room can be wired so that it can feed either transmitter. This plan calls for a remote location for the transmitter and antenna:

Studio A	900 sq. ft.
Studio B	400 " "



SUGGESTED RADIO STUDIO AND TRANSMITTER BUILDING

50' x 30'

SCALE 1' = 6'

DIAGRAM F

Studio C (Announce booth)	100	sq. ft.
Control room Studio A	200	" "
Master control room (Studio B & C)	300	" "
Music library	100	" "
Office	900	" "
Building service	600	" "

Local conditions and available materials will dictate what modifications need to be made in the station plans. These suggested areas might be called the ideal minimum space requirements. It is possible to operate from areas considerably less than the suggested size, but the program schedule will have to be reduced to fit the area. In stations which are mainly to be network or transcription relay stations, it is possible to operate from an announce booth and control room. In these cases, the most ambitious live program to be undertaken would probably be a local newscast.

Additional space may be required for heating and air conditioning equipment, in extreme temperature zones. It may be desirable to include an auditorium studio, or additional announce booths, as the program plans develop. If equipment and personnel are available, it is a good idea to plan a separate control room for each studio.

In planning a station, a location away from noise and vibration should be selected. The studio walls should be constructed as nearly soundproof as possible. If lighting and ventilation will permit, there should not be any openings, such as doors and windows, in these outside walls. For visual communication, there will need to be windows between the control rooms and studios. These should be made of double panes of glass, using ½ and ¼-inch plate glass, where possible. The two panes should be mounted in a sound-absorbing frame, so that the two surfaces are not parallel. This will serve to cut down on the light reflection between the two rooms. Entrance to the studio should be through a sound lock, consisting of two doors, separated by a small vestibule.

All surfaces in a room where microphones will be used need some acoustical treatment to reduce or increase the reverberation time.

The optimum reverberation time increases as the studio expands. In general, there are two ways of controlling this reverberation time — absorption and diffusion. In the early days of radio, the trend was to reduce this reverberation to a minimum by absorbing all the sound possible, making a "dead" studio. This resulted in voices and music that sounded dull and lifeless. From observation and practical experience, it has been recognized that some reverberation is necessary — there is an optimum point which sounds best over the air.

There are several general types of acoustical control materials — acoustical plaster, draperies and carpets, acoustical tiles, and membrane-covered absorbing materials. The selection of which of these to use will depend upon the type of treatment needed and the material available. Whatever type of material is used, it should be fireproof or fire resistant.

Acoustical plaster is not very practical for overseas installations. It is relatively low in sound-absorbing qualities, difficult to apply and has a poor resistance to abuse.

Draperies and carpets absorb high frequencies very well, but have little or no effect

upon lower frequencies. Their low frequency absorption can be increased by padding the carpets and lining and interlining the drapes. Lined drapes hung a foot or so from walls and backed up with several inches of rock wool, or similar acoustical material, will do a fair job of absorbing the low frequencies. Draperies are an economical and quick way to adjust studio acoustics for varying program conditions.

Acoustical tiles, which are probably the easiest to apply, provide fairly high absorption at medium and high frequencies. It is important to remember that these tiles lose from 20 to 60 percent of the their absorption qualities when they are painted.

Membrane-covered absorbing materials are perforated metal, asbestos board, or hard board, backed up by a highly absorbing material. This type of acoustical treatment is highly absorbent, up to about 4000 cycles, after which it becomes increasingly reflective. This surface can be painted several times without affecting its acoustical properties. It is rugged and will stand up under considerable abuse.

The final acoustics of a room should be considered when the room is first being designed as a studio. If possible, the 2:3:5 proportions should be maintained in selecting the room dimensions. A studio having these proportions will usually produce a fairly diffused sound field.

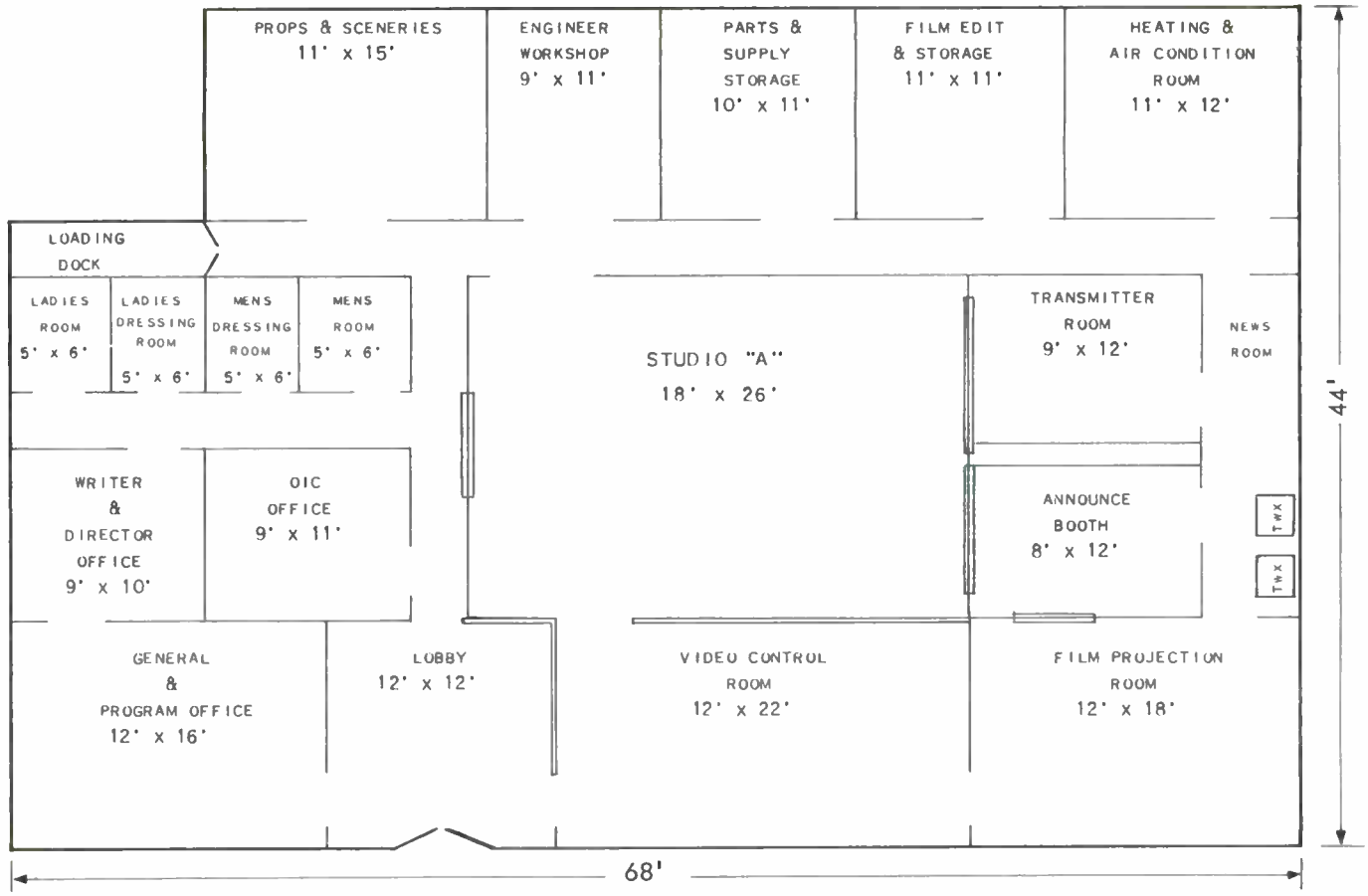
Sound is diffused by breaking up a normally flat reflective surface with splayed, serrated or curved surfaces. Surfaces which must remain parallel, like the ceiling and floor, can be treated so that one is highly absorbent and the other left normal. In the case of the ceiling and floor combination, either acoustical material can be put on the ceiling or a rug can be put on the floor. In either case, the opposite surface should be left bare. Side walls can be built curved or on an angle. It is important not to leave any large flat reflective surfaces opposite each other. It is equally important to have a studio that is not completely diffused, since this leads to a confusion of sound. To treat a studio properly, you need to absorb some of the sound and diffuse the rest.

The space requirements for administration of the station will be of two kinds — that necessary for the housekeeping chores and that necessary to carry on the programming of the station. The office requirements will depend upon how large a staff will be working at the outlet. The office space laid out earlier will accommodate a staff of 10 to 15.

REQUIREMENTS FOR A TELEVISION STATION

A television outlet will require considerably more space than is required for a radio station. Studio and control rooms will need to be larger to accommodate the video equipment. A minimum size studio should be 14'x 25' x 40'. A criss-cross light grid of 1¼" pipe should be located 12' from the floor. This grid should extend from wall to wall and the pipes should be located on 4' centers. A power distribution system for all present and future lighting instruments should be included in the grid. For a studio having floor dimensions 25' x 40', there should be approximately thirty individually controlled ceiling outlets, or one for every thirty square feet of floor space. In addition, there should be several individually controlled double outlets located on the walls of the studio. All of these circuits should be run into a switchboard, where they can be individually controlled by switches or dimmers. The studio light control board must be capable of supplying 20KW of fused power, or about 30 watts per square foot of studio floor space.

The grid can also be used for hanging drapes and other scenery. It is a good idea to mount drapery tracks around three sides of the studio. Drapes can be hung in such a



SUGGESTED TELEVISION STUDIO AND TRANSMITTER BUILDING

68' X 44'

SCALE 1" = 10'

Diagram G

way that they can be moved behind various program sets easily. Drapes in a heavy dull gray are best. There may be sections of the drapes in varying shades of gray, giving the producer an option of a light or dark background. Any material can be used for drapes, as long at is does not have a smooth, glossy surface.

Acoustical treatment of a television studio generally follows that for radio studios, except it needs to be much more absorbent. Usually, a television studio is a "dead" studio. Besides the desirability of reducing the reverberation time, so the large room does not sound hollow, it is necessary to absorb considerably more noise. Many television productions call for a boom microphone. This means that the microphone will need to be from three to five feet from the speaker, necessitating an increase in the volume level of the audio console. Any noise caused by lens changes or the scuffling of feet, as the cameras are moved, will be picked up by the open mike, unless they are absorbed.

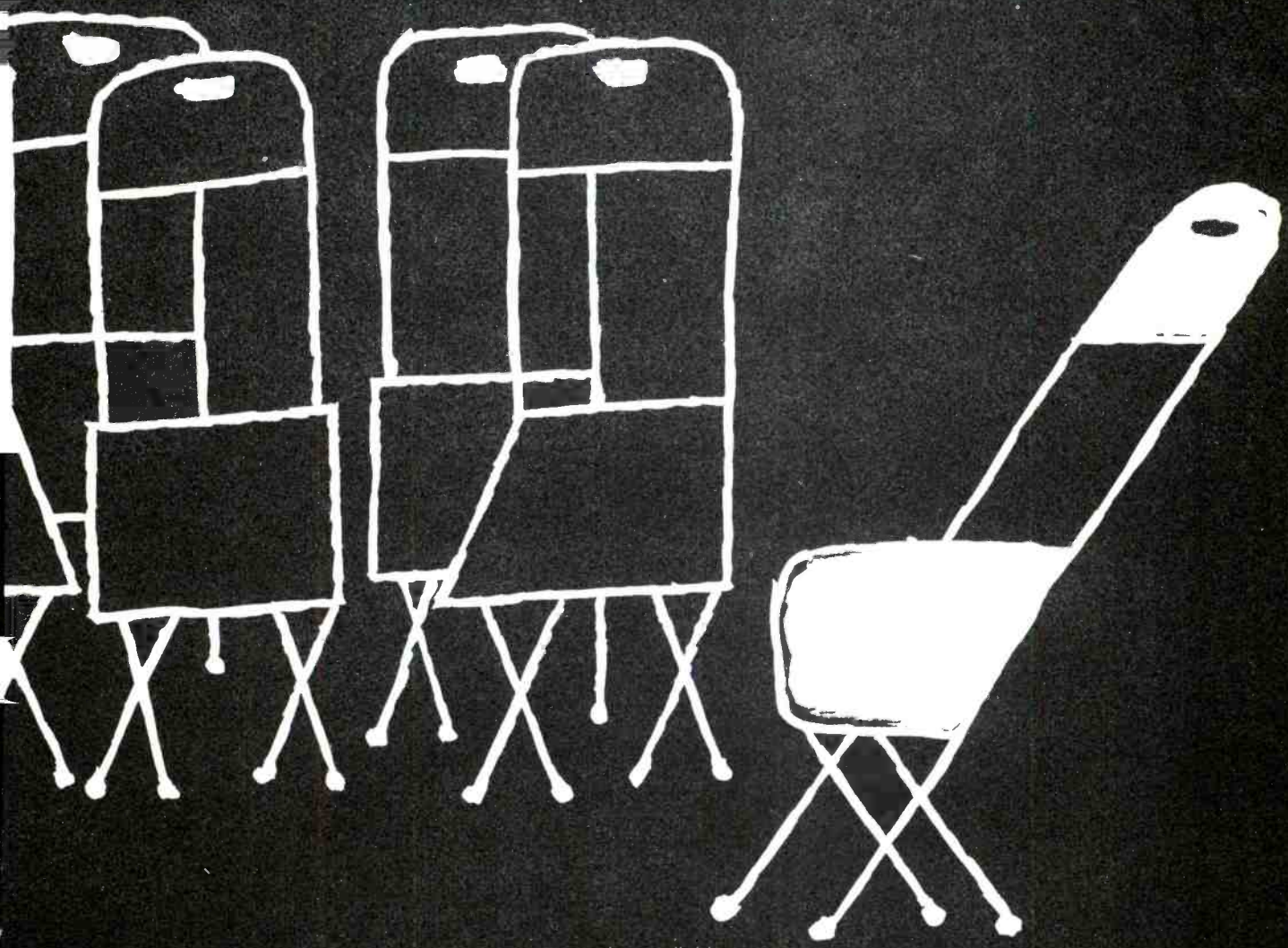
It is possible to operate from a smaller studio at first, where programs are limited to simple one-camera operations. However, a station's program schedule will soon outgrow these limited facilities and the original plans should take into consideration this probable growth. If the choice has to be made between one large studio or two small ones, it will be more practical to design one large studio similar to Diagram G on page 35, since this arrangement will be more flexible for staging programs. An enlarged announce booth can be included for a one-camera set-up — for news, interviews, or other simple talk programs.

In order to accommodate the video equipment, the control room will have to be somewhat larger than a radio control room. If the transmitter is to be located in the control room, even more space will be required. Then, too, space will be needed for additional engineer and production personnel in the television control room. It is a good idea to locate the studio lighting switchboard or panel where it can be operated during a program by the control room engineers. A room with 250 to 300 square feet of floor space should be adequate when the transmitter will be at another location. Double glass windows should be located so visual communication between the three rooms is possible. Other special areas include about 250 square feet for film storage, viewing, editing and handling. Another 1000 square feet will be needed for the construction and storage of properties and scenery.

DUCTWORK OR TRENCH PLANNING

The careful planning and layout of wiring trenches or ducts is essential to every station planner, once the amount of technical equipment has been determined accurately. It is practical to plan "trench runs" to accommodate the future addition of console sections, equipment racks and transmitter cabinets. No attempt is made in this chapter to illustrate complete station duct layouts. This is deemed as a consideration unique for each station and is, perhaps, best jointly solved by the station engineers and the TV equipment engineers involved.

PERSONNEL REQUIREMENTS OF THE ARMED FORCES RADIO AND TELEVISION STATION



CHAPTER V

PERSONNEL REQUIREMENTS OF THE ARMED FORCES RADIO AND TELEVISION STATION

Each military department is responsible for furnishing all personnel necessary to operate each Armed Forces Radio and Television Station under its jurisdiction, except that by joint agreement other military departments may provide an equitable share of the required personnel.

The commander of a unified command may assume responsibility for coordinating the equitable allocation of personnel by the component service commanders to staff Armed Forces Radio and Television outlets operated within the unified command.

Personnel requirements of the individual radio or television station will depend, to a great degree, on the type or classification of station authorized. These requirements will vary according to the basic purpose and need the station satisfies in a particular area, total hours of broadcast per week, as well as the component parts of the potential listening or viewing audience.

In view of these influencing factors, this chapter, of necessity, will be restricted to general guidelines for an adequate and qualified staff, qualifications and job duties, and their interlocking relationship in the day to day operations of a radio or television station.

The importance of sufficient and adequately trained personnel cannot be over-emphasized. Upon these two necessities rests the efficiency and effectiveness of a radio or television station in performing its basic informational service for the command and the military department which authorized its installation.

RECOMMENDED PERSONNEL

Number of personnel recommended for operating the three basic classes of radio and television stations listed in Chapters I and II will depend on the physical layout of facilities, need and usage by the command, and programming services furnished the military community. The following manning tables have been designed with an underlying command support concept for operational assignments, alert or recall activities, and local informational, educational, and community projects.

SUGGESTED RADIO MANNING TABLE

	CLASS A		CLASS B		CLASS C	
	(1,000 watts or more)		(Less than 1000 watts but not less than 100 watts)		(Less than 100 watts)	
Hours Per Day:	24	18	24	18	18	12
JOB TITLE:						
Officer-in-Charge	1	1	1	1*	0*	0*
NCOIC (E-8 or E-9)	1	1	1	1	1	1
Chief Engineer (E-8 or E-9)	1	1	1	1	1	1
Program Director (E-7)	1	1	1	1	1	1
Chief Announcer (E-5 or E-6)	1	1	1	1	1	0**
Announcer (E-3 or E-4)	5†	4†	4†	3†	3†	2
Script Writer (E-5)	2	1	1	1	1	1
News Writer (E-5)	2	1	1	1	1	0‡
Librarian (E-4)	1	1	1	1	1	1§
Maintenance Engineer (E-5 or E-6)	3§§	2§§	2§§	1	1	1
Administrative Clerk (E-3 or E-4)	1	1	1	1	1	1
Supply Clerk (E-4 or E-5)	1	1	1	1	1	0†‡
	20	16	16	14	13	9

* In some instances it will be desirable to have an NCOIC as Station Manager, rather than an Officer.

** Program Director can serve as Chief Announcer.

† Includes one Announcer for local special events and sports.

‡ Script Writer can act as News Writer.

§ Also part time Announcer.

§§ One Engineer sufficient in instances where studio and transmitter are located in same area.

†‡ Handled by administrative personnel, under direction of Chief Engineer.

It should be noted that jobs and functions listed in the above tabulation will be sufficient under normal circumstances to maintain a radio station's assigned command support mission with a degree of professional quality. The manning table also allows for continuous training and cross-training of assigned personnel for maximum utilization.

SUGGESTED TELEVISION MANNING TABLE

	CLASS A (Two or more studio cameras plus film camera chain)		CLASS B (One studio camera, plus a film camera chain)		CLASS C (Film camera chain with provision for limited local originations)	
Hours Per Week:	70	65	60	55	55	50
JOB TITLE:						
Officer-in-Charge	1	1	1	1	0*	0*
NCOIC (E-8 or E-9)	1	1	1	1	1	1
Chief Engineer (E-8 or E-9)	1	1	1	1	1	1
Program Director (E-7)	1	1	1	1	1	1
Production Supervisor (E-7)	1	1	1	1	0**	0**
Production Assistant (E-2)	2	1	0	0	0	0
Director (E-5 or E-6)	2	1	1	1	1	0
Announcer-Director-Cameraman (E-4 or E-5)	3†	3†	2†	2†	1	1
Artist (E-4 or E-5)	1	1	1	1	0	0
Script Writer (E-4 or E-5)	2	1	1	1	0	0
News Writer (E-4 or E-5)	2	1	1	1	0	0
Maintenance Engineer (E-5 or E-6)	3	3	2	2	2	2
Audio-Video Operator (E-4 or E-5)	3	3	3	2	1‡	1‡
Film Technician (E-3 or E-4)	1	1	1	1	1	1
Librarian (E-3)	1	1	1	1	1	1
Administrative Clerk (E-4)	1	1	1	1	1	1
Supply Clerk (E-4)	1	1	1	1	1	0†‡
	27	23	20	19	12	10

* An NCOIC as Station Mgr may be more desirable for this type of operation.

** Program Director can serve as Production Supervisor.

† Includes one Announcer-Director for local special events and sports.

‡ Cross-trained with Maintenance Engineering staff.

†‡ Handled by Administrative personnel, under direction of Chief Engineer.

The above television personnel tabulation, similar to the radio chart, has been designed with a view toward maintenance of professional quality and implementation of the command support concept. Manning table allows for continuous training and cross-training, combining such commercial network job titles as Assistant Director, Stage and Floor Manager, Audio and Video Engineer, for economy of operation.

SUGGESTED JOINT RADIO AND TELEVISION MANNING TABLE

	CLASS A		CLASS B		CLASS C	
Hours Per Day: (Radio)	24	18	24	18	18	12
Hours Per Week: (TV)	70	65	60	55	55	50
JOB TITLE:						
Officer-in-Charge	1	1	1	1	0	0
NCOIC (E-8 or E-9)	1	1	1	1	1	1
Chief Engineer (E-8 or E-9)	1	1	1	1	1	1
Program Director (E-7)	1	1	1	1	1	1
Production Supervisor (E-7)	1	1	1	1	0	0
Production Assistant (E-2)	2	1	0	0	0	0
Chief Announcer (E-5 or E-6)	1	1	1	1	1	1
Director (E-5 or E-6)	2	1	1	1	1	0
Announcer-Director-Cameraman (E-4 or E-5)	5	4	4	3	3	2
Artist (E-4 or E-5)	1	1	1	1	0	0
Script Writer (E-5)	2	1	1	1	1	0
News Writer (E-5)	2	1	1	1	1	0
Maintenance Engineer (E-5 or E-6)	5	4	3	2	2	2
Audio-Video Operator (E-4 or E-5)	3	3	3	2	1*	1*
Librarian (E-4)	2	2	2	2	2	2
Film Technician (E-3 or E-4)	1	1	1	1	1	1
Administrative Clerk (E-4)	1	1	1	1	1	1
Supply Clerk (E-5)	1	1	1	1	1	0
	33	27	25	22	18	13

* Cross-trained with Maintenance Engineering staff.

The foregoing manning table for a joint radio and television operation has been designed for combination of duties and cross-training of personnel. For economy of operation, manning tables for radio and television should not be added together.

JOB TITLES AND FUNCTIONS

By way of assistance, key job titles and functions listed in preceding radio and television manning tables have been extracted and are explained further in the following brief descriptive notes.

1. **Station Manager**

The Station manager, usually a non-commissioned officer, is responsible to the Officer-in-Charge for all technical and program operations. He recommends and supervises procedures and policies on training, equipment, production, programming, news remotes and assignment of personnel. In the absence of the Officer-in-Charge, the Station Manager assumes command responsibility. In a Class C station, the Station Manager is the Officer-in-Charge.

2. **Chief Engineer**

The Chief Engineer is responsible to the Station Manager (NCOIC) for the technical operation of the station. This responsibility includes maintaining adequate technical stock levels, proper installation, maintenance, and operation of all technical equipment. He schedules work assignments and training of military and civilian engineers. In the absence of the Station Manager, the Chief Engineer assumes operational responsibility of the station.

3. **Program Director**

The Program Director is responsible for the daily program and production operations of the station. He prepares the master schedule, supervises training and assignment of Announcers and other production personnel. He reports directly to the Station Manager and keeps him informed on all schedules and program personnel changes desired or needed.

4. **Production Supervisor**

The Production Supervisor reports to the Program Director and assists in the planning and scheduling of assignments and duty hours. He establishes procedures and performance standards and assures availability of required equipment, such as cameras, recorders, turntables, microphones, lighting devices and supplies necessary to the operation of the equipment. He assigns broadcast, script writing, and production functions to subordinate personnel and assures adherence to broadcast schedules. He establishes and conducts on-the-job training in such phases of broadcast operations as script writing, news editing, operation and minor maintenance of studio equipment, set construction, and editing of sound tracks.

5. **Staff Announcer**

The Staff Announcer is responsible for the quality and effectiveness of all broadcast material. At all classes of stations he will be called upon, not only to announce programs, but to write copy, operate a control board or camera, direct a radio or television program, conduct interviews, and participate in special events. His activities usually will be supervised by a Chief Announcer who will be directly responsible to the Station Manager for all staff announcers and their work schedule.

6. **Staff Director**

The Staff Director is responsible to the Production Supervisor or the Program

Director for the production and direction of television programs. He oversees preparation, selection and revision of scripts. He designs, prepares and sets up stage settings, graphics and special effects. He positions lights, cameras, microphones, and performers, selects camera shots, and informs camera operators which shots to use and when to use them. He monitors pace and timing of performance. He coordinates, prepares, and supervises special broadcasts, such as athletic events and ceremonies.

7. **Script Writer**

The Script Writer is responsible for the writing of a complete program, including performers' cues, music, sound effects, and camera angles. He writes spot announcements, commentary with film, graphic aids, and scripts on a variety of non-technical subjects. On occasion he may write speeches and dialog for sketches and other presentations. He will also write and edit continuity, rewrite material submitted, rearrange picture and sound to insure most effective presentation.

8. **News Writer**

The News Writer compiles and edits local and wire service news for presentation over radio or television. He may perform as a commentator for special events, act as master of ceremonies in an informational program or conduct interviews. He designs and arranges graphic aids for the presentation of news over television and prepares news stories, feature items and articles for use by local camp newspapers.

9. **Librarian**

The Station Librarian is directly responsible to the Station Manager for maintenance of the station library. This includes indexing transcriptions, tapes or film, storage and filing of all programming materials for quick and easy reference. At Class C stations, this will usually be a combination job, incorporating announcing or production duties. Class A Stations will find it more desirable to use a full time librarian for this responsibility.

10. **Maintenance Engineer**

The Maintenance Engineer performs maintenance functions, under the direction of the Chief Engineer. He positions, secures and interconnects equipment according to plans, specifications or instructions. He checks action of such items as relays, switches and coils and makes necessary adjustments. He inspects, dismantles, and repairs circuit wiring and replaces defective components and individual parts. He may substitute component parts when necessary and fabricate simple parts not requiring precision machine tooling. At Class C television stations he is usually cross-trained as an Audio-Video Operator.

11. **Audio-Video Operator**

The Audio-Video Operator maintains picture and sound quality during a television presentation, by adjusting controls to assure proper performance and operation of equipment. He coordinates with personnel controlling other portions of equipment on dial settings, meter readings and positioning of switches and controls to clear up maladjustments of equipment. The Audio-Video Operator also establishes requirements for placement of microphones and cameras.

12. **Film Technician**

The Film Technician checks and inspects film and projector equipment for prop-

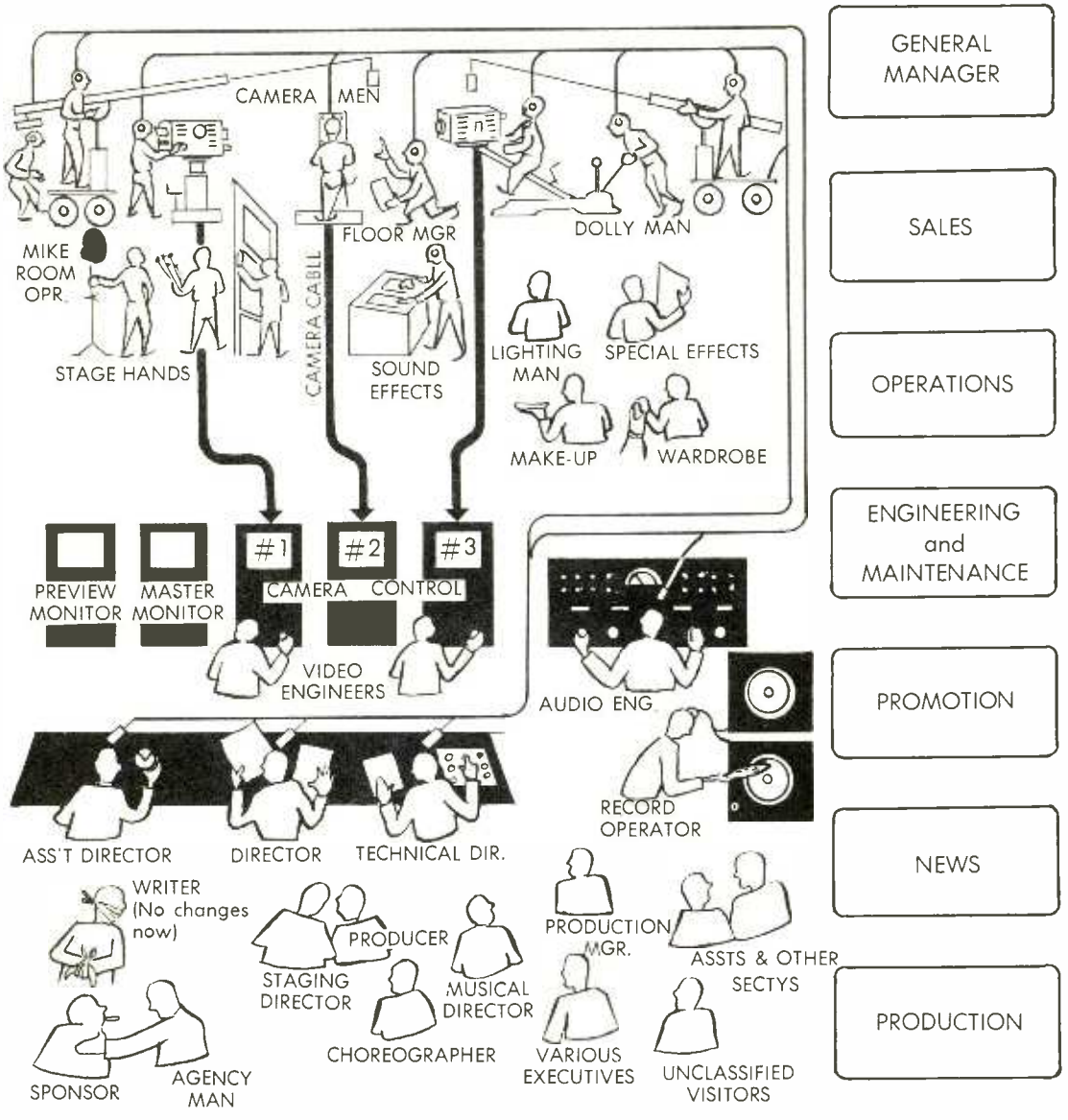
er identification and condition. He inspects, repairs and rewinds film before storage in racks. He lubricates, cleans, adjusts, and makes replacement of minor parts of projectors, such as lamps, fuses, belts, amplifier tubes, springs, cords, and similar items. He usually supervises operation of the film library.

THE TELEVISION TEAM

An Armed Forces Television Station will be only as good as its last program. If the program has been hastily assembled, with insufficient pre-program preparation and inadequate personnel, the end product will be substandard in all respects, reflecting no credit on the command which supported its initial installation. The television team, engineering as well as production, must be a flexible and cohesive unit. For reasons which are obvious, commercial operating standards cannot be adopted. A compromise, however, is possible and Diagrams "H" and "I" on pages 44 and 45 have been designated to illustrate, pictorially, the manner in which simple elimination, doubling, and cross-training can be effectively worked out for a Class A television station.

THE COMMERCIAL TELEVISION TEAM

(Non Network Station)

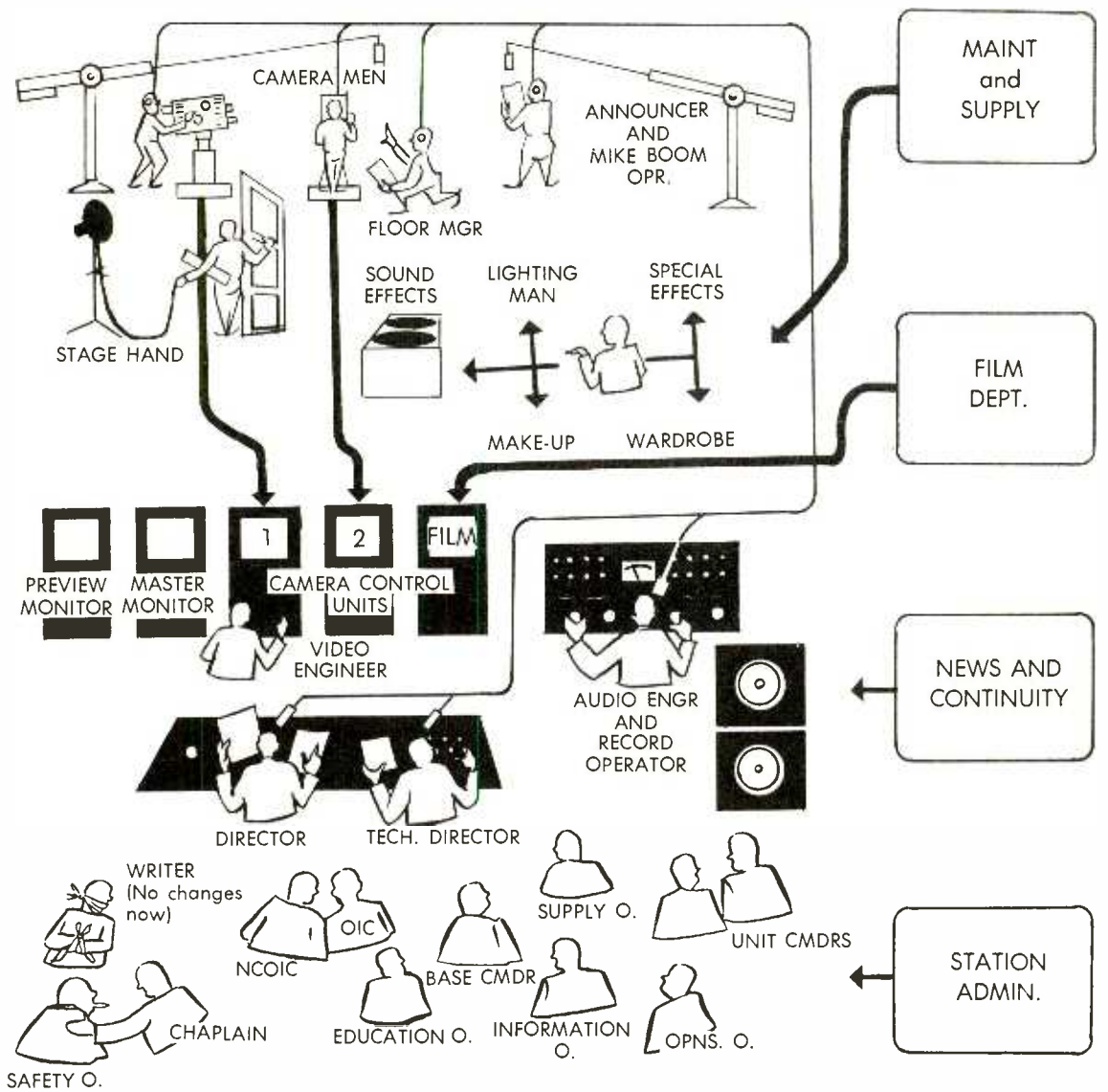


Musicians and performers are not shown. Observers shown at the rear of the control room are rarely all present at the same time, but all of them usually have access to the control room.

Diagram H

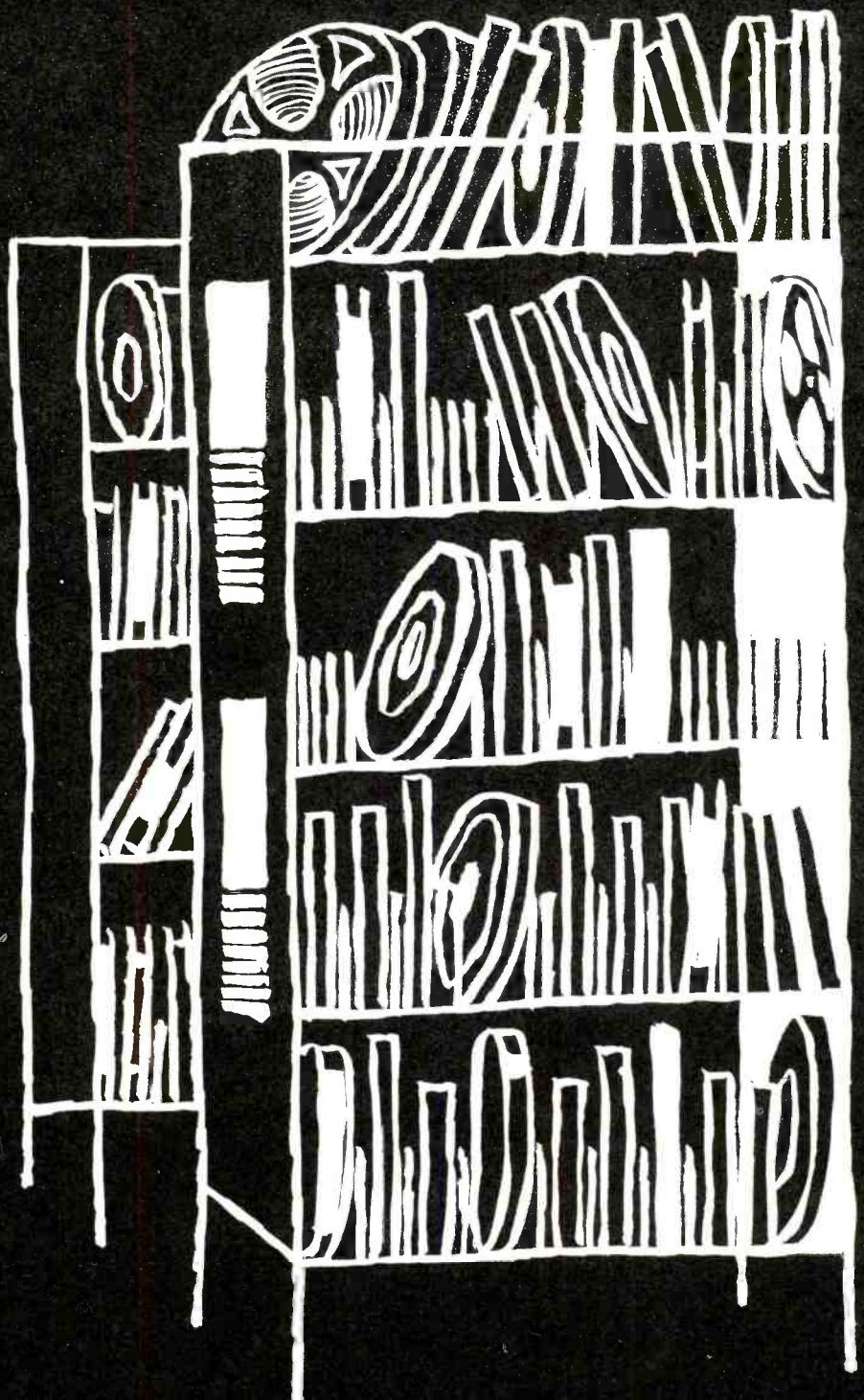
THE ARMED FORCES TELEVISION TEAM

(Class A Station)



Doublings are not identical to those indicated in the preceding Manning Tables. The intention, here, is to illustrate the wide flexibility of cross-training or doubling. Cross-training or doubling should be arrived at after study of individual aptitude, talent and training. Musicians and performers are not shown. Observers shown at the rear of the control room are rarely all present at the same time, but all should have access to the control room.

