Television:

THE REVOLUTIONARY INDUSTR

By ROBERT E. LEE

TELEVISION:
THE REVOLUTIONARY INDUSTRY

is a trip backstage in the television industry of the future. Without a syllable of technicality, the book deals with the problems facing the infant art.

DR. LEE DE FOREST **says: "No one who has not read this remarkable book can have the remotest conception of the changes which await this country with the coming of television."**

With a foreword by Dr. Lee De Forest

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"TELEVISION:
THE REVOLUTION"

"Television: The Revolution"

by

ROBERT E. LEE

With a Foreword by

DR. LEE DE FOREST

NEW YORK

ESSENTIAL BOOKS

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ROBERT E. LEE

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FOREWORD

THIS is a remarkable book—a bold, frank expression highly suggestive to the program director, the advertiser, the technical man and the public. In the early chapters is a clear statement of the problems involved in television, even to the technical—revealing a comprehension quite unusual for one whose training has been along a literary and commercial rather than engineering lines.

As regards the question of immediacy in Television entertainment, the Author has taken a very sensible view. His stand is quite a contrast with that of some directors of the Television industry, who in utter disregard of the question, "Who's going to pay the bills?" insist that Television entertainment, to be attractive, must be viewed while it is being broadcast. Indisputably they are wrong. The motion picture film alone can make Television economically profitable. And Mr. Lee shows why.

He also handles convincingly the question of commercialized radiovision versus wired toll-service here in America. The free-as-the-air broadcasting habit has too completely spoiled us to tolerate a conversion to the British type of government monopolized radio service.

The Author's forceful warning to the Television advertisers not to attempt to black-jack the watching public with offensive commercials is indeed timely. As he states, the surest way to smother Television in its cradle is to expect to pour on the screen the same sort of vulgar bombast as now darkens millions of our radio dials, except when news is on the air.

In analyzing this question of Television advertising, again the book demonstrates how indispensable to the economists of Television is the general and generous use of motion picture film. And how doubly essential will be the film at the commencement of television's introduction to the public. The three hour time differential between our East and West coast will of itself usually make film indispensable, even for live spot-news events—and this even assuming an actual trans-continental television network of automatic relay stations. It is doubtful that suffi-

ciently frequent sports or political events will occur, even ignoring the time differential, to make economically attractive the great expense of a trans-continental television relay station network at least for some time to come.

The Author has devoted a great amount of concentrated thought to this enticing subject of television entertainment, for which his extensive experience in radio production and writing has well equipped him. His suggestion of the Association for Advancement of Television is most constructive and far-sighted. Its agenda, as herein outlined, is far ahead of most present-day concepts of the power for good which radio broadcasts inherently possess. Nothing could be of greater benefit to the new industry of television and to its future patron, the American public, than the early organization and function of such an association. Now, before the war is ended, there should be an earnest meeting of the minds of the leaders of the coming art of sight-broadcasting, to organize and map out the destiny of that art (not the science) with the highest regard for the very best which Television can confer on American culture and American ideals. Mr. Lee advances here a proposal

of sterling worth which should be eagerly accepted, thoughtfully enacted.

If the Author is correct in his defining and timing of Television's "adolescence," then I say Television will never outgrow its adolescence. Which is quite all right, because adolescence is the most interesting period of life. For never will "the number of watchers in the nation exceed the number of listeners"; from the very nature of radiovision this fact will remain so. And as to his "maturity"—if this stage demands dependable trans-oceanic television, then frankly I can not agree that it may possibly come within ten years, or even twenty. To achieve this, we must either rule sun-spots out of existence, or send our pictures through and not above the surface of the earth.

As Mr. Lee points out in some detail, Television is certain to produce profound changes in the motion picture industry, especially in the picture-making division. Existing picture producers, the "B" class in particular, must be made to see the handwriting on the wall. The new Television industry will build studios and begin to turn out millions of feet per year of good entertainment for radio transmission. One hopes

that this book will awaken producers to this inevitability before they are faced with the tremendous yet unnecessary competition. For Television will live on film production. It must.

The suggestions he offers for wedding Television to the cinema theatre are imaginative and yet highly practical. This should make the enterprising exhibitor impatient for the day when he can produce Television shows on his own stage, before doubly paying audiences. But I would be far more liberal than Mr. Lee as regards offering immense home audiences many delightful hours each month in reviewing countless old-time popular movies, long off the screen, but to be welcomed again like long, lost beloved friends. Today the owners of such films are adamant in their refusal; but time, and those additional large reservoirs of revenue, now stagnant, will soften their unreasonable resolutions. How lasting their oaths never to make talking pictures?

Mr. Lee's outline of a typical Television program viewed in the home is indeed attractive. It makes one's mouth water for the time when one may sit in for such pleasant fare. Unquestionably, here is already a "vision impresario"

uniquely endorsed for this new type of job. His depiction of the educational possibilities of Television is by far the most comprehensive and suggestive yet presented. Its value here to our national good far surpasses that of radio, potent as that is— "A tremendous force is awakening a social consciousness in the youth which will be our next generation." In its educational fields Television program material is limitless. Let us fervently hope that A.A.T. will, from the beginning, effectively taboo all that is moronic from the iconoscope's ken. Let radio remain its medium!

Mr. Lee makes one unexpected but significant point: "Television will see a gradual decentralization of program production—a gradual growth of interest in local shows which may damp some of the industry's present day provincialism" . . . "will have the desirable effect of drawing off some of the excess concentration of talent in Broadway and Hollywood." Anything working these days for decentralization is surely a benefit to our nation. Here surely the absence of a tele-network becomes a blessing.

The long awaited opportunity for the short-story drama, never wholly suited to the stage

and badly blindfolded in radio, will come with Television. Its possibilities here, as Mr. Lee points out, will be startlingly revealed.

The contents of Chapter 8 will readily convince one that the Author is amply qualified himself to lay out a completely equipped, streamlined Television studio of an ultra-efficient design, as well as to undertake its operative direction. His graphic running description of those swift moving events during a production will make the reader dizzy. And his description of what will transpire in a news-reel distributing studio—assuming tele-world-wide networks—makes one deeply thankful that he will not be among the living when that frenetic, almost maniacal scramble for the fleeting NOW shall dominate man's living. Too little time is granted even today for thought and contemplation. What with the hourly editions, and three news reels weekly, what if the man in the street does have to wait a few hours for the latest tele-cast from Timbuctoo? So what? That way lies madness. Let us not unnecessarily develop stomach ulcers and schizophrenia. Above, the night stars are still serene.

If there's one chapter in this fine book which

more than all others I sincerely approve, applaud and earnestly recommend right now to radio program craftsmen, it's Chapter 9—"Television Commercials." What our Author inveighs there against the crass commercialization of sound radio,—and particularly against spot announcements—deserves to be emblazoned on every radio transmitter tower in America. "The spot advertiser demands attention but gives nothing in return. He's a chiseler. His message is a barnacle sucking its hold on the programs which precede and follow it." Here, at last, a Daniel has come to judgment! "Sound radio—despite a scrofula of spot announcements and daytime serial beriberi—has proved a hardy specimen. But cheap, lazy advertising methods will be the kiss of death for Television." When will the radio station owner realize his public trusteeship—or the F.C.C., its? The eloquent and timely warning here given by our Author must be heeded, or Television's future will be scant and sordid indeed. "For the cheap little advertisers with cheap little minds, Television has only two words: 'Stay Out!'" Based on his intimate relationship with broadcasting, good and bad, Mr. Lee goes on to constructive suggestions

as to how legitimate advertising by Television may be made inoffensive and actually entertaining. His words here are indeed heartening.

One must enthusiastically endorse the list of original themes for Television weekly programs which the Author has thoughtfully and with fine imagination mapped out. These are exciting in the possibilities they suggest.

To sum up in a word the completeness and excellence of wide viewpoint with which our Author has scanned the possibilities of Television, let me say that no one not having read this remarkable book can have formed even a remote conception of the magnitude of the Revolution which awaits America in the coming to age of Television.

LEE DE FOREST

HOLLYWOOD, 1944.

CONTENTS

	PAGE
FOREWORD—BY DR. LEE DE FOREST . .	v
1. THE BLOCK-BUSTER	3
2. THE MOVING FINGER WRITES— . .	12
3. WHAT DO YOU EXPECT OF TELEVISION?	30
4. WHO'S GOING TO PAY THE BILLS? .	44
5. TELEVISION TIME-TABLE	65
6. WHAT'S GOING TO HAPPEN TO THE MOVIES?	85
7. PREVIEW OF COMING ATTRACTIONS .	101
8. ENTER THE NEW ART—	140
9. TELEVISION COMMERCIALS . . .	182
10. MONKEY WRENCHES	194
11. TELEVISION AS A FORCE FOR FREEDOM	218

"TELEVISION: THE REVOLUTION"

1

"THE BLOCK-BUSTER"

PEOPLE who have never heard a radio program and have never been to a movie will not be interested in this book. It is a history of the future—a telescopic view of a revolution which is certain to come in the entertainment industry soon after the war.

So if you derive your livelihood from making people laugh or cry or have goose-pimples or run down to the corner drug-store to buy something they didn't know they needed two minutes ago, then this revolution is going to be very important to you. If, on the other hand, your closest approach to Bette Davis has been a loge in your neighborhood theatre on Saturday night, you may find it good fun to take a back-stage tour of an industry which is going to spend a billion dollars yearly entertaining you. That's what this book is really. A trip back-stage in the coming industry of television.

* * *

There will be many revolutions in our post-war world. We can expect revolutions in business, as industry shifts gears from war production to peace-time manufacture. There may be political revolutions, as statesmen re-align the world's boundaries and weld a stable, prosperous peace. Surely we can expect a revolution in transportation—as the miles of aircraft assembly-lines discontinue B-29's for Tokyo bombings and start rolling out luxury sky-cruisers for Trinidad week-ends. And there is one revolution which will have a direct, immediate effect on all our lives: the revolution in the arts of entertainment and communication, with the coming of television.

Actually, television has already come. It is perfected. Right now, the pictures are almost as good as 16 millimeter movies, in full, natural color. Within a matter of months after the war's end, you may expect to have a television receiver moved into your living room for two weeks' salary, or less. But that receiver is worth its weight in dynamite. It can add much to the happiness and knowledge of the world's peoples; but if mishandled, it may blow up in our faces, causing damage which may take years to repair.

The World is hungry for television. The idea challenges our imaginations. Movies by radio—at home—instantaneous—free—! For more than a decade, the promise of television has dangled in front of us, just out of reach. The delay couldn't be helped. The technical problems are fantastic. Chopping a moving picture into a couple of million spurts of electricity every second and cramming them down a radio antenna —this makes sound-broadcasting seem like child's play. But the television experimenters have gone at the job doggedly, spent a few fortunes, and licked most of the problems. Only the Axis has held up the parade.

But while we've been waiting, some crazy ideas about television have been making the rounds. There have been strange rumors about the cost and length-of-life of receivers, and mistaken notions about how television works. Some people seem to think that sight radio will be only a passing fad. Others look forward to a Rube Goldberg-esque television receiver, which will also wash the dishes, mix drinks, fry three-minute eggs, and change the baby's diapers. Many members of the entertainment industry eye the new invention with skepticism and dis-

trust, seeing in it a possible threat to the present pattern of information and entertainment. It is time that we junked these misconceptions in favor of an enlightened, constructive outlook on the future of sight-broadcasting.