Diagram I



BASIC PROGRAM BUILDING MATERIALS FOR THE ARMED FORCES RADIO AND TELEVISION STATIONS

CHAPTER VI

BASIC PROGRAM BUILDING MATERIALS PROVIDED ARMED FORCES RADIO AND TELEVISION STATIONS

A variety of program-building materials are provided authorized Armed Forces Radio and Television stations. These are supplied either weekly or daily and are designed as basic program aids. They are the nucleus from which local program building will be developed by station program directors and include a varied cross-section of American radio and television entertainment, events of national and international importance, sports, news, and informational features. These basic program-building aids can be grouped into the following three (3) programming services:

1. Radio transcriptions (Los Angeles)
2. Shortwave transmissions (Los Angeles — New York)
3. Television films (Los Angeles)

Successful local program building by station program directors demands skillful and effective arrangement of these materials in order to meet scheduled broadcast hours and needs of the local military community. Local originations will complement and supplement these basic program-building aids.

In order to assist station program directors in their local program building efforts, the following supplementary programming publications are provided all radio and television outlets:

1. Radio Roundup
2. Teletips

These publications contain detailed program notes, scheduling information and suggestions for the effective airing of program materials supplied in the weekly transcription and film shipments. Radio Roundup and Teletips also serve as overseas information exchange desks for local operational problems and their solution by station personnel. Feature articles, summarizing current stateside programs and technical developments, as well as editorials on the broader aims of the information mission of the Armed Forces Radio and Television Station, are also included.

RADIO TRANSCRIPTIONS

The weekly transcription service, consisting of micro-groove pressings, is released to Armed Forces Radio Stations in two basic distribution units:

1. Weekly Program Unit: Transcriptions in this weekly unit are made up of decommercialized information and entertainment segments from the major networks, independent stations, and producers in the United States. Pressings rotate among several stations in the proximate geographic area and are not usually retained on a permanent basis.

2. Weekly Library Unit: Pressings in this weekly unit do not rotate among several

stations. They remain with individual outlets to form a permanent station library and include the following decommercialized and original programming materials:

Informational Programs
Holiday Specials
Informational Spot Announcements
Filler segments
Promotional Spot Announcements
Music Library supplements
Timely discussion programs on national and international issues.

RESTRICTIONS

The use of commercial phonograph recordings and commercial musical tape recordings for broadcast over AFRTS outlets is prohibited. Broadcast of live music over AFRTS outlets is restricted to that material which has been cleared by AFRTS-LA for use in the area concerned.

The use or reproduction of Armed Forces transcriptions, in whole or in part, for private or commercial purposes, is prohibited.

Armed Forces radio transcriptions and tapes will **not** be used:

1. On commercial or private broadcasting stations within the continental United States.

2. In a program which originates from a military installation and is broadcast by a commercial station.

3. On a wired carrier or dummy antenna system, unless specifically authorized by OAFIE.

4. At a dance, party, or other activity, where such use would preclude hiring of professional musicians and artists.

5. As a feed from a hospital program distribution system to provide entertainment for such non-hospital activities as service clubs, barracks, workshops, and offices.

6. For commercial purposes, or in any manner that would constitute competition with, or otherwise be detrimental to, commercial artists, copyright owners, or owners of other services or properties of a commercial nature.

7. On government-owned (foreign), commercial or private stations outside the continental United States, except when specifically authorized by OAFIE.

DISPOSITION

Armed Forces radio transcriptions on hand at Armed Forces radio stations, which are no longer needed, or which have been declared obsolete, will be reported to AFRTS-LA for disposition instructions. Transcriptions will be screened periodically to assure that obsolete recordings are removed from the files. Such screenings will be effected at least semiannually.

When authorized by AFRTS-LA radio transcriptions will be so defaced as to render future playing impossible and then disposed of in accordance with existing Military Department regulations. Certificates of such disposition will be forwarded to AFRTS-LA.

POLICY OF BROADCAST

Armed Forces radio transcriptions and tapes will be broadcast as received, except for reasons of nonsuitability of content due to the existence of a local situation which would make airing undesirable.

SHORTWAVE TRANSMISSIONS

These emanate daily on numerous frequencies from Los Angeles and New York and may be incorporated into station schedules, either as direct rebroadcasts or as delayed rebroadcasts. Schedules are mailed seasonally to all stations.

Shortwave transmissions cover events of national and international importance, information on what is happening in government, industry, entertainment and sports. These daily transmissions can be grouped into four main informational services — news, sports, features, special events.

1. **News**

Consists of regularly scheduled five and fifteen-minute newscasts compiled from the major news services, on-the-spot reports, and news programs containing the voices of news personalities.

2. **Sports**

Includes play-by-play broadcasts of major sports in season, boxing, spot coverage of special sports events and regularly scheduled sports feature programs. Up-to-the-minute scores of sports events are broadcast at regularly scheduled times each day. On occasion, special transmission periods are arranged to permit live broadcasts of such events as World Series baseball, or Service Academy football.

3. **Features**

These cover various programs of primary interest to servicemen, or their dependents, such as service news and stock market quotations.

4. **Special Events**

Major events of immediate interest and significance, such as speeches by the President and other national figures, celebrations, and election returns are beamed to overseas stations, either during normal transmission periods or on additional transmitter time, when timeliness and interest warrant such special treatment.

CONFERENCE PERIODS

These are the most important segments in the shortwave broadcast day to overseas station program directors. These conference periods are of an operational nature and contain information on program changes, special events, frequency changes, and the general subject matter of each day's regular features. They are also used for other operational matters, such as date of radio transcription unit shipments, date and content of direct mail (DAM) television shipments.

Los Angeles and New York beam daily two such conference periods.

Overseas station program directors are urged to monitor these daily conference periods from Los Angeles and New York. They are essential and effective program-building tools for overseas radio and television stations.

MAXIMUM UTILIZATION

Shortwave transmissions from Los Angeles and New York are designed for maxi-

mum utilization by overseas Station Managers and Program Directors. Daily monitoring and taping of these broadcasts will be valuable program aids in a number of ways:

1. For direct or delayed rebroadcasts in their entirety.

2. For taping and subsequent use as insert segments in locally-produced newscasts and monitor type programs.

3. For authentic, direct, on-the-post, camp and ship newspapers.

4. To further the objectives of the overall Information Program at overseas radio and television stations.

POLICY OF BROADCAST

Armed Forces shortwave transmissions will be broadcast as received except for reasons of nonsuitability of content due to the existence of a local situation which would make airing undesirable.

TELEVISION FILM

The weekly film service, consisting of sixteen millimeter films, is released to Armed Forces Television Stations in three basic distribution units:

1. Weekly Program Unit: Film is not usually retained on a permanent basis, but shipped as a complete unit from station to station through designated circuits. This material consists of:

Decommercialized Information and Entertainment Programs,
Cartoons,
Religious Films,
Motion Picture Features,
Industrial and Public Service Films.

2. Weekly Direct Air Mail (DAM) Unit: These units contain film of timely interest, individually shipped to stations by direct air mail. These shipments include:

A weekly newsreel,
Play-by-play sports,
Panel or documentary programs covering current events,
On-the-spot coverage of national and international happenings.

Some of this film is retained for permanent station use; the majority is circuited among designated stations. Shipping documents accompanying each direct air mail unit will indicate retention or non-retention by individual television stations. All direct air mail material is decommercialized.

3. Library Unit: These are periodic shipments of film which will be permanently retained by individual television stations for subsequent replay. They include:

Decommercialized information and entertainment programs designed to supplement the Weekly Program Unit,
Holiday and seasonal programs,
Informational slides,
Spot announcements, and
Fillers of varying lengths.

RESTRICTIONS

The use or reproduction of Armed Forces television film, in whole or in part, for private or commercial purposes, is prohibited.

Armed Forces television film will **not** be used:

1. On commercial or private telecasting or broadcasting stations.

2. On a program originating from a military installation and broadcast by a commercial station.

3. On a wired carrier or dummy antenna system, unless specifically authorized by OAFIE.

4. At any activity where such use would preclude hiring of professional musicians or artists.

5. For commercial purposes or in any manner that would constitute competition with or be detrimental to commercial artists, copyright owners, or owners of other television services or properties of a commercial nature.

6. On foreign government-owned, commercial or private television stations outside the continental United States, unless specifically authorized by OAFIE.

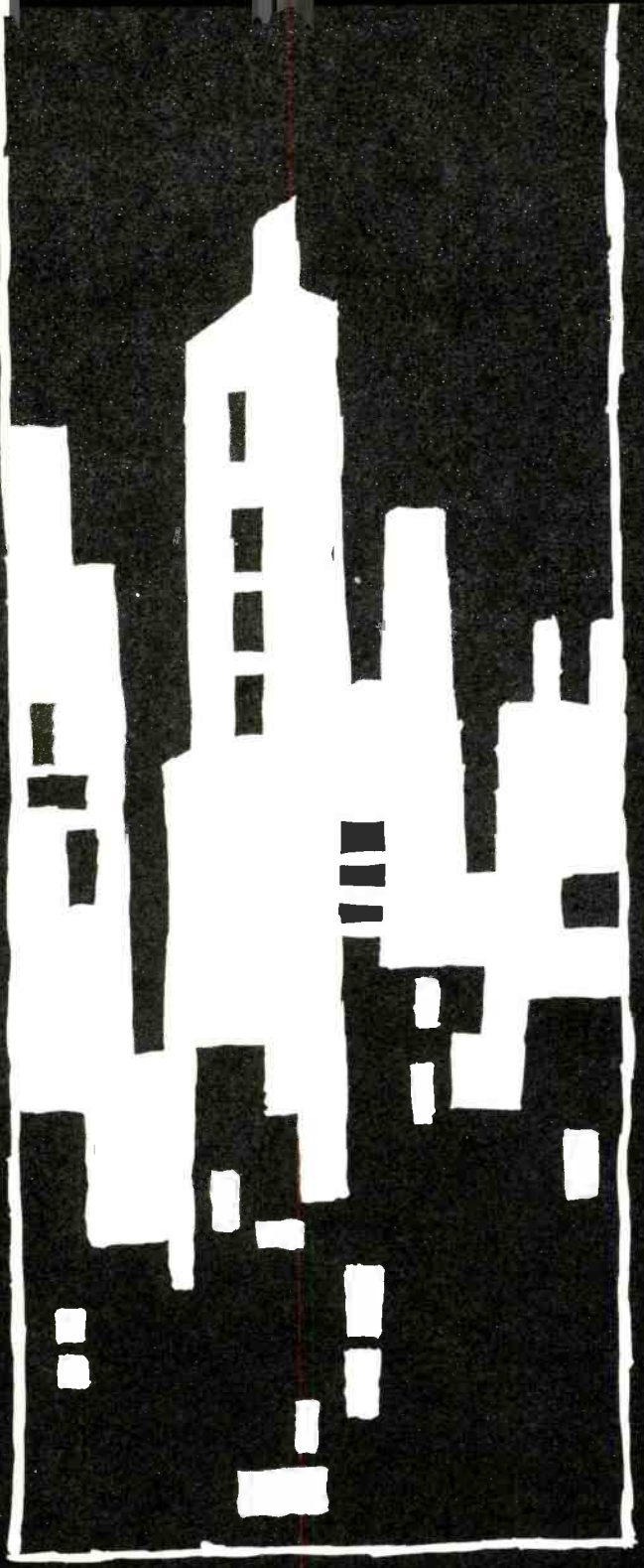
7. In post theaters, service clubs, or private homes.

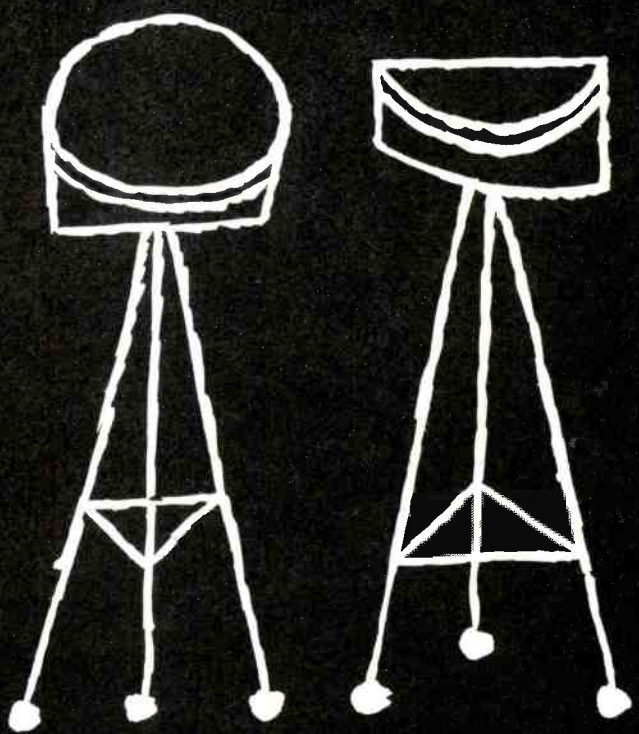
DISPOSITION

When television film is no longer needed, or declared obsolete, individual television stations will request disposition instructions from AFRTS-LA. Television film on hand at Armed Forces Television Stations will be screened periodically to assure that obsolete film is removed from the files. Such screenings will be effected at least semiannually. When authorized by AFRTS-LA, television film will be so defaced as to render future viewing impossible and then disposed of in accordance with existing Military Department regulations. Certificates of such disposition will be forwarded to AFRTS-LA.

POLICY OF BROADCAST

Armed Forces television film will be telecast as received, except for reasons of nonsuitability of content due to the existence of a local situation which would make telecasting undesirable.





PROGRAMMING

THE ARMED FORCES RADIO

AND TELEVISION STATION

CHAPTER VII

PROGRAMMING
THE ARMED FORCES RADIO AND TELEVISION STATION

The paramount concern in programming the Armed Forces Radio or Television Station is the audience. To determine its composition and needs, a survey of personnel in the area is usually an effective measuring tool.

Which military services are represented?

Which service is predominant?

Other than radio and television, what sources of information are available?

What are the working hours of the installation?

Of leisure time, which periods are most popular for listening to radio or watching television?

Generally, what category of programs is preferred?

Specifically, which program titles are favorites?

What type of music is desired?

What is the dependent population?

How many children, by age group, are involved?

Without this knowledge, programming can have no valid objective, nor can it serve the best interests or purpose for which it is intended. Questionnaires developed by each Station Manager, or Program Director, can be designed for information relevant to the individual area. Analysis of the results of an audience survey can serve as an important key to successful program planning.

Due to the shifting of military personnel, the personality of an audience can change drastically. Hence, it is advisable that three years be the maximum lapse between survey projects. In each case, the validity of a survey will depend on the number of questionnaires distributed. To this end, the format should be kept as simple as possible, and, each person polled should be made to feel that the responses will influence and affect program plans.

Service to all categories is the watchword. Whether programming information or entertainment, the needs of the primary audience — America's men and women in uniform — should receive the greatest attention. Conversely, the impact of stateside programs on indigenous personnel cannot be overlooked. Herein lies an effective People-to-People implement which can make valuable and staunch friends for America.

The next step in Program Planning is to ascertain how much of the desired information and entertainment is available in the material received from Los Angeles and New York, and how much can the local population be relied on for live presentations. A survey can include questions for indicating talent in the area.

Armed, then, with the composite picture of audience preference, program and local talent available, the Station Manager normally consults or coordinates program plans with the staff of the major command. Frequently, the area command Information Officer is designated to represent the command. At this point it is wise to recall that an Armed Forces Radio or Television outlet not only offers an overseas command an ex-

cellent vehicle for the discussion of command problems, policies and procedures but, more important, the combating of enemy propaganda.

PROGRAM SCHEDULING

There can be no slide rule for programming a military audience which may be completely transient, static, or semistatic. Regardless of audience type, one substantial fact is evident: The audience is composed of human beings who consider radio and television environmental parts of life and programming service must be geared to fit their mode of living to the fullest extent. This, in the final analysis, will dictate the radio or television broadcast schedule.

In developing the daily program schedule, the radio or television Program Director will find the following commercial tools helpful in determining the viewing or listening habits of his audience:

Classification booking
Vertical or horizontal booking
Block booking

1. **Classification Booking**

This programming tool classifies listening and viewing hours as "A" or "B" hours. Class "A" will represent peak hours, when listeners and viewers are available in greatest numbers. The theory here is to give the audience what the majority of them want when they can listen or watch. Class "B" programs, therefore, will be those not as popular, or pertinent, which can be scheduled at other than peak listening or viewing hours.

2. **Vertical or Horizontal Booking**

The Program Director arranges segments of his schedule according to type of program — either vertically (one day's broadcasting period) or horizontally (a period of two or more consecutive days). Examples of this type of program booking are: Five western programs in one night (vertical programming), or one western program at the same time, on five consecutive nights, Monday through Friday (horizontal programming).

3. **Block Booking**

This method, used by many radio and television stations, is the segmenting of a typical broadcast day into blocks. The broadcast day for radio may vary from 18 to 24 hours per day. The listening habits of an audience may permit a break of the daily radio broadcast schedule into five or six segments: 0600-0800, 0800-1100, 1100-1300, 1300-1700, 1700-2400, 2400-0600. This blocking is dictated by the peculiarities of the duty hours and responsibilities of the military personnel.

The station Program Director will discover that the more suitable or desirable method of scheduling will rest with the audience he serves. This is paramount for scheduling of all overseas radio stations. He should also remember that his television operation, unlike radio, should be more critically geared to the off-duty time of military personnel. Other factors, such as available film supply, local talent, versatility of staff, and the capabilities of studio equipment are secondary in governing the television schedule. A typical broadcast day for television, therefore, will begin with sign-on at 1500 or 1600 each weekday and sign-off at 2400, with a slightly longer telecast day on Saturday and a continuous Sunday schedule from 0800 to midnight.

MAJOR PROGRAM BLOCKS

The following major program blocks and their peculiarities are submitted as general guidelines for the radio or television Program Director:

0600-0800
1100-1300 Normally, during these periods, service personnel are preoccupied with the preparations for going to duty. This follows the normal habits of morning stateside audiences. Programming should then be lively, cheerful and invigorating — attuned to the needs of that part of the day. Announcements should be short and alertly delivered. Musical selections should be brief, varied, largely popular and preferably melodic.

0800-1100
1300-1700 These periods, at most military installations, often represent the times when the majority of military personnel are occupied. This can be a problem area. However, this is the time when minority audiences (numerical) can be served extremely well, i.e., dependents, hospital patients, mess personnel, or the indigenous audience. During these hours "home-maker" shows, "soap operas" and childrens' features can be inserted. Too, certain area problems of special interest or concern to dependents or indigenous audiences might be programmed. These periods should not contain programs of such extended length that would exclude or discourage the tune-in of military personnel.

1700-
Sign-off As 1700 hours approaches, the radio or television station should openly play to the audience for whom it basically exists — military personnel. This transition will likely be a progressive thing, until about 1900 or 1930. By this time, audience habits will have become more static. Personnel who are going to be away from their radio or television sets during the evening will have completed their preparations and will have gone. One can normally assume that those remaining will continue to be a potential attentive audience during all or part of the evening hours, until 2230 or 2300, when the numbers will begin to dwindle.

The period around 1900 to approximately 2230 or 2300, at most installations, will furnish an audience of larger size. During this period the alert radio or television Program Director will schedule informational, educational and entertainment programs of top-flight interest. The competitive recreation plans at each base during the evening hours will deserve consideration for program planning. Generally, music or movie film will be in order for the period 2230 to Sign-off, as it will have the greatest mass appeal at this time.

PROGRAM BALANCE

The business of serving military personnel becomes a unique undertaking when one realizes the gamut of tastes which must be catered to by the Armed Forces Radio or Television Stations. In an attempt to please as many viewers or listeners as possible — at least some of the time — the Program Director must make provisions for a balance of program types. Beyond the obvious categories of information and entertainment features, further breakdowns can be refined into specific types, such as:

News,
Sports,
Music,
Comedy,
Drama,
Westerns,
Religious,
Programs for children,
Features for women.

Along with programmed shows, a balanced offering in types of music is also important and should be given careful study. To meet this requirement, the Weekly Music Transcription Library shipments from Los Angeles provide a steady flow of all types of music. These shipments include the following music categories:

P — popular
SP — symphonic-popular
C — concert
W — western
CH — childrens'
L — Latin
MW — music of the world
R — religious
M — military

together with sound effects, marches and programming aids. This continuous supply provides a growing station library which remains with each outlet and helps build a background of music types to draw upon for disc shows and local productions.

In still another category — religion — the balance can be adequately met for radio or television by utilizing the religious films and transcriptions in the weekly program units supplied by AFRTS-LA, covering the basic faiths — Protestant, Catholic, Jewish. In addition, the station Program Director has the responsibility of providing equal time for all chaplains in the area. Sign-on and sign-off periods might also utilize short religious or inspirational features, for example, a prayer of hope for the day, a prayer of thankfulness at the close of the day.

PROGRAM STANDARDS

In scheduling the Armed Forces Radio and Television Station, the Station Manager, Program Director, in fact, all personnel connected with the outlet, have a serious responsibility for maintaining program standards. The radio or television station should consider itself an invited guest and that listening and viewing are communal.

The following standards, dictated by common sense, decency, and good taste, apply to all types of programs and all station personnel should become thoroughly acquainted with them and apply them to everyday programming:

1. **RELIGION**

The subject of religion must invariably be treated with respect.

Reverence shall mark any mention of the name of God, His attributes or powers.

References to religious faiths, tenets or customs must be respectful and in good taste, free of bias and ridicule.

Religious rites must be portrayed or reported with accuracy.

A chaplain, when shown in his calling, must be vested with the dignity of his office.

2. **RACE, COLOR, NATIONALITY**

No program will be accepted which misrepresents, ridicules or attacks races, colors or nationalities.

3. **MARRIAGE AND FAMILY**

Marriage and the home are fundamental institutions of our society; all treatment of these themes must tend to uphold their sanctity.

Adultery and infractions of moral law, being condemned by society, are permissible themes only when absolutely essential to plot development and must not be presented as glamorous, socially or morally excusable.

Divorce may not be lightly introduced as the solution to marital problems.

Extra-marital relations may not be used for comedy; nor may marriage be made a vehicle for suggestive or offensive lines.

No material tending to break down juvenile respect for moral conduct will be accepted for broadcast.

4. **SEX**

Good taste, restraint and decency must govern all references to sex.

Songs and lyrics involving "double entendre" will not be approved.

Passion and lust, even when required by plot, must be played down. Dramatic situations and dialogue which tend to be suggestive may not be used.

Sex crimes, seduction, rape, may not be dramatized.

5. **CRIME AND PUNISHMENT**

The drama of crime is a recognized and popular literary form. Crime may not be presented in a manner which will glamorize the criminal, suggest imitation, or shock the sensibilities of the audience.

Gruesome details of crime may not be presented; nor may torture and agony be dramatized, either in dialogue or sound effects.

Suicide may not be held up as a satisfactory solution for personal problems, nor detailed in method.

Crime should find retribution, but details of punishment, such as hangings and electrocution, may not be dramatized.

The kidnapping of children is not an acceptable theme. Cruelty to children and horror themes, in general, may not be presented in distressing detail.

6. **PHYSICAL AND MENTAL AFFLICTIONS**

Physical deformities and mental afflictions should inspire sympathy rather than ridicule.

Neither may be used for comic effect; nor may either be presented in such a manner as to offend those suffering from such infirmities.

Scripts dealing with deformity or insanity will be individually examined and approved, only if within the bounds of good taste.

7. ALCOHOLISM AND NARCOTIC ADDICTION

Insobriety and addiction to narcotics may not be introduced except when essential to plot development, and if used at all, may not be dramatized in detail.

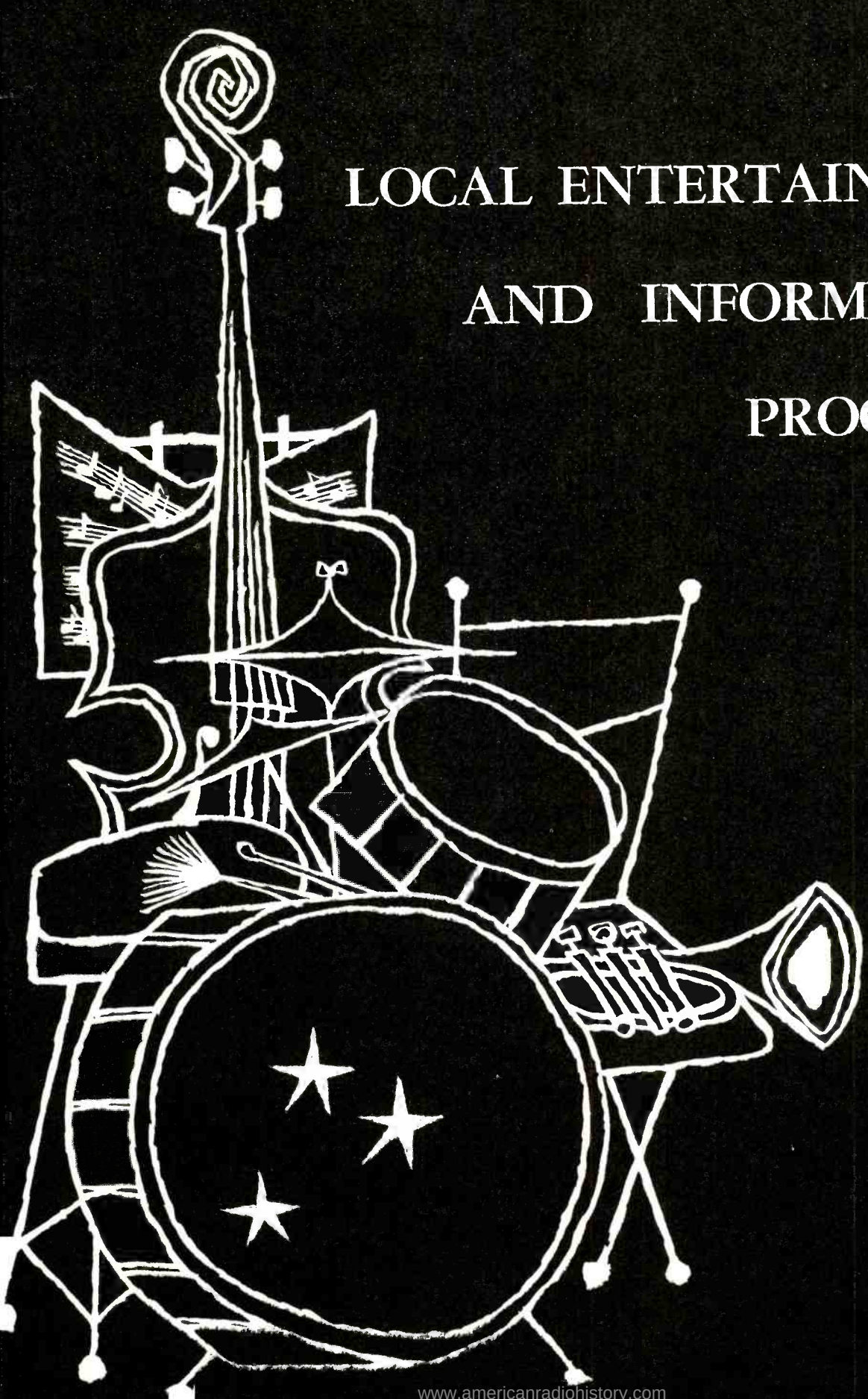
Alcoholism is not to be presented as commendable and narcotic addiction may not be shown as other than a vicious practice.

8. PROFANITY AND OBSCENITY

Use will not be permitted of any material or language which is blasphemous, sacrilegious or profane, salacious or obscene, indecent or vulgar.

It is recognized that such words as "damn" and "hell" sometimes have contextual uses that do not constitute profanity. In general, good taste demands their deletion.

LOCAL ENTERTAINMENT AND INFORMATION PROGRAMS



CHAPTER VIII

LOCAL ENTERTAINMENT AND INFORMATION PROGRAMS

Local productions, tailored to the needs and desires of a locale, can be good morale builders as well as excellent local program building devices. Earnest efforts should be made for a degree of professionalism which will satisfy the listening or veiwing audience. These shows should supplement stateside transcribed or filmed features and professional performers should not be sacrificed for these local offerings.

Listeners and viewers will want, first, their favorite stateside programs. When a choice must be made between a program, popular at home, and a local production of unknown or dubious quality, it will always be desirable to schedule the higher-rated professional segment. Recognized local talent should not be discouraged, but used wisely.

Amateurism in radio and television can be guarded against with careful pre-program planning. Mechanics are different, but basic general areas of activity are common to each medium. These include:

1. Casting
2. Rehearsing
3. Timing
4. Staging
5. Writing

Casting is extremely important. A good script, program idea or format can be nullified with a poorly selected performer. The viewer or listener does not expect seasoned professional quality. This fact should not be an excuse to accept mediocrity when time and research will bring to the microphone or camera a more acceptable personality.

Rehearsing is the key to smooth production for both radio and television. Unsure and faltering performers can be made less so with adequate rehearsal. This is particularly true in television, where the additional dimension of video is a complicating factor in establishing the final intricate composite of sight and sound. Adequate rehearsing before air time will blend all ingredients into a seemingly effortless and enjoyable pattern for the television viewer. The cardinal responsibility of the station Program Director is to make arrangements for sufficient rehearsal time for local offerings. If this prerequisite has been overlooked, cancellations are in order, rather than risk antagonizing an audience with poorly prepared material.

Timing will distinguish the professional from the amateur. There is no exception in either medium. The mechanics of timing a radio or television program is an individual matter. Methods and procedures will vary with individuals controlling the program. The important consideration to remember is that an audience expects disciplined programming and nothing will aggravate viewers or listeners more than sloppily-timed material. Station Program Directors should guarantee against infractions of timing by reiterating to station personnel that timing is an important step in the pre-program planning of their assigned units.

Staging is important to radio, only in so far as variety or audience participation programs are concerned. Where possible, these should be played before an audience, since laughter and reactions are contagious and sweep listeners into the program's spirit. Mounting or staging for these radio segments can be simple, but it should present a

pleasant and comfortable framework for the audience, with the stage being the focal point of interest. Staging for the television camera is of paramount importance and for this reason more time will have to be allocated in pre-program planning. In stations where radio and television are side by side, the alert Program Director will caution personnel against transferring radio formats or ideas to television, without the necessary adjustments for effective visual presentation of an idea. Television is a visual art; the viewer knows this and expects it, even in a local offering.

Writing is probably the most important tool in pre-program planning. Radio writing consists of mood music and sound effects so blended as to provoke pictures, thoughts and action in the listener's mind. Television writing adds to these ingredients, movement of a camera and performers. In addition to sound, it presents action and depth to the viewer and this makes it differ materially from radio writing. In either case, radio or television writing is vital and necessary to pre-production planning. Whether it is a formal script or a series of notes, competent radio and television production personnel should not ignore writing in their pre-program planning.

TYPES OF PROGRAMS TO BE CONSIDERED

Depending on talent and facilities available, the station Program Director should consider the following types of programs for his local program building:

Audience participation
Variety
Dramatic
Programs for children
Special features for women
Musical
Documentary

1. Audience Participation

Audience participation programs may be an excellent opportunity for many types of programs. At most military installations, this type of program will be largely confined to competition of one form or another, especially when used on a regular basis. Two branches of service, or two units of an organization, may be pitted against each other. The show can become an off-duty attraction at the Post Theatre or in an outdoor area. The microphones and cameras should be spotted carefully. The radio or television audience must be considered, as well as the captive audience. The competition can be centered around the identity of tunes played by an orchestra, definition of words, or questions of broad, general knowledge.

The simpler the questions, the better. The audience, in knowing the answers, will usually enjoy the attempts of contestants to think of them. Tangible prizes should be offered, such as theatre tickets, a weekend trip, cigarettes, candy, and the like. The audience will understand a station's inability to award elaborate prizes.

2. Variety

Variety shows are composed of various and frequently contrasting elements. Comedy and music are alternated; each act is complete in itself. Local production of such features demands high professionalism. If such talent is available, it should reach the audience in creditable style, or not at all.

3. **Dramatic**

For dramatic programs, moderately good acting, good scripts and adequate technical arrangements and direction are important requirements. Dramatic programs should be plays written specifically for radio or television. The length will vary from fifteen minutes to an hour. Shorter scripts should deal with one situation, one plot idea. These should usually build to a surprise or dramatic ending. Longer scripts must sustain interest over a greater period of time and can consist of two or more basic plot variations or complications. Here again, a high degree of professionalism is required.

4. **Programs for Children**

If the size of the juvenile population warrants it, this type of local programming can make the radio or television station a vital part of the military community. The facilities available for audience participation and the production talent available, either on the staff or from the command, will determine the extent of this type of programming. A children's program may be a studio production involving a single microphone or camera and a single person. It may be an audience participation feature, involving multiple studio and stage facilities, as well as technical equipment and abilities. This specialized type of programming must be measured carefully and should be attempted only as talent and facilities permit doing well.

Camera and microphone personnel for this type of program should be carefully screened and auditioned. Knowledge of children, genuine interest, personality, microphone technique or camera presence, are important ingredients for the success of a children's program, particularly in the actual broadcast contest with youngsters. In addition, personnel conducting such programs, whether male or female, should elicit genuine acceptability from the juvenile audience. This factor will largely determine the wearing quality of a children's program.

A program which permits actual participation by children will usually be popular, but this demands the physical presence of the youngsters, which may have the effect of limiting attendance. Analysis by the Program Director and the Station Manager will determine if this is a factor to consider. One cardinal rule to keep in mind regarding programs for children is to program the type of feature which best fits available facilities on hand and the needs of the command.

5. **Special Features for Women**

Frequently, a diversity of talent can be found among women's groups within the command. Women with previous professional experience in radio and television, and who can provide a daily or regular homemaker's show, are often available. There are others who are able to conduct interviews of general interest, and those who can conduct women's forum features. Such features provide entertainment and helpful information of interest to wives and service women stationed within the command.

Radio and television are apt to be close companions to wives of service personnel. Particularly where there are limited recreational facilities for dependents, broadcast facilities can be important diversions, if not a vital environmental part of daily living. Women's shows require considerable creativeness. They cannot be merely chatty, if they are to survive. Women's shows generally should be thirty minutes in length, or less. A program which combines participation of both children and women should be worthy of consideration, providing, of course, the proper talent and direction are available.

Even a small studio program, with a pleasant voice or good camera presence

and presenting program content of genuine interest, can be a welcome diversion to women who are stationed with their husbands, far from home. The content of such programs should be attuned to the definite need.

6. **Musical**

Musical programs present peculiar problems. Unless there is a local professional musical group at the station's disposal, amateur groups should not be used in longer than fifteen minute segments. Amateurs or semi-professional musicians and soloists usually have not acquired the change of pace of seasoned performers, necessary to sustain a thirty minute unit. Live talent should be carefully auditioned, and with discrimination. A competent performer, or musical group of any category — hillbilly, classical or popular — deserves consideration, regardless of the musical preference of station personnel conducting the audition. Certain amateur talent will also have a special human interest element, which should not be overlooked. For example, a handicapped person, with special musical ability, can be a real inspiration, without being highly professional. Such abilities should be recognized, but not exploited.

7. **Documentary**

A documentary explores or explains a subject; it is an important program segment in carrying out the objectives of the Information mission. There are two principal types of documentary programs:

Essay documentary
Drama documentary

a. The essay documentary is a narrative for the ear. It may be a lecture, an article, a detailed discussion on a particular thought area, rather than a story. The essayist in this type of documentary is usually a narrator. His voice keynotes, explains and unifies all elements of the subject. Many times, dramatic scenes are incorporated to illustrate and point up facts the narrator is stressing. Use of actual people of a region, instead of actors, in dramatic dialogue, can be employed effectively for authenticity. In certain instances, this technique has a distinct advantage over use of professional actors. Sound effect patterns and recorded music underscoring to establish mood and set scene for dramatic inserts, also make effective production.

d. The drama documentary does not necessarily utilize a narrator to tie together all segments of a subject. Emphasis is on story stemming from the basic idea, projected and developed by the writer, in a logical sequence of situations and characters.

Personnel of all Armed Forces Radio and Television Stations will find themselves actively associated with the Information programs of all branches of the Armed Forces. Basic policy and guide lines will be set down by higher command, but the day-to-day implementation of policy will be executed by station personnel.

OBJECTIVES OF THE ARMED FORCES INFORMATION PROGRAM

Everyone connected with either radio or television should be familiar with the following objectives of the Armed Forces Information Program as formulated by the Office of Armed Forces Information and Education:

1. To inform Service personnel and to provide factual information for understanding our obligations as American citizens, and for the protection of our way of life.

2. To keep before our military personnel our country's objective of freedom and re-

spect for all human rights. Through informational programs, the individual serviceman is provided an understanding of:

a. Our representative form of government.

b. The responsibilities and obligations to serve and the privileges he enjoys under our form of government.

c. The faith and trust that we, as Americans, place in our fellowman.

d. The value and dignity of the individual.

e. The missions of our Armed Forces, their relationship to each other, and the importance of each serviceman's contribution to the national defense program.