* * *

Everybody should know about television, because it's going to be "everybody's art." Television belongs to the people—more than motion pictures, or even radio. There isn't one person in the United States who won't be affected by television. It's going to change our living habits, what we do with our evenings, how we keep in touch with the rest of the world. If you happen to be a member of the entertainment industry, the television revolution will strike very close to home. If you happen to be a motion picture star, you'll find that the public expects you to learn a new technique, in addition to the ones you have already mastered. If you are the operator of a radio station, you can get ready to sink another quarter million dollars into your broadcasting plant—and it will probably be the wisest investment you ever made. Perhaps you're a motion picture exhibitor—you manage movie theatres. Television may bring longer lines to

your box-office than ever before. And, if you've been holding your breath waiting for vaudeville to come back, relax. You don't have much longer to wait; for television will be bigger than the Orpheum Circuit in its heyday. It may be you're a network radio man: by sacrificing (for a while) a principle which has long been dear to your heart, you may guide the growth of the greatest network in the world. If you're a manufacturer, television can be the means of telling more people about a better product in a more dramatic way than ever before. And if the motion picture industry approaches the future with its usual pioneering spirit, it will foster a new market for films which can triple Hollywood's production schedules.

Maybe you don't have any connections with the new industry. Maybe you happen to be a schoolteacher, or a tool-maker, or a business man. Or a housewife, or a Clark Gable fan. Life will never be the same after that Saturday afternoon when your radio serviceman pokes his head in the side-door and says: "The antenna's all rigged up now. Just snap on the switch and adjust that brightness control. This little receiver will bring 'em in like a Rembrandt paint-

ing!" *That* day the world will move into your living room. You're Mohammed. The mountain comes to you.

This doesn't mean that television will be all things to all men. There's nothing magical about the invention. It has many limitations and hazards. The fruits of the revolution will not be realized easily or over-night. But it is a fatal mistake to underestimate the possible scope of the new industry. Television is going to be big. It's going to affect everyone. No intelligent person can close his eyes to it. The people who cling precariously to the status quo, pooh-poohing pictures-by-radio, can expect to be dropped by the wayside, with little left to them but the sand in which they buried their heads.

The shape of the television revolution is important for another, deeper reason. It is a straw in the wind. The direction taken by the new industry may help to decide the entire course of American business in the post-war era. After the duration, we stand at the cross-roads. It is a critical decision. To what extent can individual initiative be trusted to assume the grave responsibility of raising the standard of living of Americans, and the people of the entire world?

Television presents an accurate-to-scale model of this problem. The ether through which radio pictures travel is public domain. The people, through their government, have every right to supervise the medium in the public interest, and license broadcasters. And it seems reasonable to hope that television stations will be granted commercial licenses soon after the war.

In the past it has been the democratic way to give courageous and enterprising citizens free rein to develop new fields. Such opportunity has meant that the nation's most vigorous minds could attack the problems directly and efficiently. This method has served America well. Sometimes it has led to abuses on the part of purely selfish interests. This must not happen in television. Some arrangement must be made to curb such practices. Preferably, these fractious elements should be outlawed by a "jury of their peers" within the industry. Self-discipline is always more desirable than policing from the outside. Television's would-be exploiters can be restrained most effectually by a concerted action of *all* their fellow-interests in the industry—"all" meaning an equal representation of television's share-holders, not only financial, but

also technical and cultural. However, if there is no regulation, from inside or out, abuses are inevitable. And then all hell will break loose. For television belongs to the people. Viewers will be keenly aware of everything that goes on. And if commercial television falls short of the people's expectations, offends their taste, or outrages their sense of justice, the "powers-that-be" may just as well throw in the sponge. And American business will have lost its share in the greatest avenue for reaching other men's minds since the beginning of time.

* * *

There are two kinds of revolutions: bloodless and violent. The revolution in television may be a smooth, gradual transition. Or it may explode the entertainment industry with the impact of a block-buster bomb. The difference between an intelligent, progressive conversion and a "reign of terror" is *planning.*

This very moment the best minds of the United Nations are planning political and economic changes which must take place in this world-after-the-war. We must use the same foresight in *planning* the revolution which is certain to come with television.

This book is a plan. It is a study of the people and the machinery and the ideas of television. And it is a plan for assembling them into a working scheme which will mean the most happiness for the greatest number of people.

It is a Blueprint for a Revolution.

2

"THE MOVING FINGER WRITES—"

REMEMBER those lines from Omar Khayyám?

> "The Moving Finger writes; and, having writ,
> Moves on: nor all your Piety nor Wit
> Shall lure it back to cancel half a line . . ."

That might apply to television; except that the "moving finger" is a cathode beam made up of a few million electrons. And our piety and wit manage to lure it back to cancel five-hundred-and-twenty-five lines thirty times a second.

In the next few pages, we're going to describe how television works. This is important. To have a clear understanding of where television is going, we must appreciate the technicalities which will decide ultimately how far it can go, and how it can get there. This chapter deals with some of the most complex theory in modern electronics; but it's as plain and graphic and non-technical as science can be described. Chances are you'll get through it without even

shifting to second-gear. But if you find interest lagging slightly in the technical aspects of television, skip over to Chapter 3. Then, when you've finished the whole book, come back to where you left off in this chapter. It may seem easier then.

Let's begin at the beginning. Suppose we want to televise Betty Grable. What goes on in a studio, and what happens inside the radio apparatus, which makes it possible for a picture of Miss Grable to appear on a radio receiving screen forty miles away? First, the television soundstage is illuminated to approximately the same brilliance as a motion picture set. The television camera, which looks very much like the cameras used for motion pictures today, is wheeled up to the subject. The picture is lined up, exactly as a motion picture photographer would do it. A microphone is swung above Miss Grable's head on a boom, in order to pick up what she says. The light reflected from Miss Grable's head and figure passes through a system of lenses into the inside of the television camera, which is known technically as an "iconoscope."

Now, if this were just a plain movie camera, Miss Grable's picture would be projected on a

strip of motion picture film. A great many molecules of silver would begin jumping around, and chemical changes would take place to produce a photograph. But inside the iconoscope, the picture is projected on a metal plate, called a "mosaic." This mosaic is slightly smaller than a post-card, and contains several million separate "electric eyes" or photo-electric cells. They are so tiny and so close together that only a powerful microscope can show them separately.

Each of these "electric eyes" in the mosaic is chemically constructed to give out a spurt of electricity every time a ray of light falls upon it. In other words, bright light—big spurt of electricity; darkness—none.

Now we have converted Miss Grable into an impression on a metal plate consisting of several million spurts of electricity. How are we going to arrange them in order so that they can be broadcast, put back together at the receiving end, and still look like Betty Grable? That's where the cathode beam comes in.

For all practical purposes, we can consider a cathode beam as a wire carrying a charge of current—except there is no wire. A cathode beam is a stream of rapidly moving electrons. It can

be focused into a pin-point, like a beam of light. Magnets attract this cathode beam as if it were an iron wire. It can be swerved back and forth, up and down, by the pull of properly placed magnets.

This is what happens inside the vacuum of the iconoscope tube. The cathode beam might be called the "electronic milk-man." His route begins at the upper left-hand corner of the mosaic, and he starts across to the right-hand side. At each electric eye along the way he stops and asks, "How many bottles today?" Where the picture is dark, the electric eye will have given up no charge of electricity. And so it won't ask for anything from the electronic milk-man. But when the cathode beam arrives at that silvery high-light at the top of Miss Grable's head, the electric eye in that particular spot will have given up a large amount of its electric charge. That electric eye will need a bottle of current from the cathode beam.

Several thousand learned scientists are probably having hemorrhages at this description of television theory. It really isn't so simple. If it were, we probably would have had television several years before Columbus discovered

America. Actually, the mathematics of what goes on inside the iconoscope is enough to send Dr. Einstein away for a rest-cure. But for all practical purposes, this simple description covers quite accurately the events which take place inside the sealed glass tube of the tele-camera.

Now, back to Miss Grable and the cathode beam. After the "electronic milk-man" has completed one sweep across the mosaic, it zigzags back to the other edge and begins another sweep, slightly lower than before. This zigzagging by the cathode beam is called "scanning." At each tiny electric eye along the way, the cathode beam says, in effect, "How much electricity do you need?" And the electric eye, depending upon how big a spurt of electricity Miss Grable's picture has caused it to give out, tells the cathode beam how much current it needs to come back to normal. And so the electronic milk-man scans the whole mosaic—giving a charge of electricity to each electric eye in proportion to the brightness of the light which fell on that particular part of the mosaic. All in all, the cathode beam makes five-hundred-and-twenty-five zigzag sweeps across the mosaic—each line being slightly lower than the one be-

fore. When this route is completed, the electronic milkman has called on every one of the electric eyes in the iconoscope mosaic. Another plate, sandwiched to the back of the mosaic, measures the amount of charge delivered by the cathode ray; the fluctuating current from this plate goes to the television transmitter to be amplified and broadcast.

It takes the cathode beam "milkman" only 1/30th of a second to zigzag over the whole mosaic. As soon as the beam reaches the end of its route, magnets pull it back to the top and it starts all over again. This entire process takes place thirty times a second. Result? Thirty separate pictures, broken down into a parade of about ten million electrical spurts per second.

And thereby hangs a headache. Ten million current changes every second is asking a great deal of any electrical apparatus. The ordinary house-current, which runs your refrigerator and electric lights, is usually 60 cycles A.C.—that is, sixty spurts of electricity per second. If you hit "A" below middle "C" on your piano, that's a faster vibration: 440 times a second—if your piano's in tune. A coloratura soprano gives your sound-radio the fastest workout of any micro-

phone artist—vibrations in the neighborhood of five or six thousand electrical spurts per second. But broadcasting a high quality motion picture requires ten million distinct ripples in the ether every second.

So naturally a television signal can't be broadcast over an ordinary sound station: if it were, the picture would smear across the entire broadcast band, and spill over both ends. It would blanket all the other stations on your set. But there's more room to spread out at the very top of radio's dial—above the short-wave stations and the amateurs' CQ's. These ultra-high-frequencies are the source of practical television's toughest problem. They're so short that they act the same as light waves. They won't bend with the curve of the earth. They go as far as the horizon, and stop. That's why television antennae are erected as high as possible—atop the Empire State and Chrysler Buildings, and in the Hollywood Hills. But only in freak cases can a television station transmit farther than fifty miles.

Another difficulty arises when we try to persuade the high-frequency television signals to stay within the limits of a wire cable. At ten

million cycles per second, the current which makes up the television picture doesn't want to stick to an ordinary wire. By the time it has traveled a mile, most of the current has flown off into space. There is a way to keep the television signal from vanishing into thin air: that is, to build a cylindrical retaining wall around the wire, which helps the current to stay in place. This is called a coaxial cable. Unfortunately, a coaxial cable is a fairly expensive piece of merchandise. With the necessary amplifiers, a coast-to-coast coaxial cable would cost about a half billion dollars.

All of this adds up to one thing: networks of television stations, like today's radio networks, will be very difficult to form. The television signal likes to stay close to home. Only the most expensive persuasion by the best electronic engineers can transmit television pictures from one city to the next. Maintaining a complete nation-wide network would cost as much as a medium-sized war.

Now let's get back to the picture of Betty Grable, which was spinning through the ether as ten million blobs of electric current. The radio waves bearing Miss Grable's likeness ar-

rive at your television receiver antenna. They trickle down and are amplified by radio tubes in much the same way that sound is now amplified in your standard receiving set. Next, they are hitched to another cathode beam which is focused on the screen of your television receiver, or "kinescope." This cathode beam is identical to the electronic milk-man in the television camera at the radio studio.

But instead of shining on a mosaic, the receiving cathode beam zigzags across a screen which is painted with a luminous material. This material is similar to the paint on the hands of your watch, which makes them visible at night. The difference is that the paint on this television screen glows only when the cathode beam is shining on it. A group of magnets swings the cathode beam back and forth across the screen of the television receiver, exactly synchronized with the cathode beam inside the tele-camera miles away. You might call it a moving pencil of electrons which draws Miss Grable's picture on the luminous screen, precisely in step with the identical cathode beam at the broadcasting studio. The five-hundred-and-twenty-five lines which make up the picture are so fine and so

close together that they can scarcely be seen separately—except when the viewer is very close to the screen.

As soon as one complete picture is traced on the kinescope, the cathode beam immediately zigzags back to the top and starts to build up another picture to follow the first. These pictures tumble on top of each other at a rate of thirty per second. Each picture shows Miss Grable in a slightly different position than before, and so she appears to be moving on the television screen. The pictures come so rapidly that there is not the slightest flicker, and the motion seems to be continuous.

The screen of the kinescope may be any size up to about sixteen inches; they can't be made larger, or the glass walls of the tubes would be crushed by the weight of the atmosphere pressing against them from the outside. Engineers are now improving home projectors which will throw the broadcast picture on a standard beaded home-movie screen. However viewed, the picture is more distinct and enjoyable than eight-millimeter movies. The screen is fairly bright; but the picture shows up best when the receiver is in deep shadow, or when the lights in

the room are subdued. With a large television receiver, two dozen people can watch a program in comfort.

The sound of Miss Grable's voice, to accompany the picture, is broadcast over another radio transmitter, and is received through a separate radio contained in the same cabinet. The sound-channel of television operates on FM, a very clear, life-like method of sound-broadcasting.

Given proper care, the television receiver will last almost indefinitely. The kinescope screen will last for hundreds of hours, if it's not turned up too brightly. However, a carelessly violent bombardment from the cathode beam may cause the screen to burn out. But special screens have been constructed for theatre television, which glow with the brilliance of an electric arc. This very bright image is projected on a theatre screen, exactly as are motion pictures. Thus, television can be seen by a whole theatreful of people.

Naturally an invention as complicated as television didn't spring into being overnight. The idea of sending pictures by radio is as old as sound broadcasting. A German scientist named Nipkow first devised a system for tele-

vision scanning back in the early 1880's. When America's coast-to-coast networks were airing their first broadcasts, the earliest video dramas were being pumped out of pioneer television stations. There were no cathode-beams to do television's leg-work back in those experimental days. Instead of having five-hundred-and-twenty-five lines, the pictures usually consisted of sixty lines. This meant that the images were about as plain as a faded tintype seen through a pair of dark glasses on a foggy day. You might be able to tell Jackie Coogan from Ethel Barrymore—if the camera showed a close-up. In those early days, the picture was an uncertain reddish color, and about the size of a postage stamp. The receiver was as easy to operate as a two-ton truck, with five speeds forward and three back. And it made almost as much noise.

Since those early days, painstaking years of research in electronics have brought us television pictures almost as clear as a page from "LIFE." Today's receiver is roughly the same size as a modern radio-phonograph combination. It is an attractive piece of furniture, often with a lid which raises up, disclosing a mirror on its under-side. The audience sees the broad-

cast by reflection from the mirror in the lid of the receiver. The pictures are the same shape as those on a movie screen—3/4ths as high as they are wide. For all intents and purposes, the picture is black-and-white although sometimes there seems to be a slightly bluish tint. Near a street-car line, an occasional blob of static will cross the screen—a sudden streak of black, which disappears almost instantly. A lightning flash may jar one frame of the radio-movie out of step but the receiver adjusts itself automatically. In crowded metropolitan areas, faint "ghost images" may haunt the television screen; these appear when radio waves are reflected off nearby buildings. A good serviceman can usually turn "ghost-chaser" and shield the antenna from these annoying reflections.

You don't have to be a Bachelor of Science to operate the modern television receiver. There are only six controls: Sound and sight tune on the same knob; when the sound is sharply tuned, so is the picture. Another dial controls the brightness of the screen. A third regulates contrast, or the difference between the lightest and darkest parts of the video image. Another dial keeps the cathode beam sharp and the picture

distinct. Then there's a volume control for sound, and a power switch. That's all.

Before the war, a sight-receiver cost a moderate fortune. If you wanted pictures approximating home movie size, the tariff was about six hundred dollars plus installation. There is every indication that the retail price of good television receivers will soon take a nose-dive. We hope.

Installing a television receiver in your home isn't like moving in a new divan. Because of the very short wave lengths involved, the exact positioning of the antenna and reflectors is an important matter. Rigging up your receiver and antenna will be the work of two men for the better part of a day.

Once the receiver is installed it causes practically no headaches. It will use a little more current than your electric refrigerator. Any child who has successfully passed the eighth grade can operate it. And unless Junior aims his bee-bee gun at the television screen, there's not much that can go wrong.

* * *

Video engineers are preparing many improvements in television transmission. Soon

there may be a reshuffling of the kilocycles assigned to the various broadcasting organizations. If television gets broader chunks of the ultra-high frequencies, the way will be open for broadcasting pictures up to a thousand lines. This will mean home sight-radio of as fine quality as the best motion pictures—comparable to magazine half-tones.

Color television is almost ready. The process is simple. A whirling disc is set up in front of the television camera, and a similar one in front of the receiver screen. The discs are transparent, and divided into three segments, each tinted to one of the primary colors. At the transmitting end, the whirling disc televises one picture in red, the next in yellow, a third in blue. At the receiver, the other color-disc—exactly in step with the one at the transmitter—dyes the kinescope screen successively red, yellow, and blue, to correspond with the monocolored images from the transmitter. What comes out is a perfect fusing of all the colors of the spectrum, in their proper values.

All video programs need not come from a studio. Field television service is steadily improving. For short transmissions—"remote"

pick-ups, they're called in the industry—two effective systems have been worked out. One is a mobile unit which is a truck containing a complete, low-power television transmitter. The "remote pick-up"—a football game, a tennis match, or other special event—is thus relayed to the main transmitter from the mobile unit in the field.

This method works beautifully, if there's a clear line of sight from the point of the remote pick-up to the home transmitter. But in crowded metropolitan zones, buildings cast "radio shadows," absorbing the high frequency signal from the portable transmitter before it ever arrives at the home station. Under these circumstances, the output of the iconoscopes may be fed into ordinary telephone or power lines; the high frequency signal follows these wires to its destination. But telephone wires can be used as television carriers for short distances only. After a few miles, the picture is "lost in the mud" and cannot be recovered.

And that is the worst fly in the technical television ointment; the problem of distant television transmission. The technicians are at work on another system for solving this problem,

which may be less expensive than the coaxial cable. Soon we may see a sprinkling of relay "booster" stations at forty-mile intervals across the continent. Each station would pick up the waning signal from the preceding transmitter, amplify it, and rebroadcast it to the next station in the relay chain. Current progress in Army and Navy "Radar" is making important strides in this field. It may be that much of the military high-frequency radio equipment can be salvaged in peace-time and adapted for use in such a national relay network. Radar has developed highly "beamed" radio signals, which are as concentrated as a ray of light from a signal beacon. This will help to prevent loss between the booster stations. It is quite possible that such a coast-to-coast line-up of relays could be almost entirely automatic. The equipment required at each "step-up," though complicated, is quite compact; it might be installed in an antenna tower similar to present automatic aircraft beacons. Turned on and off by a separate cueing circuit, the booster stations might not even require a full-time attendant.

This is possible. But it is still an enormous undertaking. The installation of relay stations

to service the whole nation—and keeping the net in good running order—will call for astronomical expenditures, far out-of-line with present-day charges for network sound transmission.

* * *

Here is the outlook on post-war television, from a technical point of view. The quality of the pictures will be all that the radio audience can desire. Natural color is possible. But no reasonably-priced system for linking stations instantaneously across long distances has appeared on the experimental horizon.

Television researchers have given us satisfactory machinery for the local transmission of radio pictures. If these pictures are worth seeing, Americans en masse will invite television to be a guest in their living rooms.

3

"WHAT DO YOU EXPECT IN TELEVISION?"

RIGHT now television is in a position comparable to motion pictures and radio at the close of World War I. The public knows about the invention—has seen a few scattered demonstrations. The audience is just waiting for the play to begin. The stage is set for television to become a bigger entertainment medium—and a bigger money-maker—than motion pictures and radio combined. Up to this writing, no definite course has been laid out for the commercial development of the new art.

Who's going to decide which of many courses the new entertainment industry will follow? The answer is—you. Not "You, John Jones,"—but "You, One Hundred Million John Joneses." We may not realize it yet, but the television screen is going to be an extremely personal thing. The tele entertainer will be a "guest in your living room" in a more real sense of the

word than any other type of entertainer. The viewing audience is going to have a great deal to say in deciding exactly what blueprint this entertainment revolution is about to follow.

From a technical point of view, what is going to satisfy the public? Before the war there were several thousand television receivers in the metropolitan New York area. These receivers were adjusted for a five-hundred-and-twenty-five-line image. The watcher-listeners seemed quite well satisfied with a picture of this quality. However, it seems that the electronic laboratories may have thousand-line television readied for us within a few years; and after viewers have seen a thousand-line image, they will never again be satisfied with less. This may discourage the many ingenious mechanical systems of television scanning. But the machinery for high-definition scanning by mirror drums is too intricate and cumbersome for John Jones' living room.

How about screen-size? If, as we believe, television is going to be an intimate medium in the living room of your home, there is not much likelihood that more than a handful of people will be watching the screen at a given time. For small audiences—a half dozen or less—a six-

teen inch screen is ample. But for those who want a still larger picture, the projection kinescope may soon be available, providing radio pictures of home-movie dimensions.

Are audiences going to demand color? They probably will find it desirable, but won't demand it. The reaction will be much the same as that of motion picture audiences today. Technicolor is a welcome "plus"; but no one leaves the theatre disappointed because a film was in black-and-white.

The television color process is simple and quite economical. A touch of a button on the receiver-console converts the set from color reception to black-and-white, or vice versa. Moreover, pictures transmitted in color can be received on a black-and-white screen without the color attachment. This means that video color is completely flexible. The answer to the television color question seems logically to be the same as the motion picture industry's solution: when the program material warrants the extra production and expense, color will be used. In most normal instances, however, black-and-white is satisfactory. Set-buyers can do as they choose about

spending a few dollars more for a receiver with a color attachment.

How about the sound channel? After the war, a comparatively new innovation called Frequency Modulation (FM) is sure of wide acceptance. FM is extremely high fidelity sound, virtually noise-free. Average listeners probably won't scream their demands for FM quality with their video pictures, but the few who are not partially tone-deaf will be so pleased with the brilliant FM reception that they will insist upon it. Conclusion: it will prove ultimately desirable for all television sound to be FM quality.

One more point, from the technical aspect. How much is the public going to be prepared to pay for this television-FM masterpiece? Well, if the new medium is really going to be the "people's art," the price of sets must be kept within the range of the people's pocketbooks. Also, since television can be a major force only by reaching a mass-audience, it is important that the price of good video receivers be reasonable. It's a good guess that John Jones will be willing to pay the same price for his television set, complete with sound, that he paid

before the war for a good phonograph-radio combination. For optional color, he may pay 20 or 30 per cent more. And let's hope that some mass-manufacturer will work out an economical small-screen job which can sell for well under one hundred dollars. The console with a sixteen-inch screen should come within a stone's throw of two hundred dollars, or we can expect a lusty squawk from the paying customers.

Now let us assume that the reasonably-priced, high-quality, FM-sound-channel television receiver has been installed in the northeast corner of John Jones' living room. The family is now sitting down for its first evening of television entertainment. The switch is snapped on. The screen lights up. What do they expect to see?