3. To make each serviceman fully conscious of:

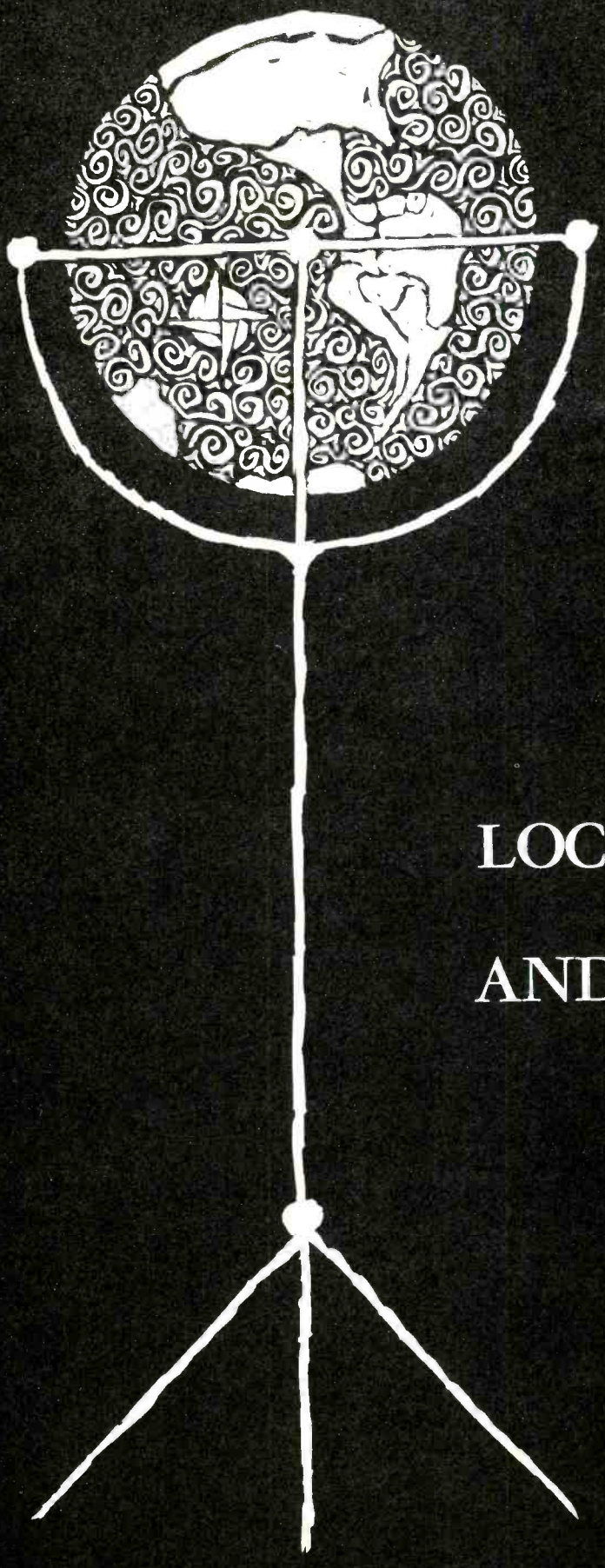
a. National and international problems and issues which have an impact on his life and upon his attitudes and conduct at home and abroad.

b. Soviet Communism, its meaning, aims and objectives, and its conflict with the free world's concepts of decency, integrity and fair play.

c. The worth of the individual and the rights assured him by our form of government.

4. To encourage all members of the Armed Forces to take advantage of opportunities available to them in voluntary off-duty programs of academic, technical and vocational education.

The foregoing objectives place a serious responsibility on personnel operating an Armed Forces Radio or Television Station. Effective implementation of these objectives, in local spot announcements and programs, will demand serious study and evaluation of the material and the audience at hand. Problems will differ from area to area, but the enterprising Program Director will think and plan as a commercial advertising man: KNOW THE PRODUCT — KNOW THE AUDIENCE!



LOCAL NEWS, SPORTS AND SPECIAL EVENTS PROGRAMS

CHAPTER IX

LOCAL NEWS, SPORTS AND SPECIAL EVENTS PROGRAMS

News and sports programs are basic ingredients of local program building. Production of good news and sports segments is vital to the program structure of an Armed Forces Radio and Television Station.

It will be discovered that military audiences have an intense interest in news from home. This should be satisfied with a liberal quantity of well-written, well-edited stateside news, supplemented, at regular times, with shortwave news from either Los Angeles or New York. In a military area, where news is being made, local news should also be reported to the limit of security regulations. Reliable local news sources should be developed, and tape recorders and cameras put to work as a regular daily functional part of the over-all operation.

Commercial newsmen, aware of competitive media, will take pride in achieving "firsts" or "scoops." Armed Forces Radio and Television Stations must be alert to cover timely events, where security permits, but greater consideration must be placed on factors of accuracy, authenticity and security. Sensationalism, poor taste, involved details, must be avoided. Radio and television news production should be alert, smooth flowing and authoritative.

News broadcasts should be considered and scheduled as anchor points in the daily schedule. News should provide the skeleton for the programming framework around which the station Program Director can insert his other program-building aids. Broadcast times should not be changed, once the best news times have been determined.

If a story of major importance breaks, normal schedules can be disrupted, but the immediacy of radio and television should be used with discretion. Programs should be interrupted only when it is certain that the interruption will best serve the audience.

Maximum use should be made of insert materials, to keep news programs fast-paced and interesting: Brief recordings of personalities in the news, inserted for radio; appropriate still photographs added for television exposure. Care should be exercised not to give an item more time than it deserves, simply because plenty of insert material is available. The Los Angeles and New York shortwave transmissions are daily sources of such material.

In a ten or fifteen minute newscast, use of headlines is recommended:

For example: "Here are tonight's news headlines:

CONGRESS APPROPRIATES $15 BILLION FOR DEFENSE. THE NEW YORK YANKEES ON RAMPAGE AGAIN.

These are the headlines. Now here are the details."

Immediately following should be a detailed exposition of the subject matter promised in the headlines. These details make up the body of the news broadcast and are followed with a closing, in which the stories headlined in the opening are recapped:

"You have just heard the 7 o'clock news roundup, compiled and edited by Armed Forces Radio-Television Station in ..... Congress has just appropriated the largest peacetime military expenditure in history. The New York

Yankees make it seven in a row — with just ten days to go for the pennant. Next news report at ..... etc."

News should be read intelligently, with a delivery that is impersonal and unbiased. This does not mean that the newscaster should suppress his normal air personality. He should deliver the news at hand in a straight forward, reportorial manner. Tempo should never lag enough to allow an audience to lose interest. Due to the time element involved in newscasts, every item should be concise and to the point, stressing the important factors involved.

It is important, whenever possible, to rehearse the news which will be read for radio or television. In this way the announcer will be assured that his listener or viewer is getting a comprehensive picture, instead of a jumbled mass of information. Many times there will not be an opportunity to look over and study the news thoroughly before approaching the camera or microphone. On these occasions, reading newspapers, preferably aloud, looking up unfamiliar names, keeping abreast of places currently mentioned in the news, will stand the announcer in good stead and save him much embarrassment, as well as spare his audience many unhappy and difficult moments of listening or viewing.

POLICY OF NEWS

Since overseas news is obtained largely from private news-gathering organizations, it must be analyzed and edited carefully by the radio or television news staff. Material supplied by these commercial sources is prepared, primarily, for private customers, such as newspapers, radio and television stations. When used by military organizations, such as Armed Forces Radio and Television Stations, stricter rules of accuracy, balance and fair play prevail.

Any story failing to name its source should be regarded as unsound for official use. "Informed quarters," "authoritative sources" or "usually reliable sources," are devices often used to cloak either a dubious source or speculation by the wire service writer. No matter how interesting, speculation must be avoided, as well as predictions of future actions, except where a recognized official in authority is being directly quoted.

Stories about equipment, movements or locations of service units must be viewed in light of security regulations in force within the command at the time of broadcast or telecast.

When politics makes news, it must be reported in such a manner as to keep listeners informed of events at home. In view of the basically controversial nature of such political news, it is important to avoid any involvement of the station, direct or implied, in the issues at stake. Even the appearance of partisanship must be avoided. A partisan statement should be balanced with a statement from the opposition. This is not always possible, as one party will, at times, dominate the news of the day. The opposition, however, will make itself heard, and its views should then be presented. In quoting political utterances it must be clearly indicated where quotations begin and end.

In political news, as well as all other news, Armed Forces Radio and Television Stations will avoid all commentary, editorializing, interpretation, rumor, supposition and speculation.

During national presidential campaigns, AFRTS-LA will supply outlets overseas with transcriptions and films of addresses by presidential candidates of the major parties, and AFRTS-LA and AFPRTS-NY will broadcast a balanced coverage of campaign news and addresses by shortwave. Addresses by presidential candidates will be schedul-

ed by local outlets during the most advantageous listening hours. Equal time will be allotted to addresses by candidates of each major political party and adequate advance notice of the date and hour of each broadcast will be given.

SPORTS

Regular sports features should be an integral part of the radio or television schedule. They should include summaries, up-to-the-minute scores, team ratings and batting averages.

For the scheduling of play-by-play accounts of baseball, football, golf, and other sports in season, the New York and Los Angeles Conference Periods and schedules will be invaluable aids to radio Program Directors. Also included in the Conference Period will be advance notice of sports film shipments, which information will be useful to television Program Directors in pre-scheduling plans and advance build-up to viewers.

In addition to play-by-play airings, sports features of an undated nature are also desirable. Feature programs should be developed, covering early history or records of boxing, football or track. All sports news and play-by-play coverage should be offered as frequently as is consistent with the interest of the viewing or listening audience.

It is well to remember that local sports should not be overlooked. These are important events in the military community and they should occupy a key position on the local radio or television program schedule. Play-by-play accounts of these local sporting events, either by tape recorder or direct lines, should be assigned to the sportscaster who genuinely appreciates and knows the sport he is covering for his audience. The sportscaster for these local airings should always be accurate, alert, steady under pressure, and enthusiastic. If he is covering the event for radio, he should be able to translate motion of play into colorful, graphic phrases, creating with ease a series of direct consecutive images for his unseeing audience. If he is calling action for the television camera, he should be an unobtrusive line of continuity, highlighting turning points in the action, assisting the viewer with action he might have missed. He should not dominate and overpower the camera; he should play a secondary role and assist both the camera and the viewer.

The experienced sports announcer will prepare himself thoroughly for a sporting event. All the facts related to the event, the persons involved, their histories, their opinions, their idiosyncrasies, are learned by the announcer before he approaches the camera or microphone. He keeps this material readily available and passes it on to his audience for their more enjoyable and comprehensive understanding of the sporting event he is about to bring to them. Before attempting a play-by-play description of a sporting event, the inexperienced sportscaster should prepare himself by checking the four basic questions noted in the following sample:

1. Information concerning the event?
   a. What it is: Belmont Sweepstakes, etc.
   b. Who presents it: Belmont Race Track Association, etc.
   c. Why is it presented: National Championships, etc.
   d. When it is: Every spring, etc.
   e. Where it is: Belmont Park, etc.
   f. History: 76th Annual Running; who were winners in the past; interesting sidelights; how the event originated, etc.

2. Information concerning the contestants?

a. Who they are: Army, Navy, etc., football teams.

b. History: Sporting records this year - through the years, etc.

3. Information concerning individual contestants?

a. Who they are: Joe Zilch, 225-pound tackle from Dubuque, Iowa, #17 jersey - strong on offense.

b. Histories: Zilch is a junior, played for St. Mary's during freshman year, played high school ball in Texas, has blocked three kicks this season, lettered in track last season, etc.

c. Idiosyncrasies: Zilch is a fiery-tempered screwball, thrown off the field for fighting in last game, always stands up on line before the shift, to look at opposing team, etc.

d. Opinions: Coach says Zilch promises to "murder" them, etc.

4. Information concerning related sporting or social activities?

a. What it is: The Tournament of Roses, along with the Rose Bowl Game; half time program, etc.

b. Who is responsible: Personnel of Rose Bowl Committee, etc.

c. Who participates: Name of Rose Queen, etc.

The foregoing check-off list should not be the only tool at the sportscaster's disposal. It is a readily acceptable fact that proper research and preparation before the event will result in a more listenable or viewable feature. Preparation extending over several days, such as pre-game talks and discussions with coaches and players, is an additional device which will assist the sportscaster in being more articulate and informative at air time. Interviews with participants and coaches should also be considered as part of this preparation for game time. It will serve the purpose, also, of instilling audience interest in the forthcoming event, as well as effectively promoting good relations within the military community. Questions for these interviews should be so planned as to prevent undue rambling. Guests, at all times, should sound, or give the appearance of being, completely relaxed and questions should be what the fans would likely ask, rather than what the sportscaster personally thinks should be asked.

The tape recorder can be used with surprising versatility in play-by-play work, especially if the radio station has a local scheduling problem. A play-by-play broadcast may be aired in its entirety or edited to highlights in order to fit a prescribed time block. There are varying opinions on this editing procedure and what may prove acceptable in one area will be unacceptable in another. The audience should dictate decision on this matter. The same can be said of the actual scheduling of these play-by-play sports events. The audience and the local situation will indicate whether it is more desirable to schedule them during the mid-afternoon or evening hours. As a general rule, sports news is acceptable in early morning, noon, dinner, and late evening time blocks. In all instances, reactions should be analyzed carefully. The majority should decide and the radio or television Program Director should implement their desires to the best of his ability.

SPOT NEWS, FEATURES, SPECIAL EVENTS

There are three main types of broadcast news:

1. Spot News
2. Features
3. Special Events

Spot News and Features are obtained from news teletypes or gathered by the radio or television staff from local sources. These are edited and aired in scheduled news blocks. In the case of local news, alert station personnel will overcome studio limitations by putting to good use the tape recorder or camera. In the case of a teletype news item, with local significance or special interest to the area, it should be standard procedure, wherever feasible, to give the item depth by securing the local background as quickly as possible. Here again, the camera or tape recorder can be used to advantage. In the gathering of Spot News and Features, hometown newspapers, magazines and periodicals should not be overlooked. It must not be forgotten that a radio or television audience is made up of diversified likes, interests, education and previous environments. All these factors must be taken into consideration and must not be geared exclusively to personnel from large cities. Consistent with the needs of the area, items and features of rural interest should be included in order to present a well-rounded service to all listeners or viewers.

Special Events are features prepared outside of the radio or television studio. They will usually include activities of local interest to viewers or listeners, such as a native celebration, a religious ceremony, or a fashion show for servicemen's wives. Coverage of such events by the television station will have understandable limitations, for the simple reason remote equipment will not always be readily available, but feasibility of filming these events for later release, either in their entirety or as inserts, should be thoroughly explored. The audience will always benefit from such enterprising anticipation of their needs and desires. Covering such events by radio, even from remote points, by direct lines or tape recorder, will be relatively simple, but this coverage, too, should be anticipated well in advance, with particular attention on the technical aspects of the pick-up.

In planning a Special Event, the assigned announcer, as well as the technical personnel, should work out details as a team. Surveying the site of the event beforehand, contacting the proper authorities for necessary permissions, checking out equipment in a dress rehearsal, will pay off in dividends of professional-like quality. If interviews are involved, the Special Events announcer should contact the people to be interviewed and ascertain areas to be covered by the questions. He must also remember that the justification for an interview is primarily a story, not just casual unrehearsed sound.

The Special Events announcer is probably the most important cog in the Special Events project. Upon his shoulders rests the quality of the end product and he alone can give it professional dimensions. The following baker's dozen of suggestions should help the Special Events announcer attain a high degree of professional quality in his work:

1. Orient yourself and your audience to the location of the event.
2. Be aware of what happens around you.
3. Relate each sentence to the one which precedes it.
4. Speak in simple sentences.
5. Develop an exact, imaginative vocabulary.
6. Be familiar with the professional terminology of the event to which you are assigned.

7. Be accurate.

8. Avoid cliches and speed mannerisms.

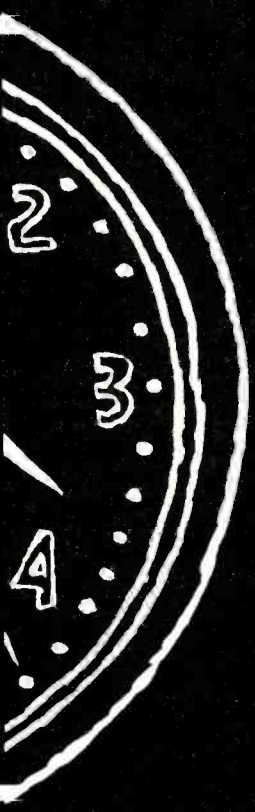
9. Avoid profanity and vulgarity in everyday conversations.

10. Prepare thoroughly before an assignment.

11. Listen to recordings of your ad lib work and check it for clarity, vividness, interest, variety, and accuracy.

12. When possible, compare your recordings with the work of professionals in the field.

13. Practice, by describing aloud everything you see.



THE TOOLS OF RADIO

CHAPTER X

THE TOOLS OF RADIO

Radio is not a medium of huge technical complexity. Radio is a comparatively uncomplicated medium and the working team involved in an average radio production is not as large as that called for in creating the visual image for television.

The working team involved in an average radio production falls into easily understood divisions. In the studio are one or more performers who may include actors, sound effects men, musicians, announcers, speakers. In the control room there is an engineer who coordinates their work technically. Supervising all of them, is the director.

This comparative simplicity should not mislead as to the potential of the medium. Simple does not mean easy. Neither does it mean small in potential effect.

What happens in the studio is simple, but that is not the program in its final form. The final program takes place in the mind of the listener.

THEATER OF THE MIND

The listener's mind plays an active part in every radio program. He enjoys or is impressed by what he hears in proportion to the mental activity it arouses in him. His enjoyment is measured by the imagining, thinking and feeling a radio program makes him do.

To the listener's mind, you broadcast certain words with, perhaps, sounds and music. They mean nothing unless he shapes them into pictures, events, ideas. These are the program.

Morton Wishengrad, prominent radio writer and producer, once opened an "Eternal Light" program with the sound of wind, then some words, music, and footsteps. The footsteps were made in the studio by manipulating a box of cornstarch in rhythm, giving somewhat the effect of footsteps in snow. But, because the words were right, and the music was right, the picture produced in the listener's mind was something of far greater meaning.

Here is the script opening:

SOUND: **OF WIND**

NARRATOR: In the beginning there was this sound of the wind. Nothing but this sound and the running of the primeval seas and the rustling of leaves in the primeval forests. It was the early morning of the American continent.

MUSIC: **ESTABLISH NARRATIVE THEME AND DOWN**

NARRATOR: In this early morning there was a thin western arm of land which bound Siberia to Alaska where now there are the shallows of the Bering Sea. There was also an eastern arm of land which bridged the North Atlantic. . . . . pushing up from France, through Britain, north to Iceland and Greenland, and across to Canada. And perhaps in the unfolding of the world, primitive man walked dry-shod from Siberia in the west and dry-shod from France in the east to what is now the continent of America.

MUSIC: **OUT**

SOUND: **OF FOOTSTEPS CRUNCHING THROUGH SNOW**

NARRATOR: Do you hear this sound. . . . . this is the first man on American soil . . . . . an Indian.

Compare what was happening in the studio to what was happening in the theater of the mind.

In the studio: One actor at a microphone, a group of musicians playing to another microphone and, at a third, a sound effects man playing a wind record and kneading a box of cornstarch.

In the listener's mind: A primeval world, shaped by the listener himself, out of things read, seen, heard and imagined. The radio program was whatever the words and sounds and music were able to awaken in him.

The radio director, performer, and engineer must always consider, not what they are sending into the ether, but what the listener is likely to make out of it. Radio depends strongly on the imagination of the listener, and, therefore, requires great imagination from performer and director.

Radio is a medium with a unique responsibility, because of its wide potential audience and the power over men's minds. It is a medium which has absorbed features of almost all forms of human communications and has developed from these, forms of its own, all of which give it extraordinary flexibility, whether for purposes of entertainment, information or persuasion.

THE RADIO MICROPHONE

At the center of a broadcast is the microphone. A broadcast may use one or more microphones. It will be found, in general, that fewer microphones will increase the chances of a "clean" pickup. But, on a complex program — with orchestra, cast and sound effects, a number of microphones may be required, and used successfully.

There are several types of microphones, and this may confuse the uninitiated. It is not necessary for the radio performer to have at his command a thorough knowledge of the technical workings of microphones. He should understand, however, how the various types vary in a few essential respects.

1. **The Beam**

A microphone should be compared to a searchlight casting a beam. This idea is so convenient that it has become embedded in radio terminology. Even engineers talk about the microphone beam, though it may not be a technically correct term.

If an actor or singer is standing outside the clearest pickup area of the microphone, he may be told by the director that he is **off beam,** or, sometimes, **off mike.**

2. **Types of Microphones**

Microphones vary in the number and shape of their beams.

Some have just one beam and are said to be uni-directional (one-directional).

Some have two beams, and are said to be bi-directional (two-directional).

Still others cast a beam in all directions, more like an ordinary electric light bulb than a searchlight. These are called omni-directional (non-directional).

There are also microphones which are adjustable and can, with a turn of the screw driver, be given any of the above characteristics.

These are the most important variations for the performer to understand. It is not absolutely essential for him to know whether a microphone is a velocity, a dynamic, or a cardioid. If a studio has strange-looking microphones, he should ask the engineer whether they are one-directional, two-directional or non-directional.

a. The Uni-Directional Microphone: The value of this microphone can best be explained by examples. When a singer, singing with an orchestra, uses a one-directional microphone, its insensitive or "dead" side can be turned toward the orchestra, so that the orchestra will not drown out the singer. Similarly, when a speaker is addressing a crowd, use of a one-directional microphone can help keep the coughing and rustling of the crowd relatively less prominent, since they will be in the dead area of the microphone.

Uni-directional microphones are occasionally used for dramas but are less practical for this purpose. If two or more actors are working together at a one-directional microphone, it means discomfort. Most present day uni-directional microphones can be swiveled and pointed upright. It then becomes an omni-directional microphone.

b. The Bi-Directional Microphone: This type of microphone is usually preferred for drama or interview.

When two or more performers work together at a two-directional microphone, they not only feel less crowded but have the advantage of playing to each other. This gives a feeling of natural, human interrelationship.

Another reason for preferring the two-directional microphone for drama is because the actor will often be called upon to "fade" — give the illusion of leaving the scene of action — by moving from the beam into the "dead" area. It is, therefore, convenient to have this area near at hand, as in the two-directional microphone.

c. The Omni-Directional Microphone: This is the microphone which enables the radio performer to talk from any direction. The non-directional microphone is particularly valuable for round-table discussions, or groupings of voices which will not be called upon by the director to fade from the scene.

3. **Further Microphone Classifications**

Microphones are also classified according to the physical use for which they are designed:

a. Standing Microphones: For acting casts, singers, announcers and, sometimes, for speakers.

b. Hanging Microphones: Convenient for orchestras and for picking up audience applause.

c. Desk Microphones: Chiefly for speakers and commentators.

d. Gooseneck Microphones: Useful for such special problems as the singing pianist.

e. Boom Microphones: For choral groups, orchestras; sometimes used for picking up crowd voices from a large acting cast.

f. Portable Microphones: For broadcasts outside the studio.

g. Lavaliere Microphones: Suspended closely around performer's neck. Excellent for a performer moving around from place to place.

POSITION AT THE MICROPHONE

The position of any person, sound effect, or musical instrument at the microphone is determined by various factors, including the characteristics of the sound, the characteristics of the microphone, and the characteristics of the studio. Generally, the most important consideration is: How loud is the voice or sound?

A very loud voice or sound must usually be placed further from the microphone than a soft voice or sound.

This principle, however, can only be carried out within limits. There often are other considerations, such as: Should the sound or voice seem to be near or far away? The various sounds heard must have a sensible relationship to each other.

And there are further complications. If a soft voice or sound is brought very near, it may be distorted. The type of microphone most used for radio drama (two-directional, velocity microphone) overemphasizes the low tones of any sound produced within a few inches of it. This makes voices sound unnatural, chesty, and must usually be avoided.

But, oddly enough, this distortion may sometimes be valuable, and is, in fact, indispensable to the sound effects man.

Low tones, in the listener's imagination, suggests size. When a sound is made very close to the microphone, it will be thought to come from an object larger than is actually the case. Thus, the crushing of a berry box very close to the microphone will serve for the splintering of a door, when it is smashed in by the police, or even for the collapse of a burning barn.

The sound effects man constantly uses the microphone's possibilities of distortion to play on the listener's imagination, and, when the source of a sound is actually in contact with the microphone, the distortion is even more dramatic. Such distortion should be avoided because of the danger of injuring equipment, but it can occasionally be utilized for unusual effects. Poe's "Tell-Tale Heart," for example, has been produced by holding a microphone against a person's chest.

For normal radio pickups, where no distortion is wanted, it will be seen how important it is to stay a proper distance from the microphone, and not to touch it. Unfortunately, the public has firmly in mind the image of the average singer passionately clutching the microphone as he sings. With the type of microphone used in most public address systems (crystal microphone), as in night clubs, there is no harm in clutching or caressing the microphone. But the more sensitive microphones used for most broadcasting purposes amplify contact sounds into disturbing noises. Kicking the microphone can sound like an old country fire gong.

ACTION AT THE MICROPHONE

Once the performer has his correct microphone position, the physical setup should be thought of as follows: The performer may be a foot or a few feet from the microphone; the listener is probably a few feet from his loud speaker. These combined distances may be considered the distance between performer and listener. The miles or hundreds of miles, or thousands of miles between microphone and loudspeaker are really without meaning.

This emphasizes that radio is intimate, that there are no second balcony customers to be played to, that all seats are front row orchestra seats. There is no need, in other words, to throw or project the voice to the rear of a hall.

Whenever a speaker or actor at the microphone is addressing the listener, this is the main fact to be kept in mind. It means that some habits of theater or lecture hall must be set aside. The radio artist must adjust himself to a new, intimate performer-listener relationship. And this may take imagination, because all he may see in front of him is a microphone, resembling a large cheese grater.

There is a further reason why projection should be avoided. It is likely to involve excessive and erratic volumes, which are a serious problem to radio. This problem arises not so much from the nature of the microphone as from the control room equipment.

THE CONTROL BOARD

The engineer, sitting in the control room, has in front of him the control board, or control panel. This may seem complex at first glance, but its main principles are readily understood.

Near the bottom, convenient to the engineer's hands, is a series of knobs. Each knob can control the volume of a microphone. If on a program three microphones are being used, three of the knobs will be in use.

1. Faders

Each knob is called a fader, because by turning it the engineer can fade whatever is coming over the respective microphones. In fact, he can fade it down or up because, oddly enough, the word "fade" has come to be used for either a decrease or an increase in volume. A sound can be faded in, up, down, or out.

Generally, the faders that are in use are connected to microphones in the immediate studio, but, occasionally, a program involves a remote pickup, such as a talk from another city or a man-in-the-street interview from a local corner. Then one of the faders can be connected with the incoming material and can control its volume.

Occasionally, for special purposes, a fader may be connected with a microphone in another studio. Generally, in a radio station, other faders are connected with record playing equipment in the control room and can control the volume of the recordings.

2. Master Fader

In addition to the individual faders — one for each microphone in action — there is generally a master fader. This increases or decreases the overall volume of all the microphones.

3. Volume Indicator

Above the faders, squarely in front of the engineer, is a small gadget in which a needle jumps back and forth, across a dial. This is the volume indicator, and it shows the over-all volume of whatever speech, sound and music are being sent out. Some understanding of this gadget is important to everyone associated with a radio production.

The needle of the volume indicator, or "V.I.," as it is familiarly referred to, jumps hectically back and forth, measuring the always varying program volume. Even between the syllables of a word it sags back toward its starting place before jumping again for the new syllable. Every sound note or syllable gives the needle its own jolt. The engineer watches it constantly.

IMPORTANCE AND PRACTICAL APPLICATION

The volume indicator is probably the most important single piece of equipment in a radio station. It is equally important to director and engineer.

The primary function of the engineer is to control the jumps of the needle — that is, see to it that the jumps go high enough, but not too high.

If the jumps of the needle do not go high enough, the listener at home will not be able to hear the words at a comfortable volume.

If the needle goes too high, station equipment may be damaged. In earlier days, a station tube would blow out, and the station might be temporarily off the air. Today, there are devices which automatically reduce dangerous volume, but a distortion of sound sometimes results. A momentary jump over the permissible volume may do no harm, but the needle must not stay more than a brief instant above the warning line. Within the permissible volume range, the engineer tries to keep the jumps of the needle as high as possible, for maximum audibility.

If a speaker is beginning to raise his voice, making excessively high peaks, the engineer must turn the fader of his microphone down slightly. If the speaker talks too softly, the engineer edges up the volume.

Note that the engineer's job of controlling the program volume adds up to this: Everything that is to be heard clearly must be sent out within a certain volume range. Whether the actor or announcer is shouting or whispering, the needle should kick within the proper range. The sounds will then be of fairly equal loudness on the home radio. This does not mean that shouts and whispers will sound alike. They will vary in quality. But they will go into the air with a somewhat similar transmission volume. The listener must not feel the need of tuning his radio up or down during a broadcast.

How does this affect a performer's work? Why does he need to be interested in the volume indicator?

Let us suppose that during a rehearsal of the famous Macbeth speech — "Life is but a walking shadow . . . . . it is a tale told by an idiot, full of sound and fury, signifying nothing —" the actor, at first, leans heavily, with great increase in volume, on the words "sound" and "fury." The needle, as a result, gives great lunges, or peaks, on these words, and the peaks jump too far into the danger zone:

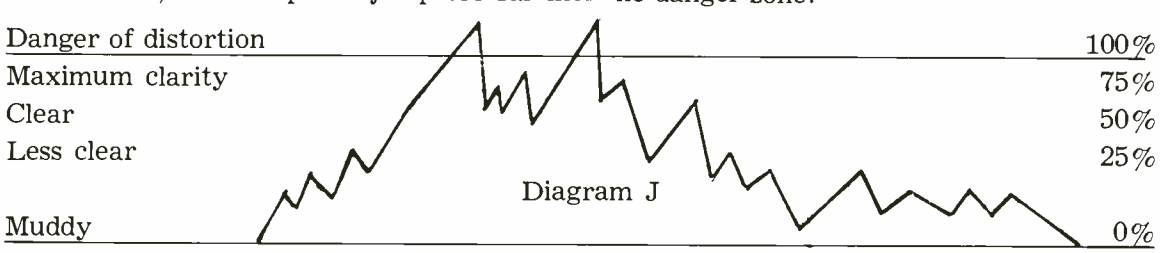


Diagram J

Full of sound and fu-ry, sig-ni-fy-ing no-thing

The engineer, nervous about the peaks, lowers the general volume of the actor's microphone on the next reading, in order to accommodate the peaks. The result is:

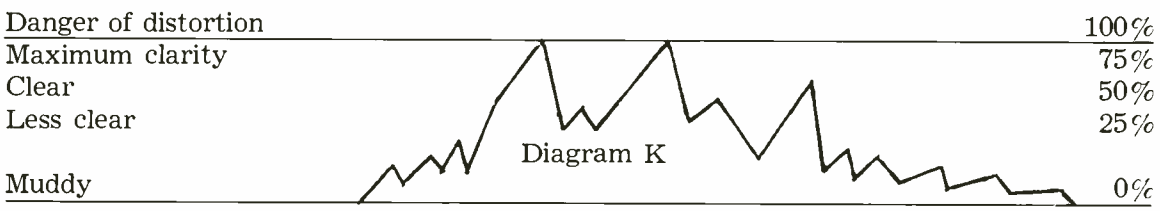


Diagram K

Full of sound and fu-ry, sig-ni-fy-ing no-thing

Notice that to keep the peaks within bounds, the engineer has really brought most of the actor's words to too low a volume. Compared to the rest of the play, much of what the chief performer is saying will now sound submerged to the listener. The word "nothing," for example, is far down in the "mud."

The director explains this problem to the actor, and at a subsequent rehearsal the actor uses less increase in volume to create his emphasis on the words "sound" and "fury." Thus the engineer can increase the actor's general volume, so that the needle jumps as follows:

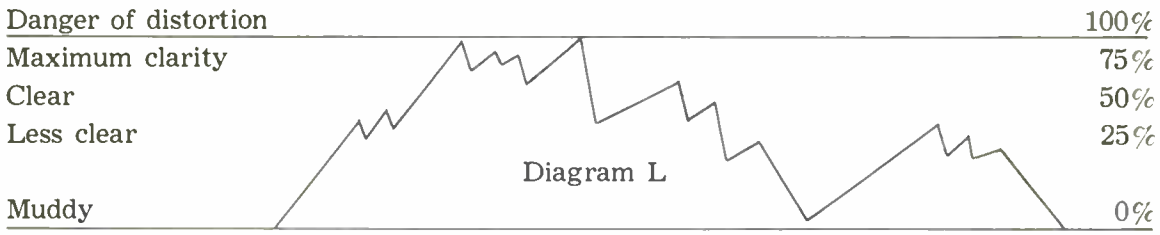


Diagram L

Full of sound and fu-ry, sig-ni-fy-ing no-thing

The peaks are now no longer disproportionately high, but the actor's average volume is higher. In the following rehearsals he may feel he is giving less, talking less loudly. But, paradoxically, the audience will be able to hear him more easily and clearly for that reason.

The lesson to be learned is simply this: The engineer can give the most favorable volume treatment, the most volume prominence, to an actor or speaker who keeps his peaks under control. An actor or orator whose volume is erratic, whose peaks are troublesome, must be kept at a low, submerged volume.

It is especially important that singers understand this matter of peaks, for songs often require rather sudden increases in volume. Such increases must sometimes be compensated for by a slight change in position, or in the direction of the singing. Also, the engineer must be ready in advance for each peak and know about how high it will be, so that he can adjust his knob in time for any further necessary compensation. All this requires precise coordination between engineer and performer.

It should be apparent in this brief analysis that an understanding of the volume indicator will show the performer — whether actor, announcer, singer, sound effects man, or musician — the danger of erratic changes of volume. It should also show that such changes, when essential, must be planned in coordination with the engineer.

BALANCE OF VARIOUS ELEMENTS

The control equipment enables the engineer not only to control over-all volume, but also to adjust the relative levels (volumes) of various program elements, if performed at separate microphones.

If an orchestra is picked up at one microphone, a singer at another, the engineer can alter their relative prominence. Similarly in drama, if dialog is performed at one microphone and a crowd background at another, he can vary the relationship between them by adjusting the faders.

This mixing of the different elements is the second principal function of the control equipment. Because of its importance, the term "mixing panel" is sometimes applied to the control panel.

It must be remembered that the engineer's control over relative volume is not complete, only partial. It sometimes happens that, in trying to turn down a sound effects background which is obliterating dialog, the engineer turns the sound effects microphone out entirely — and the background is still too heavy. It is picking up too loudly even on the microphone used by the actors. This occasional problem and the special equipment that can solve it will be outlined in the section on the function of screens and the isolation booth.

Most problems of relative volume require no equipment, other than the engineer's control panel. This assumes that the engineer must, of course, be helped by those in the studio, where microphone positions and performance volumes must always take the matter of relative levels into account. The engineer can usually make any further adjustments needed.

He is guided in these adjustments entirely by ear. There is, in the control room, no visual indication of the volume being sent out over each individual microphone. The engineer therefore relies, in making his adjustments, on what he and the director hear over the control room loud speaker. Occasionally, especially in a remote broadcast, they may listen on earphones. The control room loudspeaker and earphones, therefore, play a crucial role in the production process.

LOUD SPEAKER AND EARPHONES

The control room loud-speaker is an important guide to both engineer and director. During a broadcast it plays what is going on the air. During rehearsal, what is heard over the loud-speaker, is the basis for corrections in relative levels and for the director's suggestions to the performers.

It is important that the loud-speaker be of highest excellence. If it is unbalanced in quality, overemphasizing high or low tones, the director may make serious mistakes. During an orchestra rehearsal a faulty loud-speaker, with inadequate base tones, may cause the director to ask the orchestra conductor to move his base instruments closer to the microphone. This move may improve the effect on the control room loud-speaker but result in a disasterously bassy broadcast.

On the other hand, the high quality of good control room loud-speaker can also be a trap. It will enable the director and engineer to hear many subtleties and overtones, and they may wrongly assume that these are equally audible to the home listener. The wise engineer and director will occasionally turn the control room loud-speaker down to a decidedly low volume, to see how the balance of elements will sound under less favorable listening conditions. The control room loud-speaker can be turned up or down in volume without affecting the volume of what is being broadcast.

At remote pickups there may be no control room available, and the engineer's control equipment may, therefore, be in the same room or hall as the performers. The engineer will then wear earphones to check the program balance, and the director may do likewise.

During a studio program, an orchestra leader or sound effects man will occasionally wear earphones, connected with the control room, to hear what is being broadcast. This is not so much a check on balance as to hear cues. Sometimes, so much noise is being made by music or sound effects that the conductor or sound effects man cannot hear words spoken at the dialog microphone, and, therefore, cannot be ready for the following cue. Earphones will solve the problem.

Occasionally, a director will prefer to work in the studio, giving direction and signals from there instead of from the control room. If so, he will wear earphones to get the total effect.

Directors usually work chiefly from the control room and base their directions to the performers on what they hear over the all-important control room loud-speaker.

During rehearsal they convey most of their suggestions to the performers in the studio via another tool of radio — the talk-back.

TALK-BACK

The talk-back, or talk-back system, consists of a microphone in the control room connected with a loud-speaker in the studio. The loud-speaker is generally directly over the control room window.

In order to speak to the performers the director merely presses a button located, sometimes, on the control panel. This button turns on the talk-back.

It also automatically shuts off all studio microphones. The system is usually so arranged that communication can only be in one direction at a time. Performers need to understand this. While the director is making suggestions from the control room, over the talk-back, it is useless to interrupt with questions and protestations; the director cannot hear. He will hear no word from the performers until he once more releases the talk-back button. When he does so, the performer will hear a click on the studio loudspeaker; this tells them they can once more communicate with him.

The talk-back microphone and loudspeaker need not be of broadcast quality, but must be clear. It is also important that the talk-back loud-speaker in the studio be set at a proper volume. If the volume is too low, the director will not be heard when he interrupts a scene to make comments.

SCREENS AND ISOLATION BOOTH

A radio production will often include speech, sound effects and music. In addition, these several elements will be broadcast at the same time. In such instances it will be important that proper relative levels are maintained.

A certain set of elements, properly balanced, may, in the listener's mind, become a beautiful picture. The same set of elements, badly balanced, may be chaos and an invitation to the listener to tune out.

It will be discovered that proper balance can usually be maintained by: (1) Adjusting positions in the studio; (2) tempering the loudness of speech, sound effects, or music in the studio; (3) Adjustment of volume controls by the engineer. But sometimes these methods are not enough.

In Orson Welles' production of Sherwood Anderson's story "I Was a Fool," one heard a boy-girl conversation in the grandstand at a race track. The talk had a note of intimacy, but the background was bedlam: Hawkers selling food, brass band playing, the crowd in an uproar. In such a scene, it is useless to ask an actor playing a hawker to sell his wares softly, or the brass band to play at an undisturbing volume. The whole quality of the scene would be lost if the background were performed sotte voce. The earsplitting spirit is needed.

How can one control the relative levels of the intimate boy-girl dialog and this crowd background? Is it not inevitable that the bedlam will be picked up so loudly on the dialog microphone that it will drown out the talk?

The first device used toward solving such problems was the sound-absorbing screen, for some reason called a "gobo." Gobos began to be used in the earliest days of radio. A performer or group of performers who had to be shielded from a heavy background or orchestra accompaniment could be surrounded, along with their microphone, by several gobos.

An important additional solution was developed later, in which the arrangement of screens gradually grew into a portable booth on wheels, called an "isolation booth." Today, a large network center usually has several such booths, each three or four times the size of a telephone booth — large enough for two or three actors and a microphone. The booth has windows, so that those inside can see cues from the director. Such a booth can be wheeled into any studio where it is needed for a special effect.

The isolation booth, therefore, becomes a studio within a studio. Here is a way to isolate the boy and girl in the grandstand from the earsplitting band and the hawkers. The engineer can have complete control over the relative levels.

At many stations, closets or small storage rooms adjoining a studio are used in the same way.

Another solution is to use two regular studios — one for dialog, another for the noisy background — both connected with the control room.

ECHO CHAMBER

The echo chamber is a valuable tool for producing arresting effects and providing unusual acoustical changes.

This chamber may or may not be in or near the studio itself; it may be on a different floor of the radio station.

The echo chamber may be a small room like a labyrinth:

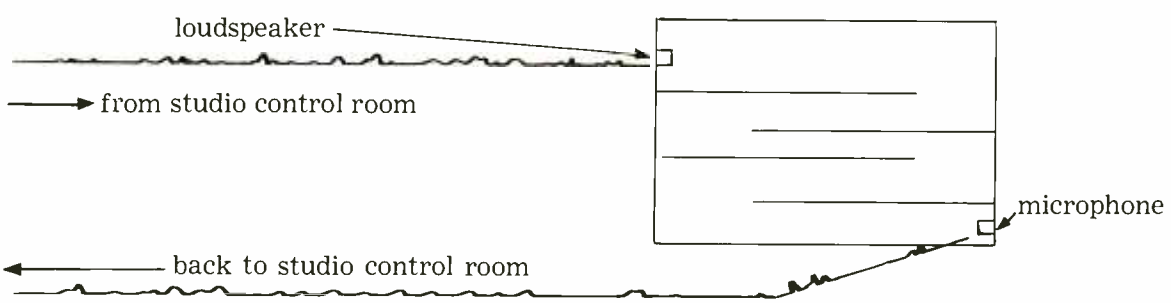


Diagram M

Most present day echo chambers are constructed so that no two wall surfaces are parallel and one end is considerably larger than the other.

In the studio, the passage that is to have an echo effect is being picked up on a normal microphone, in a normal way. Actors involved in such a passage do not hear anything different. But the engineer sends the speech, sounds or music by wire to the echo chamber. There, they are played from a loudspeaker at one end of the labyrinth. After traveling, perhaps a hundred feet — depending on the desired time lag — they are picked up by a microphone near the end of the labyrinth, and then returned by wire to the studio. There, the speech, sounds or music, having been on what is mainly a time-consuming trip, are combined with the original pickup and the combination is broadcast.

In other words, everything is heard twice: Each syllable as originally spoken, plus the same syllable after a short journey. The lag between the two is so short that the double effect is not heard, as from a distant canyon wall, but it closely resembles the effect heard in a cave, in which each sound comes bouncing back almost the moment it is spoken, so that the sound is heard from everywhere at the same time.

The effect produced by the echo chamber is actually cleaner than the effect in a cave. In a cave, echoes come from many surfaces at many different distances, each of which keeps bouncing back every sound, so that a chaotic effect is the result. The echo chamber gives a single, controlled time lag, easily accepted by the ear as the sort of thing heard in a cave, tunnel, or large hold, but more listenable.

The echo chamber is finding increasing popularity and use in music pickup. Slight echo in modern orchestrations and choral arrangements for radio is finding widespread acceptance because the resulting reverberation effect gives the listener the illusion and depth of a stage in a theatre.

FILTER

The filter is a device used to give the effect of something heard over a telephone, radio, or other communication system. It may also be used for an inner voice, a ghost, an invisible man or other supernatural effects.

It is generally a boxed instrument, smaller than a portable radio. It is usually placed in the control room, sometimes in the studio. In most modern studios, filters are built into the control room equipment.

The filter, when in use, is connected with one of the microphones, so that everything spoken over that microphone passes through the filter before it is broadcast. The filter is a kind of tone sieve which strains out parts of the voice. The degree to which tones are removed or filtered out can be controlled. High frequencies or low frequencies, or both, can be filtered, making a variety of effects.

SUMMARY

The Armed Forces Radio broadcaster should know that a radio program consists of speech, sounds, and music, broadcast either live or recorded. In addition to this basic and essential knowledge, he should be concerned with the over-all volume of these elements and also their relative volumes. He may broadcast these elements with the purest possible room quality; he may purposefully preserve a reverberant quality, or induce it by artificial means; he may even deliberately distort voices, sounds and tones.

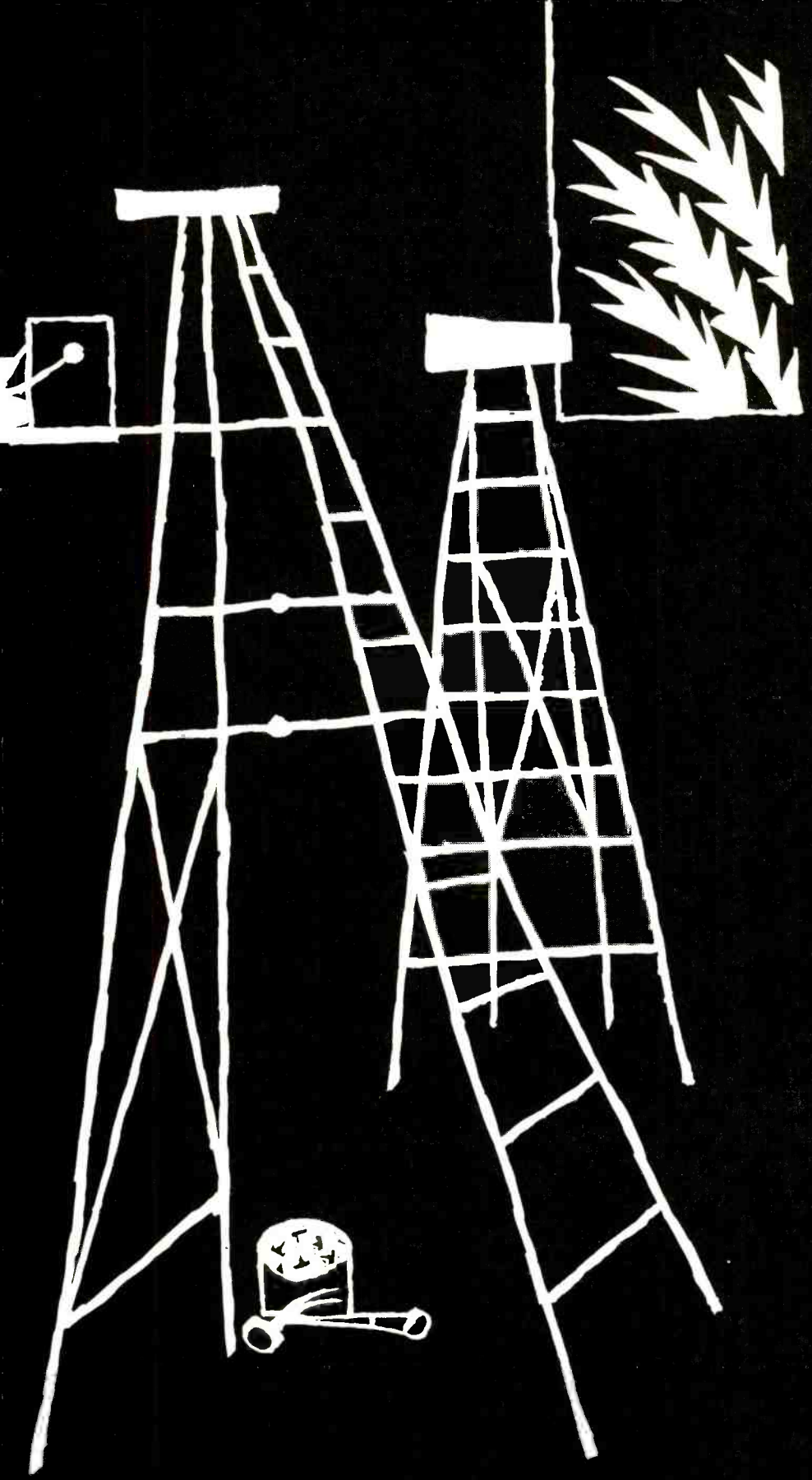
The Armed Forces Radio broadcaster should always remember that many of the items of equipment that accomplish these effects were developed for just one reason: They stimulate the listener's mind into creative activity.

Radio does not send out a filtered voice because such a voice sounds like a ghost. It uses such a voice because it knows that, given a strange distortion and the right kind of suggestion from the words and, perhaps, from the music, the listener can quickly be stimulated into imagining a ghost.

The tools of radio are but instruments by which the Armed Forces Radio broadcaster can invade the mind of a listener and enlist his partnership in creating, through thought, imagination and feeling, the experience of a radio broadcast. One inadvertent slip or indiscretion during air time will destroy this empathy between listener and broadcaster.

The Armed Forces broadcaster, radio or television, must constantly guard against on-the-air activities which will distort his public image. Horseplay, meaningless conversation, insulting remarks in the guise of humor, deliberate camera movements to catch performers off guard — these have no place in the posture of an Armed Forces Radio or Television Station.

The tools of radio and television are expensive and delicate command support instruments. Properly used, they will reflect credit on the military broadcaster, the local command, and the Service which authorized their installation. Improperly used, these selfsame tools can jeopardize the career of an Armed Forces Radio or Television Station. Remember — they are more than tools — they are a trust.



THE TOOLS OF TELEVISION

CHAPTER XI

THE TOOLS OF TELEVISION

Intricate tools are necessary for creating the visual image for television. Use of these tools calls for complete and thorough understanding by station personnel. This chapter will deal briefly with these tools, their use and functions.

THE TELEVISION CAMERA

This is the most important single tool in television. Many effects can be created with the television camera, but knowledge of its basic component parts is essential for proper use and understanding of this flexible instrument. These basic component parts are:

Camera Proper — This includes the tube, lenses and associated circuits;

View Finder — Located at the rear of the camera, electronically controlled;

Camera Mount — This is the tripod or pedestal, mounted on casters, with a suitable pan head.

1. Camera Proper

Three lenses, mounted on a turret, are located on the front of the camera, which enables the cameraman to rotate any of the three lenses into operating position. Also, on the front of the camera is the tally light — a red pilot light that indicates to all personnel on the set which camera is picking up the scene. On the right side of the camera is found the focus knob used by the cameraman to bring the picture into sharp focus. Usually, it will be necessary to change the focus each time a lens is switched.

With each camera there is a control unit, normally located in the control room, with a monitor screen showing the picture on the camera.

2. View Finder

The electronic view finder is situated on the back of the camera and usually carries a hood to block out incidental light. Below this will be found the handle for rotating the lens turret and a tally light which serves to inform the cameraman when the picture is being taken from his camera by the director.

3. Camera Mount

This includes the pan head, a device on which the entire camera is mounted and by which the camera can be moved on its mounting. The most popular type of pan head is a friction head which uses the friction between two surfaces to slow down and smooth out the movement of the camera. This friction head has two tension controls: One to adjust tension or friction on the panning movement, that is, from side to side; the other, to adjust tension on the tilting movement, that is, up and down.

The long handle attached to the pan head is used to pan or tilt the camera and the mounting beneath the pan head is the tripod to which is attached a movable dolly.

THE TELEVISION CAMERA LENS

Familiarity with the characteristics of television camera lenses is important to television personnel. Television lenses have certain characteristics and personnel should un-

THE TELEVISION CAMERA

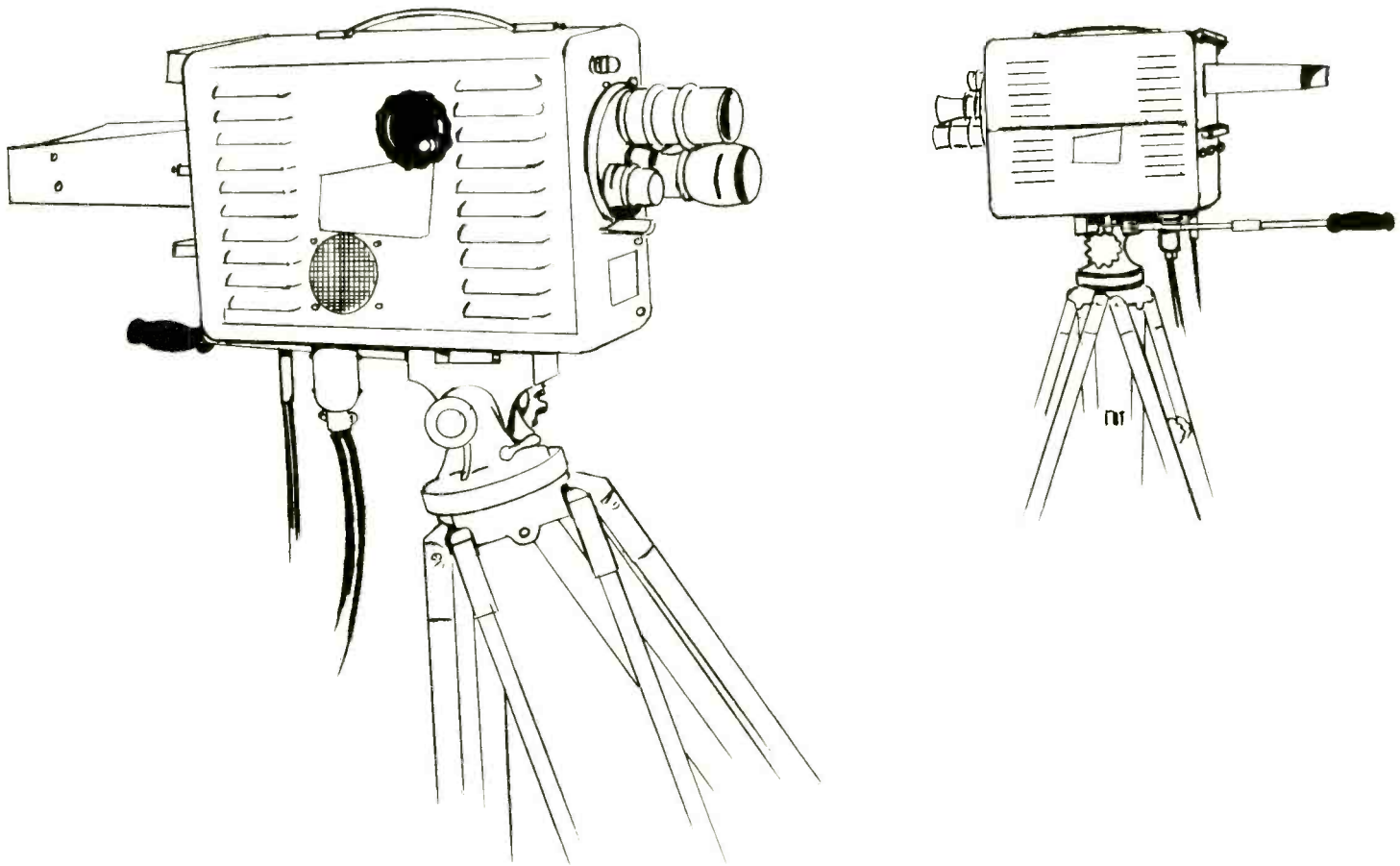


Diagram N

derstand these, as well as conditions under which certain lenses will operate, before selection is made for a particular shot.

Basic characteristics of television camera lenses are:

Focal length
Magnification
Depth of field

1. The focal length of a lens determines its field of view:
   a. Change lenses by rotating the lens turret, or
   b. Move camera in or away from the subject.

2. Magnification is a characteristic which is determined by the distance between the lens and the subject. Choosing the proper lens will materially affect the illusion of depth and perspective. For example, a wide-angle lens, such as a 1/2-inch or 1-inch, close to a person, will make his hands appear large and out of proportion to the rest of the picture when he gestures toward the camera. On the other hand, a telephoto lens, such as a 3-inch, will make objects in the background appear larger than they really are.

3. A third characteristic of television lenses is their depth of field. This is determined by the amount of light passing through the camera lens and is controlled, either by varying the distance between the lens and the subject, or by adjusting the lens opening. For this purpose, each lens has two different adjustments:

a. The f stop adjustment: This is usually a small, rotary ring around the barrel of the lens and connected to an iris diaphragm made of many small overlapping leaves. Moving the ring will increase or decrease the size of the opening in this diaphragm — the larger the opening, the smaller the f stop number, resulting in more light being transmitted through the lens; the smaller the opening, the higher the f stop number, resulting in less light passing through the lens. It is necessary to have the iris set so that sufficient light will be transmitted in order to give a good picture to the camera tube. With normal lighting levels for vidicon studio operation, an adjustment between f/2.5 and f/4 is usually satisfactory. If light is below normal, a larger opening will be required.

b. The optical focus adjustment: This is usually set on infinity for television camera operation and usually is not changed during a program. In cases where it is necessary to adjust the optical focus for a particular shot, the lens optical focus will then remain constant and focusing will be accomplished by moving the camera tube back and forward by means of the focusing knob on the side of the camera.

CHARACTERISTICS OF THE VIDICON CAMERA TUBE

There are several advantages in using this type of camera, not the least of which is its small size and light weight, as well as its lower initial and operating costs. These factors make it particularly suitable for portable or field installation at Armed Forces Television Stations.

While there are advantages in using the vidicon camera, there are also disadvantages. The vidicon picture appears somewhat flat and the light values must be higher than for other types of cameras. Normal studio lighting conditions will call for approximately two-hundred foot candles of light and a lens opening of f/5.6.

The spectral response of the vidicon camera tube is similar to that of the human eye and this response extends, somewhat, into the ultra violet and infra-red regions, but

with normal lighting this extended spectral response can be disregarded. The vidicon camera in a high-quality circuit is capable of producing all ten shades of the television gray scale. A somewhat wider range of contrast can be picked up and more than five-hundred lines of resolution is possible.

Another feature of the vidicon camera is its ease of operation. It will operate virtually unattended over a wide range of conditions. Where adequate and considerable amounts of light are available, such as from a projector, studio, or remote pick-up, it performs in a more than satisfactory manner.

The vidicon camera's low cost, small size, light weight, and freedom from "burn-in," make it a flexible instrument for field operations.

THE TELEVISION CAMERA CONTROLS

The camera controls and associated equipment will be located in the television control room. Each camera will have its separate control unit containing a monitor screen. Using a selector switch, this screen is used to observe the picture, its horizontal or vertical wave form, as it comes from the camera. The control unit also contains the controls and circuits necessary to maintain the picture quality while the camera is in use. In addition to the camera controls, there is a synchronizing generator which produces the pulse for locking the camera and receiver together.

By means of the video switcher, also located in the television control room, it is possible to switch the output of video sources into the program line. This is done with a series of push buttons which instantaneously cut from one signal to another or a dissolve unit. This dissolve unit permits fading in and fading out from one video source to another, or superimposing one picture on top of another image.

There are many other pieces of equipment which should be added to the television control room. These include a master monitor, an audio mixing panel, turntables, tape recorders and monitor speakers.

VISUALS FOR TELEVISION

The simplest and most common visual used in television is the title card. Many devices can be used for injecting the title card into a program, but the most reliable is also the simplest. These devices can be classified into the following two categories:

1. Devices which project an image directly into the television system, such as a slide, telop or motion picture projector.

2. Devices which project an image indirectly into the television, that is, by means of a studio camera.

No matter how visuals are introduced into the television system, the following standard of size, contrast ratio, and composition must be observed:

1. **Size**

Television transmits a picture in an aspect ratio of three to four. This means that all television pictures are three units high and four units wide and anything picked up and televised should be prepared in this proportion.

a. **Studio Title Cards:** Standard sizes of poster board divided evenly into rectangles of 11 x 14 inches are excellent for preparing studio title cards. This size allows an ample one-inch border for fingerprints and smudges, leaving a 9 x 12 working area for both artist and cameraman. But, as a safety measure, it is wise to mark off an

DIMENSIONS FOR STUDIO TITLE CARDS

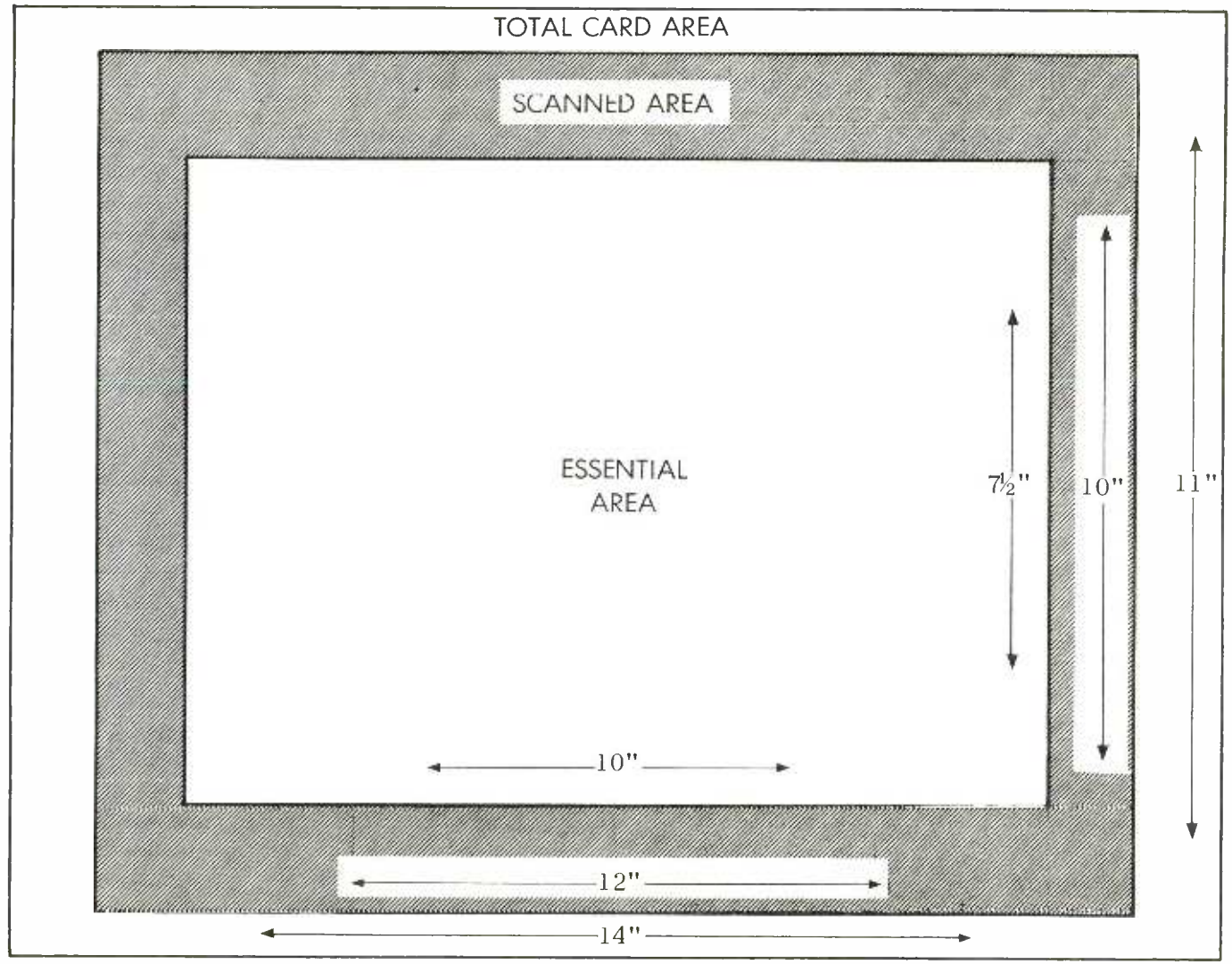


Diagram O

additional ten or fifteen percent inside this 9 x 12 inch area. This added precaution will reduce copy area to about 7-1/2 x 10 inches, but it will overcome overscanning, that is, loss at the edge of the picture, and will guarantee appearance of material in the essential area on a poorly adjusted receiver.

b. **Slides:** Copy for slides should be laid out so that the essential area will not be greater than 5/8 x 7/8 inches and it should be remembered that the total scanned area of the slide is 15/16 x 1-1/4 inches. Since slides are prepared by photographic process, the original material can actually be any size but the dimensions suggested for studio title cards will reduce to the proper slide dimensions, 2 x 2 inches, when photographed.

2. **Contrast Ratio**

Ordinarily, a ten-step scale of gray tones, varying within a twenty-to-one contrast range, can be used in the preparation of visuals for television. Step one, the lightest of the gray scales, is not pure white, but will appear pure white on the television screen. Step ten, in the same manner, is not jet black, but will appear black on the television screen. In theory, the television system is capable of reproducing all ten steps of the gray scale, but in practice this is difficult to accomplish. The ordinary receiver is not capable of differentiating between steps at the extreme light and dark ends of the gray scale.

It will be wise, therefore, for the artist to adopt a five-step range in the middle of the gray scale, including: an off-white, an off-black, and three in-between even steps of gray. By restricting his work to these five steps, the television artist will be assured that his work will transmit as he has drawn it. He should also remember, unless he is thoroughly experienced, to avoid using color in his visuals. Color lends contrast to the actual art work, but this contrast will be lost when seen through the television system. Finally, the television artist must separate his high contrast steps of the gray scale. It is not good practice to place areas appearing white and black adjacent to each other. These high contrast areas will bloom, streak or smear, since the television system cannot instantaneously react to wide changes in contrast levels. Jet black and pure white should never be used in the television visuals, except when preparing material for superimposure. In these instances, a white-lettered black card can be used when superimposing the lettering over a lighter scene. The off-white and off-black, however, will be better practice.

3. **Composition**

Certain standards of composition should be observed in the preparation of visuals for television:

a. Glossy inks or prints should never be used. A glossy black, while appearing black to the eye, may pick up a light reflection and transmit through the television system as a white, or near-white. The television camera is extremely sensitive to light reflections and a smooth, hard surface will reflect more light than a rough, dull surface. For this reason, matte, instead of glossy photographs, should be used.

b. The television visual must be simple in order to be understood from a distance. Simple line drawings will usually transmit better than detailed drawings or photographs of an actual object.

c. Tempera, or distemper paint, is the most effective for television scene painting. This is pigment mixed with a vehicle (such as yolk of eggs or glue) soluble

in water, as distinguished from oil painting. Models and properties executed in such materials will have a coarse, rough surface, excellent for transmission through the television system.

d. Lettering should be limited to about six lines, with a maximum of twenty-six characters to a line. There are many short cuts to television lettering, such as mechanical guides: the Le Roy lettering pen, the acetate templates, or the ready-made paper or plastic letters which the artist can lay out and cement to his art work. Some typewriters have over-size type, called bulletin type, which can be used for making small visuals. Almost any form of lettering device can produce a good television visual if proper contrast and layout are observed. A common fault with many television visuals is that the artist tries to include too much, thereby confusing the audience with the non-salient points of his message. This inclusion of too much information is referred to as a busy message. Extreme care must be exercised to insure that visuals are simple but, at the same time, tell a story.

STAGING FOR TELEVISION

In preparing studio backgrounds, the problems of contrast and layout are similar to those encountered in the preparation of studio visuals. For this reason, most commercial television stations combine the art and staging departments.

Before preparing the background for a program, it is necessary to know camera movement, whether the background will be seen in a close-up, and what type of action will take place in front of the background.

The background, as a general rule, should be darker than the foreground. A darker area tends to recede from the viewer, while a lighter area tends to stand out. This will give the appearance of greater separation between background and performer — always desirable for television transmission. If the background is not to be shown in a close-up, the lines and designs can be coarse, but if one area is to be seen close up, then more detail should be added to this particular area.

Lighting is also important in planning the television setting. The tone of the background can be adjusted by varying color, texture of material or intensity of light. All three of these characteristics will influence the reflective value of the back-drop, but in no case should the contrast range exceed the limits of the television system. Under normal lighting conditions, flesh tones will usually reproduce in the neighborhood of the third step of the ten-step gray scale, or the lightest gray in the five-step gray scale. Highly reflective objects should never be included on stage as a property, or as a part of a costume. If it is necessary to use a highly reflectant surface, it should be dulled with a special dulling spray. If a dulling spray is not readily available, soap can be used as a substitute, or a solution of Epsom salts and stale beer — one tablespoon of salts to one cup of stale beer. Spraying or brushing a shiny surface with this mixture will appreciably dull reflecting properties.

Many times, a visual will be seen in the same shot as the television performer. It should always be large enough to be read or at least recognized, usually 3 x 4 feet. Nothing will annoy a viewer more than a medium shot of a performer holding a small, unreadable visual. In cases where it is not possible to have a sufficiently large visual for the cover shot, it will be necessary to limit shots to close-ups. The visual in this case should not be included in a shot with the performer.

COSTUMING AND MAKE-UP FOR TELEVISION

For purposes of this Chapter, remarks relative to costuming and make-up will be re-

stricted to a few basic principles which can be applied to all costuming and make-up for television.

In general, extremely light or dark clothing, as well as material with highly reflectant qualities, should not be used. Fabrics with small busy prints or certain weaves should also be avoided inasmuch as they have a tendency to confuse the picture by interacting with scanning. The same can be said about tie clasps, pen clips, bracelets, broaches, and the like.

Make-up should be applied to the television performer for a clear, smooth skin tone. Special television make-up is preferred but, if it cannot be obtained, regular theatre make-up can be substituted. When applying either type of make-up, it must be remembered that television is a close-up medium and make-up must be applied and blended more smoothly than for normal stage work.

One must not be misled into believing that ordinary street make-up or a naturally flawless complexion will televise satsifactorily without stage or television make-up. A flawless, natural complexion, for example, will usually appear blotchy; a very light complexion will come through chalky white, while a dark complexion will give a swarthy, dirty look to the performer.

Besides giving a smooth appearance to the skin, make-up lightly applied to lips, eyebrows and eyelashes will give added definition to features, if their natural coloring does not come through the television system in sufficiently dark tones. If any doubt exists, a camera test before actual performance will always be helpful.

LIGHTING THE TELEVISION SETTING

Three basic factors are involved in the reflective value of a scene:

1. Material
2. Color
3. Illumination

Since it will be too late to change material or color, at the time a set is ready for lights, illumination, of necessity, should be considered as the most flexible of the above factors.

According to function, lights for a television set may be divided into the following five types:

1. Base Light
2. Set Light
3. Effects Light
4. Back Light
5. Key Light

A proper balance between these five types of lights is essential for transmitting an effective television picture. While reading the following descriptive explanation on these various lights, it will be helpful to consult Lighting Diagram "P" on page 92.

The Base Light: This is an even bath of light over the entire set. Its principal function is the filling in of shadow detail. The key light will be the principal source of light, but the base light will be used to balance this hard light. Base light usually comes from a highly diffused source. Scoops with spun glass diffusers are generally used to give this light. A properly diffused scoop gives virtually shadowless light, uniform-

ly distributed over a large area. Sometimes the base light is referred to as fill light or front light. The base light instruments are normally mounted relatively high over the scene and angled toward the floor in order to reduce the amount of light reaching the background setting. The base lights should be so arranged as to cover the entire scene with an even light. A single row of scoops, approximately ten feet from the front edge of the playing area, will be sufficient for this base light.

The Set Light: These are the special lights arranged to illuminate the various parts of the setting. At times it may be impossible to keep the key light and base light from falling on the set but, wherever possible, the setting should be lit separately from the other parts of the scene. Set light is seldom a constant intensity throughout the scene. The upper portions of the setting are usually darker than the bottom. The set light should also be of a lower intensity than the light on the performers, since a dark background tends to recede from the scene, thereby improving the appearance of the performers in the foreground. For special dramatic effects, it may be desirable to place the set lights so that darker portions of the set will appear behind light objects in the foreground, or so that dark objects are in front of a pool of light. On occasion, effective and interesting patterns can be created by breaking up the set light with shadows from silhouettes of wood, metal, cardboard, or such real objects as tree branches. Set lights should not be over-used in washing out unwanted shadows from such items as microphone booms. The usual result will be a set with too much light.

The Effects Light: Most settings will not need many effects lights, since these are arranged to give a special dramatic effect. Lights coming through windows, doors, or used to highlight a specific area or object, will be dictated by the script or setting. An eye light, a specific type of effects light, will be used to add sparkle to a performer's eyes. This is a small fresnel spotlight, mounted on the top front of the camera. It is small enough so that it will not materially affect the intensity of the light on a scene. This eye light is also used to light small objects in dark corners.

The Back Light: Properly used, the back light is the main contributing factor to the illusion of a third dimension in television. This light comes from behind the performer, focused on the head and shoulders in order to separate his image from the background. Back lights are normally equipped with barn doors for the purpose of keeping light out of the camera lens and preventing spill-over on the backdrop. Fresnel spotlights are used, but they are smaller than those used for the key light. Back light should be arranged to come from as low an angle as possible so as not to get into the camera lens. In selecting and placing back lights, it should also be remembered that too strong a back light will throw an unnecessarily heavy head shadow on the performers chest. If this occurs, intensity should be reduced or the light relocated. Back light is not a natural light. It is used only to create the illusion of depth and for this reason light intensity should be kept as low as practical.

The Key Light: This is probably the most important light in television and forms the principal light for the camera operation. On an average scene, it will be located above and slightly to one side of the camera. It usually is a fresnel type spotlight, with wattage and size dependent on the throw and the spread needed. With most key lights, two-way or four-way barn doors are used to shield the key light from undesired parts of the set. They are also used to keep light from interfering with special lighting from other areas and mask microphone boom shadows on the backdrop. If it is necessary to have two or more key lights in a scene, it should be remembered that each key should be so arranged as not to overlap. This is accomplished by adjusting the barn doors on each key light.

LIGHTING

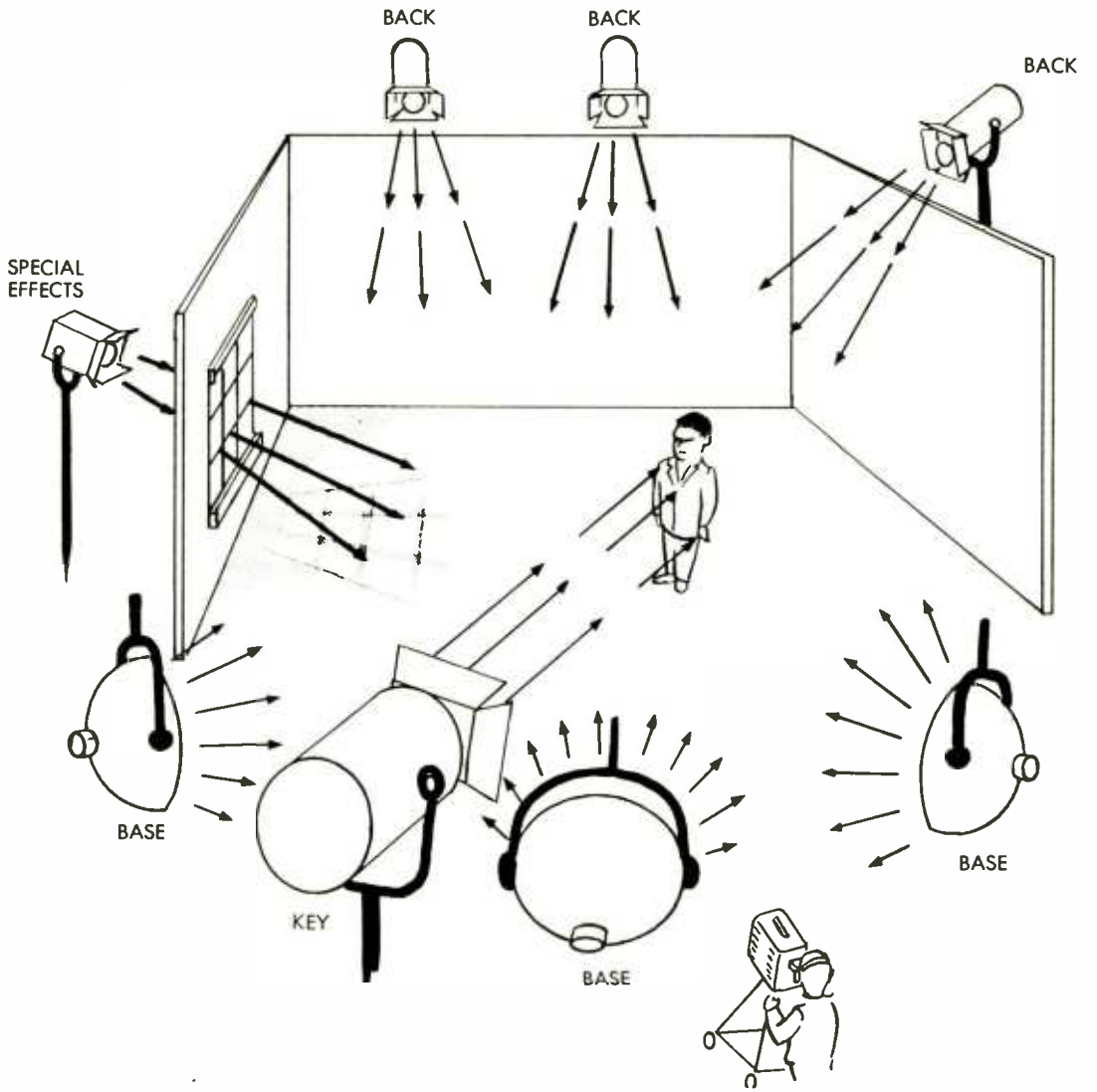


Diagram P

SEQUENCE IN LIGHTING THE TELEVISION SETTING

Under normal conditions it will be good practice to light the television setting according to the following sequence:

1. Key Light
2. Back Light
3. Base Light
4. Set Light
5. Effects Light

It is best to start with the key lights. After these have been set, intensity adjusted, barn doors arranged to restrict the light to the playing area, the other lights can be added.

The back light is usually the next one to be adjusted. Since a television set may extend over a considerable area, it may be necessary to set up several different back lights. If a camera is going to move into the setting and shoot from several directions, these back lights will have to be carefully adjusted so as not to reflect into the camera lens.

After the key light and back light are set, the base light should be added. It should be remembered that the base light is used to fill in shadow detail. Need and intensity can be determined by looking through the television camera while the base light is being set.

The set and effects lights are added last. These are primarily added to correct the deficiencies of the key, back and base lights, but they should not be added to basically bad light. The problem of bad lighting can usually be corrected by adjusting or re-locating the key, back or base lights.