No one can pretend to be a midget Muncie, or a one-man Gallup Poll. But, by using some common sense, combined with what we know of present-day listening habits, we may hazard a pretty fair guess as to what John Jones and family are going to want to see. And let us have the proper respect for their expectations. Because it is the considered opinion of several million John Jones' that will determine the final course which the new industry shall follow.

How many hours of video entertainment will the public expect per day? If Jones has sunk half a month's salary into his television receiver, he's going to be dissatisfied if he can use it only one or two hours out of every twenty-four. Sound broadcasting has accustomed us to twenty-four-hour entertainment service. At the very outset, John Jones may be satisfied with four hours of tele per day; but ultimately he will require eight hours or more of sight-broadcasting seven days a week. This doesn't mean he's going to want to look all the time; but he will want programs available for watching whenever he chooses to turn on his receiver.

Logically, television time might be broken into two daily periods: one, from noon until two o'clock; then, a three hour lay-off until five; the main broadcasting hours would then continue from five until eleven in the evening. Eight hours of television programming is going to be a man-sized job for the nation's visual programmers. The public will prefer shorter periods of high quality to long sessions which are dull and poorly done. However, the eight-hour television day is certain to come—and the sooner the better, as far as John Jones is concerned.

What sort of things will the Jones' want to see? Well, it's a cinch they won't want to look all the time. Like radio, television is going to be more or less a *casual* medium. Some programs will be built for intent watching, while others will be constructed so that full entertainment value can be received by just glancing at the screen occasionally.

Video programs, like present-day radio, must be planned on a "margin-of-interest" basis—realizing that interruptions and distractions within the home will prevent audiences from giving their undivided attention all of the time.

Motion pictures have already set the standard for visual entertainment in the United States, and that standard is an exceedingly high one. John Jones is going to expect his programs by television to compare favorably with the movies that he sees at his local theatre. This seems unreasonable, but Jones isn't going to think so. He is going to have little patience with the technological and programming difficulties which confront the television stations. No one is going to be satisfied with televised radio shows, as they are produced today. You can't set an iconoscope in front of Jack Benny, put on

the broadcast in the usual fashion, and expect people to be interested for more than a few weeks. If we think of television in these terms, it will be a short-lived novelty. The technicians of the motion picture industry will be dismayed at the thought of producing eight hours of visual entertainment daily of a caliber comparable to present-day movies where twenty minutes of actual shooting each day is considered record-time. Television's appetite for entertaining material will resemble a baby elephant with a tapeworm. But the problem of satisfying it is not insuperable. When sound radio was coming into its own for the first time, many persons were alarmed about where the material was going to come from. It came. It will come in television, too. The solution does not lie in any pattern of visual or sound entertainment as we know it today. Programming and production for television is going to be a *new art* in a very real sense of the word calling for radical and courageous thinking on the part of the men in command of the new medium.

"What the public wants" will be most directly felt in their program demands, for good programs must precede the mass purchase of tele-

vision receivers. Unless the entertainment creates a desire, John Jones is going to keep the money which he might spend on a tele receiver right in his wallet.

One factor in public demand will simplify the problem to some extent. The television public is going to request shorter parcels than they are accustomed to receiving in motion picture theatres. Fifteen-minute and half-hour productions will predominate, as in present sound broadcast scheduling. Programs of motion-picture-feature length are too long for broadcast. Interruptions may cause home-viewers to lose the story-line. And eye-strain is a serious factor in watching a small screen for two hours or more.

Will the television audiences expect the sight receiver to take the place of movies? Not at all. It is difficult to imagine John Jones looking at the shiny mahogany television receiver in the corner of his living room, rubbing his hands together, and saying, "Thank heaven, I'll never have to go out any more!" The public will still expect to go out several evenings a week—to filmed entertainment. They will look on television as an important "plus" in their standard

of living: a means of visual entertainment to supplement, but not replace, motion pictures. The public is going to look on television as exactly what it is—a new entertainment form—and not expect it to infringe on the territory of any other means of entertainment which has given them satisfaction.

* * *

Now comes a very delicate question in the public's demands on television. Will John Jones insist on "immediacy"? Will he insist that the programs he sees now be taking place in front of a television camera at the same instant?

The insistence on immediacy has been a prime thesis of all major network broadcasting policy. In sound broadcasting, this has been intended to discourage the development of large transcription networks, which might eventually threaten the existence of the instantaneous wired chains. Partially in self-defense of its own existence, the wired network has preached a policy: "Would you rather kiss a girl or her picture?" —the inference being that non-instantaneous broadcasting was vastly less satisfactory than flesh-and-blood entertainers, performing *now*.

Experience does not bear out the network's

claim that audiences are strongly displeased by the idea of transcribed or delayed entertainment. Actually, the public demands instantaneous broadcasting service only in two fields: news and sports. In drama, music, and comedy, there seems to be no objection to delayed transmission. The largest radio network in the world, built up during war-time by the Special Service Division of the War Department, has done its job entirely by transcription. Transcribed rebroadcasts for presentation at better listening hours have become an accepted part of network procedure. In music, John Jones seems to have a distinct preference for fine records, as opposed to live performance by less able artists. In other words, if the quality is the same or better, there is no reason to believe that audiences have any objection to delayed broadcasts.

In the field of sight, the requirements of immediacy will be even less insistent. For movies have accustomed watchers to the full enjoyment of filmed entertainment, which is often many years old. The question of whether you would rather kiss a girl or her picture no longer has meaning. When can you recall seeing an audience come out of a motion picture theatre,

moaning disappointedly, "It was a good show—but just think! They made it six months ago!"

Current events and sports news are an entirely different story. John Jones' most insistent demand from the television producers will be for instantaneous coverage of sports and news events. Also, in matters of local interest, he will prefer instantaneous broadcasts. But in the presentation of prepared entertainment, such as drama, comedy, and music, we can expect virtually no public opposition to high quality filmed and recorded productions. And in normal times, this type of entertainment constitutes four-fifths of a broadcasting station's time.

Will John Jones object to advertising? Not if it's intelligent advertising, and in good taste. American listeners have become accustomed to advertising by radio as a normal part of their daily lives; there is every reason to believe that we shall feel the same way about television. American audiences have learned that advertising brings them the highest standard of entertainment at a low cost to the people entertained. There is no doubt but that violent objections will be raised if commercials are too long, dull, stereotyped, or offensive. But intelligent agen-

cies and advertisers have proved that commercials can be among the most entertaining parts of a show. The same can be true in television.

* * *

There is one other request that the people of America will have to make of the new industry. They'll want it to have stature and guts. Americans will expect their television producers to turn out programs of the best quality in the world—technically and dramatically. They won't be satisfied with drivel or nickelodeon stuff. Whether or not John Jones and his family can put it in so many words, they can sense in the new medium a potent force for the good of mankind. Television has already caught their imaginations. Subconsciously, they realize it can be great. People will not be satisfied with blueprints which call for small-scale building in developing the new art. They will demand to see things that will really make them happier, wiser people. And we must give them the best visual entertainment that the brains of America can turn out.

That, in a rather large nutshell, is what the public may expect of television. The television technician has had an extremely difficult job in

perfecting the electronics of broadcasting television images. But difficult as his job was, the problem facing the program men looks to be even a tougher nut to crack. Before long, we may see an ad something like this in the Classified section of the Hollywood *Citizens-News:*

HELP WANTED. MALE

Executive writer-producer-directors, to invent new sight-broadcasting techniques. Must be thoroughly grounded in motion pictures and radio broadcasting. Must be creative, highly imaginative. Must be willing to work twenty-four hours a day, or longer. Must be completely immune to stomach ulcers and nervous breakdowns. Salary no object. Prospective employees report for work at once. Bring your own tooth brush.

4

"WHO'S GOING TO PAY THE BILLS?"

As of today, nobody has made any money out of television. And many American stockholders have received smaller dividends because of expensive experiments in the new field. We've already mentioned the technical and programming difficulties of visual entertainment. The economic problems are of similar proportions. Money will change hands rapidly and in astonishing quantities after television gets under way. And the aggregate monthly bill of the new industry—for technical and creative services—will be astronomical enough to make even Henry Morganthau raise an eyebrow.

To whom will this impressive statement be sent? Obviously it will have to be an easy and courageous spender. And it is vital that the party who pays the bills should have the best interests of the new medium sincerely at heart. For whoever pays the television piper is certainly entitled to say something about the tune.

The foremost developments in television as a service to the public have been achieved in the British Isles. BBC has been turning out remarkably high quality television broadcasts from its studios in Alexandra Palace since the mid-thirties. Television receivers in the London metropolitan area number in the tens of thousands. The "angel" of BBC's television is the British Government. Exactly as in sound-broadcasting, the sight-transmissions of the British Broadcasting Corporation are supported through a tax on receiving sets collected by the post office department. In England, government controlled and operated television seems to have been highly successful.

How about the same system for the USA? Fifty million people are probably wincing at the thought. Government operation of radio just isn't our way of doing things. Commercial sound broadcasting has taught American audiences to expect a different kind of entertainment from their radio sets than the British demand from their government-controlled stations. The type of broadcast which the Britisher is accustomed to call satisfactory, is not as lavish or as brightly-paced as that demanded by American audiences.

The government would certainly qualify as a glib spender; but it is doubtful if any government agency would have the courage, the ingenuity, or the sensitive response to public taste which could guide the course of a commercial organization.

This doesn't mean that the government has no place in the new industry. It seems wise and desirable that the government should assist the visual broadcasters during the period of "growing pains." Perhaps by loans or subsidies. Perhaps with "yardstick" visual productions. And surely there will be a place for government operated stations on the television spectrum. But if the government is going to take over completely, and pay all the bills, it will probably be the kiss of death. It would be extremely unfair to the private agencies which have already spent millions in the new medium, and have been almost entirely responsible for all the developments so far. It would also be very disappointing to the public, which expects present-day commercial quality in its visual broadcasts.

It seems reasonable that the people who enjoy the programs should be the ones who pay the bills in the video operation. But there is only one

practical way to bill the consumer of home visual entertainment. That is to handle television in the same way that telephone service is now operated. In other words, television programs would not be broadcast, but would be wired into each home as a monthly service. As long as you paid your monthly bill, the company would keep your tele screen supplied with entertainment by wire.

There are many bugs in this arrangement. We have already discussed the enormous technical difficulties of wired television. Installing a wired television set in your home would be five hundred times as complicated as installing a telephone. And the cost for the technical service alone would be correspondingly higher. The checks for the artists and performers would have to come out of the same fee. If the company expects to barely break even, the monthly fee would necessarily limit subscribers to members of the Treasury Department's "Four Hundred." Before the cost of wired television could be brought within the range of the average man's pocketbook, it would be necessary for the majority of the homes in this nation to participate in the service. Only then could the wired video

corporation show anything resembling a profit. And what with the enormous investment in equipment, the organization would have operated at a loss for so long that the scheme loses feasibility. The natural place to cut corners would be in the extravagance of program production. And cheapening the program is the surest way to kill public interest in the new art.

It has been suggested that "scrambled" television pictures be broadcast; the only sets which could receive these images would be those who had paid the monthly bill. This arrangement would be singularly unhappy. It parcels out the ether which is public domain. It puts a price-tag on a service which we have come to consider as "free as the air." And the way is open for a profitable racket by television bootleggers, who will "fix" your set to receive the scrambled image without paying the subscription fee.