THE MICROPHONE IN TELEVISION

Television is a visual medium, but this fact should not reduce the importance of audio.

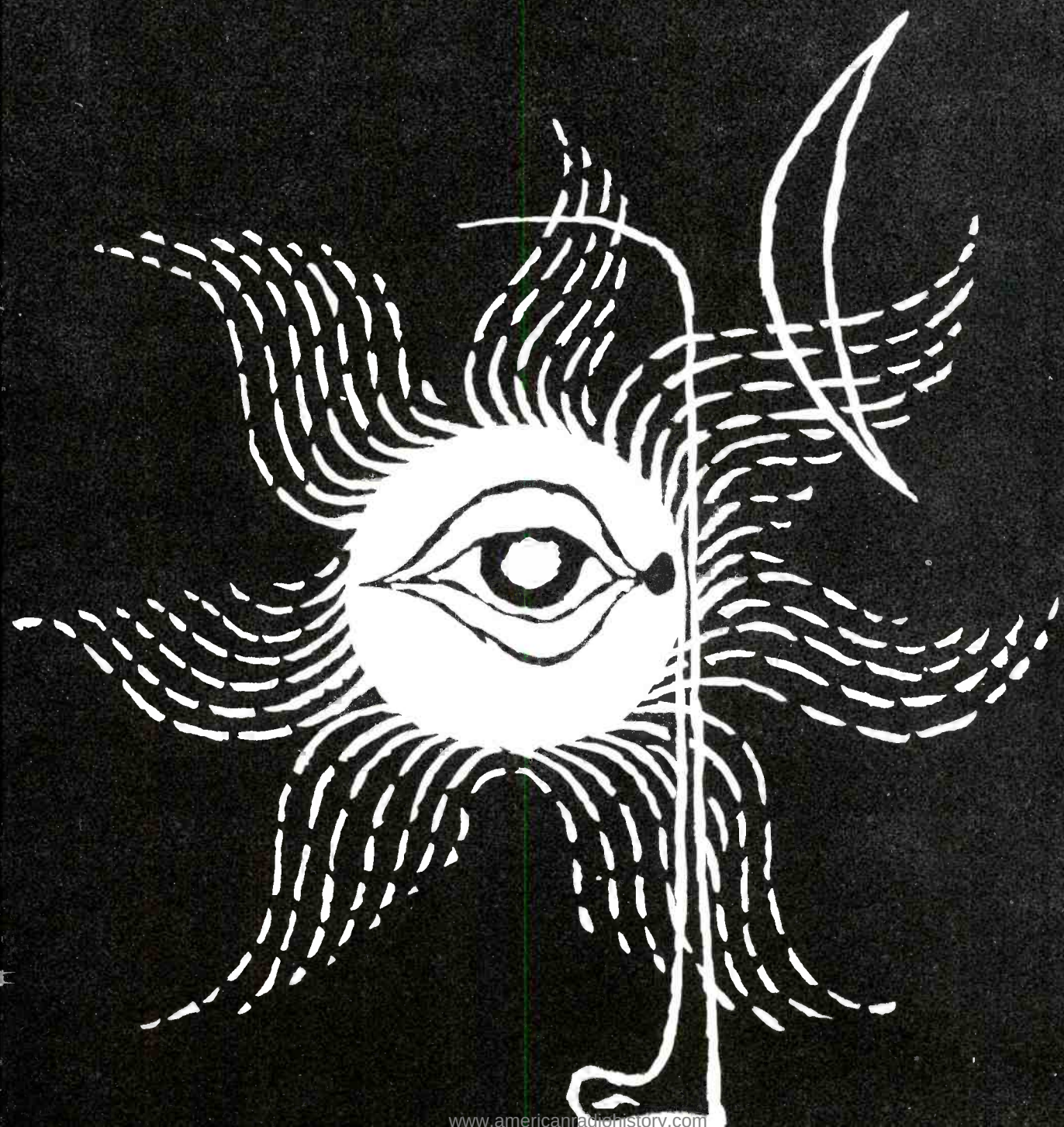
There are several special problems involved in picking up the sound of a television program and the first of these is the source of the sound. In many television programs the source of the sound will be in motion and some form of moveable microphone will have to be used to follow this sound. This is usually accomplished with either the lavaliere type of microphone attached to the performer or a regular microphone suspended from an extension boom.

Regardless of the type of microphone used, problems will be presented to the audio engineer. If the microphone is on an extension boom, the boom will have to be manipulated in order to keep the microphone in the proper pickup position. This will necessitate smooth coordination between camera, performer and the boom man. If the performer turns around while he is speaking, it will be necessary for the microphone to travel a considerable distance in order to get back into the proper pickup position. With the lavaliere type of microphone it will be relatively easy to follow sound because it is attached to the performer, but there will be the problem of the trailing microphone cable. The performer will always be conscious of this hindrance and if he walks around a table in a clockwise motion he will have to remember to return in the opposite direction.

This leads to a consideration of a second problem with television audio. It will be desirable, in most cases, to keep the microphone hidden and the best way to do this is to

suspend it from a boom over the performer's head. This will cause problems with incidental microphone boom shadows, but if sufficient time for rehearsals is allowed, these shadows can be eliminated with proper lighting. Another problem facing the audio engineer will be the noise present in the studio. If a boom microphone is used approximately three to five feet from the actor, noise created by his clothing, movement of cameras, scuffling of feet, will be picked up, as well as his voice. The audio engineer will have to employ extra precautions in order to keep these extraneous noises to an absolute minimum. Under the best of circumstances, audio will be difficult. Each program will have its own special set of problems. Each problem will have to be worked out with the material at hand, the personnel, and the time available.

TRANSITIONS IN TELEVISION



CHAPTER XII

TRANSITIONS IN TELEVISION

Transitions are the changes from one picture to another. They are electronic in nature and include:

Cut
Fade
Dissolve
Superimposition
Wipe
Defocus Transition
Object or Effect Transition

These time-consuming bridges should never be used without proper basis. It must be remembered that they should not become so prominent in themselves as to interfere with the very scenes they introduce or end. The cut will keep a tight relationship between actions; the other transitions will allow for more time to elapse between actions and will usually be used in pairs — whatever transition started the scene or segment, will conclude it.

1. **The Cut**

This is the most frequently used form of transition in television. A cut, in itself, is non-existent. It is simply a term used to mean the immediate change (instantaneous juxtaposition) from one picture to another.

a. **Continuity:** The well-cut show will follow a logical sequence. All shots will bear a relationship to each other. There should be no harsh cut for the viewer, unless such a reaction is intended for a dramatic reason.

Transitions should usually follow the same visual sequence of observation that the viewer will experience in real life. First, the total view of a scene is observed; next, the main point of interest is singled out as a closer look takes place; then a study in detail of the main subject is made. After this singling out of detail is satisfied, the viewer moves back again to see the elements in relation to their setting. In other words, the sequence is the usual continuity of long shot, medium, close-up and back to wide shot.

It should be noted that this logical progression should not tie the director to any ironclad set of rules. Often, for the purpose of drama, the substance of a scene can be caught more effectively by beginning with a close-up of an element and then using the wider shot to show location. This is the reverse procedure, using close-up first, then medium, then long shot. The detail of the close-up, however, must have dramatic importance to the sequence in which it is utilized.

A cut from a long shot to extreme close-up of the same subject should be avoided; instead, the intermediate shot should be used. Furthermore, a series of tight close-up cuts should be left out of any continuity as the mismatching of objects shocks the transitions and the viewer needs an occasional overall look.

It must be realized that the viewer usually remembers only the scene previous to the one being shown. The re-establishment shot is needed to carry the mind

of the viewer back to the entire scene before further developing the continuity. Any new entrance or action usually demands a wide shot to show the total area again.

b. **Cuts of Matching Image:** Cameras should not be permitted to feed two shots with the same pictorial composition. This is a waste of available facilities. There is a general tendency on the part of inexperienced personnel to overdo the cover shot. In order to avoid this, the director should know how long it will take his camera to get a cover shot. He should be prepared to use it when necessary, thus freeing his camera for close-ups and other shots. He should not allow himself to be placed in the position of having to cut to a similar shot in order to break a camera.

If the pictorial composition of two shots is almost identical, a cut between them should not be used.

c. **New Angle Cut:** A cut to a new angle is a rule often followed in transitions. It will give a scene two perspectives. Minor mismatching also will not be so noticeable with new angle cuts. This rule of change of angles for variety must not be misused. The misuse results when the new angle fails to keep the viewer oriented. A new background, for example, should not be suddenly thrust behind the main subject by this type of cut. If the angle cut makes the subject unknown in the new transition, it should not be used.

d. **Matching of Screen Direction:** The director must always keep the proper orientation in his transition by maintaining direction. A simple rule to follow is not to cut to a camera that would suddenly view the subject from the opposite side of the stage.

With moving objects in front of the camera, it must also be remembered to keep them moving in the same direction. If the subjects start moving from left to right, the director must make sure all the following shots are also from left to right. Whatever is moving in a certain direction in one shot, must be moving in the same direction in the next shot. When an object moves between two cameras, so that the cameras shoot it from two opposite sides, facing each other, a switch in the direction of movement will occur if a transition is executed between the cameras.

e. **Timing of the Cut:** The rate of time elapsing between transitions has a decided influence on the presentation of any program. All programs have their own inherent pace and transitions should be made in accordance with this pace. The rhythm of the action sets the rhythm of the transition. The pace of a show comes from writing — timing and tempo, from the director. Transitions are allowable only if they catch the tempo or emotional content.

The content of a shot determines the period of time it should be seen. The shot that introduces an entirely new image demands a longer time on the screen than one showing something already well known to the viewer. If the subject is simple, it requires a brief shot for comprehension, while complex subjects require a longer time on the screen so as to be understood. The shot should be held long enough for full understanding and kept short enough to remain interesting.

Fast cuts, where the pace is tranquil, will be incongruous. A fast-paced scene requires swift cutting, jumping from one element to another.

A rapid series of transitions is not the rule in television. Too much cutting leads to repetition of shots. If the director has a good shot on one camera, he does not have to make a new cut until the pace demands it.

f. **Cut during Movement of Subject:** Movement of subject provides one of the best times for a cut. As the movement takes place — while the action is under way —

MATCHING SCREEN DIRECTION

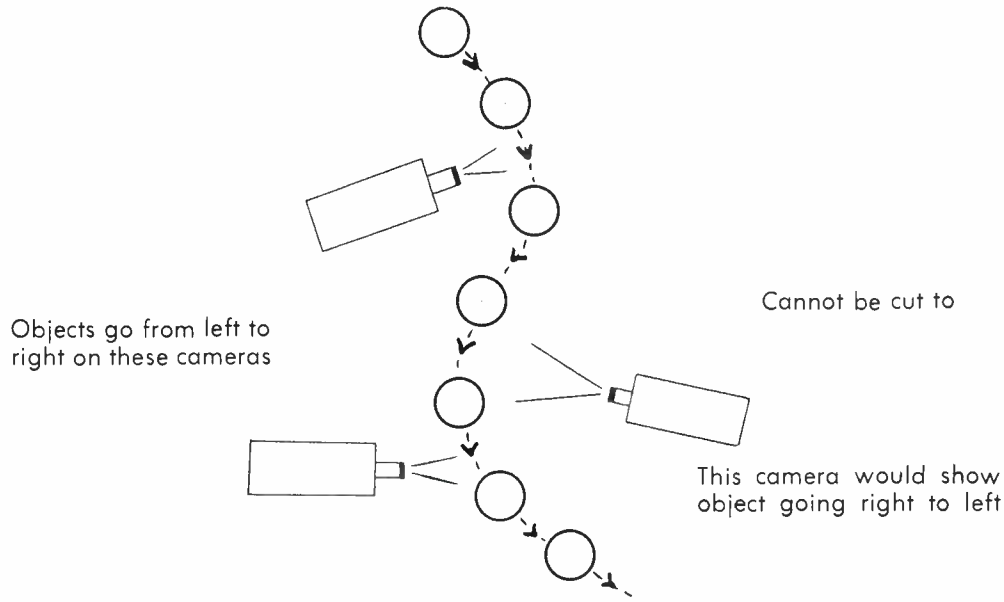


Diagram Q

MOVING OBJECTS IN FRONT OF THE CAMERA

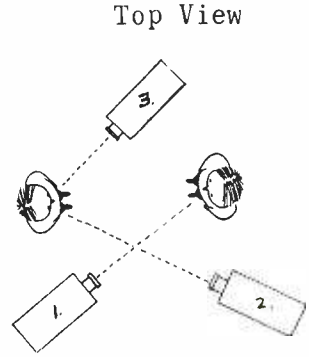


Diagram R

Shots of camera 1 and 2 should usually match in composition type of shot-close-up, medium shot, over-the-shoulder, etc.

Note: Cross shooting as shown is a usual camera set-up as it allows best possible viewpoint of performers. Alternating over-the-shoulder shots are of value.

Cuts on camera 1 and 2 would be logical to follow dialogue, but a cut on camera 3 would not work as the direction of the glance of the person on camera 3 would be a reverse in direction.

the eyes of the viewer will not be stopped on a non-moving area. He will be closely following the action. A cut at a moment of action is thus concealed because it comes at a natural transition spot. A common example of the action cut is the cut from a close-up of a performer seated, to a wide carry shot as he rises.

A cut on action should usually be taken at the beginning of the movement, rather than at a point that breaks a continuous action. Action cuts can also be made at the end of the movement or at a point of hesitation in the move. Even a cut in the middle of some movements is often acceptable. The main thing to catch in any action cut is the start of the action and the consequence of the movement.

g. **Cut to Sound:** Although the audio of a program must always be considered in making a cut of any kind, it can often be the basis for a cut. In dialogue, it is logical to cut at the completion of a sentence — or in a song, at the end of a verse or chorus — but the cut should not break the flow of audio. The director should cut to the performer, just before he speaks, setting the shot for the dialogue to follow. Close-up cuts on dialogue can best be done where there are distinct pauses. This also allows for a delayed reaction shot. In a scene of rapid exchange of conversation, it is best to carry it on a cover shot, as a series of fast cuts will be jarring. This rule does not apply if the content of the dialogue has strong, dramatic overtones.

An excellent opportunity for a cut is the introduction of any new sound in a scene. The viewer will immediately want to see the cause of the new sound.

Music will provide an excellent basis for the cut or dissolve in the musical show. Accurate cutting in these shows builds with the music as visual variety takes place. The cut should always be made on the beat, and, if showing an instrumental section, the transition must catch the start of the segment. If the music has constant change, it should be cut accordingly. If not, the director must not make any transitions which would break the flow of audio.

h. **Cut to Reaction:** Reaction shots are a major obligation which the television director owes his audience. If a director merely cuts to each person as he speaks, and never shows reactions of other people in the scene, he will lose many of the most dramatic phases of the scene. Initially, the viewer wants to be introduced to every performer. Once he knows the speaker at any given point, he wants to see the reaction of the person being addressed, particularly if the reaction has dramatic importance. The viewer wants to see the face of the suspect, as the detective announces the victim was not stabbed, but was poisoned.

The cut should come before the facial expression materializes. It is far more dramatic to see the expression of the face change than to see only the completed change. In modern drama, especially with its inward emotions, some of the greatest heights of conflict are found, not in the lines, but in the silent expression of actors.

i. **Insert Cut:** In dramatic programs, the insert cut is a valuable facet of cutting because it makes the viewer feel ahead of the story. He gets a feeling of being in the drama by uncovering, for himself, important facts about the action.

The insert gets its name because it punches into the main scene. For example, a close-up of the villain's hand placing the poison in one of two glasses of wine. The insert is used for the build-up in action scenes; the contrast builds up the force of the main action.

j. **Cut-away:** The cut-away uses subject matter other than in the main scene. It cuts away to a subject that is related or undergoing simultaneous action. The cut-

away must have a definite relationship to the main scene in order to be understood. The expression of a person watching the exchange of conversation between two main characters is a demonstration of the use of the cut-away.

The cut-away often adds a great deal to remote shows. At a sporting event it will contribute to the enjoyment of the home viewer by adding shots of sidelights going on — fans at the event — colorful surroundings. The director should not cut away if it will mean missing something important in the main action.

2. **The Fade**

The fade-out is performed by the screen being gradually taken to a point of black. The fade-in is performed when the screen intensity is brought up to normal gain from black. The fade-out signifies the conclusion of a segment of the program. The fade-in starts a new segment.

Fades may be fast or slow, depending upon the amount of emphasis the transition needs. A fast fade, for example, will tie the adjoining scenes tightly, whereas the slow fade will announce a definite conclusion. In any case, the fade denotes a distinct pause in continuity.

A point to remember is the fact that the attention of the audience will also fade when the screen fades. A black screen can be most upsetting to the viewer when he wants to get back to the story or variety program. All fades should be pre-set so that the new picture is always ready to be brought in after the proper amount of division has taken place.

At the conclusion of any segment in a program, the director must always be prepared to go black at the precise moment of the conclusion. One of the most recurring violations is to leave performers frozen in their final action, while waiting for the camera to leave them. If the announcer has said goodby, the director must get away from him. The reverse holds true for the fade-in to the performer who is about to speak or act. Nothing is worse than to see the performer watching for his cue, receive it, and then start his action. In order to overcome this common fault, the director should have the cue given to the performer, then fade-in on him as he is in motion, if acting, or about to speak, if using dialogue.

3. **The Dissolve**

The dissolve is performed by fading out one picture and overlapping it with a new image started at low intensity and raised to normal level. The dissolve does not have the degree of definite pause of the fade. The rate of execution of the dissolve is also made to coincide with the requirements of the scenes it joins.

The importance of the time of transition lies in the fact that it has no independent existence. This provides a striking punctuation between the images it divides. The effective dissolve has a smooth, rolling effect as its distinctive quality. In dramatic programs, dissolves are generally used for transitions to denote a time lapse. In non-dramatic programs, a variety-musical show, for example, a slow musical number is often handled best by dissolves, as cuts would interfere with the smoothness of the number. News programs, on the other hand, usually demand the snap and punctuation of cuts.

There is a tendency to over-use the dissolve, since it can be done electronically as easily as a cut. The dissolve must not be used when the cut is more suitable. Neither should it be used merely to attain variety in shots. This is not sufficient reason for a dissolve.

The matched dissolve is a useful effect for producing visual novelty. Two similar figures, one on each of two cameras, are required. The respective size of the identical elements, as well as the placement in the frame, must have an exact match. When a dissolve from one camera to the other is made, the second figure will appear to grow out of the first. This type of dissolve should be used only if the objects merit dramatic importance.

In any dissolve, it must be understood that for an instant both pictures in the transition are on the air at the same time. This can produce some objectionable overlays in a slow dissolve. For example, a head close-up dissolving into a profile close-up will show the ears merging and growing out of the nose of the performer.

4. **The Superimposition**

The superimposition is a fixed double exposure obtained by placing one picture over another with the combination going through the television system at the same time. This interweaving of shots should be used only with good reason and definite purpose, as the results can be confusing to the viewer.

Superimposition has excellent potentialities for creating illusory images, spirits and the like.

These double exposures can also be useful in certain musical shows. Supering the slogans for the sponsor's products is common practice in commercial television. Supers also can be employed to provide definite identification across the bottom of the screen — the speaker at a convention, for example.

There must be sufficient contrast range in the two images to make supers effective. The background should be relatively low key and not cluttered. Lettering for a super is usually white on gray.

5. **The Wipe**

This transition removes the old picture by starting the newshot in one area and crossing the screen until it wipes off the previous picture. Movies have used this transition extensively.

The horizontal wipe has its place in television. This is often used for split screen telephone conversations and the like. Engineers can provide a variety of types of wipes, but this transitional device has little value for the dramatic program as it draws attention to itself and the screen, thereby interfering with the viewer's ability to concentrate on story content. Whenever a technique brings attention to the surface of the screen with a so-called gimmick, it will disrupt the reality of the shots. Thus, the legitimate use of the wipe is rare and its use must always be justified.

The wipe has value in musical programs and commercials. Since this type of programming requires that attention be brought to the screen, the wipe has an effective value. Two musical instruments, for example, can be wiped in together as they are being played.

6. **The Defocus Transition**

In order to accomplish a defocus transition, the director will rack a camera out of focus, make a dissolve to another camera out of focus and slowly bring the second camera into focus on the new scene. This transition is sometimes used for flash-backs or dream sequences. As an example, a person falling asleep as the defocus takes place, the new camera will come into focus to reveal the sleeper's dream.

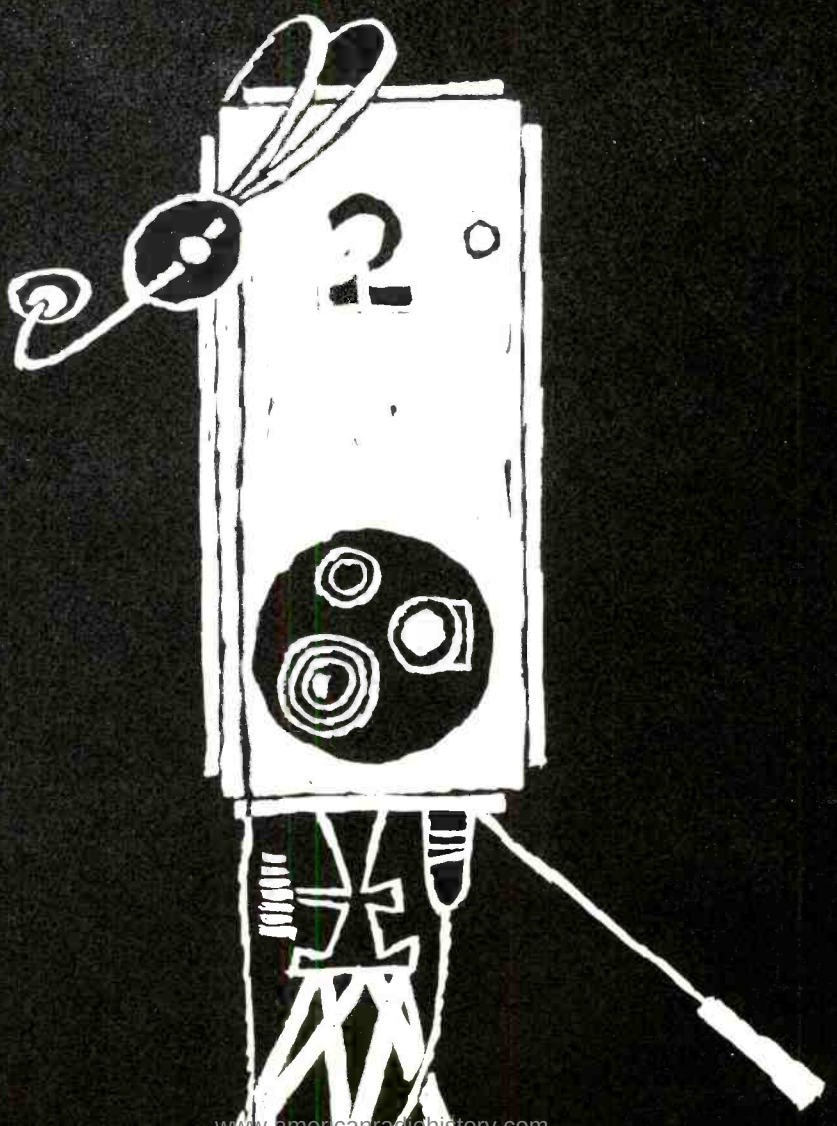
The defocus transition can also be used as a unique carry-over to a new subject. As the first camera goes out of focus, the dissolve can be made to the second camera which will create a visual surprise by presenting a new subject in focus.

The defocus transition, it must be remembered, is only a gimmick transition and the director must be sure the subjects are worthy of this attention.

7. **Object or Effect Transition**

The director can often use, as a transitional device, an object of symbolism in connection with his electronic transition. An object within a scene brought into tight close-up — a fire, for example — can be an effective opening or closing to a segment of violence. These are legitimate uses of symbolic objects or effects within a scene, but they must have direct relation and meaning to the script or segment of the show.

CAMERA MOVEMENT AND COMPOSITION IN TELEVISION



CHAPTER XIII

CAMERA MOVEMENT AND COMPOSITION IN TELEVISION

CAMERA MOVEMENT

In television, there are usually two types of movement — camera movement and subject movement. Generally, camera movement is dependent on subject movement. In any case, camera and subject movements should always have a fluidity which will enable them to complement each other. Smoothness of operation is the key to good camera movement.

The choice in many cases, other than cutting, is camera movement. For all practical purposes, these can be grouped into the following main types of movement:

1. The Pan
2. The Dolly
3. The Truck
4. The Tilt

These camera moves present difficulties not usually apparent to the inexperienced director. Moving a camera, in the first place, is time-consuming, and, secondly, considerable pre-program planning is involved.

If camera moves are not carefully planned, last minute complications will arise. The movement will disturb performers, cause shadows and get into the frames of other cameras. A cameraman must always be warned, if movement is to be used. A simple cut is always easier. Long pans and dollies can easily dull and slow down an otherwise well-paced show. On the other hand, a show without camera movement will appear static.

As with the cut, camera movement can be overdone. Movement without definite purpose should not be attempted. Only if the movement improves the shot, should it be used. The stage rule of motivation for an actor's movement applies equally to the camera. The viewer must never be allowed to feel that he is being pulled needlessly around the set.

Another reason for avoiding too much camera movement is the fact that it gives an effect not common to the normal use of the eyes. A person's eyes do not function in a slow pan to an object. The glance is tossed to an object of particular interest. When a noise is heard, for example, eyes are immediately thrown in the direction of the cause of the sound. The cut reproduces this visual reaction; the pan does not. Interim areas are left out in the normal use of the eyes.

THE PAN

The pan shot, or panning, is the movement of the camera on its axis, in a lateral plane, either to the right or to the left. Properly used, panning is a valuable device, but it should not be used without reason. The pan shot has its place and, at times, is a virtual necessity, but it should always be properly motivated.

Panning is normally used to carry action, but it is also useful in scenes without action, such as giving the viewer a comprehensive look at an extensive scene. An orientation shot, in which the camera moves from one side of a vast scene to the far side, in order to emphasize the extent of the area, is excellent use of the panning device. This type of panning will also indicate the relative distance between objects.

When possible, panning should be made from left to right. The eye is accustomed to move in this direction.

Panning, as stated before, is valuable for carrying action. It is logical to pan with a subject as it moves. During the pan, the subject should be kept in the same area in the camera frame. The camera should also lead the moving subject — more space in front of it than behind — to show where the subject is going. Any necessary correction in composition should be made while the subject and camera are moving. Once they stop, readjustments will be more obvious to the viewer.

Uniform speed should be maintained while panning, since lack of smoothness will be disconcerting. The rate of movement should be made in accordance with the action of the subject and carried through to completion. A pan must always be completed. A pan should not backtrack over an area already shown, unless it is absolutely necessary.

The whip or blur pan is the result of too much speed in executing the pan shot. Panning at high speed so as to produce a blur is not usually seen in television, except in dramatic shows for a fast sweep to a forceful element. This type of pan is used more extensively in newsreels to indicate swift changes of scene.

Panning can be used to catch reaction. If an actor glances at something off scene, the director must decide whether a cut or a pan should be used so that the audience can also view the subject with the actor. Generally, a cut will be the choice, but, in a situation, for instance, in which an actor faces toward a strange sound and an expression of fear is the reaction, a time-consuming pan to the source will add greatly to the suspense.

A cut must never be made from a panning to a non-panning camera; from a non-panning to a panning camera. A cut can be made from one pan shot to another, if both cameras are panning at the same rate and in the corresponding direction.

A pan can also be used to correct balance, that is, when an element leaves a group. A slight pan right or left will re-balance the framing of objectives left in the group.

A pan is useful for the introduction of new subject matter. For example, when one member leaves a group, the pan can follow him and center on the new subjects he approaches (with the old subject leaving the frame). Seeking moving subjects to lead and pan to a new visual area is a good practical rule for the director to follow.

A director must always avoid panning over dull, uninteresting areas.

THE DOLLY

The dolly shot can be used to take a tighter shot as the camera pushes in to a specific portion of a scene. This is the dolly-in shot. In the reverse procedure, the dolly-back shot, the field of view expands visually as the camera pulls back to show a wider field of action.

For either type of dolly shot, the cameraman must always have proper alignment, otherwise, faulty execution will result. The ending point must be definite and correct and any change in composition should be made during the movement.

The dolly-back is very useful at the conclusion of a segment since it is a fitting ending to have the camera pulling back at the conclusion of a scene. This is especially true if the segment started with a long shot, followed by a dolly-in. A dolly-in or out will often provide variety in a time-consuming one shot.

If, at the start of a scene, a tight shot of some designation or symbol of what is to

happen is used, the camera can then dolly out to show where it is. This sudden swoop into a close-up of some vital object will expand its significance as it finally enlarges to fill the frame.

The dolly move also ties together the component parts of a scene as it goes past elements to gather attention on another. In certain circumstances, a cut might be disruptive, by focusing sudden attention on an object the viewer was not aware of in the preceding shot.

The zoomar lens produces an effect which appears to be the dolly shot. That is, the subject becomes larger or smaller in the frame. The zoomar has popular acceptance for remotes, especially for rapid action sporting events, where cutting cannot keep the audience orientated.

The electrazoom, in which action is electrically controlled by a switch, also has its uses in the studio. The effect of the dolly and the zoom is dissimilar inasmuch as during the dolly, the subject and perspective change. That is, near and distant objectives move in relation to the subject as the move takes place. During the zoom, neither the camera nor the perspective change. What the viewer sees is an increase or decrease in the size of the subject, due to change in focal length.

THE TRUCK

The truck shot is a shot moving alongside of the subject. The camera, for example, moves along with the actor as he moves on stage. This is also known as the travel shot and is useful for picking up such static elements as items displayed on a long platform — the camera traveling at right angles as far as needed in order to cover the objects.

A trucking movement will also add to the effect of depth when elements are in the foreground. Multiple movement appears to take place in front of the trucking camera; objects seem to move at varying speeds, depending on their relative positions. Objects close to the camera appear to have a quicker movement than those distant from the camera. This effect is often worthwhile and should be used whenever possible.

THE TILT

When the camera pans up and down, it is called tilting. This movement, like all others, must be skillfully executed and well motivated. It has the value of psychological impact when used in such instances as tilting from the base to the top of a building to emphasize height.

All camera movements discussed in this chapter are not single elements within themselves. They should be combined in one smooth flow as one move carries into another. The director should evaluate his still picture and, with camera movement, should constantly seek to project new drama and viewer interest into this still picture. Movement, however, should not be for its own sake. Movement should have reason — motivation.

COMPOSITION

Good composition is essential to the proper presentation of the television picture. Composition, in brief, is the arrangement of elements within the frame of the television screen.

It will be the purpose of this section to discuss the principles of composition, only as they apply to the medium of television. It would be wise to become familiar with the formal theory of composition, which can be found in any textbook on art, but it must

be remembered that the television picture is a moving one, so principles learned must be applied to an ever-changing movement of subject matter. Movement is vital to television, for the simple reason that the viewer will not be attracted and his interest held by non-movement. On the other hand, unmotivated, poorly composed movement will disturb composition, as well as the appreciation and enjoyment of the medium by the viewer.

Generally accepted theories of composition are merely guideposts. Adherence to rules of composition will provide a television picture containing form, balance and interest, but it will often be found necessary to break rules in order to achieve specific effects. If the picture accomplishes its intention, it automatically becomes proper composition. This is the cardinal test in composing for television — no other test will apply. As long as the director has captured the emotional mood of the story or situation in his composition — it is correct.

The director must not try to use too much theory in his approach to composition. Other art forms allow for complete and thorough handling of all details of composition, but in television a practical compromise must be effected between the ideal and the attainable within the time limits of the production. The director, of necessity, will be forced to accept less than the aesthetically perfect picture. The unrelenting clock will not allow him to accept only perfection. The director should expend every effort to compose individually attractive shots, but he must not forget that their basic purpose is to advance the story. He must not sacrifice story for isolated perfect compositions or try to tell too much in any one picture.

STRAIGHT FORWARD APPROACH

The practical director in television will understand that any addition to visual variety in his pictures is desirable. Yet, he should not introduce variety merely for its own sake; he should not clutter up good composition with too many elements. The quality of good composition, as in all great art, is simplicity.

In dressing the set, for example, only those objects which contribute to the mood pattern should be used. Nothing should be added that is non-essential; nothing which might overshadow the main point of interest. The subdued use of embellishments should be the criteria; competition between elements should be eliminated; primary interest objects should not be lost by intermingling with busy backgrounds.

Intricate effects, elaborate sets, odd angles — these have dramatic purpose only if they do not confuse the scene and do not compete with the focal point of interest to such an extent as to leave the viewer puzzled. A sound, practical rule to follow is to keep it simple.

THE SCREEN

One of the limitations in pictorial composition is the small size of the television screen. It is a rectangle, in the conventional proportion of four-to-three and the television director must learn to adapt his compositions to these rigid dimensions. This means that he should avoid cluttered sets or groupings. Sets and action should be kept as simple as possible, photographing, in most instances, important action in the central area of the frame.

The television director must also remember that a further shrinkage occurs along the edges of his frame during transmission and in the receiver of the home screen. In order to compensate for this loss, an additional ten percent should always be considered as unusable area on the margins of the control room monitors.

FIELD OF VIEW

The field of view refers to that portion of the scene which appears on the frame and has the following classifications:

Extreme Long Shot
Long Shot
Medium Shot
Close-up
Extreme Close-up

There is no precise distinction or dividing line between these various shots. In composing for television, the director must remember that the home screen is relatively small and that in long shots — sometimes even in medium long shots — facial expressions are not readily identified.

In the long shot, distinct space will appear above and below the full figure. It will show the whole subject and the relative position of other elements in the picture. In the medium shot, the figure will be shown from the knees up or from the waist up, or from some area between these two points. The director should indicate waist or knee shot in order to avoid misunderstanding.

The medium close-up shot will include just the head and shoulders of the subject, and it is usually wise for the director to so indicate in his instructions to the cameraman. In the tight close-up, only the face of the subject is shown; in the insert close-up, only a part of the face, such as eyes or lips, appear on the screen.

The most commonly used shot in television is the medium shot. Most of the remaining shots will be close-ups, but the director should not neglect viewer orientation with necessary long shots to establish the basic scene of action.

The close-up shot is characterized by tight framing, that is, the subject is held in close to the sides of the frame. If the shot is too tight, cropping will take place (a portion of the subject will be lost, such as the head or ears). Cropping should be avoided, unless an extreme close-up of the eyes or a portion of the face is desired. Tight framing emphasizes importance and intimacy, and these are usually exploited to the maximum since they are more suitable to the television medium.

CAMERA ANGLES AND FRAMING

The two main approaches to television composition are the camera angle and framing.

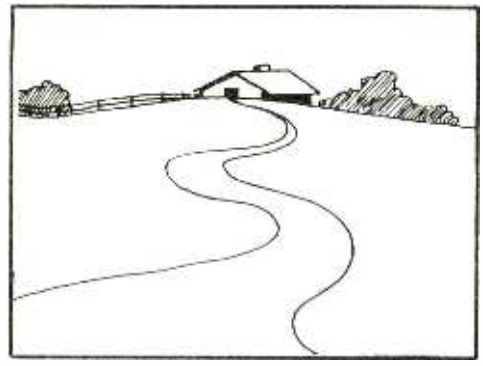
1. The Camera Angle

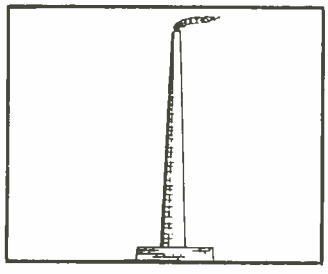
The camera angle is the position of the camera relative to the subject. The normal angle of a shot is usually the viewpoint or eye level of an individual watching the scene. Variations from this normal angle can be high, low or side. A side angle can be combined with either high or low angles.

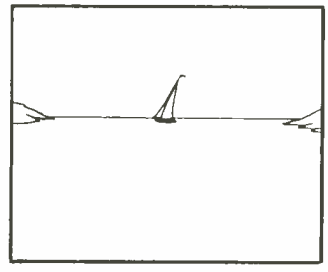
In composing with high vertical angles, the camera is raised to a higher pedestal and elements are viewed from above. This angle is excellent for dance sequences, since it conveys a feeling of depth and clarifies the viewer's orientation of the unfolding dance patterns. This angle also conveys a feeling of superiority to the viewer as the subject's illusion of strength and height are reduced.

As the camera is moved to a lower pedestal, subjects are viewed from below, making

LINES ON THE TELEVISION PICTURE







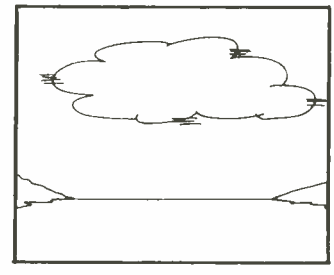


Diagram S

them more imposing, as well as exaggerating their height. This low angle will convey a feeling of inferiority of the audience and will also increase the apparent speed of a moving subject.

Moving the camera either right or left will often improve composition. These side angles will usually give depth and variety to subject matter, emphasizing objects closer to the lens and, in turn, weakening elements which are already in the background.

Where depth is not desired, the normal angle is always preferred. If angles tend to make the viewer want to square off in proper relationship to the subject, they are being improperly used. The director must never go overboard with angles — they must not be used for their own sake.

In summary, it should be remembered that the normal angle of a shot should be at the eye level of the individual within the scene. Definite angles should be used only for dramatic purposes. The camera angle of a newscaster at his desk, for example, should be at his eye level — not staring down at him just because it is easier for the cameraman to be on a higher pedestal. Angles have their place in relation to performers since most actors have a so-called "better side." It is the director's responsibility to find this and use it in as many shots as possible. Angles can also be used to de-emphasize or help eliminate undesirable facial features.

2. **Framing**

a. **Balance:** In framing the television picture, the director must always consider balance. In fact, a picture will not be properly framed until balance is sought and maintained.

Balance does not necessarily mean formal balance, in which equal weights are repeated at equal distances on each side of the frame. This type of symmetrical balance will tend to be monotonous and is not suitable for television viewing.

Informal symmetry, on the other hand, balancing equal weights with elements not identical in size and distance within the frame, is preferred. This type of symmetry will give a feeling of movement and the television director should always seek this dynamic approach in his composition.

Since the viewer needs a central point to attract his attention, each shot must have a center of interest or attraction. A dull center of attraction, however, placed in the geometrical center of the screen, should be avoided for the simple reason it will be too symmetrical and monotonous. Moving the point of interest to either side of the screen, without another element to oppose it, will not be a solution because the picture will then be out of balance.