Another reason why these "subscription" video services don't seem to solve the problem is that the public prefers to pay for its home-entertainment indirectly. Commercial sound broadcasting has accustomed American audiences to free entertainment. Television is so closely allied to present-day radio that the pub-

lic will probably resent being charged for something which it expects to receive free.

Wired television will certainly have its place. Large hotels and apartment houses will probably install wired visual channels as a courtesy to their guests. Business-men will find wired video methods helpful for inter-office communication and conferences. Retail organizations will use wired tele for stunts, promotion, and window displays. But these are excursions off the main line of the television industry's development.

* * *

Probably no one with an I.Q. of 15 or less will have the slightest idea whom we are going to suggest as the man to pay the bills in the television industry. You guessed it. The commercial advertiser.

Why? Principally because that's what the people expect. Moreover, the commercial sponsorship of television broadcasting into the home is economically sound. Advertisers will jump at the chance to utilize this greatest of all advertising voices. It is true that television combines the best features of virtually every advertising medium, except direct sampling. The kinescope

screen offers manufacturers and retailers an unparalleled opportunity to display their products.

One consideration is vital in the decision to send a major share of television's bill to the commercial advertiser. The sponsor must have a sincere respect for the privilege of footing the expenses of broadcast television. He is only kidding himself if he thinks he is a patron of the new art, letting the pay-checks fall like manna from heaven. And if the man who pays the piper also tries to tell the piper what key to play in, people may lose interest in the tune. Because the sponsor happens to hold the purse strings is no reason for him to consider himself the grand-duke of the new medium.

Rather, he is just a ticket-taker. Other methods of collecting from the public for television service are comparatively unsatisfactory. The method of collecting indirectly through commercial advertising is the happiest means of charging the audience for what it sees. Happiest, because the cost tends to wipe itself out in amplified sales of the advertised product. So, in spite of the high price of broadcast advertising, the public actually saves money: because the public acceptance, so created, makes pos-

sible the savings due to expanded mass-production.

The cost-per-thousand of television advertising impressions will necessarily be several times the maximum cost of any other medium. Since video exceeds any other medium in effectiveness, this higher price is justified. Commercial sponsorship must mean a courageous stimulus to the creative minds of the new art. The sponsor must be prepared to pay the price of great entertainment, for in the long run quality in broadcast advertising pays off. It seems very logical that advertisers who make an honest attempt to understand the new medium, and their relation to it, can be the men who succeed in making television profitable—for the public, in entertainment—for the creative and technical men—and for themselves.

* * *

Of course, if any advertising medium is going to be truly great, it must reach everyone. We have already observed that coast-to-coast television networks will be financially out of reach within the predictable future. How, then, are we going to achieve mass-coverage with visual broadcasting? Since we have exploded the bogey

of immediacy, the film networks offer an ideal solution. A television program can be produced in front of iconoscopes and movie cameras simultaneously, and the motion picture film sent by air to the other stations in the national network for delayed broadcast. The advantages of this method are numerous. The use of film gives program producers more flexibility in television production. They can make mistakes and correct them. They can take more time in production. The resulting shows can be of higher quality.

For the advertiser, film means much smaller bills. He has to pay only a few cents postage to deliver his program to the broadcasting outlets, instead of paying thousands of dollars in line charges.

Moreover, film means that advertising can be a part of the visual broadcasting scheme of things immediately. There may be only a handful of commercial stations at the start, but even so the expense of a high quality television production can still be justified; for although the film will have an immediate showing on only a few stations, as more video broadcasting plants mushroom across the country, the same

film can be shipped to each of them. Ultimate result? Genuinely low-cost national coverage. And this blueprint for development will make it profitable to bring quality television programs to video audiences at the time in tele's development when quality is most important—during the adolescence of the medium.

The cycle is endless: better programs, more receiver sales. More receiver sales, bigger audiences. Bigger audiences, better programs. The film network is the logical and natural means of starting this cycle in operation.

* * *

There is one reasonable demand of the tele audiences which the film network fails to fulfill: that is the demand for instantaneous coverage of news, special events, and sports. It is true that local stations can provide coverage of such program material within the limited range of their mobile units. But John Jones will want national, on-the-spot coverage of news and sports: and this calls for an instantaneous network linking of every potential audience in the nation.

We have counted the cost. Whether we choose co-axial cable or a peppering of booster stations across the nation, the expense of instan-

taneous coverage will be far more than any advertiser can logically pay. Still, this is what the public demands. The only solution seems to be —charge the public for it directly.

We've pointed out the difficulties of charging the consumer direct via wired tele service into the home. However, a network service by cable or booster stations could be very profitable for theatre operation.

Two types of television theatre service will probably result. One, a periodic news service to replace present-day news-reels with actually instantaneous news coverage. This form of television network operation might eventually become a part of every theatre program in the country. The existing news-reel and picture-gathering organizations would convert their techniques of news-coverage to include actual on-the-spot viewing of news and special events within the range of the network connections. This would be augmented with speedy photographic coverage of foreign news-fronts. Mobile handling of telephoto stills and trans-oceanic news-reels by air express will provide fuel for the theatre-iconoscopes. In a later chapter, we shall discuss production techniques and methods

of synchronizing theatre schedules to include the video news transmission.

To be practicable, this network service must be offered to theatres exclusively. The cost will naturally be high. But once theatre audiences have enjoyed the thrill of instantaneous television news coverage, they will never again be satisfied with news-reels. It is reasonable to expect that audiences will pay an increased admission price gladly in order to enjoy theatre-tele of news and special events. By charging the customer direct, through theatre box-offices, network television can be profitable.

It is interesting to think over some of the dramatic means of news presentation. Even though instantaneous transoceanic video coverage is lost in the haze of the distant future, such service can be simulated in the following manner: an on-the-spot reporter can give verbal description of events taking place overseas, while the network video channel sends out graphic charts, stock shots, and telephoto stills illustrating what the commentator describes. These would be edited to make more dramatic the commentary which the foreign correspondent radios in. The place of the television camera in political

conventions, sports events, trials, incidents of human interest, military maneuvres, visits of celebrities, demonstration of new scientific devices, and documentary news—these vistas of electronic news-coverage are unlimited.

* * *

But it is in the fields of special promotion and sports events that theatre television will really hit the jack-pot. Probably one theatre in each population center will convert entirely to the showing of tele productions. The operation may be as follows. The battle for the world's heavyweight championship is scheduled to take place in New York's Madison Square Garden. Ringside seats at the Garden are selling for upwards of twenty-five dollars each. A crowd of thousands of New Yorkers will pack the Garden to see the bout. And in the past, this audience alone has made such promotions extremely profitable. But imagine the size of the potential audience when a television camera occupies one of those ring-side seats! The crowd in the Garden shrinks to unimportance when compared with the mass of fight-fans occupying millions of theatre loges throughout the nation. Each of them—whether he lives in Spokane, Pomona,

Corpus Christi, or Keokuk—can enjoy the bout just as fully as a fan who drove down from Yonkers.

Will theatre audiences be willing to pay for the privilege of seeing these televised sports events? What do you think? Is there any doubt that there are at least a million fight fans throughout America who would gladly pay a dollar-ten for a ring-side view of Joe Louis, actually defending his title? Where is the true baseball fan who would refuse the opportunity to watch the World's Series from a seat in a television theatre three thousand miles away—with a better view of the diamond than an actual spectator with a seat on the first base line? Horse races, hockey meets, wrestling bouts, international Olympic games, automobile races, airplane races, regattas, collegiate and pro football games, track meets, tennis tournaments—every form of skilled competition will find willing watchers in the theatres of the nation supplied by the television networks.

Nor are sports the only food for theatre television. Is it impossible that the iconoscope might find a place in Carnegie Hall and the Metropolitan? Surely America's music-lovers will be

glad to pay reasonable prices to see as well as hear the world's foremost conductors, soloists, and instrumentalists. Whether lovers of the drama will be satisfied with a straight televised reproduction of a Broadway play is a decision of the future; if they are, the Longacre may contain nine hundred thousand seats instead of nine hundred. The screen results of merely photographing a play electronically will certainly differ from the flexible usages of modern motion picture techniques. But even though comparatively stilted and lacking in ubiquity, televised stage productions may be startlingly effective.

Here indeed is a new entertainment industry. No advertising director could justify spending the hundreds of thousands of dollars necessary to bring such special events to video audiences as a free gift from a sponsor. But the sports fans, the play-goers, and the music-lovers of the nation will gladly wear a path to the theatres which bring these features to their screens by instantaneous television transmission; and they will pay the price, where no advertiser could reasonably dream of assuming the financial burden.

This is but a foreshadowing of the vigorous

television theatre chains—whose annual gross may conceivably run into nine figures.

On occasions of national importance all of the instrumentalities of television—theatres and broadcasting plants—may be linked together through the tele chain for the presentation of addresses by the President, important world figures, and significant sessions of Congress. Such a pooling of television's audiences would, of course, be non-commercial and probably at the specific request of a government agency.

* * *

The probable pattern of post-war television begins to make itself apparent. The industry's basic coverage will be visual broadcasts into the home, sponsored by local and national advertisers. The demand for immediacy—beyond the financial reach of practical sponsors—will be provided by theatres. Virtually all motion picture houses will include some televised news on their program, replacing the obsolescent newsreel. Certain theatres will convert to the showing of television productions exclusively and their screens will be lighted by the nation's headliners in sports, drama, and music. The bill for the filmed and live entertainment broad-

cast into the home will be delivered monthly to the commercial advertiser. The bill for the television network service will be delivered directly to the consumer through the theatre box office. When the public good demands that all of these agencies be joined, virtually all the eyes of the nation can be focused on one scene at the same time.

This arrangement seems to offer a minimum of conflict and a maximum of profit for all. More important, it is an arrangement which should encourage television programming of a stratospheric standard. This plan does not mean that local broadcasting stations will seldom make transmissions of sports and musical events on their own. Local athletic contests and current happenings, which can be televised within the range of the station's mobile transmitter, will be welcome program material on the screens of home receivers. But the exorbitant cost of network chains will confine national special events to theatre screens. From an economic point of view, this is not an undesirable arrangement, as we have seen.

* * *

One more "angel" may be called in to share the expense of tele operation. It seems reasonable that with every television receiver sold, a "Service Policy" may be included in the price of the set. In effect, this "Service Policy" would be an insurance for the set-owner that his receiver would always be kept in top-notch condition. For a nominal annual fee—in the neighborhood of ten dollars—the dealer will service the set against all normal wear-and-tear at no additional cost to the purchaser. At the conclusion of each year, the renewal of this Service Policy should be made so desirable as to be almost automatic. The premium might be paid on a quarterly or semi-annual basis, if desired. The administration of this Service Policy would follow the general pattern of similar automobile servicing policies sponsored by the A. A. A.

We have already noted that the television receiver, properly cared for and carefully installed, is a fairly indestructible piece of furniture. Therefore, a sizeable profit should accrue to the agency collecting the Service Policy.

It is suggested that this surplus be diverted into a permanent fund, dedicated to the improvement of the new medium. When the num-

ber of tele sets in the nation approaches the present number of sound receivers, the surplus from this Service Policy will be an impressive figure. This fund may be administered by an organization made up of representatives from every segment of the industry. These men will be the trustees of television as a cultural force. Don't flinch, please. This will be no battery of stuffy gray-beards, foisting archeological seminars on helpless television watchers. The leaders of this organization—which may appropriately be called "The Association for the Advancement of Television"—will have one goal: to keep their eyes focused on the most distant horizons of the new art. Whereas the purely commercial interests will be chiefly concerned with day-to-day developments, the board of the A. A. T. will be concerned with long-range planning for the public good. The membership of this Association will include a fair representation of all the men and women who have a stake in the industry. Not merely a financial stake—although the broadcasting and manufacturing interests must surely be present. But the A. A. T. will also include those who have invested their talent in television—the actors,

writers, and musicians. The men who have invested their technical genius—the inventors, camera-men, and engineers. And the craftsmen who contribute so much to the progress of the medium. There must be representation from the Federal Communications Commission. And from the universities and foundations which are the trustees of the national culture.

These people will mold programs which would be difficult or impossible commercially; but which are genuinely needed and desired by the American public. The Association will prescribe certain television vitamins to make up for deficiencies in the entertainment diet of the democracy. What sort of programs? Unbiased documentaries on sociological problems. Education for citizenship—with guts. Setting up laboratories for improving video transmission. Sponsoring experimental production techniques, and subsidizing creative artists who are attempting to explore new coves and bayous in the television coastline. Encouraging thinking which is free and young. Standing guard as the industry's self-appointed sentry against sordid, unimaginative commercialism. Those may be

the working functions of the Association for the Advancement of Television.

The Association need not go begging to make its force felt. The surplus from the Service Policies should prove ample to finance the work of the organization. And since its membership will contain a democratic representation of all groups associated with the television art, it may well be a meeting place of minds to forestall detrimental clashes and discord. And if the Association does its work well, set-owners will surely support a voluntary "tax" to continue its existence. The Association for the Advancement of Television will assume responsibility for those bills which neither stations nor theatres could be expected to take on entirely of their own accord. Of the Association, we will say more later. For the present, it rounds out the financial picture. The bills are all paid.

5

"TELEVISION TIME-TABLE"

FROM where we sit, five stages of the new industry are visible before conjecture falters in the mists of the future. It will be interesting to rough out these phases of tele development, and lay a calendar along side them as an approximate measure of their length. Blandly ignoring warnings from Shakespeare's lawyers, we may identify the five periods in the chronology of the industry as: (1) Infancy; (2) Childhood; (3) Adolescence; (4) Youth; and (5) Maturity. It won't be as pretty and clean-cut as that. But dividing the television time-table in this manner will order our thinking.

Television's infancy was its purely laboratory stage. This was a decade-long whirling of scanning discs, mirror drums, and mechanically-driven scanning devices. Sight broadcasting emerged from the nursery with the introduction of electronic scanning. The cathode beam pointed the way toward high-quality video

broadcasting. When the iconoscope arrived on the soundstage, the laboratory was left behind and television became a force in the lives of the people. An unknown quantity, but a force. Banks of photo-cells and flickering neon tubes—grinding motors and flying-spots of light—the day these were discarded, television learned to walk. The laboratory-infancy was over, the childhood was begun.

Sight broadcasting is still no more than a growing child. Outwardly, its growth was temporarily halted by the war. Actually, the experience which researchers gained under war-time conditions forms an invaluable store of knowledge and experience which will nurture tele's "beanstalk" growth.

We are now in the latter part of stage two in television development. Let us stop to look around and see where we stand. Despite the tremendous strides which have been made, tele is still in an experimental stage. As of today there is no money to be made in video broadcasting. The Federal Communications Commission has licensed no stations to accept payment for television time. Nevertheless, thousands of far-sighted individuals are exploring the knowl-

edge which we have accumulated, and are making plans for future developments. This is a time of groping. A period of trial-and-error. This is the grammar school stage, in which we are learning by making mistakes. The United States has roughly a score of tele stations. They are operating on irregular schedules with skeleton staffs—servicing, for the most part, audiences which do not exist. Although radio manufacturers put several extremely satisfactory television sets on the market before Pearl Harbor, only the more courageous consumers ventured to buy. For about this whole period in the working of television, there hangs a curtain of uncertainty. We are still learning. And the public knows that we are still learning.

This segment of tele's life-span which we call "childhood" has extended over the better part of ten years, and may last for three or four years more. It is better that this era of broadcast history be ample in length, for if we burst into the next stage prematurely, the result may be disastrous.

We can liken conditions in the television industry today to the activities back-stage in a Broadway theatre an hour before the curtain is

about to go up on a first night performance. The show is rehearsed; lights, scenery, costumes, are all in readiness. Already a few early arrivals have taken their seats in the house before the lowered curtain. But the back-stage is a place of vigorous activity. This next hour is "now-or-never." Any change, revision, last-minute directions must be made at this time—for after the curtain goes up, it will be too late. That the stage is set perfectly for the first act of the performance is a vital concern, for when the house-lights are dimmed, the time for changes will be past. The success or failure of the play may depend on the precision and care with which these last-minute details are arranged. Within an hour, the full audience will be out-front. The critics will be appraising the performance. They will be hard-boiled. It will be too late then to correct or revise. This is the hour of grace, the time for last-minute polishing before the play goes for its test in front of the public.

Right now, sight-broadcasting is in exactly that phase. We are putting the finishing touches on our masterpiece, before releasing it. There is fevered activity back-stage in the industry, readying the new medium for a performance

which critics and audience alike will hail as great. If we are careless or over-anxious, the show will fail. A television audience will be no more charitable than a theatreful of Broadway play-goers. If the performance stinks, they will show no mercy whether the play is on the stage of the Music Box or on the kinescope screen of their own tele receiver. Exactly when television is ready to go depends on many different people and organizations. The set-manufacturers, the networks, the movie studios, the guilds, the government—all of these groups must get their heads together now, set their watches, and decide exactly what time is 8:40. For when the hour comes to raise the curtain on television for the entire nation, the public will expect no dawdling. They look for an industry which will arrive full-blown.

Anyone can see that we must make the most of the experimental time which is allotted to us. We must "jell" our thinking, lay definite plans, draw up careful blue-prints, and set forth all the "business" as the playwrights of the new medium, so that each performer and craftsman can do his job effectively and without interfering with the work of the others. Although the

engineers are doing yeoman work in preparing video for its nation-wide first-night, those who will be primarily concerned with the creative, production, and economic aspects are a long way from having a unified point of view. Some groups seem to want to do an act-in-one in front of the curtain before the show begins. Unless we look now toward an immediate meeting of minds to make the vitally important last-minute arrangements before the television play begins, what happens on the stage during the first-night performance may be a frightening hodge-podge.

We've already mentioned the Association for the Advancement of Television. This organization, whose purpose it is to govern policy and long-range planning for the best interests of the industry, should certainly come into being during television's critical experimental period. It is important that now, during the so-called "childhood" of sight-broadcasting, the Association should bring to a focus the more-or-less disorganized thinking in the industry's still fluid mind. The plan of the operation of the association may very well be as follows: representatives from every entertainment art and craft which may be related to the television business

should convene to formulate and criticize the blue-print for future developments, and initial these blue-prints as approved by all the parties concerned. The psychological moment for this convening is *now*. For the psychological moment for the curtain to rise on the first act of the drama of television is immediately following the end of World War II. Then all of American industry must be prepared to shift gears to a peace-time economy. That adjustment will be a much less arduous one if the personnel for the electrical and entertainment industries can pledge themselves to a growing field of endeavor. The vast reservoirs of technically trained man-power, now busy in military operations, may rightly expect to find a place for their skills in the post-war television industry. We must be sure that that place is ready for them. The function of the new industry immediately following the war may be that of a cushion, a shock-absorber. Though diminutive in comparison with our production for war schedules, the demands of television in personnel and production facilities will loom large. It is sensible to plan now for the place television is capable of holding in the post-war economic front.

All of these considerations are the responsibility of the Association for the Advancement of Television. The A.A.T. must have its meeting of minds as soon as possible: to iron out differences of opinion, allay fears and skepticism, assign functions to responsible persons and organizations, draw up scales and contracts which will be agreeable to all. The machinery for the formation and financing of network theatre television must be designed and set into operation. The thousands of minds throughout related industries which have been mulling over the problems of post-war video, should get together—exchange their thinking—spark each other to joint concepts of the scope of visual broadcasting.

The actual purpose of the first convention of the A.A.T. will be to focus the eyes of all persons who will play roles in the drama of television in the same general direction—toward the same horizon. It will be the purpose of the convention to bring about a unity of thinking, and a unity of high purpose among all the members. The exploratory work which has been carried out by researchers and program men during television's childhood will be displayed.

Each representative should leave the convention with a clearer picture of the shape of the new industry, and his place in it. That meeting of the Association for the Advancement of Television will mark the end of stage two in our television time-table. When the A.A.T. draws up a crystallized, industry-wide plan for the future, tele's childhood will be over.

* * *

Phase three of this time-table cannot begin until the war is entirely over, and the road is cleared for the commercial sight-broadcasters. But on the day the F.C.C. issues the first commercial licenses, video broadcasting will have ceased to be a child. The period lying ahead will be the time of television's growth to full stature. And along with this growth will come all the growing pains which accompany adolescence. This third period in the history of telebroadcasting will probably last for several years. When military requirements are relieved to such an extent as to permit mass-production of sight broadcasting and receiving equipment, the physical expansion of the industry will begin in earnest. Virtually every sound broadcasting station in the country will realize the importance

of setting up a video station—with its attendant FM sound channel—to service watchers in that area. The addition of sight-channels will be a side-by-side development, along with the continuation of sound broadcasting as we know it now. The visual channel, with its accompanying FM sound, will simply be added to the regular operation of the broadcasting station. The addition of sight-FM transmitters will undoubtedly begin in the large population centers, where concentrated audiences present the best advertising markets. In subsequent months, as the operation of the subsidiary sight-FM channels of metropolitan stations proves profitable, local stations in more outlying sectors will undoubtedly follow suit.

The programs which will supply these mushrooming stations throughout the country may be expected to consist almost entirely of "videofilm." This is a type of movie—probably on 16 millimeter film—which is prepared especially for broadcasting purposes. The accompanying sound, to feed the station's FM channel, is recorded on a sound-track along-side the film—exactly as in current motion picture practice. Videofilm programs of both commercial and

sustaining types will be sent out to station subscribers. These films will no doubt be produced mainly in Hollywood and New York—where the equipment and manpower for making high quality visual entertainment is now concentrated. The development of the technique of "videofilm" production will be a tremendous stimulus to the creative art of visual entertainment. Advertising agencies—aware of the vast potential of the new medium—will encourage their more courageous clients to experiment in tele advertising. For by the time we have arrived at this third stage in video's development, the rapid sale of sets and the springing up of stations all over the nation will offer an increasingly attractive audience of potential customers.

Much of the advertising during these early days of tele's adolescence may be purchased by radio set manufacturers who stand to make very sizeable profits through the rapid sale of sight-receivers. Since it is naturally to their advantage that the programs be of the highest possible quality, it is only good business for them to subsidize the stations, in a manner of speaking, through the purchase of substantial time blocs —and devote this time to the production of

highly entertaining programs. For such programs are the best selling point the radio retailers have to offer the general public as an inducement to buy video receivers.

The pattern of present-day sound networks can be preserved to a large extent in the distribution of videofilm. The major networks can find film-networks exactly as profitable as wired-networks have proved in the past. In fact, during television's formative period—before the number of radio-watchers has reached mass proportions—the videofilm technique will mean much more substantial profits than would be possible otherwise.

Simultaneously with this rapidly expanding home-broadcast service will come the linking of theatres into television chains. The more far-sighted exhibitors will install television equipment for either full-time or part-time service. We probably won't see a coast-to-coast network —either by coaxial cable or by booster stations —until further along in this period of television development. But we shall see spurs running out from metropolitan centers on both coasts, servicing outlying theatres with visual entertainment electronically. Several years after the close of

the war—depending on the speed with which physical components of the industry can convert —we shall see these "spurs" joined into coast-to-coast coverage.