In order to combat off balance caused by moving the point of interest to either side of the screen, it is good practice to set the center of attraction to a degree off the actual center of the picture and oppose it with another element in the remaining area. This is especially effective when balancing a performer with an object. The object in the picture balances the performer as the two share the frame. This is not the case when the performer or actor is addressing the camera from the center of the screen. In this case, he should be located in the center of the frame, to be in correct balance. The actor in this situation is the center of interest as far as the viewer is concerned and nothing should be added to counteract this center of attraction.

When an actor looks to an influence outside of the frame, in a three-quarter or profile direction, he should be balanced in such a way as to compensate for this shift

in the cast of his eyes and oblique facing. This can be accomplished by placing him so that the direction of his glance will have more empty space in its own side of the frame. This will re-establish balance in the scene. The same principle will apply when the actor looks up. The weight of the directed glance, despite its direction, will require more empty space on that side of the frame. In other words, the direction of interest has importance — not the area behind the performer.

b. **Lines:** Lines are usually present in every television picture. They can be up and down the screen, across it, or diagonal to the frame. The lines themselves can be of various types: straight, jagged or round. These lines have their own uses. Upright, straight lines are used for firmness or strength; jagged lines for disorder, and round lines for flow or grace in the set.

A director should not let the placement of lines destroy balance or composition. A strong vertical line down the middle of the screen, for example, will divide composition into two equal parts, resulting in two monotonous, similar pictures. For the same reason, horizontal lines should not divide the middle of the picture. These should cross in the higher or lower third of the frame in order to lend variety to the composition. The content of the upper or lower part of the frame will decide where the division should be made and it should be remembered that horizontal lines are usually associated with stability, while vertical lines are used for impressiveness. Lines adjacent and parallel to the edge of the frame should be avoided as they double-edge the frame.

Diagonal lines have a basic feeling of action. For this reason they break the frame less than vertical or horizontal lines. The diagonal is also dramatically interesting since the travel distance seems to be increased. While the diagonal move is useful for entrances and exits, it does not have the force of a perpendicular move. In many instances, the diagonal line can be useful in leading the eye of the viewer to a particular point of interest on the screen. This technique is especially effective in a scene where a winding road in the foreground of the frame is used to lead the attention of the viewer to the background — a house on top of a hill, the main point of interest. Long diagonal lines are always effective and should be used whenever possible, but they should not split the exact corner of the frame.

c. **Depth:** In television, the director will often stage with a view toward achieving the illusion of depth. He will do this in order to avoid the flat appearance which is the trademark of this two-dimensional medium.

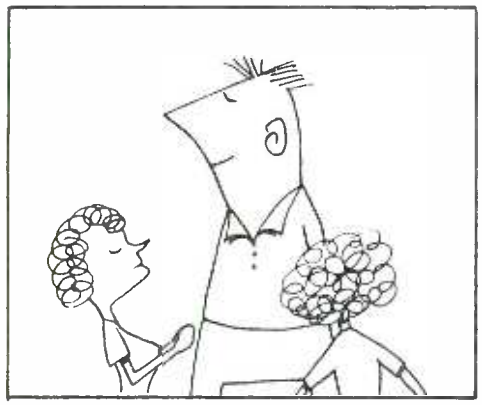
In promoting this illusion of depth, there must be spatial balance between foreground and background, and this is achieved by placing elements at different distances. The director, however, must be careful not to allow distraction to take place. A strong element in the background, for example, can detract from the important center of attention in the foreground.

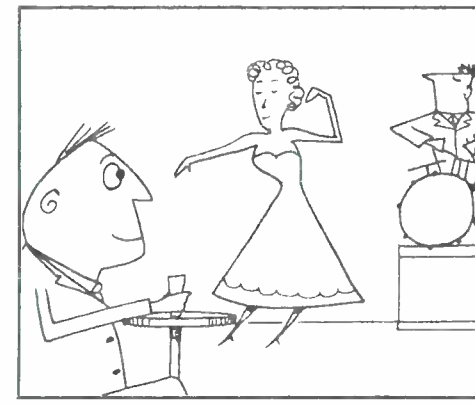
A useful device for suggesting a distant background is to place an element clearly in the middle area between the foreground and the background. This will create an impression of depth, a background receding into the distance.

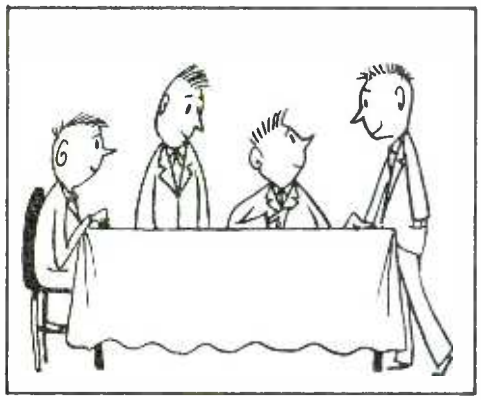
In a long shot, composition for depth can be achieved in many cases by using an element in the foreground as part of the frame line, such as a branch, an arch, or other device. This prop will accentuate the foreground, at the same time giving depth by focusing attention on the distant background.

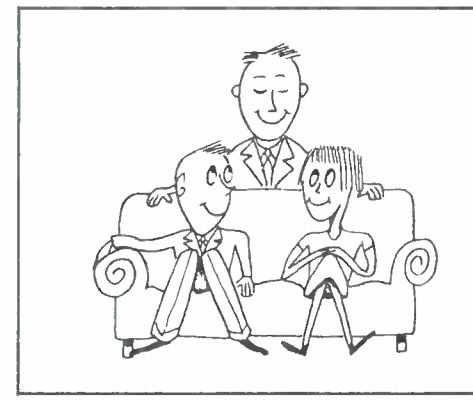
When the director arranges objects in front of each other, he must be sure that he never places them so that they seem to hide the background from the sight of the

DOMINANCE AND GROUP ARRANGEMENTS









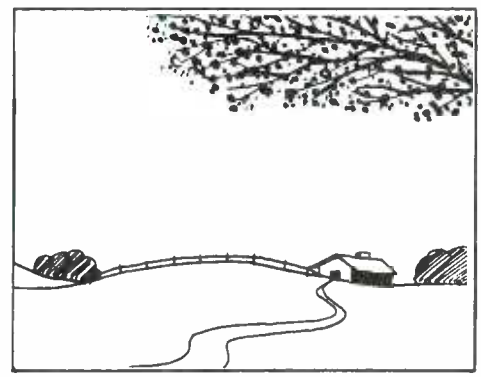


Diagram T

viewer. Except for certain effects, objects placed in such an arrangement should never block the background.

A further point to remember is that prominent background lines should not appear to connect with a performer's head or other part of his anatomy. Background objects, also, should not appear to be growing on the performer, or give the effect that they are being worn. Stating it simply, close objects should not give the impression that they are connected to or are parts of distant objects.

What has been said about the placement of objects in a scene will also hold true for the placement of people. Placing one performer near the camera and another well behind him in the background, but clearly seen by the viewer, will not only achieve the effect of a long shot and a close-up in the same frame, but the relative difference in size and height of the two figures will add to the illusion of a third dimension.

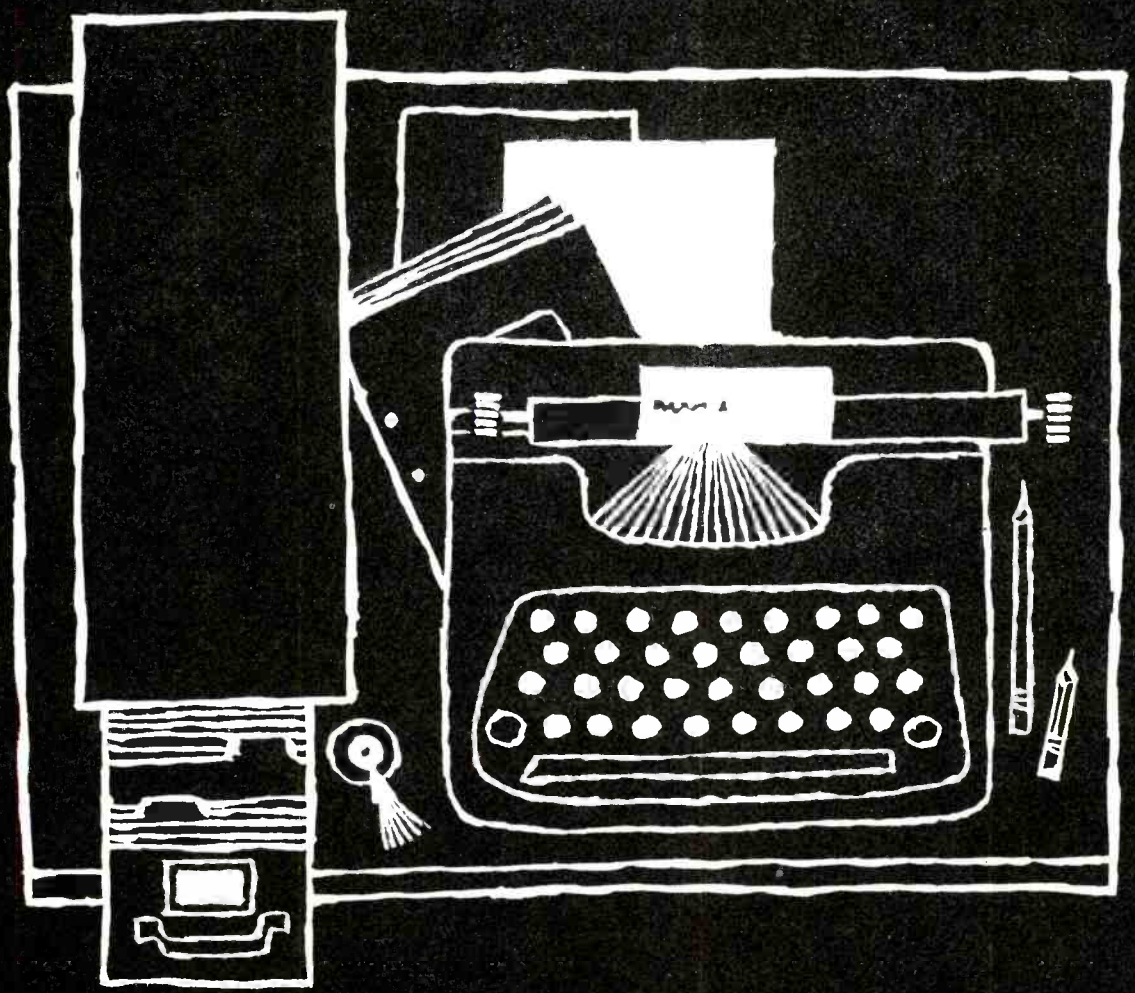
d. **Dominance:** In most dramatic scenes, story value will require greater attention on one or several characters. The general rule for obtaining dominance, or emphasis, for a particular character is to place him in a higher position in the frame of the picture. A variation to this rule, for example, is an arrangement in which an actor, even in an isolated position at the base of the frame, or in a stronger body position than the others, can dominate the picture. Regardless of any rule, if all attention is thrown to one person, he can dominate the scene, despite his position in the frame.

Depending on story value, the television director can also gain a dominant position for an actor if he locates him close to a vertical shape or line. This definite use of contrast in composition will bring attention to the individual. Dominance will be even greater if appearance or gestures of the character are sharply different from the other actors in the picture. Any meanful and purposeful use of contrast will focus interest on the individual.

e. **Group Arrangement:** The skill and instinct to arrange groups interestingly is the trademark of good composition. Static arrangements — all standing or sitting at the same level — result in dull pictures, lacking rhythm and variety. The good television director should always strive for comfortable and informal arrangements, but this should not be done at the expense of forced or awkward staging, not in keeping with the presentation. This should not rule out, however, certain formal groupings which require the rigidity of formality, such as court rooms, grouped chairs, and the like.

Many times, the television director can gain interesting pictures by placing his cast at different distances and heights. This gives variety and movement, but he must not inadvertently create distraction by competing points of interest.

The pyramid arrangement is probably the most effective device for accomplishing good composition with groups of individuals. This is a triangular pattern in which the actors are placed to form the shape of a loose triangle. Good shots generally result from such a schematic layout. They fill the frame in a comfortable, informal manner. The actor at the top of the triangle remains dominant unless a principle previously mentioned in this chapter diverts attention to another person or element in the scene.



STATION ADMINISTRATION

CHAPTER XIV

STATION ADMINISTRATION

Good management procedures should not be ignored or overlooked, under the pressure of programming and technical functions of an Armed Forces radio or television station. Proper administrative procedures are necessary for efficient management. For this reason, and for guidance purposes, this chapter will list and discuss administrative aids and management tools which will guarantee the orderly conduct of day-to-day business at an Armed Forces radio or television station.

CATALOGING

Cataloging is a tedious and time-consuming process, but too much emphasis cannot be placed on its importance for a smooth-running radio or television station. Proper cataloging and accounting of films and transcriptions in a station's permanent library will provide a well-rounded station operation and discourage "off-the-top" programming which usually overlooks a wealth of material on hand. All radio and television program directors should be thoroughly familiar with material at their disposal and they should make periodic reviews to insure that the filing system adopted by their station is working and that all personnel are using available materials for the purpose for which they are intended.

It is not necessary to have an intricate cataloging system for either films or transcriptions. The system can and should be simple, designed to fill the needs of a particular radio or television station. The key to whatever system is used is that it be kept up to date with current shipments of library films or transcriptions. Cataloging is usually divided into a number of categories, but a cross-indexed division by title, artist and type will be sufficient for the average station's needs. This section does not intend to outline a detailed procedure for establishing a particular cataloging system.

The type index card system can be developed by filing title and artist cards according to type. If it is more desirable to establish an independent filing system for this purpose, separate cards can be prepared, similar to the title and artist index cards. This supplementary filing system will prove useful and practical when a particular type of film or transcription is desired.

Samples of cross-index cards for both transcriptions and films are shown below:

TITLE INDEX CARD — TRANSCRIPTION LIBRARY

TURKEY IN THE STRAW	2:25	W-72-4
ORCH: Spade Cooley		
TYPE: Western	(Inst.)	
REMARKS:		

ARTIST INDEX CARD — TRANSCRIPTION LIBRARY

COOLEY, SPADE		W-72-4
SELECTION: Turkey In The Straw	2:25	
TYPE: Western	(Inst.)	
REMARKS:		

TITLE INDEX CARD FILM LIBRARY

VOICE IN THE FOG, A 24:58 Program No. 11-11-57

SERIES: Four Star Anthology
Jack Lemmon
TYPE: Mystery
REMARKS:

ARTIST INDEX CARD FILM LIBRARY

LEMMON, JACK Program No. 11-11-57

TITLE: A Voice In The Fog 24:58
SERIES: Four Star Anthology
TYPE: Mystery
REMARKS:

DAILY ISSUE SHEET

Transcriptions and films permanently retained in station libraries are actually property on loan from AFRTS, Los Angeles. These materials are valuable and stations have a responsibility to protect these privately owned copyrights from unauthorized usage. As an aid toward carrying out this responsibility, the following Issue Sheets are suggested:

TRANSCRIPTION LIBRARY
DAILY ISSUE SHEET

All issues of recordings will be entered on this Daily Issue Sheet. There will be no exception, regardless of purpose, length of time or person involved. Discs will not be taken outside the building at any time, except by a special authorization of OIC, which will be noted below. All records issued, and not included in record shows for broadcast on THIS DATE, will be returned to the library by 5:00 PM on day covered by this Issue Sheet.

Selection and issue of records will be made ONLY by the Transcription Librarian.

DAY..... DATE.....

RECORD NO.	TITLE	TIME OUT	DESTINATION	TIME IN	REMARKS	SIGNATURE

FILM LIBRARY
DAILY ISSUE SHEET

All issues of film will be entered on this Daily Issue Sheet. There will be no exception, regardless of purpose, length of time or person involved. Film will not be taken outside the building at any time, except by special authorization of OIC, which will be noted below. All film issued, and not included in programs for broadcast on THIS DATE, will be returned to the library by 5:00 PM on day covered by this Issue Sheet.

Selection and issue of film will be made ONLY by the Film Librarian.

DAY..... DATE.....

RECORD NO.	TITLE	TIME OUT	DESTINATION	TIME IN	REMARKS	SIGNATURE

THE MASTER SCHEDULE

The Master Schedule is prepared and maintained by the station program director. It will contain the following information:

1. Name and type of program.
2. Day and time of broadcast.
3. Length of each broadcast.
4. Number of times broadcast each week.
5. Source of program.

Station ABCD
Channel 8
Power 200W

MASTER SCHEDULE
TELEVISION

(Sample -- partially completed)

LOCAL TIME	SUN	MON	TUE	WED	THU	FRI	SAT	SOURCE
1100 1115 1130 1145	Test Pattern							S
1200 1215 1230 1245	Christophers #14 Chaplain Corner						Test Pattern	S
1300 1315 1330 1345	All Star Golf (F) 16-12-59	Test Pattern (S)	Test Pattern (S)	Test Pattern (S)	Test Pattern (S)	Test Pattern (S)	Baseball (F) 27-9-60	
1400 1415 1430 1445	World Wide 60 (F) 10-3-60	Open House (S) Cartoon S113 (F)	Open House (S) SkyKing 1002 (F)	Open House (S) Cartoon J125 (F)	Open House (S) Roy Rogers #44 (F)	Open House (S) Cartoon M567 (F)	Baseball (F) 27-9-60	
1500								

Code: F - Film
S - Studio

Station Frequency Power	ABCD 1480KC 250W	MASTER SCHEDULE RADIO				(Sample -- partially completed)		
LOCAL TIME	SUN	MON	TUE	WED	THU	FRI	SAT	SOURCE
0600	News	News	News	News	News	News	News	S
0605	Sunrise Salute	Sunrise Salute	Sunrise Salute	Sunrise Salute	Sunrise Salute	Sunrise Salute	Sunrise Salute	MTL
0630	Morn. Melo-dies 14	Morn. Melo-dies 15	Morn. Melo-dies 16	Morn. Melo-dies 17	Morn. Melo-dies 18	Morn. Melo-dies 19	Morn. Melo-dies 20	ET
0645	Hymns from Home	Hymns from Home	Hymns from Home	Hymns from Home	Hymns from Home	Hymns from Home	Hymns from Home	T
0700	News	News	News	News	News	News	News	S
0715	Home-town Hilites	Home-town Hilites	Home-town Hilites	Home-town Hilites	Home-town Hilites	Home-town Hilites	Home-town Hilites	SW
0730	Church Serv. R	Brkfast Club 71 ET	Brkfast Club 72 ET	Brkfast Club 73 ET	Brkfast Club 74 ET	Brkfast Club 75 ET	Merry-Go-Rnd S	
0815	Church Serv. R	Melody RoundUp MTL	Melody RoundUp MTL	Melody RoundUp MTL	Melody RoundUp MTL	Melody RoundUp MTL	Melody RoundUp MTL	
0830	Church Serv. R	Hobby Shop S	Hobby Shop S	Hobby Shop S	Hobby Shop S	Hobby Shop S	Dixie Jam-boree ET	
0900								

CODE:
- S - Studio
- MTL - Music Transcription Library (AFRTS)
- ET - Transcribed (AFRTS)
- T - Tape
- SW - Shortwave Feed
- R - Remote

THE WEEKLY SCHEDULE

The Weekly Schedule is used primarily for publicity purposes, for release to local military and civilian publications, for reproduction and distribution within the command, or for such other methods of dissemination as the commander may direct. It contains the following information:

1. Name and type of each program.
2. Day and time of broadcast.
3. Length of program.
4. Names of star performers and such other information as constitutes billing for publicity purposes.

The weekly schedule is prepared from the master schedule with codes and operational information deleted. Program highlights are also included for the purpose of attracting viewers or listeners. For this reason, these program comments should be brief and to the point. For example:

> Johnny Dollar — That hard hitting insurance investigator, Johnny Dollar, moves his action-packed adventures to a new time. Listen for him at 2030 hours, Thursday.

Cross Current — Three international stamp thieves try to turn Christopher Storm's hotel into a kidnapper's refuge on Cross Current . . . . . 9:00 o'clock, Wednesday night.

Have Gun, Will Travel — Paladin finds himself ducking bullets from both sides when he comes between two angry brothers engaged in a duel-to-the-death. Have Gun, Will Travel . . . . . Saturday night, 8:30.

THE DAILY OPERATING SCHEDULE

The Daily Operating Schedule is prepared at least twenty-four hours in advance and is used for information and instruction of station operating personnel. It includes the following information:

1. Name and type of each program and each announcement.
2. Time of broadcast in minutes and seconds.
3. Length of broadcast in minutes and seconds.
4. Source of program: Studio, remote or transcribed, shortwave transmission.
5. Other pertinent information of value or use to studio personnel.

DAILY OPERATING SCHEDULE
RADIO

Transcription
Unit # _____ Sunday, _____ 196___

TIME			
ON	**OFF**	**PROGRAM**	**SOURCE**
05:57:00	05:59:15	NATIONAL ANTHEM - Sign On	B
05:59:15	06:00:00	***Program Notes (:45)	B
06:00:00	06:04:30	NEWS	A
06:04:30	06:05:00	***Absentee Voting Reminder (:30)	B (ET-AFRTS)
06:05:00	06:29:15	SUNRISE SALUTE	B (MTL-AFRTS)
06:29:15	06:29:45	***Church Announcements (:30)	B
06:29:45	06:30:00	***Station Identification & Weather	B
06:30:00	06:44:30	Morning Melodies #14	A (ET-AFRTS)
06:44:30	06:45:00	***Safe Driving (:25)	B

DAILY OPERATING SCHEDULE
TELEVISION

Film Unit # _____ Sunday, _____ 196___

TIME			
ON	**OFF**	**PROGRAM**	**SOURCE**
11:30:00	11:56:30	TEST PATTERN	A Slide
11:56:30	11:59:15	NATIONAL ANTHEM - Sign On	A Slide w/music
11:59:15	12:00:00	***Program Notes	B ID slide
12:00:00	12:29:00	Christophers #14	A F (AFRTS)
12:29:00	12:29:30	***Savings Bonds (:30)	B Slide (AFRTS)
12:29:30	12:29:45	***Listening Reminder (:15)	B Slide
12:29:45	12:30:00	***Station Identification (:15)	B ID Slide
12:30:00	12:59:15	CHAPLAIN'S CORNER	A S
12:59:15	13:00:00	***Program Notes - Station ID (:45)	

NOTE: Above samples of Daily Operating Schedule forms are partially filled out as a guide from basic information contained in sample master schedules on preceding pages. Programs originating away from the studios (remotes, AFRTS, transcriptions, films, slides, and so forth) are indicated in small type. Programs originating at the station are shown in LARGE TYPE, while live announcements are indicated with asterisks. This type of operating schedule can be adjusted to any day of the week and should be prepared in advance for inclusion in the continuity book at the beginning of the day.

THE DAILY OPERATIONAL LOG

The Daily Operational Log is maintained by studio personnel on duty. It should be authenticated daily by the station manager and retained as a permanent record. The Daily Operational Log can be divided into a transmitter and program log, depending on the physical arrangement of the radio or television station. Instances where transmitter and studios are located in the same area, these two logs can be combined into one daily operational log. In any event, The Daily Operational Log should include the following information:

1. All information listed in daily operational schedule.
2. Signature of announcer or engineer on duty during each period.
3. Deviation from program schedule, discrepancies or variations in studio activities or transmission affecting broadcast operation, should be noted in detail.

The following samples are partially filled out and can be adjusted according to local requirements:

DAILY OPERATIONAL LOG (PROGRAM)
RADIO

Sunday, _____ 196 ____

Scheduled Time On	Program	Time On	Time Off	Origin	Announcer	Remarks
05:57:00	National Anthem-Sign On	05:57:00	05:59:15	ET LL	R.J. Jones "	
05:59:15	Program Notes (:45)	05:59:15	06:00:00	LL	"	
06:00:00	News	06:00:30	06:05:00	LL	"	Filled 30 w/Absentee Voting spot scheduled at 06:04:30; news not ready
06:04:30	Absentee Voting			ET-SA	"	Cancelled
06:05:00	Sunrise Salute	06:05:00	06:29:15	ET (MTL)	"	

CODE: ET · Transcribed
LL · Local Live
SA · Spot Announcement
ET-SA · Spot Announcement (Transcribed)
MTL · Music Transcription Library

DAILY OPERATIONAL LOG (TRANSMITTER)
RADIO

Sunday, _____ 196 ____

Time	Freq. Devia.	Plate Voltage	Plate Current	Antenna Current	Remarks	Engineer
05:57:00	+6	1460	290	2.65	National Anthem - Sign On	B. L. Smith
06:30:10	+4	1460	285	2.64		
06:47:47					Station off air 6 seconds - blew overload	
07:00:05	+3	1460	290	2.65		B. L. Smith Off duty

Above information should be filled in by the transmitter engineer at half hour intervals.

All air outages or transmitter trouble should be entered in log, with actual readings. Transmitter engineer signs log only when coming on and going off duty.

DAILY OPERATIONAL LOG (COMBINED)
RADIO

In instances where it is desirable to combine transmitter and program activities into one daily operational log, the columns of information listed in the two preceding samples should be reproduced (lengthwise), beginning with columns from Daily Operational Log (Transmitter), followed by columns from Daily Operational Log (Program).

DAILY OPERATIONAL LOG (COMBINED)
RADIO

Sunday, _____ 196___

Time	Freq. Devia.	Plate Voltage	Plate Current	Antenna Current	Remarks	Engineer	Sched. Time On	Program	Time On	Time Off	Origin	Announcer	Remarks

In a television operation, the Daily Operational Log performs the same function as in radio. It should be authenticated daily by the station manager and retained as a permanent record. It is maintained by studio personnel on duty and reflects all deviations, discrepancies, or variations in operation. Similar to the Radio Operational Log, and where the local situation dictates, it can be divided into transmitter and program logs.

Here again, transmitter and program activities can be combined into a Daily Operational Log (Combined) by reproducing (lengthwise) columns of information from the Daily Operational Log (Transmitter), followed by columns of information from the Daily Operational Log (Program).

DAILY OPERATIONAL LOG (Program)
TELEVISION

Station _____ Sunday, _____ 196___

Scheduled Time On	Program	Time On	Time Off	Origin	Announcer	Remarks
11:30:00	Test Pattern	11:44:10	11:56:30	Slide	R. W. Green	Test Pattern slide could not be located
11:56:30	National Anthem Sign On	11:56:30	11:59:15	ET-Slide	"	
11:59:15	Program Notes	11:59:15	12:00:00	LL-Slide	"	
12:00:00	Christophers #14	12:00:00	12:29:00	F(AFRTS)	"	

DAILY OPERATIONAL LOG (TRANSMITTER)
TELEVISION

Station _____ Carrier on 11:30:00

Video Carrier Freq. _____ Modulation on 12:00:00

Sound Carrier Freq. _____ Carrier off _____

Sunday, _____ 196__ Modulation off _____

Time	Ep		Ip		Power Out or RF Line	VSWR	Remarks	Engineer
	Pix	Snd	Pix	Snd				
11:30:00	1500	600	.370	.185	200	1.3-1	Test Patterns on	J. D.
12:00:00	1500	610	.375	.183	200	1.3-1	Program on	Brown
12:30:00	1500	600	.370	.185	200	1.3-1		
13:00:00	1500	600	.370	.185	200	1.25-1		

Ep - Plate Voltage
Ip - Plate Current
RF - Radio Frequency
VSWR - Standing Wave Ratio

Above information should be filled in by the transmitter engineer at half hour intervals.

All air outages or transmitter trouble should be entered in log, with actual readings. Transmitter engineer signs log only when coming on and going off duty.

DAILY OPERATIONAL LOG (COMBINED)
TELEVISION

Sunday, _____ 196____

Time	Ep		Ip		Power Out or RF Line	VSWR	Remarks	Engineer	Sched. Time On	Program
	Pix	Snd	Pix	Snd						

Time On	Time Off	Origin	Announcer	Remarks

THE CONTINUITY BOOK

The Continuity Book should be prepared at least twenty-four hours in advance and should include the following information:

1. Copy of the daily operating schedule.
2. All continuity to be read during the broadcast day.
   a. Sign-On and Sign-Off announcements.
   b. Station identification announcements.
   c. Spot announcements.
   d. Emergency announcements.
   e. Program copy, except news copy. Standard opening and closing announcements are sufficient.

By adding appropriate visuals for television, the following samples can be used for either radio or television:

SIGN-ON

Music: The National Anthem to end.
Announcer: "Good Morning. This is AFRTS (geographic name) , an affiliate of the United States Armed Forces Radio and Television Service, an activity of the United States Department of Defense. AFRTS operates on an assigned (frequency or channel) , with an authorized power of _____ . AFRTS is on the air."

SIGN-OFF

Announcer: "AFRTS (geographic name) now concludes its transmission, returning to the air at _____ tomorrow morning. AFRTS _____, an affiliate of the Armed Forces Radio and Television Service, is an activity of the United States Department of Defense and operates on an assigned (frequency or channel) with an authorized power of _____ . On behalf of the AFRTS staff and your commander, this is (announcer's name) bidding you good night. . . and good morning. Ladies and gentlemen, our National Anthem."
Music: The National Anthem to end.

STATION IDENTIFICATION

This is AFRTS (geographic name) , the Voice of Information and Education.

SPOT ANNOUNCEMENTS

Title of Spot: (weather forecast promotional)
Number: (1)
Writer: (Wolfe)
Starting date: (25 October)
Suspense date: (5 November)

Date and Time used	Announcer's Initials	Copy
25 Oct 06:15:00	CB	Announcer: "Much more reliable than an old man's lumbago. . . . the scientific weather forecasts are now sent your way by AFRTS , through the facilities of the Twenty-ninth Air Weather Service Detachment. Listen for them every day, following all newscasts.

EMERGENCY ANNOUNCEMENTS

1) Failure at beginning of program:-
   a) Due to operating difficulties, we are unable to present the program scheduled at this time. In the meantime, AFRTS (geographic name) offers (standby material) .

b) Operating difficulties which necessitated delay in presenting the regularly scheduled program have now been cleared. We return you to (program title) .

2) Failure after start of program:-

a) Due to operating difficulties, we interrupt the regularly scheduled program (program title) . We present an interlude of (standby material) .

b) Operating difficulties which necessitated interrupting our schedule have now been cleared. We return you to (program title) .

3) Program substitution announcement:-

a) The program originally scheduled for nine o'clock, (program title) will be broadcast at ten o'clock in order to bring you the following special report from the President of the United States.

b) The program originally scheduled at this time, (program title) , will not be (heard-viewed) . Instead, we invite you to (listen-view) (program title) .

MISCELLANEOUS ADMINISTRATIVE AIDS

For purposes of study, this section lists samples of several outstanding miscellaneous administrative forms. It is hoped that this brief sampling will initiate review of current operating forms and suggest changes or adoption of additional ones in the light of local operating conditions.

DUTY SCHEDULE FORM

Week Ending _____ 19 ____

Time	Sun	Mon	Tue	Wed	Thu	Fri	Sat
SIGN ON To- 1200							
1200 To- 1700							
1700 To SIGN OFF							

MUSICAL PROGRAM LOG SHEET

This log is to be prepared in duplicate by the announcer and approved by the program director **prior** to broadcast. After the program is aired, copy of this log will be filed and retained for three months.

Program _____ Date _____ Announcer _____

Approved _____

Program Director

Time _____

SELECTION	ARTIST	MTL #

FILM INSPECTION REPORT

Running Time:

Show

Reel No. 1 _____

" " 2 _____

Program No.

" " 3 _____

" " 4 _____

Print No.

TOTAL RUNNING TIME _____

CODE

CS -cell scratch	ENT-edge nicks, track side	TR-track ruptured (spliced)
CM -cinch marks	MF -missing footage	TS-torn sprocket hole
ES -emulsion scratch	MUF-mutilated footage	TT-torn track
ENP-edge nicks, perf. side		R-(after code) - repaired

CODE	ENTER EXACT FOOTAGE AND FRAMES	REMARKS

COMMENTS:

_____ GOOD

_____ PARTIALLY GOOD

_____ NO GOOD

(name) _____ _____

Inspector Date

_____ (name) _____

Disposition Authorized

ANNOUNCER FILE CARD

Name:

Date assigned:

Date graduated from indoctrination period to announcer staff:

Experience prior to this assignment:

Production abilities:

Dependability:

Vocabulary:

Voice quality and characteristics:

Willingness to accept responsibility:

Attendance at training:

Initiative in work and study:

Type announcing recommended:

TALENT FILE CARD

NAME: Craigh J. Lott, Sgt. ASN: 74038393 MOS: 756

MILITARY ADDRESS: Company "C" Staff Bn. Unit/430/B
Hqs & Sr Gr GHQ FEC Grant Heights (Tokyo)
APO 500 26-3467 84-3021

EDUCATION: 2 yrs college - University of Illinois
Dramatics Major

PREV. RADIO: Staff Announcer WMAZ Chicago, Ill. (1 yr)

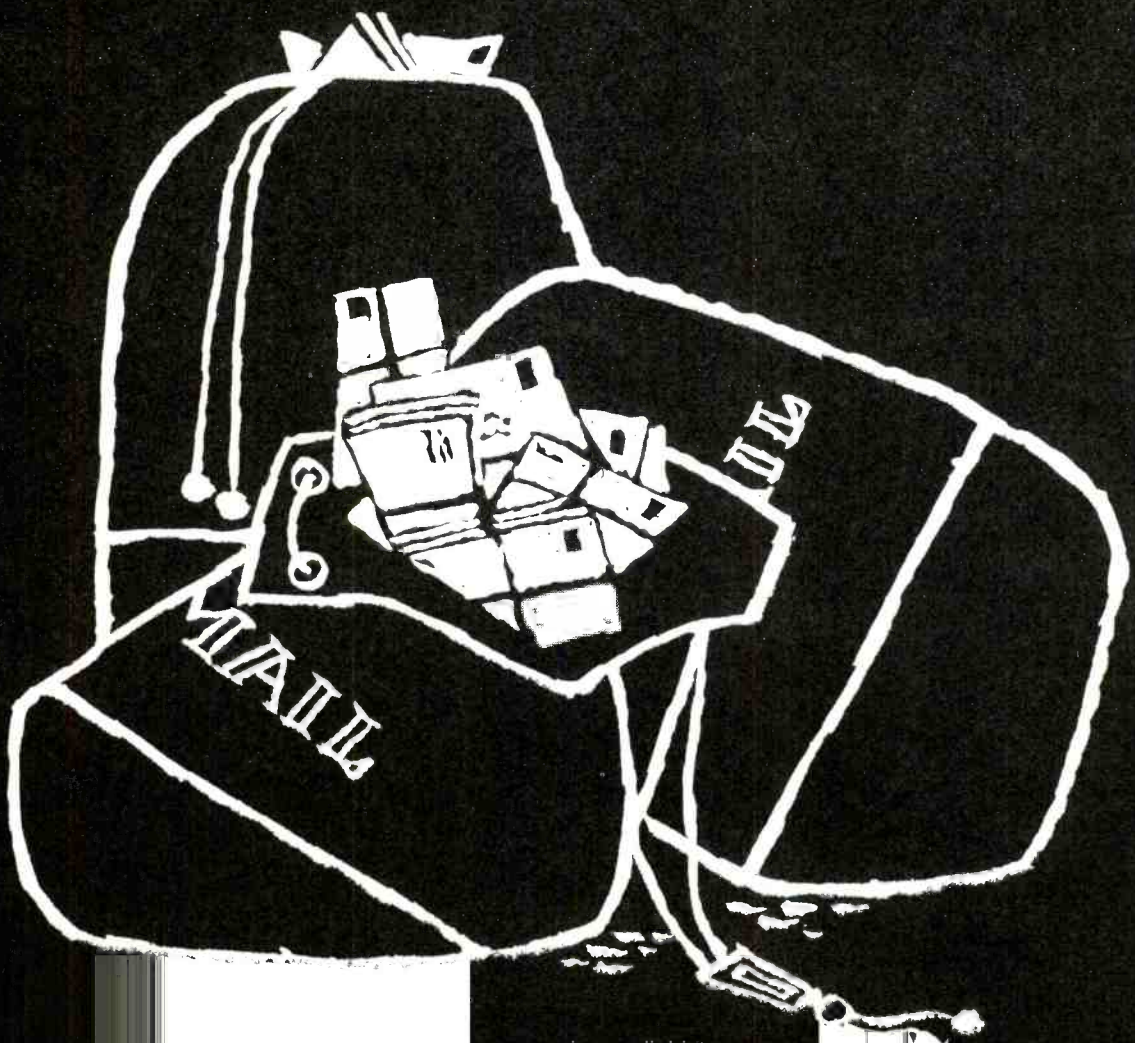
SPECIALTY: Sound effects production

DIALECTS: Texas, New England, Pure British, Cockney & Irish

CHARACTERIZATIONS: Juvenile - old man, Peter Lorre - take off

REMARKS: Good enunciation - fair characterization and very good straights

STATION AND AUDIENCE MEASUREMENTS



CHAPTER XV

STATION AND AUDIENCE MEASUREMENTS

An often forgotten aspect of an Armed Forces radio or television station is the measurement of its coverage and its audience. Measuring a station's coverage and impact on viewers or listeners is vital to its continuing effectiveness and it should not be overlooked by an otherwise energetic and competent staff.

The first step in measuring the size of an audience for a radio or television program is to determine the listening area of the broadcasting station. This type of survey, called a measurement of station coverage, defines the area in which the signal of a particular station can be heard. Coupled with a count of the population and the number of receivers, coverage information will tell how many people can hear or see the program if they all tune in.

The next step is to determine how many of the available audience actually hear or view a particular program. A number of methods have been worked out which arrive at this figure through the use of sampling techniques. In general, these measurements indicate the comparative popularity of a program in relation to others on the air, and from this the actual audience can be estimated.

MEASURING THE STATION'S COVERAGE

At first thought, it might seem that determining the area in which a particular station can be received is a comparatively simple problem, but when the vagaries of reception from day to day, interference by other stations, and the influence of weather and terrain are considered, it can be seen that even this measurement can be only an estimate. Three principal techniques are now in use. These methods are described in terms of radio, but they can also be applied to television.

FIELD STRENGTH SURVEY

This engineering method consists of taking a radio receiver out into the field to determine the listening area of a station. The strength of the signal coming from the transmitter is carefully measured at various points in the area surrounding the station. When this strength falls below a previously determined minimum strength, it is presumed that satisfactory reception will not take place. A circle or contour drawn through these points of minimum strength encloses the primary coverage area of the strength. In order to establish the secondary and testing coverage area the survey is continued beyond this point until the signal disappears entirely. A contour map summarizes the information by indicating in graphic form the various coverage boundaries.