Throughout all this expansion, the A.A.T. will stand ready to unsnarl disputes, aid in planning, and offer financial assistance to the agencies pioneering in the new art. In two years, the entire radio public must be converted to visual thinking. This switch can be easy and painless. During this adolescence of the industry, we must build up a public acceptance of visual broadcasting. There is every indication that the public will be willing to give its acceptance readily. However, the introduction of television will mean an adjustment of the entire pattern of the nation's leisure. It will mean a change in the standards of public expectation concerning what it will hear and what it will see. Planned with an eye to every possible contingency, the awakening to television can be swift and pleasant. We must avoid jarring the video audience with too drastic or abrupt changes. It is the job of the television industry to prefabricate the mechanism of television so that it can fit into the lives of the American people with a minimum

of wasted time, hammering, and adjustment. Not only must the public change its concepts, but so must advertisers and theatre-exhibitors. They must prepare to think in terms of electronic visual transmission. That such thinking will be profitable is so apparent that we may expect most advertisers and exhibitors to be among the vanguard in the new industry.

Now bear in mind that during all the time that these video stations are springing up across the country, sound broadcasting will continue as we know it today. Advertisers may sponsor two separate and distinct radio campaigns: one in sound alone, and one in sight-and-sound—a completely different program from the familiar entertainment which we are accustomed to hear from our radio loudspeakers. Some few of today's network radio shows may be adaptable to video presentation; these will give their sponsor a desirable continuity in both media. But of course, the television version must be made separately from the sound-radio broadcast; the former will be fed to a film network, the latter into wire cables.

* * *

Television's adolescence will end at the precise day when the number of *watchers* in the nation exceeds the number of *listeners;* that is, when more homes have sight-FM receivers than have sound alone. Then television will become America's principal show-case for selling things. This doesn't mean that sound-radio will never be heard from again. Stations will do well to maintain eight hours of video daily. But audiences are accustomed to 24-hour broadcasting service. The FM-channels of the nation's broadcasting plants will continue to supply day-and-night program service—sponsored largely by advertisers who want mass coverage without television's sizeable production bills. The loudspeaker alone will continue in the role of radio's bargain basement. This will see the evacuation of the present broadcast-band—for FM, boosted by television, will then be nation-wide. Perhaps commercial broadcasters can make a deal with the FCC—swapping the 550-1500 kilocycle strip for some healthy chunks at the top of the radio spectrum.

Roughly coinciding with this conversion will be the filling out of the nation-wide, instantaneous television theatre hook-up. Thus, the end of

tele's adolescence will be marked by the shifting of emphasis from sound broadcasting to sight-and-sound—the nation-wide replacement of news-reels by theatre news tele service—and the extension of televised special events into theatres all over the nation. With luck, this point can be reached less than a decade after the first granting of commercial video licenses.

We come, therefore, to the fourth phase of sight broadcasting—the youthful manhood of the industry. The shifting of primary emphasis away from sound broadcasting should cause no economic spasms at the beginning of this fourth phase. For the interests operating the television stations and videofilm networks can be essentially the same interests which previously operated the sound-transmissions of the nation.

Expansion will continue through this period of tele's "youthful manhood," but more slowly. The main pioneering will be completed. But the job of extending inexpensive video service to small population centers and rural areas will still remain.

This will be the time in which television really begins to feel its own muscles. The industry will realize fully that, as an entertainment

medium, it has come of age. It is no longer merely a gawky nephew of Aunt Radio and Uncle Cinema. By this time television will have developed its own language—and the ability to express itself fluently. By this phase in the tele-time-table, we shall have seen courageous departures in visual techniques—not only in broadcasting into the home, but in transmissions to theatres of special events and news services. Television will have developed its own dramatic form—borrowing the best from the stage, radio, and pictures—but adding to these a certain spontaneity all its own. In other words, the new art will have become actually a *new art*. Telecasting will have come into its own and everyone, from the highest-paid entertainer to the newest rural set-owner, will concede the greatness and scope of the medium.

It is assumed that instantaneous, coast-to-coast television transmissions will, even during this advanced period in tele-development, be confined to theatres. Network bills will remain too staggering for even the most stout-hearted advertisers. Moreover, actual practice will prove that live transmissions of commercial shows are not only less polished than videofilm, but are not

TELEVISION TIME-TABLE

Stage One	Infancy	Laboratory stage; era of mechanical scanning.
Stage Two	Childhood	Television's present stage. Continued experiment, perfecting cathode beam scanning and high-frequency transmission.
Stage Three	Adolescence	From the formation of the A.A.T., through the growth of commercial television. Mushrooming stations. Nation-wide videofilm network. Rapid sale of receivers and conversion of theatres. Continues through five to ten post-war years.
Stage Four	Manhood	More viewers than listeners. Instantaneous coast-to-coast chains. Continued expansion, especially into less populous areas.
Stage Five	Maturity	World-wide, low-cost networks. Decline of videofilm. Television firmly established as a cornerstone of American—and world—life.

desired by the watchers of the nation. Eventually, in the far, far distant future, some keen mind in the field of electronic research may turn out a low-cost method of coast-to-coast

visual transmission. When this comes, videofilm networks may be supplanted to some extent by the live linking of commercial stations—although it is more probable that the instantaneous transmission will serve only to replace the airplane as a means of delivering the film to the transmitters of the nation. Theatre television, entirely live and entirely instantaneous, may, in this fifth era of video broadcasting, carry transmissions from all over the world. It is certain that somehow, some day, men will develop the means of sending pictures instantaneously across oceanic distances. This will be one of the features characterizing television's maturity—the most distant epoch in the art which we can see from this point.

It is difficult to hazard a guess at what time television will reach its maturity. Probably within fifteen to twenty years after the close of the war. In these days, we shall see world-wide video networks. We shall see the entire planet welded more compactly into one integral unit through the electronic joining of the two hemispheres. We shall undoubtedly see videophones replacing telephones in common usage. We shall see complete acceptance of tele techniques

in even the most unexpected corners of our personal lives; and we may see a more truly democratic expression of government by the people, with Congress meeting in emergency sessions by means of pooled television circuits.

A sixth stage? We can only wait, and watch. . . .

6

"WHAT'S GOING TO HAPPEN TO THE MOVIES?"

NO JUGGLER likes to have another juggler on the same bill with him. Hollywood is inclined to be wary about television. Understandably so. To thousands whose living depends on the picture industry, sight broadcasting appears to jeopardize companies which have taken years and fortunes to build. Not since Hollywood rose to power has anyone come along to challenge the statement: "Motion Pictures are your best entertainment." Now a new medium arrives which has the potential to challenge the cinema's exclusive sway. We can't expect the people of pictures to welcome sight-broadcasting with open arms and without reservations.

The plain truth of the matter is that television is *not* a threat to Hollywood's status quo. Most of the worries about the menace of tele are pure eye-wash. Sight-broadcasting and movies are two entirely different media. There need be no

conflict of authority. Not even the most rabid television addict will dispute the claim that "Motion pictures are your best entertainment." Of course they are. And will continue to be.

The pictures which emerge from the cable of an iconoscope are very different from the pictures which emerge from the cutting rooms of the motion picture studios. Television—a rapid medium—can never duplicate the artistic perfection of the studied cinematic technique. The two industries have entirely different scales of values: one, to turn out eight hours a day; the other, to turn out two hours a month.

Despite its speed, television is going to have something which pictures lack. A certain freshness, an immediacy, a spontaneity. A great motion picture is truly a masterpiece—the painstaking results of endless hours of labor, by thousands of minds, and hands, and faces. Television is going to produce few masterpieces. It cannot aim for perfection, as do our best motion picture producers. Sight-broadcasting will be a breezy compromise between perfection and speed. The difference between electronic and photographic sight is the difference between an illustration and a painting—between a digest and an ency-

clopedia—between a Liberty ship and a luxury-liner. Each has its place, separate and distinct from the other.

One thing is incontestably certain: the family is not going to stay at home all the time because there is a television receiver in the living room. People are still going to want to "go out." They are going to get a great deal more pleasure at home, through their television sets, exactly as the radio brought more entertainment into the home than ever before. However, sound broadcasting has stimulated rather than discouraged the family's venturing outside its own walls. Television will have the same effect. People will still want to be entertained visually and audibly in the theatres of the nation. What they want to see in these theatres will be influenced to a large extent by what they have already seen at home. No rational show-goer is going to pay good money to go to the theatre and see exactly the same thing he can see on his television screen at home free of charge. However, the theatre-going urge is going to be encouraged, not discouraged, by the presence of television in the life of the American-in-search-of-entertainment. It behooves each of the related industries

—motion pictures and television—to analyze itself and the other, recognizing what salient features in the technique of each constitute strong points, and which services can be better supplied by the other medium. It will be found that the differences are wide. There is ample room for both video and movies to continue to grow, with practically no overlapping of their separate spheres.

Let us examine the signal differences between the two media. We have already noted that one is capable of greater perfection, while the other has the advantage of speed and freshness. Another important difference between television and movies lies in their narrative structures. The motion picture takes two hours to tell its story; sight broadcasts normally will be thirty minutes of less. The motion picture is a novel; tele is a short-story, or a newspaper article. In program structure, the new industry will be much more closely related to present radio-broadcasting practice than to the motion picture.

Difference three: home television is free, contains commercial advertising; the motion picture plays to a paying house. Video is a casual

medium; cinema audiences tend to expect a spectacle.

Another critical difference between the two arts lies in the fact that the motion picture artist is assured of the undivided attention of his entire audience while the sight broadcaster has no such assurance. He may be bucking a bridge game, a cocktail party, or a pillow-fight. He must draw in broader strokes than the motion picture entertainer, for subtleties may be lost on the less attentive watchers.

Aside from news-reels, which will probably be replaced entirely by electronic news services, motion pictures make no claim to immediacy. Because of the length of time involved in preparing a film, it can be made current only as regards a broad trend. On the other hand, a telecast has an immediacy which makes it possible to link it with specific current events. Even with videofilm, the normal time lapse between production and broadcast will be only a few days; the film tele-networks will have a considerably greater quality of timeliness than do movies.

Another consideration in the differences between the two media lies in the matter of distribution. Technically, television is limited for

the most part to national coverage; at any rate, the new industry will be so vitally concerned with improving markets at home that there will be little interest in going afield for some years. On the other hand, post-war Hollywood will be movie-maker for the planet. Every theatre in the world is a potential buyer for the output of American films. Distribution by air to all of the world's entertainment markets is a certain direction of post-war growth and expansion. Television will be so preoccupied with technical and economic problems at home that the lucrative world markets will be left almost entirely for motion picture servicing.

Well, there are the salient differences. Let us add them up, and see what course seems most logical for each branch of visual entertainment to follow. Wisdom calls for the leaders of each industry to capitalize on the peculiar values of their individual equipment and methods, heightening and exaggerating the differences between the visual services delivered by motion pictures and video.

In this regard, post-war picture producers may very well place a greater emphasis on "A" and "Super-A" budget pictures. Movie-makers

will be wise to capitalize on the perfection which their photographic methods make possible. They should provide the theatre screens of the nation with the best photographic entertainment which is creatively and technically possible. Video screens are small; black-and-white will predominate. But post-war motion picture screens will be consistently filled with color. Camera and projection techniques must be developed to offer theatre-audiences the greatest possible detail, and bringing to the screen all the subtleties and creative tricks of the cinematic art. Technicolor will become a virtual "must" on motion picture screens. Binaural sound and other technological improvements in motion pictures may be advanced from the laboratory to provide the paying public with the greatest possible satisfaction.