MAIL ANALYSIS

A second method of determining coverage is to analyze the mail received by a station. Often the writing of letters and cards is motivated by special offers on certain programs. On the assumption that the station can be heard at all points from which mail is sent, the coverage of the station is indicated by plotting the most distant of them, then drawing a contour line.

It cannot be taken for granted, however, that because an occasional faraway listener hears a program, the station has coverage of the area. A rare atmospheric condition or an unusual set may have accounted for this reception.

THE BALLOT METHOD

This method has been used by the Broadcast Measurement Bureau, an organization established cooperatively by broadcasting Stations, networks and advertisers, specifically to gather coverage information. It sent ballots to listeners who were selected to represent the nation geographically, socially and economically, asking them which radio stations they listened to, when and in what proportion their listening was divided among the various stations. The Bureau then analyzed these responses to determine the various coverage areas of stations and networks for both day and night. Although the Broadcast Measurement Bureau is no longer in existence, studies similar to the type it made are being conducted by other organizations.

> Note: Both the mail and ballot methods measure actual listening to a station, while the field strength survey merely indicates the station can be heard. To establish their coverage areas, most stations will correlate information gained from the use of all three methods.

MEASURING THE STATION'S AUDIENCE

Audience coverage information is used by commercial stations and networks to prove that programs broadcast from their facilities are potentially capable of gaining an audience of a certain size. Once an advertiser has decided to invest in a broadcast, his next concern is to know what percentage of his potential audience will actually take advantage of the opportunity, either to hear or see his program.

MAIL RESPONSE

The earliest method of determining the audience for a particular broadcast was to make an estimate, based on the number of letters sent in by listeners — the assumption being that the more letters received by a program, the larger the audience. Before the development of modern measurement systems, a letter was often the only tangible evidence that anyone was listening and the number of letters received by a particular program had a great deal to do with whether it stayed on the air.

Mail response is minimized by experts as an accurate measure of the audience because no one has ever been able to determine what proportion of the people tuned in actually write to stations. A large number of persons have never written a letter to a station in their lives. The general belief that fan mail writers tend, in general, to be a small and unrepresentative part of the population casts a doubt on the validity of the mail count as a measure. As a result, more accurate methods have replaced the counting of letters in larger stations and networks, but fan mail is, in many instances, still the basis for estimating the number of listeners to smaller stations.

TELEPHONE SURVEYS

Each year millions of telephone calls are made in the United States to estimate the size of the audience of various radio and television programs. The outstanding exponent of this method was the organization founded by C. E. Hooper, the originator of the coincidental telephone technique which measures the audience of a program through telephone calls while the program is actually on the air. People answering the telephone are asked what program, if any, they are receiving, the name of the sponsor and the station, and who is listening with them. The first step in the analysis of the data is to determine the percentage of radio or TV sets in use for a particular period. Of the number of sets actually operating, the number tuned to a particular program becomes the basis

for arriving at that program's share of the audience. In other words, this figure indicates the relative popularity of a particular program, as compared with other programs on the air at the same time.

PERSONAL INTERVIEW METHOD

This technique, used by such organizations as The Pulse, Inc., was developed in an effort to eliminate the errors inherent in a listener to recall programs without help; moreover, it could include other than telephone homes. The interviewer actually visits a home, bringing with him a list of programs broadcast in a previous period, in the hope that cueing the listener's memory will make his recall more accurate. However, when non-existent programs were put on the list by investigators, it was discovered that listeners remembered hearing these programs too. This discrepancy has tended to throw further doubt on the validity of any technique which depends on the memory for accuracy.

THE DIARY METHOD

By this method a group of listeners, or viewers, representing the audience as a whole, are paid to list radio and television programs as they tune in. The members of the panel obviously need not be restricted to telephone homes or to cities, as in the coincidental telephone surveys. Another advantage of the method is that it permits an analysis of the audience in terms of such factors as age, sex and income.

The accuracy of the diary method, of course, depends on how conscientiously an indivdual keeps track of his listening or viewing activity. If he forgets to make a record after each program and does it at one time for the whole day, the method becomes one based on undependable recall.

AUTOMATIC DEVICES

The Audimeter introduced into radio audience measurement by A.C. Nielsen Company, is the outstanding automatic measurement device. When installed in a radio or TV set, this instrument keeps a minute-by-minute record of the stations to which the receiver is tuned. Placed in every set of a house, the Audimeter accurately indicates the programs tuned in by an entire family.

In addition, the Nielsen Audimeter method records the "flow of listening" from one program to another, and thus may indicate the point at which a particular show loses a large number of listeners or viewers. This information can be used to improve the construction of the show at that point.

PRACTICAL APPLICATION

It is not the purpose of this chapter to enter the controversy regarding the relative merits of the various audience and coverage measurement techniques used by commercial broadcasters and advertisers. Their various methods have been briefly outlined merely for purposes of background study, and possible practical application in one form or another.

It should be obvious that automatic devices, such as the patented Audimeter, will not be available to Armed Forces Radio and Television Stations. It will be necessary, therefore, to adapt and adjust other methods, such as mailed questionnaires, personal interviews, and, in some instances, telephone surveys, to the situation at hand.

The paramount objective of any questionnaire or survey is to get facts.

Space here does not permit a lengthy discussion of audience research technique. The questionnaire survey, however, is so widely used that a brief outline of procedures is in order.

Questionnaire surveys are probably the most widely used and the most widely abused. A questionnaire is a list of questions for formal answers by the group from which information is desired. Questionnaire surveys can be made by mail, personal interviews, and by telephone.

If the local situation permits, telephone surveys can be effective and useful for determining relatively simple facts. It has been generally supposed that telephone interviews are severely limited in the number of questions that can be asked. With proper planning, however, on the part of the interviewer, a complete questionnaire of moderate length can be handled by telephone. This type of sampling, it must be remembered, has limitations, since it will, of necessity, eliminate segments of an audience without telephones.

THE QUESTIONNAIRE

Care is needed in preparing questionnaires, either for mailing or personal interviews, and the following more important rules should be used for guidance:

1. Ask only for data that is needed. Too often extraneous information is added, which only contributes to confusion and lessens the percentage of completed returns.
2. Do not ask for information that is already available from other sources.
3. Ask only for information that can be given by informants.
4. Word questions clearly so that anyone of normal intelligence will know the meaning on first reading.
5. Do not ask leading questions. Leading questions are, perhaps, the least excusable of the common mistakes.
6. Ask for definite facts.
7. Frame questions that can be answered "yes" or "no," or with check marks. Such questions should contain, also, a "don't know" space or column.
8. Make the questions simple. Put only one idea in a question.
9. Prepare questions to follow in logical or conversational sequence.
10. Do not ask for personal or confidential information.
11. Adjust length of questionnaire to information desired and type of informant. Mailed questionnaires usually should not exceed one page in length — two pages, if taken by interviewers.
12. One or more free or opinion questions are permissible if they are pertinent to the questionnaire.

RADIO AND TELEVISION AUDIENCE PREFERENCE QUESTIONNAIRE

(Sample)

The purpose of this survey is to obtain information on the listening and viewing habits and program preferences of U. S. Armed Forces personnel. We are also interested in obtaining information about other related activities, such as reading, movie-going and personal hobbies.

This information will help our program planners at this station and in the United States to secure and schedule more of the programs that you like. It will also assist al-

lied activities, such as the Special Service Office and the Post Exchange, in obtaining items of interest to you.

In order to determine if we have surveyed a representative cross-section of the Armed Forces, it is necessary to get a little information about the people who answer this questionnaire. In this way we will be able to tell whether all ranks, age groups, etc., are properly represented.

The information about you, of course, is retained on a confidential basis, and you will never be identified in any report of this survey.

INSTRUCTIONS

This questionnaire is divided into four parts:

1. INFORMATION
2. RADIO
3. TELEVISION
4. NEWS MEDIA

Please answer all questions in terms of your personal likes and dislikes.

At times, you will be required to CHECK, CIRCLE or WRITE.

Pleast PRINT your answers.

Check (√) "Yes" and "No" answers.

Ratings: CIRCLE your preference.

WRITE your answer or comments; if your answer is "Other," specify.

INFORMATION

NAME _____ AGE ____ RANK _____ UNIT _____

SINGLE ___ MARRIED ___ NO. OF DEPENDENTS ___ DATE ARRIVED HERE _____

What is highest grade of schooling or equivalent that you have completed?

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

WHAT ARE YOUR WORKING HOURS?

1. ___ As needed
2. ___ Days only
3. ___ Nights only
4. ___ None

DO YOU HAVE

1.	A radio set?	_____ Yes	_____ No
2.	A radio set that you can use?	_____ Yes	_____ No
3.	A Hi Fi set?	_____ Yes	_____ No
4.	A Stereo Hi Fi set?	_____ Yes	_____ No
5.	A TV set?	_____ Yes	_____ No
6.	A TV set that you can watch?	_____ Yes	_____ No
7.	A car radio?	_____ Yes	_____ No

MOVIE GOING

1. How many times per week do you go to the movies? _____
2. Which of the following performances do you usually attend? ___ Matinee; ___ 1st Eve Performance; ___ 2d Eve Perform.; ___ Early Bird
3. I never attend the _____ Performance(s)

READING

1. About how many hours per week do you spend reading? _____
2. About how many hours per week do you spend reading NEWSPAPERS? _____
   NEWSPAPER TITLE _____
3. About how many hours per week do you spend reading MAGAZINES? _____
   MAGAZINE TITLE _____
4. About how many hours per week do you spend reading BOOKS? _____
   TITLE OF LAST BOOK READ _____
5. Which types of reading material do you prefer? ____ Non-fiction; ____ Fiction; ____ Military reading; ____ Other (specify) _____
6. Do you have a subscription to:
   a. ____ Yes ____ No -Hometown or other newspaper. Title: _____
   b. ____ Yes ____ No -Magazine. Title: _____
   c. ____ Yes ____ No -Record club.

WHICH OF THE FOLLOWING POST ACTIVITIES DO YOU ACTIVELY PARTICIPATE IN?

1. ____ Club Oasis, Top-5, Officers, and related activities to said clubs.
2. ____ Special Services Sports Program — Bowling League, etc.
3. ____ University of Maryland Courses.
4. ____ Correspondence courses.
5. ____ Other (specify)

HOBBIES

1. Do you have a hobby? ____ Yes; ____ No.
2. What is it? _____
3. Does this post have facilities for you to actively participate in it? ____ Yes; ____ No.

COMMENTS

Do you have any suggestions, recommendations, that would improve your morale while stationed here — gripes, etc.?

RADIO

The following questions pertain to radio. We would like you to answer these questions in terms of your particular likes and dislikes.

1. How many hours per day do you listen to the radio? _____
2. Do you listen to the radio while at work? ____ Yes; ____ No.
3. Check the days and time that you listen to the radio:

	EARLY MORNING							MORNING					AFTERNOON						EARLY EVES			LATE EVES		
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
MON																								
TUE																								
WED																								
THU																								
FRI																								
SAT																								
SUN																								

4. What is your favorite LOCALLY produced radio program? _____
5. What is your favorite NETWORK radio recorded program? _____
6. Rate the following types of music according to your personal preference. 5-best liked; 4-well liked; 3-good; 2-fair; 1-disliked.

5 4 3 2 1	CLASSICAL	5 4 3 2 1	OLD STANDARDS
5 4 3 2 1	SYMPHONIC	5 4 3 2 1	LATIN AMERICAN
5 4 3 2 1	OPERATIC	5 4 3 2 1	CHILDREN'S
5 4 3 2 1	CHAMBER	5 4 3 2 1	MILITARY
5 4 3 2 1	SEMI POPULAR	5 4 3 2 1	JAZZ (in general)
5 4 3 2 1	BROADWAY HITS	5 4 3 2 1	PROGRESSIVE JAZZ
5 4 3 2 1	ORCHESTRAL (Mantovani)	5 4 3 2 1	DIXIELAND JAZZ
5 4 3 2 1	INSTRUMENTAL	5 4 3 2 1	FOLK
5 4 3 2 1	TOP 20	5 4 3 2 1	COUNTRY OR WESTERN
5 4 3 2 1	ROCK AND ROLL	5 4 3 2 1	RELIGIOUS
5 4 3 2 1	POLKA	5 4 3 2 1	SPIRITUALS
5 4 3 2 1	MOTION PICTURES (Sound Tracks)	5 4 3 2 1	HYMNS

7. My favorite type of music is _____
8. I intensely dislike _____
9. My favorite performer is _____
10. My favorite radio program produced by the local AFRTS station is _____
11. I dislike intensely _____, produced by the local Armed Forces Radio Station.
12. What is your favorite NETWORK recorded program? _____
13. I dislike _____ NETWORK recorded program.
14. Rate the following NETWORK recorded programs according to your preference. 5-best liked; 4-well liked; 3-good; 2-fair; 1-disliked.

5 4 3 2 1	TURN BACK THE CLOCK	5 4 3 2 1	BOB AND RAY
5 4 3 2 1	THE BREAKFAST CLUB	5 4 3 2 1	BEULAH
5 4 3 2 1	THIS IS JAZZ	5 4 3 2 1	NETWORK TIME
5 4 3 2 1	GARRY MOORE-FUNNYSIDE UP	5 4 3 2 1	ARTHUR GODFREY
5 4 3 2 1	AMERICA'S POPULAR MUSIC	5 4 3 2 1	JOHNNY DOLLAR
5 4 3 2 1	FIVE STAR MATINEE	5 4 3 2 1	GUNSMOKE
5 4 3 2 1	N.B.C. RADIO THEATRE	5 4 3 2 1	WHAT'S MY LINE
5 4 3 2 1	GROUCHO MARX	5 4 3 2 1	JIM AMECHE SHOW

15. What stateside radio programs would you like to hear that are not currently being aired by the local Armed Forces Radio Station?

16. Rate the following LOCALLY produced programs that you have heard, according to your personal likes and dislikes.

5-best liked; 4-well liked; 3-good; 2-poor; 1-disliked.

5 4 3 2 1	LOCAL SPORTING EVENTS	5 4 3 2 1	MUSICAL MENU
5 4 3 2 1	NEWS	5 4 3 2 1	EARLY BIRD SHOW
5 4 3 2 1	THE RECORD RACK	5 4 3 2 1	COUNTRY JAMBOREE
5 4 3 2 1	AFTERNOON W/THE CLASSICS	5 4 3 2 1	NITE WATCH
5 4 3 2 1	TEEN TIME	5 4 3 2 1	CONCERT IN RHYTHM
5 4 3 2 1	WONDERLAND OF WAX	5 4 3 2 1	SOUNDS IN PASTEL
5 4 3 2 1	KORN KRIB	5 4 3 2 1	FEATURE PAGE
5 4 3 2 1	LUNCHEON SERENADE	5 4 3 2 1	SUNDAY SERENADE
5 4 3 2 1	GOSPEL TRAIN	5 4 3 2 1	COFFEE BREAK

17. Do you have any suggestions, recommendations or comments with regard to improving your local AFRTS Station?

TELEVISION SURVEY

1. How many hours per day do you watch TV?
2. Where do you watch TV?
   a. _____ At home
   b. _____ At the club
   c. _____ In the Company day room
   d. _____ Other (specify)
3. Do you watch TV with your family? _____ Yes; _____ No.
4. Check the days and times that you watch TV:

	430-5	5-530	530-6	6-630	630-7	7-730	730-8	8-830	830-9	9-930	930-10	10-1030	11-Sign Off
MON													
TUE													
WED													
THU													
FRI													
SAT													
SUN													

5. Do you watch the sporting events on weekends? _____ Yes; _____ No.
6. Do you think that TV is on the air long enough daily? _____ Yes; _____ No.
7. If your answer is "No," what hours would you like to have TV operate?
   a. _____ Go on earlier in the afternoon
   b. _____ Stay on later at night
   c. _____ Go on earlier on the weekends
   d. _____ All of the above
   e. _____ Other (specify)
8. Rate the following types of TV programs according to your preference.

5-best liked; 4-well liked; 3-good; 4-fair; 5-disliked.

5 4 3 2 1	MYSTERY (Peter Gunn)	5 4 3 2 1	NEWS REEL
5 4 3 2 1	DRAMA (U. S. Steel Hour)	5 4 3 2 1	WESTERNS
5 4 3 2 1	COMEDY	5 4 3 2 1	FEATURE LENGTH MOVIES
5 4 3 2 1	VARIETY (Ed Sullivan)	5 4 3 2 1	SPORTS

9. List your five favorite TV programs aired over the local AFRTV Station:
   a. _____
   b. _____
   c. _____
   d. _____
   e. _____
10. What stateside TV programs, not currently aired on your local AFRTV station, would you like to have aired?

11. What types of programs would you like to see the local AFRTV station produce? (Please check)

CHILDREN'S	DRAMATIC	EDUCATION
WESTERN MUSIC	COMEDY	SPORTS
HOBBY	POPULAR MUSIC	INFORMATION
FILM SHOWS OF LOCAL EVENTS	WOMEN'S VARIETY	CRAFT
		SWAP SHOP

OTHER (Specify) _____

12. When would you like to see feature motion picture films on TV?
    a. ____ One per day in the late evening hours at
    b. ____ One per day in the early evening hours at
    c. ____ Two per day.
    d. ____ Other (specify) _____
13. Rate the following sporting events that you like to see on TV?

5 4 3 2 1	BASEBALL	5 4 3 2 1	COLLEGE FOOTBALL
5 4 3 2 1	BOWLING	5 4 3 2 1	PRO FOOTBALL
5 4 3 2 1	BOXING	5 4 3 2 1	COLLEGE BASKETBALL
5 4 3 2 1	GOLF	5 4 3 2 1	PRO BASKETBALL
5 4 3 2 1	ICE HOCKEY	5 4 3 2 1	WRESTLING
5 4 3 2 1	AUTO RACES	5 4 3 2 1	TRACK AND FIELD EVENTS

14. What is your best-liked sporting event on TV? _____
15. What is your least-liked sporting event on TV? _____
16. Do you mind watching sporting events on TV, even though they are outdated and you know the outcome? ____ Yes; ____ No.
17. Do you have any suggestions, recommendations, or comments with regard to improving your Station's TV?

NEWS

1. Which two of the following news sources best keep you informed on world events?

a. Army-Navy-Air Force Times	_____ BEST SOURCE
b. Civilian Newspapers	
c. Civilian Magazines	
d. Troop Information Periods	_____ NEXT BEST SOURCE
e. Post Bulletins	
f. Post Newspapers	
g. Stars and Stripes	_____ POOREST SOURCE
h. Local Armed Forces Radio Station	
i. Conversations with fellow service men	
j. Local Armed Forces TV Station	
k. Other (specify) _____	

2. What is your opinion on the amount of radio and TV newscasts?
   a. There should be more news on radio and TV.
   b. There is too much news on radio and TV.
   c. There is enough news on radio, but increase newscasts on TV.
   d. There is enough news on TV, but increase newscasts on radio.
   e. Coverage is sufficient as is.
   f. Other (specify) _____

3. Rate the following types of NEWS that you like to read and hear according to your personal preference.

   5-best liked; 4-well liked; 3-good; 2-poor; 1-disliked.

5 4 3 2 1	WORLD EVENTS	5 4 3 2 1	POST NEWS
5 4 3 2 1	NATIONAL EVENTS	5 4 3 2 1	SPORTS
5 4 3 2 1	HOME TOWN EVENTS	5 4 3 2 1	EXPLANATION OF NEWS

4. Do you read the local Post Newspaper?
   a. _____ Read it thoroughly each day.
   b. _____ Glance at it each day.
   c. _____ Unable to read it because I never get it.
   d. _____ Seldom read it.
   e. _____ Never read it.

5. Where do you obtain your copies of the local Post Newspaper?
   a. _____ Picked up at my unit mail room.
   b. _____ Picked up at the PX Snack Bar.
   c. _____ Picked up at the Commissary.
   d. _____ Given to me by a friend.

e. _____ At work.

f. _____ Delivered to my home.

g. _____ Other (specify) _____

6. Which of the following is your primary source of obtaining news on post?

a. ___ Local post newspaper.
b. ___ Local Armed Forces Radio Station.
c. ___ Local Armed Forces TV Station.
d. ___ Stars and Stripes.
e. ___ Other (Specify). _____

7. Rate following TV information programs according to your personal preference. 5-best liked; 4-well liked; 3-good; 2-poor; 1-disliked.

5 4 3 2 1	CHET HUNTLEY	5 4 3 2 1	TWENTIETH CENTURY
5 4 3 2 1	MEET THE PRESS	5 4 3 2 1	THE BIG PICTURE
5 4 3 2 1	HARVEST	5 4 3 2 1	ADVENTURE TOMORROW
5 4 3 2 1	TIME PRESENTS	5 4 3 2 1	YOU ARE THERE
5 4 3 2 1	CORONET FILMS	5 4 3 2 1	MOVIETONE NEWSREEL

8. Your best liked TV information program is _____

9. Your least liked TV program is _____

10. How effectively have you been informed by the local Armed Forces Radio and TV Station regarding events such as: THE SUMMIT CONFERENCE and THE U-2 PLANE INCIDENT, etc.

a. ___ The information I received from this source made it possible for me to understand the purpose of these events.

b. ___ The information was fairly good but did not fully make me aware of the purpose of these events.

c. ___ I don't remember getting any significant information on this subject from radio and television, but I was able to keep up on the news through civilian newspapers and magazines.

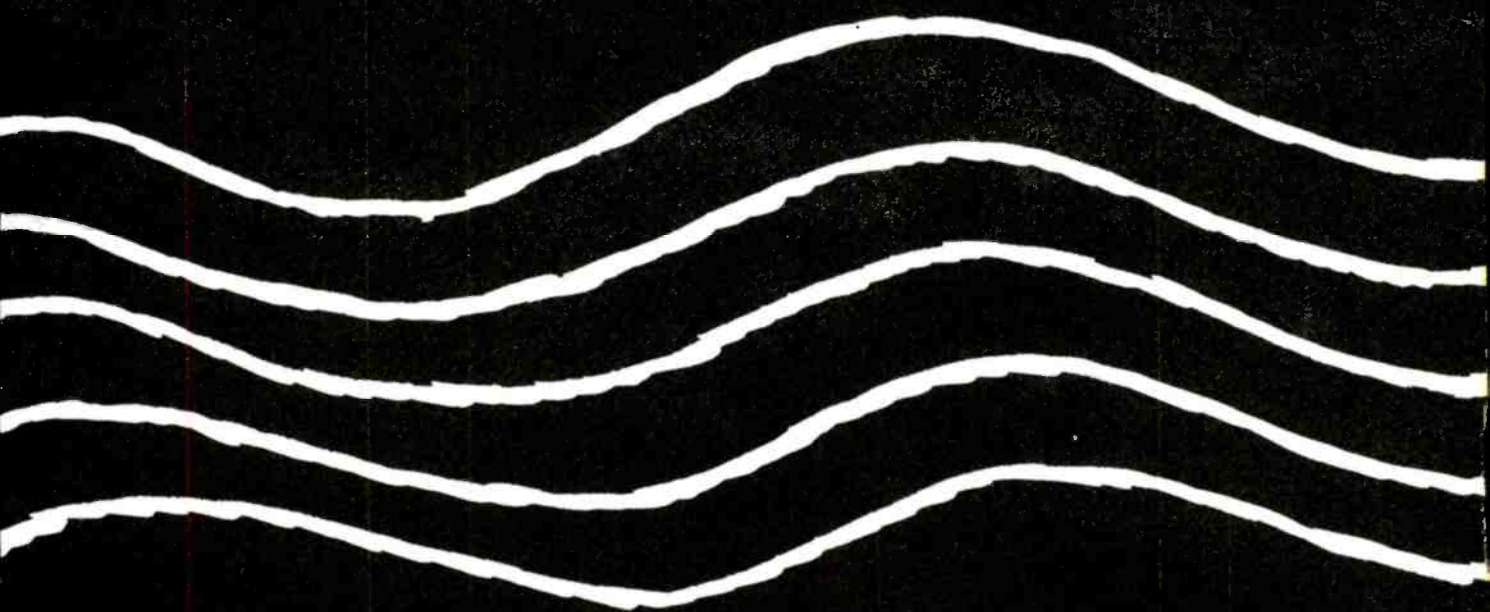
d. ___ The information was fairly good but most of my understanding came from other sources.

e. ___ I don't remember getting any information on this subject from either radio or television.

f. ___ I don't remember getting any information on this subject from radio and television, or any other source.

11. COMMENTS — What are your recommendations, complaints or comments on news coverage by the local Armed Forces Radio and Television Station, or by the local post newspaper:

APPENDIXES

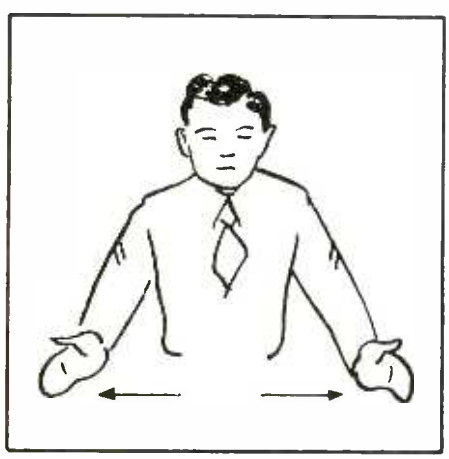


APPENDIX A

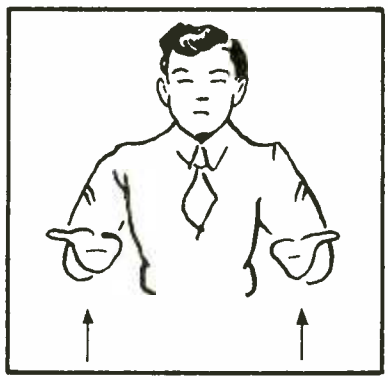
THE RADIO DIRECTOR'S HAND CUES

"CUT" is the obvious expression used to stop at the nearest convenient point in the broadcast. The director indicates this to the announcer by drawing his hand across his throat.

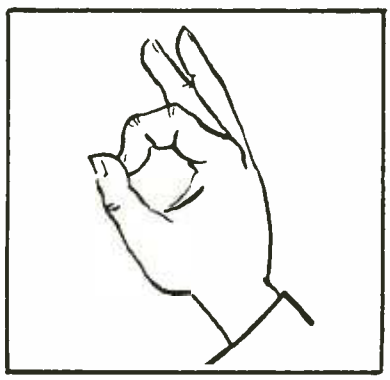
"GET CLOSER TO MIKE" — is indicated by holding the forearms in a vertical position with the palms of the hand facing each other and slowly brought together as though you were clapping in slow motion.



"GET BACK FROM MIKE"—may be shown with the arms in the same position as in "Closer to Mike" except that the motion of the hands is reversed.

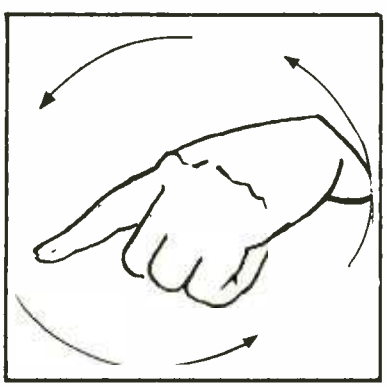


"LOUDER" — is indicated by holding the arms forward, palms up, and raising evenly.

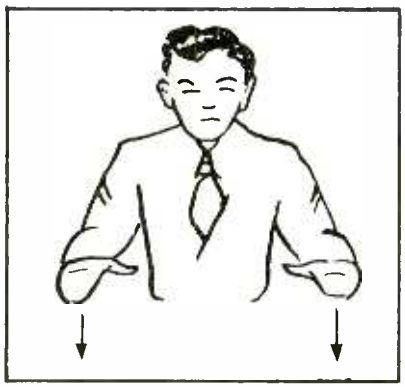


"OK" or "ALL RIGHT" — is indicated by forming a circle with the index or second finger curved to touch the end of the thumb.

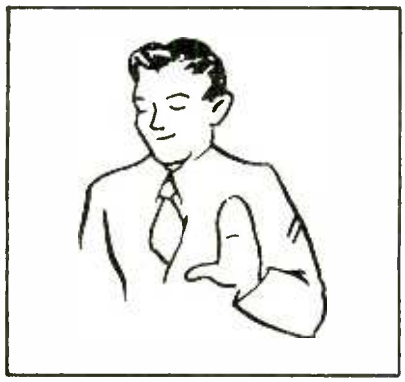
"ON THE NOSE" — is indicated by placing the index fingers directly on the tip of the nose and means that the program is running parallel with the estimated or rehearsed time.



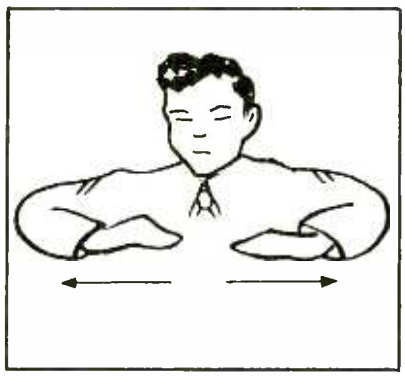
"PICK UP TIME" — is indicated by rotating the index finger in a clockwise direction and means that the broadcaster (cast, announcer, or speaker) concerned should increase his tempo.



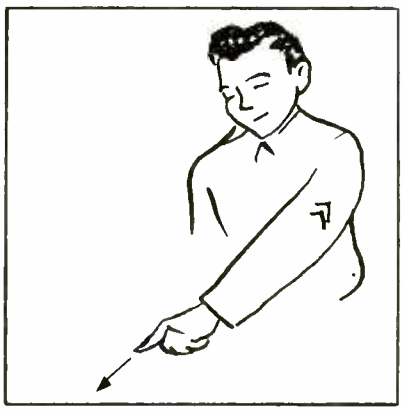
"SOFTER" — is indicated by holding the arms forward, palms down, and lowering evenly.



"STAND BY" — is indicated by holding the palm out in the same manner as a policeman would hold up traffic.



"STRETCH" — is indicated by pulling the hands and arms apart as though stretching a rubber band. This means that the program will end too soon unless the pace is somewhat slackened.



"THROWING A CUE"—is indicated by projecting the index finger at arm's length to the person concerned (whether it be the announcer or member of the cast) and is, of course, the signal to begin talking.

APPENDIX B

THE TELEVISION DIRECTOR'S VOICE CUES

It is most essential that the television director use proper, systematic and uniform terms for his transitional instructions to the cameraman and the technical director. This is also important to other members of the production crew. They, too, should know what to expect and when to expect it, so that they may perform their function smoothly and achieve what the telelvision director wants to create in a given series of pictures.

There are tried and proven commerical procedures for giving these voice cues and the talented but inexperienced television director will commit these to memory and learn to use them in a quick and facile manner. For this, he will win the respect and confidence of his crew.

CUES FOR THE CUT

"READY" CUE

For the cut, the skillful director will give a "READY ONE" (or other camera number).

This phrase prepares the technical director and the cameraman. It alerts the technical director to the button he should push for the cut to follow; it warns the cameraman to hold his shot in focus and be ready to go on.

If this "READY" cue is not given, the cameraman, in all probability, will be "caught" re-aligning his camera or making a lens change. If this happens, there is no one to blame but the director. A good cameraman should always attempt to improve his shot while the show is in progress, or, in an ad-lib show, catch some unexpected action on stage.

The "READY" cue, followed by the number of the camera, should be given by the director as he watches the monitor of the camera about to be used.

"TAKE" CUE

The cue for the cut is "TAKE ONE" (or other camera number).

The switch should come on the word of the camera number.

If the two words are slurred, the cue has no value, as the technical director might switch on either the word "TAKE" or camera number. The cue "TAKE" should be used as an additional preparatory signal, if the wording is to remain clear.

For fast cuts (when the camera shots are pre-set), the director can simply call the camera number for the switch. There are many occasions when the cuts come so fast the director cannot go through all the usual word cues.

CUES FOR TRANSITIONS OTHER THAN THE CUT

FADE

For the fade, the director should use the following cues:

Fade-In:	(Standby)	READY TO FADE-IN ONE
	(Cue)	FADE-IN ONE
Fade-Out:	(Standby)	READY TO FADE-OUT ONE
	(Cue)	FADE-OUT ONE

If a certain rate of fade is required, the director should qualify the standby cue with the words **"slow, "medium"** or **"fast":**

(Standby)	READY TO FADE- ONE, FAST
(Cue)	FADE-IN ONE

DISSOLVE

The dissolve cues are as follows:

(Standby)	SET UP DISSOLVE TO ONE
(Cue)	DISSOLVE TO ONE

The word "set" distinguishes the dissolve from the cut. If a certain rate of dissolve is required, the director should qualify the standby cue with the words "slow," "medium," or "fast":

(Standby)	SET UP DISSOLVE TO ONE, FAST
(Cue)	DISSOLVE TO ONE

SUPERIMPOSITION

For the superimposition, the director should employ the following cues:

(Standby)	READY TO SUPER ONE
(Cue)	SUPER ONE

to take super out, the cue is:

(Cue)	TAKE OUT SUPER

DEFOCUS TRANSITION

The cues for the defocus transition are as follows:

(Standby)	READY ONE OUT-OF-FOCUS
(Cue)	TWO DEFOCUS — DISSOLVE TO ONE — BRING IN FOCUS ONE

NOTE

The director must learn at the outset to keep a check on all of his monitors while a show is in progress. In a multi camera commercial show this is usually done for him by his assistant director. On small shows, and particularly at Armed Forces television stations, he will have to do this for himself, keeping himself flexible and alert to all cameras at his disposal, especially in ad-lib situations.

The director must also watch the master monitor in order to maintain an objective viewpoint on all of his transitions. This objectivity on his own program will be most difficult to sustain but most necessary in the attainment of a better end product.

APPENDIX C

KEYS TO CORRECT PRONUNCIATION

What every announcer should accept is the inescapable fact that he is the image of his Armed Forces Radio or Television Station.

Regardless of the medium, words will be important and necessary for attracting and holding the interest of listeners or viewers. The neophyte should realize this at the outset and expend every effort to become familiar with this important tool of his craft. He should learn to live with words — appreciate and understand their inner meaning. What is more important, he should learn to pronounce them correctly.

Correct pronunciation is the pronunciation used by the great majority of educated people throughout the country. Correct pronunciation, in other words, is no more nor less than current pronunciation. "Bahth" may sound pretty to some people, but it is incorrect, while "bath" is correct — because most educated people say it that way.

WAYS OF NOTING PRONUNCIATION

The spelling of the English language is highly inconsistent with its pronunciation. A given letter such as *c* represents one sound in a word like *curtain* and an entirely different sound as in *certain.* With this one exception, both words are pronounced alike despite the different spellings, i.e., *ur* and *er,* which represent the same vowel sound in the first syllable of the two words. Words that are pronounced alike, such as meat-meet, pare-pear, two-too, etc., are known as homophones. Another source of inconsistency is the aphthong, or letter that is not pronounced in English words. There are many such words, mus*c*le, plum*b*er, *gh*ost, has*t*en, being representative.

In order to record pronunciation graphically, some system is needed that allows one symbol for each sound. Since there are twenty-six letters in the spelling alphabet and approximately forty sounds in American speech, it is obvious that more symbols are needed for recording pronunciation correctly. The need is met by at least three systems of notation, namely, diacritical markings, the International Phonetic Alphabet, and respelling.

A diacritical mark is attached to a letter to distinguish it in sound. A widely used system of diacritical markings of vowels in American speech is found in Webster's New International Dictionary.

The International Phonetic Alphabet, commonly referred to as the IPA, is, perhaps, less cumbersome than diacritical markings. Since many of the symbols are taken from the spelling alphabet, one may learn the IPA without a great expenditure of time. Within the last fifteen years it has become widely used in schools and colleges, and its present as well as future usefulness seems assured.

There are many individuals who prefer respelling to the other two systems. Respelling has the advantage of making use of the symbols that comprise the spelling alphabet, so that it is not necessary to learn any new letters. On the other hand, respelling is likely to be less reliable than diacritical markings or the IPA, especially in regard to the unaccented vowel sound which occurs in words like lem*o*n, *a*bout, tak*e*n, penc*i*l, circ*u*s. Thus, *uh* is used to record the unaccented vowel and also the accented vowel as in the word *up.* Whenever possible, an apostrophe is used in place of *uh* to represent the unaccented vowel.

Occasionally, other deviations from the adopted respelling system are employed for the sake of clarity. Such liberties are not necessary in the phonetics, which lend themselves to more consistent representation.

The IPA and respelling systems, as used in the NBC Handbook of Pronunciation, are as follows:

KEY WORD	RESPELLING	PHONETICS	KEY WORD	RESPELLING	PHONETICS
all	awl	ɔl	jay	jay	dʒe
at	at	æt	kiss	kis	kɪs
ace	ays	es	lamb	lam	læm
air	air	ɛər	my	migh	məɪ
alms	ahmz	ɑmz	nice	nighs	nəɪs
back	bak	bæk	sing	sing	sɪŋ
chain	chayn	tʃen	old	ohld	old
do	doo:	du	oil	oil	ɔɪl
elm	elm	ɛlm	out	owt	ɑʊt
eel	eel	il	pine	hwighn	pəɪn
earn	ern	ɜn	race	rays	res
ear	ier	ɪər	so	soh	so
fit	fit	fɪt	shall	shal	ʃæl
go	goh	go	to	too:	tu
hurt	hert	hɜt	thin	thin	θɪn
is	iz	ɪz	thee	th:ee	ði
ice	ighs	əɪs	up	uhp	ʌp
foot	foot	fʊt	whine	hwign	hwəɪn
food	foo:d	fud	you	yoo:	ju
use	yoo:z	juz	zest	zest	zest
vine	vighn	vəɪn	rouge	roo:zh	ruʒ
wine	wighn	wəɪn			

Note: The colon (:) after a symbol indicates that its sound is long in duration as compared with that of the unmarked symbol.

In contrast to the NBC Handbook of Pronunciation are the United Press International and Associated Press respelling guides. The keys to these respelling styles are reproduced here as they will have daily practical application in areas where UPI and AP services are available to Armed Forces Radio and Television Stations:

VOWELS

—A—

AY for long A (as in mate)
A for short A (as in cat)
AI for nasal A (as in air)
AH for short A (as in father)
AW for broad A (as in talk)

—E—

EE for long E (as in meat)
EH or E for short E (as in get)
UH for hollow E (as in the, or French prefix le)
AY for French long E with acute accent (as in Pathe)
IH for middle E (as in pretty)
EW for EW diphthong (as in few)

add phonetics

—I—

IGH for long I (as in time)
EE for French long I (as in machine)
IH or I for short I (as in pity)

—O—

OH for long O (as in note, or "ough" as in though)
AH for short O (as in hot)
AW for broad O (as in fought)
OO for long double OO (as in fool, or "ough" as in through)
UH for short double O (as in foot, or "ouch" as in touch)
OW for OW diphthong (as in how, or "ough" as in plough)
O for middle O (as in love)

—U—

EW for long U (as in mule)
OO for long U (as in rule)
U for middle U (as in put)
UH or U for short U (as in shut or huff)

CONSONANTS

K for hard C (as in cat)
S for soft C (as in cease)
SH for soft CH (as in machine)
CH for hard CH or TCH (as in catch)
KH for gutteral CH (as in Reich)
Z for hard S (as in disease)
S for soft S (as in sun)
G for hard G (as in gang)
J for soft G (as in general)
ZH for soft J (as in Jacques or rouge)

Some words defy a logical phonetization. In such cases, use a rhyming technique. Thus: Chairman Roger Blough (like now).

APPENDIX D

SOUND EFFECTS

Occasions sometimes will arise when the recorded sound effects available in the Music Transcription Library do not exactly fit the sound pattern indicated in the script. For this reason this section lists, alphabetically, a series of simplified sound effects which can be simulated in a studio. This list by no means covers the entire field, but a careful study will enable an ingenious person to improvise or combine effects to meet most demands.

BELLS and CHIMES

1. Triangles and chimes are often available. Tapping lightly on the edge of glasses filled with varying amounts of water will give a reasonably good effect.

2. Some excellent bells can be be made from automobile brake drums. Different sizes of brake drums will give different tones.

3. Pieces of iron pipe with holes drilled in one end and held suspended may be used.

BIRD CALLS

Bird calls can be made by an imitator, or a warbling sound which simulates it (twittering of a canary) can best be done with a small bird whistle of the type which holds water.

BIRD WINGS FLAPPING

Flap pieces of canvas near the microphone.

BONES RATTLING

A good effect may be produced by suspending wooden sticks with string from a board. Manipulate board so that the sticks click together for the macabre illlusion of rattling of bones.

BREEZE

Fold two sections of a newspaper in half, then cut each section into parallel strips. When these strips are swayed together the rustling sound of a breeze is produced.

BROOK BABBLING

1. By blowing air through a straw into a glass of water a fairly convincing effect may be produced. Experiment by using varying amounts of water and by blowing at varying speeds.

2. Take a dishpan full of water, dip fingers into it and make small splashes.

BUILDING CRASHING

Crush two strawberry boxes near the microphone; drop crash box containing gravel and pieces of window glass, with the roar of a kettle drum or thunder sheet held in background. The composite of these sounds will give fairly good results. Egg crates, orange crates or any medium size crates are good.

BUSHES CRACKLING

Manipulate a small bundle of broom straws close to the microphone. (See Underbrush Sound.) Use real underbrush if available.

CHOPPING WOOD

Chop a piece of 2x4 wood with a small hatchet near the microphone. Chop as you normally would. For chopping a large tree, use a 4x4 or heavier.

CLOCK SOUNDS

For the best sound, use old clocks. Have a variety of these on hand, with several strike mechanisms to give different tone quality.

COINS CLINKING

Some coins cannot be used because they produce a high note that is lost in transmission. It may be necessary to use nickels,quarters, half-dollars and dollars. Iron washers may also be used successfully.

COWS BEING MILKED

Squeeze water-filled ear syringes alternately into a bucket.

CRASHES

Fill an old washtub with assorted pieces of iron, steel and a few rocks. Hold it about three feet in the air, rattle it from side to side and drop.

DESTRUCTION NOISE

General destruction noises may be simulated by crushing and breaking strawberry boxes and light wood held close to the microphone. In the background you may want the sound of breaking glass (drop box filled with broken glass) and perhaps use some of the effects described under Thunder.

DISHWASHING

This sound is difficult to imitate. The best way is actually to wash dishes before the microphone.

DOOR (hollow clang of iron doors opening)

1. Draw a roller skate over an iron grate. Rattling of heavy chains and of a key in a lock add to the effect.

2. Any two pieces of iron clanked together will serve. Let it ring a bit after clanking.

ORDINARY DOOR

A "studio door" with appropriate hardware hinged into frame is a necessity in every studio. It need not be full size, but substantial enough to simulate an ordinary door when opened and closed. Good results may be obtained from a standard door. The door should be mounted in a heavy frame, 2x6 kiln-dried oak. Heavy hardware must be used if realistic sound is to be expected. Do not try to combine doors with other effects, as this invariably results in bad resonance and undesirable extraneous sounds. Slamming the top of a piano will serve as a pretty good imitation of a door slam.

SQUEAKING DOOR

Squeeze the surfaces of a leather billfold together so that they slip just enough to squeak. Some old wooden chairs will give you the squeak you need. Squeaky shoes will do, also.

ECHO EFFECT OR SPEECH IN A TUNNEL

Suspend a solid wastepaper basket or any other good size container horizontally so that the open end faces the diaphragm of the microphone. The actor then stands behind

the mike so that most of his voice goes into the container and then is reflected back into the microphone. (That part of the voice which is reflected, lags enough behind the sound waves which go directly into the microphone to give a muffled, hollow effect.) To give the voice a hollow, ghostlike sound, place one end of a ten-foot length of two-inch pipe about two feet from the microphone. The actor then speaks into his hands, which he cups over the other end of the pipe. The illusion of a voice coming over an old radio or telephone receiver, sometimes called "talk-back effect," may be obtained by having the person in front of the microphone talk directly into a large glass jar.

EXPLOSION (followed by hissing blast of wind)

Secure a stem-type standard basketball bladder; drop about one dozen shot into it and blow it up to normal size. Holding the bladder by the stem to within three inches of the microphone, give it a sudden upward jerk. This will give an explosion effect, the dimensions of which can be readily controlled by the studio engineer. (See use of bladder under Thunder.)

FALLING BODY

By dropping a gunny sack half filled with sand on the studio floor, the sound of a body or heavy object falling to the ground or floor can be produced.

FIGHTING SOUND

Punch one fist against the palm of the other hand, slap chest, etc.

FIRE

The crackling of fire may be produced by twisting cellophane near mike. Also, the breaking of the stems of brooms straws, or the crushing of wrapping paper will give various effects of crackling fire.

FOOTSTEPS ON STONE OR CEMENT

This sound may be produced with hard-heeled shoes on composition material.

GANGPLANK LOWERING

Take two 2-foot lengths of wood, 2"x4"; pad each piece by wrapping in cloth. Knock the two blocks together to give a "thud" sound and then follow with "chain noises." For raising plank, start with chains and finish with thud.

GLASSES

The clinking of glasses can be made by setting glasses down on wood at intervals, and water poured into them will give the effect of bartender filling them up.

HAIL

The sound of falling hail may be simulated fairly well by dropping rice onto glass, tin or wood.

HINGES SQUEAKING

Squeak boxes may be had by turning wooden pegs in holes drilled in a block of wood to make a snug fit. White cedar is good for this purpose. (See Squeaking Door.)

HISSING SOUNDS

The hissing may be made with any of a variety of wind machines and compressed air tanks. If no such equipment is available, have two or three persons hiss into the sound mike, spelling each other as one stops for breath.

HOOFBEATS

A pair of half cocoanut shells clapped together in proper rhythm will give the "clappety clap" of a horse on hard road. Two plumber's suction cups pounded against the chest will give sound of hoofs on turf. Half cocoanut shells or rubber suction cups clapped slowly in a wooden box container give a very satisfactory effect.

RHYTHMS

Walk		Trot		Gallop	
L. Hand	R. Hand	L. Hand	R. Hand	L. Hand	R. Hand
1	2	1	2	2	1
3	4	Together			3

HORNS

Horn sounds are frequently needed. It will pay to have several electric horns with different tone qualities mounted on a board with terminals for battery attachment and with varied pushbutton controls.

ICE CRACKLING

An electric light bulb carton crumpled near the microphone gives the effect of crackling ice.

ICE JAM CREAKING

This sound can be done by twisting an inflated balloon.

KEY GRATING

If possible, use a large key in actual lock. The more rusty the lock, the better.

MACHINERY

A small motor, the kind often found in toy construction kits, if placed close enough to the microphone, will give the effect of much larger machines at work.

OARS IN OAR LOCKS

Twist or turn one block of wood on another. If simultaneously you turn an ordinary door knob in rhythm with the intended action of the oars, you may get the effect of oars working in metal oar locks. Both wooden blocks and door knob must be manipulated close to the microphone.

PICKS AND SHOVELS

To give effect of miners at work, manipulate a child's toy spade in a box of dirt and gravel. This results in a scraping and shoveling effect. To give a pick-axe effect, strike stones with a hammer.

RAIN

1. Water poured through a shower head or sprinkling can, into a tub of water is best.

2. Rain can be simulated by sand or salt slipping through the fingers or through a funnel on to cellophane. You may also try a ball of crumpled cellophane loosely wrapped in tissue paper and lightly rolled between the hands.

ROAR OF A RIVER

Fill a large washtub half full of water and draw a flat paddle through the water. A little experimenting will determine the speed and vigor necessary to give the proper

volume and quality of sound. As a precaution against getting a metallic sound, line the tub with a piece of canvas. (See Water Effects.)

SHIP PULLING AT MOORING LINES

The squeak and strain may be simulated by drawing a violin bow across the edges of a strawberry box. Two pieces of leather rubbed together under pressure will do.

SHIP SAILING ON THE WATER

With a little ingenuity, one can rotate an ordinary hairbrush on the surface of a bass drum to give the sound of waves breaking away from the boat. If it is a large sail boat, one can simultaneously use the effect of straining mooring lines as previously described.

SHUTTER BANGING

At irregular intervals, slam two pieces of wood together twice.

SLAP

A slap is easily made by slapping the hands together. Be careful not to get this too close to the microphone, or it will sound like an explosion.

SPLASH

Simply drop a flat block of wood into a tub of water well off mike. Be careful not to hit the sides of the tub. As a precaution, line tub with canvas. (See Water Effects.)

STEPS, LIMPING, ETC.

This sound can be made by using the palms of the hands, simulating the motion of steps, on a table on which twigs and leaves have been placed. Approach is suggested by augmenting motion of the hands in an increasingly heavy manner. The limp is suggested by putting one hand down more heavily than the other.

SURF

Rub a stiff brush with a rotary motion over the head of a drum or roll a few beans on a window screen or drumhead.

SWORDS

A dueling scene may be made more convincing by clashing iron rods together.

TELEGRAPH KEY

It is best to use a regular telegraph key. In using a telegraph key, remember that sending an **intelligible** message as a part of a radio broadcast is prohibited by law.)

THUNDER

Suspend vertically from a wooden clamp, a piece of thin sheet metal. By striking the sheet with a padded mallet, or by twisting the sheet to make it reverberate, a good effect may be produced. A bass drum can be used to good advantage with a little practice. An inflated basketball bladder containing about fifty small buckshot will give a convincing rumble when agitated very close to the microphone.

UNDERBRUSH NOISES

Use real underbrush, if available. If not, twisting a bundle of straw near the microphone will give the effect of something stirring in the underbrush.

WALKING ON GRAVEL

Fill a long shallow box with gravel and have someone walk on it.

WALKING THROUGH THE SNOW

Squeeze a box or bag containing corn starch in front of the microphone. By twisting the thumbs in a bowl of corn starch, a sound of walking through heavy, crusty snow may be best effected.

WATER EFFECTS

One of the most indispensable effects is that of water splashes, swimming, lapping of water against a boat, etc. A square metal tub of heavy copper, twenty inches by twelve inches deep, should be made, or, if this is too expensive, use a square galvanized washtub. Inside of this fit a canvas lining to keep the water from hitting the metal walls. This is important, as water splashing against the metal does not give a true unconfined water effect, but would sound like a dishpan. A removable paddle wheel may be mounted horizontally (not vertically) in the tub to facilitate operation. Some experimenting will show the great number of effects obtainable from various manipulations of this machine. A garden variety spray tank, with several gallon capacity, equipped with a hand pump and hose, can be utilized for a water faucet, shower bath, water hose, and other effects.

WIND

A drum made of screening material is necessary. This can be set up so that it can be rotated against a fixed piece of canvas stretched across the revolving surface of the drum. The intensity of the wind may be governed by the speed of the rotary drum. A fly-wheel of wands, when rotated by a high-speed electric motor, will give a fairly good effect.

WOOD SPLINTERING

Crush match boxes, strawberry boxes, or peach crates, according to the nature of sound required.

SPECIAL EFFECTS

1. Filter Mike: The microphone filter has the same effect on sound that a camera filter has on light. It filters sound, and only a portion of the higher and lower frequencies is permitted to slip through. Like the telephone, it doesn't muffle the voice, but the sound has an incomplete, filtered quality. Consequently, this type of mike is used whenever any kind of telephone effect is desired. It also serves for radio, walky-talky, police broadcasts, etc.

Another function of the filter is to give a supernatural effect, such as the voice of a ghost, a gremlin, someone's conscience or inner-thoughts.

2. Echo Chamber: The echo chamber is a separate chamber or compartment into which a sound is broadcast, picked up a fraction of a second later by another mike and then rebroadcast, in combination with the original sound. The effect is that of an echo, and is used whenever the scene calls for such.

A variation of this effect can be achieved by placing a microphone in a grand piano and then speaking into it. A weird echo is created by the sympathetic vibration of the strings.

APPENDIX E

CARE AND HANDLING OF TRANSCRIPTIONS AND TAPE

TRANSCRIPTIONS

A few pointers which will maintain a high quality library of available transcriptions for program planning are:

STORAGE

Keep transcriptions in envelopes (sleeves) when not in use. Always store them in a vertical position, taking care not to wedge them too tightly, causing tearing of the sleeves and damage to the small micro-grooves. They should be easily removable from rack, without disturbing adjacent transcriptions. Conversely, the bin dividers should not be so widely spaced as to cause the transcriptions to lean excessively, causing warpage due to discs sagging in the middle. The transcription storage room need not be air-conditioned but should preferably be a room where excessive heat is not generated.

HANDLING

Keep transcriptions free from dust, grit, oil, and other extraneous matter. Every effort should be made to keep transcriptions free of fingerprints by handling discs with the thumb on the outer edge and the tip of the fingers on the label. To clean extremely dirty discs, do not wipe with a dry cloth. This will only increase static charge and aggravate the dust condition. Rinse transcriptions with clean cool water and allow to dry naturally.

WARPAGE

If transcription warps, straighten it by placing on a flat surface — glass is best — and stack a maximum of twenty-five transcriptions on top and allow it to straighten out under room temperature. Do not use heat.

PLAYBACK

AFRTS transcriptions are designed for minimum surface noise and maximum wear. It will be necessary, therefore, to use .001 inch stylus and adjust the pickup carrying-arm to the recommended pressure of 0.2 ounce (6 grams).

TAPE

Although fragile in appearance, recording tape is quite durable and may be re-used many times if it is not abused. If recording tape is mishandled, it may readily become an item with a cost much greater than value.

STORAGE

Tape should be stored in dust-free containers, under conditions of moderate temperature and humidity. Avoid storing tapes near high voltage electrical equipment.

If recorded tape is stored for a period of time, there is a phenomenon that sometimes occurs, called "print-through." It occurs because a strongly magnetized tape is wound next to an unmagnetized portion and some of the magnetic effect transfers from one layer to another. The effect increases with time of storage, higher temperatures, or exposure to stray magnetic fields. Since the transfer is through a layer of acetate or polyester, the effect is slight but often objectionable for high-quality broadcasting. To minimize print-through on tapes to be stored for some time, peaks, as read on the recording meter, should not exceed 0 (zero) VU when using standard recording refer-

ence level, and storage temperature should be kept below 75°F. Occasional playing or rewinding of tape will redistribute the adjacent layers, thereby reducing the magnetic effect. Most machines wind the tape more tightly when rewinding than when playing. It will be wise, therefore, to store tapes after playing, without rewinding, to take advantage of the slightly increased spacing between adjacent layers.

HANDLING

1. Keep tape clean and free from dust or dirt particles normally found on work benches or the floor.

2. Avoid crimping, folding, or stretching tape. Efficient operation of the tape machine depends on the smooth flow of the tape past the capstans, wheels, and heads.

RE-USE

Before re-use, tape should be erased on a degausser to insure thorough and complete elimination of previously recorded material.

SPLICING

Splicing of tape is a simple process, even if a splicing device is not available. The proper method of splicing tape is outlined as follows:

1. Lap the broken ends and cut on a 70 degree angle.

2. Lap the angled ends not more than 1/16 inch and patch with a piece of 3/4 inch splicing tape. The patch should lap both sides of the recording tape.

3. Press down firmly, to be sure that a good adhesive patch is made.

4. Trim the excess splicing tape from both sides of the recording tape. Trim as close to the edge of the recording tape as possible.

5. To splice a tape through program material, such as a tape break during play or rewind, the ends may be butt spliced, rather than the regular angled lapped splice. This splice should be replaced by an angled splice before re-use, once the program material is no longer required.

> NOTE: Do not use scissors which have been magnetized. If magnetized scissors are used, splice will not be satisfactory inasmuch as an audible click or pop will occur at the point of the splice.

APPENDIX F

CARE AND HANDLING OF FILM

The best commercial methods and practices in the care and handling of film are the results of more than half a century of experience. They are basic, logical, and proven. When practiced faithfully, these methods will guarantee good quality film for all stations receiving film in a circuit.

HANDLING

1. Wear film gloves when handling film. Fingerprints are very difficult to remove. The body's oils and acids can seriously damage the emulsion on film.
2. Prevent scratches. Never drag film over a hard edge or surface. Scratches cannot be removed and the value of a print is greatly reduced when it is scratched.
3. Repair film breaks promptly by making a proper splice. Do not patch with tape. This is a dangerous practice and may even damage a projector.
4. Care should be taken to preserve leader and label information.

EQUIPMENT

The care of film equipment is equally important to the proper handling of film. Keeping equipment clean and in perfect working order will result in maximum protection of film and insure longer life.

1. Splicers should be cleaned after each splice is made. The depth and width of the "scrape" should be inspected and measured periodically. The blades should be replaced when necessary and only fresh cement used.
2. The projector should be kept free of excess oil and the gates should be dry and polished.
3. Rewind should be operated with care. Sudden stops should be avoided to prevent "clinching." If power-winds are used, care should be taken not to rewind too fast, a practice which often results in loose wrapping and breaks.
4. When rewinding film, it is important to achieve a smooth wrap. Erratic winding can leave a lip of film which may be easily broken in handling or shipment.
5. Avoid using reels that are bent or crimped.

STORAGE

1. Film should be stored in moderate to cool temperature and average humidity. It is important to avoid sudden and great changes of temperature.
2. Film is best stored in cans. If this is not possible, film should be covered to prevent precipitation of dust and grime.
3. Reels of film should be racked in either vertical or horizontal position. Avoid leaning — this causes warping.

PACKING

A little courtesy can pay big dividends. If each station ships a uniform, integrated, properly packed film unit, it follows that each station, in turn, will receive such a unit.

1. Always pack film in proper cartons, as indicated on shipping documents.
2. Always tack down the ends of film with marking tape. A loose real of film can unwind in shipment and be damaged beyond repair.
3. Respect the integrity of the unit. Repack and forward as received. Do not withdraw film unless damaged beyond repair and upon instructions from AFRTS, Los Angeles. Continuity in programming suffers unless the unit is kept intact.

APPENDIX G

GLOSSARY OF RADIO AND TELEVISION TERMS

ACETATE — The term used to describe a cellulose-nitrate recording disc used for instantaneous recording.

ACROSS MIKE — Projection of the voice almost parallel with the face of the microphone.

ACOUSTICS — 1. The branch of engineering pertaining to sound.
2. The manner in which walls, floors and ceiling of a room or studio react to sound.

ADENOID — A voice that is "tight."

AD LIB — Extemporization of lines not written in the script; improvised, impromptu, "off-the-cuff."

AIR CHECK — Recording made of an actual broadcast or any part thereof.

AFTRA — Abbreviation for "American Federation of Television and Radio Artists."

AMPEX — A tape recorder.

AMPLIFIER — A device for increasing the audio power of the signal of a radio transmitter or receiver without appreciably altering its quality.

ASPECT RATIO — The proportional relationship of the width of the picture to the height of the picture. In motion pictures and television, it is 4 wide by 3 high.

AUDIO — The sound portion of a television program.

AUDITION — A try-out for prospective artists or programs under conditions similar to the actual broadcast.

BACKGROUND — Radio:
Any low-volume passage of sound, speech, or music going on simultaneously with other sounds, such as sound effects, speech, or music transmitted at full volume.
Television:
Any material, set, drape, drop, etc., used behind performers to create scenes or atmosphere.

BG — Abbreviation for "background."

BACK LIGHT — Illumination from behind the subject in a direction substantially parallel to a vertical plane through the optical axis of the camera.

BALANCE — Arranging elements of a program in such a way that they are heard with the proper volume.

BASE LIGHT — Uniform, diffuse illumination, approaching a shadowless condition, sufficient for a television picture of technical acceptability, and which may be supplemented by other lighting.

BEAM — The angle in which the mike is sensitive.

BENDING THE NEEDLE Projecting an unexpected volume of sound into the microphone so that the needle on the volume indicator violently hits the top of the scale.

BILLBOARD The opening announcement or portion of a radio program which tells the listener what and whom he may hear during the broadcast.

BILLING The mention of cast names and the parts they play.

BLACK "Going to black" or "fade to black" means ringing down the curtain for a scene or act. The television screen becomes dark for an instant.

BLANK GROOVE A recorded track without modulation. Also called a "dead groove."

BLASTING Too much volume, resulting in voice distortion.

BLOOM A sudden flare on the television screen caused by reflections from subject matter being televised.

BOARD The engineer's control panel.

BOARD FADE A means of indicating a lapse of time or change of scene in a radio script. This is accomplished by the mixer (or monitor) who gradually turns off or fades all microphones in the studio. After a slight pause, he gradually fades into the new scene.

BOOM A mechanical device for suspending a microphone, normally movable.

BRIDGE A bridge spans two scenes of a dramatic program and may be used to show an elapse of time, change of locale, or change of mood.

BRING IT UP Increase the voice volume.

BUGS Slang term for trouble in equipment which is working imperfectly.

BURN-IN IMAGE An image which persists in a fixed position in the output signal of a camera tube after the camera has been turned to a different scene.

CAMERA (Right, Left) Indications of direction in a setting as viewed from the point of view of the camera as opposed to "stage right" or "stage left."

CANS Earphones or headphones.

CAST The artists selected to perform in a broadcast or telecast.

CATHODE RAY TUBE A vacuum tube, employing a controlled beam of electrons which strike a fluorescent target and emit light. The kinescope and oscilloscope.

CHANNEL A band of frequencies in the spectrum assigned to a given TV station or stations.

CLAMBAKE A slang term used for a program which did not live up to expectations.

CLOSE-UP A very close picture of an object or person. Usually only the head and shoulders fill the screen.

CU	Abbreviation for "close-up."
COAXIAL CABLE	A specially constructed cable used extensively for the transmission of television signals.
COLD	1. To open a show without preliminary music or sound. 2. To go on the air without rehearsal.
COLD COPY	An announcement read unrehearsed.
COMMERCIAL	That part of the program in which the advertiser tells the audience about his product.
COMMERCIAL PROGRAM	Sponsored by an advertiser.
CONTINUITY	All written material spoken on the air.
CONTRAST	The brightness relationship between the various elements of a picture.
CONTROL ROOM	Housing for the monitoring equipment.
CREDIT	A mention of the product being advertised or acknowledgment for the use of material or performers on a program.
CREDITS	A listing of people connected with the presentation of a program.
CROSS FADE	To blend one sound into another by reducing the volume of the existing sound while increasing the volume of the succeeding sound.
CROSS LIGHT	Equal illumination in front of the subject from two directions at substantially equal and opposite angles with the optical axis of the camera and a horizontal plane.
CROSS TALK	An undesired signal interfering with the desired signal.
CUE	The word or signal at which speech, sound, or music is to begin.
CUE SHEET	An orderly tabulation of program routine containing all cues.
CUSHION	Portion of the show which may be cut to any length so that the director may get the show off the air on time.
CUT	1. To switch instantaneously from one camera to another. 2. To stop action. 3. To delete a portion of the script.
DEAD MIKE	One that is turned off or is not connected.
DETAIL	Refers to the most minute elements in a picture, which are distinct and recognizable. Similar to definition or resolution.
DISSOLVE	The momentary overlapping of an image produced by one camera with that of another and the gradual elimination of the first.
DOLLY	A three or four-wheeled carriage for a camera.
DOLLY IN	To move in from a far shot to a close one by means of a camera mounted on a dolly.
DOLLY OUT	To move out from a close shot to a far one by means of a camera mounted on a dolly.

DOUBLE A member of the cast who is playing more than one part.

DOWN IN THE MUD Low in volume or clarity.

DRESS The final rehearsal before air time in which the program is treated just as if it were actually on the air.

DUBBING The process of re-recording or copying a record or portion thereof.

ECHO Radio:
An artificially induced reverberation, accomplished by a special mechanical device, or special chamber, intended to produce a large hall, sepulchral, ghost, or distance effect.
Television:
A wave which has been reflected at one or more points in the transmission medium with sufficient magnitude and time difference to be perceived in some manner as a wave distinct from that of the main or primary transmission; also called "ghosts."

ECHO CHAMBER A room or isolated portion of a studio designed to give a hollow or echo effect to the voice or instrument.

EQUALIZER A device to balance a program channel (remote telephone lines, etc.), in order to assure equal transmission over the entire frequency range.

EYE LIGHT Illumination on a person to produce a specular reflection from the eyes (and teeth) without adding a significant increase in light to the subject.

FADE IN Radio:
The gradual increase in volume of sound, voice or music.
Television:
To bring up the television image electronically so that it appears gradually.

FADE OUT Radio:
The gradual decrease in volume of sound, voice or music.
Television:
To black out the television image electronically so that it disappears gradually.

FANFARE A short dynamic musical selection for commanding attention.

FEED To supply another station or network with a given program.

FEED BACK The squeal or howl which may result from accidentally closing the inbound and outbound ends of an electrical current.

FIELD One-half of a complete picture (or frame) interval containing all the odd or even scanning lines of the picture.

FILL LIGHT Supplementary illumination to reduce shadow or contrast range.

FILM STRIP (Film Clip) A short piece of motion picture, usually integrated into a live production.

FILTER A mechanical device employed to cut "high" or "low" so that a more evenly modulated tone will result. A filter is also used to give a voice a weird effect or to differentiate between the two parties in a telephone conversation, in a radio or television script.

FLAT
1. Lacking gloss.
2. A basic piece of scenery.

FLOOR MANAGER A production staff member who remains in the studio to relay cues from the director to performers and technical staff.

FLUFF Also known as a "bloop," "butch," or "boot." These terms are used in referring to errors while reading copy or lines.

FRAME
1. A single complete picture on film or television.
2. The act of getting the correct view by the television cameraman.

FRYING A hissing sound caused by defective equipment, or noise on transmission lines.

FUZZY An adjective used to describe vocal or instrumental music that is lacking in both clarity and definition.

GAIN Control of volume used in transmission.

HALO Most commonly, a dark area surrounding an unusually bright object, caused by overloading of the camera tube.

HIGH-KEY LIGHTING A type of lighting which, applied to a scene, results in a picture having graduations falling, primarily, between gray and white; dark grays and blacks are present, but in very limited areas.

HIGHS Are the top tones of the voice scale.

HITCHHIKE A commercial announcement at the end of a program in which a different product is advertised from that mentioned during the program.

HOT MIKE One that is turned on and, consequently, sensitive to sound.

ICONOSCOPE A camera pick-up tube used in the early days of television and not very sensitive to light. Now used mainly in projection room equipment.

IMAGE ORTHICON A super sensitive camera tube capable of televising scenes lit by candles. This is the camera tube used in most modern television equipment.

IO Abbreviation for Image Orthicon.

INTERFERENCE Anything which interferes with proper reception of a station's signal. For example, static from storms, local electrical disturbances (elevators, power lines, household appliances, signals from other stations).

ON THE BEAM To be within the effective range of the microphone.

KEY LIGHT The apparent principal source of directional illumination falling upon a subject or area.

KILL To omit or leave out that portion of a broadcast, speech, announcement, music or scene which the director indicates to "kill."

KINESCOPE A cathode ray tube having a fluorescent screen at one end and which glows or emits light when struck by an electron beam. Used to reproduce the video signal in receivers and monitors. A picture or receiving tube.

LAP DISSOLVE A superimposition fading gradually from one picture to another.

LEAD-IN The announcer's resume of the preceding episodes of a continued story, or the preface leading into the drama or other material to follow.

LENS TURRET An arrangement on a television camera which permits several lenses to be mounted on the camera at one time to facilitate rapid lens rotation.

LEVEL The amount of electrical program being transmitted.

LIVE STUDIO One that is acoustically reverberant.

LOG A record required to be kept by stations and networks, of every minute of broadcasting, including errors. Logs are furnished to the FCC.

LONG SHOT A full shot of the scene, including details of background as well as foreground.

LS Abbreviation for "long shot."

LOW KEY LIGHTING A type of lighting which, applied to a scene, results in a picture having graduations from middle gray to black, with comparatively limited areas of light grays and whites.

LOWS These are the lower tones. Do not confuse these with the so-called "scale" which is a frequency range of the sound waves. All voices have a definite range of "highs" and "lows" regardless of whether the voice is base or soprano.

MASTER CONTROL The focal point joining all studios in a station from whence programs are relayed for transmission.

MEDIUM CLOSE-UP A shot between the medium shot and the close-up.

MCU Abbreviation for "medium close-up."

MEDIUM SHOT A shot midway between a close-up and a long shot.

MS Abbreviation for "medium shot."

MICROPHONE (Ribbon) A high-velocity microphone, using a metal ribbon for excitation.

MICROPHONE (Dynamic) A moving coil-type of microphone of particularly rugged construction, suitable for most broadcast uses.

MICROPHONE (Crystal) A microphone using a Rochelle salt crystal as a sensitizer.

MIX To combine the input of two or more microphones to effect a complete balance.

MIXER The technician's panel of switches and dials for controlling and blending sounds. The technician himself.

MIXING	Blending sound.
MONITOR	To listen to or view a program for checking purposes. Radio: A loudspeaker located in a control room. Television: The receivers located at various places for viewing by production and technical personnel while the show is in progress.
MONTAGE	A brief series of events occurring in rapid succession, depicting a central theme, lapse of time, or change of scene.
MOOD MUSIC	Music designed to prepare the listener or viewer for content which is to follow; background music which helps to set the mood for the viewer or listener.
NETWORK	Radio: Multiple radio stations linked by same lines, or other means. Television: Multiple television stations linked by coaxial cables, microwave links, or other means.
NET	Abbreviation for Network.
OFF MIKE	Phrase refers to sound, speech, or music originated far enough from the microphone to give the effect of distance.
ON MIKE	The optimum position for normal pickup of speech, sound, or music.
ON THE BUTTON	Ending exactly on time; same as "on the nose."
OUT IN THE ALLEY	Out of microphone range.
PAD	To add appropriate material in order to fill out allotted air time.
PAN	To follow action to the right or left. To rotate camera across a scene without moving the camera base. Direction is usually given as "pan right" or "pan left."
PATCH	To tie together pieces of apparatus to form a circuit.
PEAK	The maximum point of the needle swing on the volume indicator.
PEDESTAL	1. A type of mount for a television camera. 2. A direction given to raise or lower a camera mounted on a pedestal.
PICK-UP	Any point of origination of a broadcast.
PLATTER (Disc)	Term given to an electrical transcription or broadcast recording.
PLAYBACK	The playing of a recording for audition purposes.
PLUG	An announcement inserted into a program in favor of a particular item — request for mail, Red Cross contributions, etc.
POPS	A series of heavy crashes on a line or transmitter, caused by any of several outside disturbances. Also, on a transcription, a series of pits or bubbles formed at time of pressing.

PRINT-THROUGH Phenomenon which occurs when a strongly magnetized tape is wound next to an unmagnetized portion and some of the magnetic effect transfers from one layer to another.

PROPERTIES Actual objects — furniture, etc. — that are part of a television scene.

PROPS Abbreviation for "properties."

PUBLIC ADDRESS SYSTEM This is a microphone loud-speaker system, set up so that studio audiences may hear voices from the stage.

PA Abbreviation for "public address system."

PUNCH Announcement read with exaggerated emphasis.

REAR SCREEN PROJECTOR A projection device used to throw a picture on a translucent screen in the background. When seen on television, it gives the illusion of an actual set or scene.

REMOTE A broadcast which originates outside of a station's studios. Sometimes called "nemo."

RESOLUTION Degree of reproduction of the detail of a scene after transmission through an optical system, electron system, or complete television system.

RIDE GAIN To keep the program volume constantly adjusted for proper transmission.

ROLL A lack of vertical synchronization which causes the picture, as observed on the picture monitor, to move upward or downward.

RUMBLE A low frequency vibration, mechanically transmitted to a recording or reproducing turntable and superimposed on the reproduction. It sounds like a rumble.

SCOOP A type of light used in television production.

SEGUE (Seg-way) Transition from one musical number to another, without pause or announcement.

SET LIGHT Separate illumination of background or set other than that provided for principal subjects or areas by key, fill, cross, back lights, etc.

SIDE BACK LIGHT Illumination from behind the subject in a direction not parallel to a vertical plane, through the optical axis of the camera.

SIGNAL STRENGTH The measured strength of any radio or television signal at any given distance from the transmitter.

SMEAR A term used to describe a picture condition in which objects appear to be extended horizontally, beyond their normal boundaries, in a blurred, or "smeared" manner.

SNEAK To bring sound or music in or take it out so gradually that its presence or absence is not immediately noticed.

SOUND EFFECTS Any noise created to establish a definite thought in the listener's or viewer's mind. (Door opening or closing - footsteps - traffic sounds.)

SPLIT SCREEN	One-half of picture from one camera and one-half of picture from another camera, projected together on screen.
SPREAD	To stretch a portion of the program or announcement for the purpose of consuming more time, or it may refer to the amount of time allowed in a program for audience reaction. Also, on a transcription, the band between individually recorded tracks placed for easy cueing.
STAND BY	Signal from the control room for attention and silence in the studio prior to commencing a rehearsal or broadcast.
STATION BREAK	A cue given by a station originating a program to network stations, signaling that it is time for individual stations to identify themselves to local audiences.
STILL	A photograph or other illustrative material which may be used in a television broadcast as distinguished from motion pictures.
STING	A sharp musical chord used to heighten a tense moment.
STRETCH	To slow up for time by lengthening delivery of various segments.
SUPERIMPOSITION	The overlapping of an image produced by one television camera with the image from another camera. A blending or merging of images in any desired amount.
SUPER	Abbreviation for Superimposition.
SWITCH	To switch from one camera to another. A change of camera angles.
SYSTEM CUE	The words: "This is the Network." This is the word cue for local station identification and, in nearly all cases, completes the broadcast. The exceptions are station identification cues on programs of more than thirty minutes in length.
TAG	The announcer's closing, either to end the broadcast or to invite viewers or listeners to the next segment.
TALK BACK	A microphone placed in the director's booth and connected to a speaker in the studio to afford a means of communication between director and personnel in the studio.
TALLY LIGHT	A red light mounted on the front of the camera. When the tally light is on, it indicates that the camera is "on the air."
TAPE RECORDING	A plastic tape impregnated on one side with iron oxide for the purpose of retaining a variable magnetic charge.
TELOP	Opaque slide projection.
THEME	The signature melody, either at the start or finish of a radio or television broadcast.
THROW IT AWAY	Words read with less emphasis than normal.
TILT	Vertical movement of the camera (up or down).
TRANSCRIPTION	A recording especially made for broadcast purposes, recorded at 33-1/3 RPM.

TRUCK	To move a television camera, base included, parallel to plane of set.
TWO SHOT	A camera shot of two people.
VIDEO	The picture portion of a television broadcast.
VIDEO TAPE	A form of magnetic tape for recording pictures and sound which can be played back immediately, without processing. Also called VTR.
ZOOMAR LENS	Special lens which can produce dollying effect without moving camera.

SUGGESTED READING

Military:

DOD Instruction 5120.20.

AR 355-20.

AFR 190-15.

BuPers Instruction 1560.9A.

Commercial:

Becker and Harshbarger, *Television, Techniques for Planning and Performance,* Holt, Rinehart, Winston, 383 Madison Ave., New York 17, New York.

Bretz, Rudy, *The Techniques of Television Production,* Hill and Wang, Inc., 104 Fifth Avenue, New York 11, New York.

Kiver, Milton S., *FM Simplified,* D. Van Nostrand Co., Inc., Chicago, Illinois.

Morris, William, and Levy, Alex, *Elements of Radio Service, Vols. I and II,* McGraw-Hill Book Co., 330 West 42nd St., New York, N. Y.

National Association of Broadcasters *Engineering Handbook,* McGraw-Hill Book Co., 330 West 42nd Street, New York 36, New York.

Noll, Edward M., *Television for Radiomen, Vols. I and II,* The MacMillan Company, New York City, New York.

Pittaro, *TV and Film Production Data Book,* Morgan and Morgan, Inc., 101 Park Avenue, New York 17, New York.

Radio Corporation of America, Engineering Products Department, *TV Manual,* Camden, New Jersey.

Read, Oliver, *The Recording and Reproduction of Sound,* Howard W. Sams & Co., Inc., Indianapolis 5, Indiana.

Slurzberg, Morris, and Osterheld, William, *Essentials of Radio,* McGraw-Hill Book Company, 330 W. 42nd St., New York, New York.

Smith, F. Langford, *Radiation Designer's Handbook,* Radio Corporation of America, Tube Division, Harrison, New Jersey.

Stasheff, Edward, and Bretz, Rudy, *The Television Program, Its Writing, Direction and Production,* Hill and Wang, Inc., 104 Fifth Avenue, New York 11, New York.

Terman, F., *Radio Engineer Handbook,* McGraw-Hill Book Co., 330 West 42nd Street, New York 36, New York.

Wade, *Designing for TV,* Farrar, Straus & Cudahy, Inc., 101 West Fifth Avenue, New York 3, New York.

Wade, *Staging TV Programs and Commercials,* Hastings House, 151 East 50th Street, New York 22, New York.

Watson, Herbert M., Welch, H. E., and Eby, George S., *Understanding Radio,* McGraw-Hill Book Co., 330 West 42nd Street, New York 36, New York.