The lavish technicolor extravaganza will not be threatened in the least by the advent of television: on the other hand, telecast promotion of the super "A" motion picture may increase the box-office take of such productions. However, "B" and "C" budget pictures and shorts will find their audiences to some extent preempted by the home visual service. This does

not mean that the demand for "B" pictures will vanish; as a matter of fact, since many of these low-budget pictures find their chief audiences in outlying sections, where television will be slow in arriving, that market may not be affected for many years. However, certain of the more far-sighted producers of medium- and low-budget pictures will see the wisdom and desirability of converting their organizations, partly at least, for the production of films-for-broadcast. There may very possibly be a joining of interests on the part of present-day network radio operators and some B-picture-makers, to combine their facilities in the production of commercial video-film for tele-consumption. The voracious entertainment demands of sight broadcasting for filmed entertainment will more than make up for tele's "shaving down" the B-market. Some of the studios may find it very desirable to turn over their low-budget facilities to sight-radio operators, stressing higher-budget releases in the future. Other studios may climb on the television band-wagon, and actively engage in the production of both live and filmed broadcast entertainment—along with the prepa-

ration of high quality film for theatre distribution.

Conversion—especially when forced by circumstances—is not always a happy thought. When the status quo is functioning well and profitably, there is a perfectly natural inertia to change. The motion picture industry was faced with an almost identical crisis with the perfection of "talkies." There was resistance to the conversion then—but it had to be made. Those who refused to admit to the changes wrought by sound-on-film found themselves crowded out of the industry. Television—another technological advance—is about to become a commercial reality. Unlike sound-on-film, the new invention does not lie entirely within the pale of the motion picture interests. In this conversion, the leaders of the picture industry are going to have to deal with radio, advertising, and allied manufacturing interests—plus set manufacturers and dealers. For all these have an interested share in what happens to television. However, there is room for everyone. Courageous thinking on an industry-wide scope—not curbed by the horizons of our own self-interest—will characterize the full participation in the benefits of the new

art by all interested parties. There is a successful precedent in the motion picture industry for this line of thinking: the conversion from silent to sound pictures. The participation in the television revolution involves conversion of an even more drastic nature but promises larger rewards. From the movie-maker's point of view, it seems to imply the sacrificing of sovereignty in visual entertainment: this is partly true, but desirable for all concerned. The days of unshared sovereignty are over.

In one respect, however, the changes in the industry demanded by television may be less of a shock to motion picture producers than was the arrival of sound-on-film; for the changes brought about in the motion picture industry by electronic visual broadcasting will be fairly gradual. They will require that the leaders of both industries keep in step, and remain constantly aware of the activities of the other; but the changes required by television will not wrack the whole industry, from the movie set to the smallest exhibitor, as did the innovation of sound.

To what extent will the exhibitors have to convert their thinking and their equipment to

the television scheme of things? We will probably see a great deal more "road-showing" of pictures after the advent of home tele-service. For the emphasis on the spectacular in post-war movie production will warrant such promotion. The people, too, will welcome it. Video, in the home, will provide more or less continuous visual entertainment, whenever you want it. "Going out" will be more of an occasion; arriving at the theatre at a specified time for a single showing gives importance to the event. Also, it helps to widen the gulf between the tele habit and the moving picture habit.

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Only the least imaginative exhibitor will balk at television service into his theatre. For it stands to reason that the more he has to show, the larger his audiences will be. If television can bring practically the whole world to his theatre screen, the whole community will surely come to his box-office.

As we have mentioned, certain theatres will probably find it expedient to convert entirely to reproducing special events of national interest. These theatres will join the television network as it expands, paying for the service in a manner

very similar to that in which they book motion picture films now-a-days. As soon as the network service reaches an outlying area, virtually every theatre will install television projection equipment, in order to deliver immediate news service to its audiences. We have described this operation in a previous chapter; and though it will be an expensive service to the exhibitor, it can be so dramatically effective that audiences will gladly pay a stepped-up price to enjoy it.

It is well to note at this time that the American standard of living in the post-war world may be expected ultimately to rise higher than ever before. The standard of entertainment—cinema and television—must rise with it. We must think in terms of audiences which are prepared to spend more from their increased earnings on entertainment than they have in the past. In the light of this philosophy, the progressive exhibitor will plan to take advantage of all the new services which television offers to display on his theatre screen; for these investments by the exhibitor will pay off in the form of larger audiences lured to his box-office.

Certain theatres may find another adaptation to television highly profitable. That is—convert-

ing the stage of the theatre into a television sound stage. In effect, the exhibitor would lease his theatre facilities on occasion to the local sight-broadcasting stations for the production of local shows before an audience. Musical reviews, quiz programs, audience participation shows, and dramatic performances may be viewed electronically through iconoscopes positioned in the theatre audience. This has the audience-value of seeing a television show actually going into production. Another considerable advantage may accrue to the exhibitor who adapts his house to sight broadcasting. The post-war entertainment world may see the beginning of a new trend, called *"vaudevision."*

"Vaudevision" embodies the idea of the old vaudeville circuit, stream-lined for television. Neatly packaged half-hour video shows would be booked across the country for local broadcast over the various television stations. A local sponsor would be able to buy a series of top-notch productions, via the vaudevision circuit. These vaudevision shows may be built around name bands as a nucleus, for the tele booking would provide a desirable plus for name orchestras while travelling on the road. Special companies

of live entertainers—dancers, soloists, comedians and mimics, magicians, acrobats, singers—many of the elements which used to provide the meat of vaudeville can be stream-lined for great vaudevision shows. The handling of the cameras on these performers will be simple and straightforward, for it must be remembered that these shows are to be produced from the stages of motion picture houses—where production facilities will be decidedly limited. A standardized arrangement of iconoscopes can probably be worked out, to minimize the difficulties of adapting the show to different conditions in different theatres. Probably three or four iconoscopes will be arranged through the house in a set-up prescribed by A.A.T. standards. No attempt will be made to keep the microphone out of the picture.

For the exhibitors who convert their facilities for vaudevision, a whole new field opens up. For vaudevision is another unique facet of theatre showmanship which can increase the activity of America's exhibitors. If vaudevision proves successful, it will start a trend toward draining off big-name talent from the hitherto permanent talent pools of New York and Hollywood.

Vaudevision's function of bringing live audiences and live entertainers closer together can have a highly beneficial effect.

As we have noticed, the conversion of radio stations to sight-broadcasting is a fairly clean-cut job: adding sight and FM channels to the existing transmitting plant. For the picture industry—producers and exhibitors alike—the conversion is less precise. Exactly what relation each individual in pictures today will have toward the video industry is a moot question. However, the survey which we have just made seems to indicate that there will be plenty of room for all in both fields. By co-operating, the two industries can rise to pinnacle production and distribution.

* * *

In closing, this warning: There is one request from video producers that movies must not accede to. That is the demand of sight broadcasters for permission to transmit feature pictures. If this trend ever gets started, a pitched civil war is bound to result.

The practice of broadcasting feature pictures is pure laziness. Tele must make its own entertainment, not borrow the finished products of

another industry. Moreover, it's not what people want. The enjoyment of a full-length feature calls for constant attention to the screen for a length of time which will result in eye-fatigue. Tele is basically a low-detail, casual medium. Its entertainment must be tailor-made, not stolen from somebody else's bailiwick.

Another danger in borrowing movies for broadcast is that, as a policy, it runs counter to the whole "separation" philosophy which we have advocated as vital to keeping the peace. If tele stations and theatres are presenting identical program material, conflict is certain to follow. We must keep the two industries separated, each in its own sphere. Occasionally—only as a change of pace—tele stations might broadcast a revival of an old picture which has only slight remaining exhibitor-value; but this must be done very sparingly. The key-men in each industry must remain always watchful to keep the spheres of the two media from overlapping.

7

"PREVIEW OF COMING ATTRACTIONS"

TELEVISION will stand or fall by its programs. Economic and technical considerations pale into insignificance when compared with the importance of program material. We may as well give Shakespeare a good case in court by adding: "The show's the thing!" If the shows are good, television will catch on—and hold. If the shows are tired, no amount of technical excellence or distribution genius can salvage them.

At this point, let us stare into our electronic crystal ball and hazard a guess as to what the television programs of the future are going to look like. And let us examine video during its most critical period—those four or five years immediately following the war, when the adolescent industry will be growing most rapidly. Good programs will be the chief inducement to the public to buy television sets; and therefore the quality of the shows during this

expansion period is more important than at any other time.

These things are not guess-work: first, there must be *lots* of shows. Second, these shows must be created for television. If we try to feed audiences an entertainment diet of rehashed movies and radio shows, it's going to be a scurvy art—and audiences will rapidly develop malnutrition.

In view of the fact that set-owners have made a substantial investment in their receivers, and are conditioned to continuous entertainment service from sound-stations, the video audiences will undoubtedly expect available program service six to eight hours out of every twenty-four. If video is really going to become a mass habit, and a readily accepted part of the lives of the people, the programs must be ready to light up the kinescope screens whenever the public wants them. We may logically expect tele programs, during early commercial days, to be scheduled in two daily periods: perhaps from noon to two o'clock, then a three-hour lay-off until five; the evening hours provide a solid bloc of entertainment from five until ten or eleven at night. The day-time telecast period

provides an opportunity for sales service to the housewife and afternoon shopper—also educational material for broadcast into schools. The remainder of the afternoon will often be filled with sports—football or baseball games being played within the transmitting range of the station's mobile units.

Most of the program material to fill the evening hours will be supplied by television networks, in the form of videofilm. These specially-built shows will be rushed to the broadcasting stations by air, with a minimum delay between production and broadcast. The existing structure of national networks will probably be preserved in the establishment of this videofilm distribution. The shift from coast-to-coast wired networks to videofilm seems, on the surface, a major change; actually, it is only a modification of today's practice. Schedules can be arranged with a minimum of overlapping between the various "net" services—so that areas with several network stations can enjoy almost continuous programs from one or more stations.

Moreover, the local station will produce a number of shows on its own: for a broadcasting plant justifies its existence primarily as a special-

ized service to an individual community. In addition to the locally-built live shows, there will be travelling circuits of pre-built "vaudevision" productions. These ready-packaged shows travel about the country from one station to another, performing before the iconoscopes of the local broadcasting plants.

A fourth source of program material for local stations lies in telephoto news service: video news coverage will be edited locally, with a mixture of national and local video interest. The backbone of this news service to local stations will be the wired transmission of telephoto stills. However, it may be possible to utilize the coast-to-coast coaxial cables or booster-stations during the normally idle hours from midnight to dawn for the transmission of motion pictures of current events. These would be taken off the net by the local stations, and recorded photographically on 16 mm. film, to be shot out to the radio audience the following day.

A fifth program source is the occasional linking of theatre and stations alike for the instantaneous coverage of public events of national or international importance.

* * *

Let's assume that the war is over. A few days ago, we went down to the local television dealer's show-room, and looked over his new line of tele-receivers. We picked one that had an attractive modern console, and seemed to harmonize with our other furniture; it has a twelve-inch screen, which is amply large for the size of our family. The service-man has rigged up the antenna, the lead-ins have been attached, the connections plugged in, and we are ready to see our first home television program. At noon, let us say, the local transmitter goes on the air. We are all set to catch the first picture which is sent out. What's it going to be?

For a few seconds the screen is blank, while the receiver warms up; then, a geometric pattern of black-and-white lines appears on the screen, slightly blurred; we adjust the focus and brightness control. Now the picture stands out in perfect clarity. It is the television test pattern, with the call-letters of the station inscribed at the center; by bringing this pattern into sharp focus, we can be sure that the video channel is sharply tuned.

Now the voice of the announcer comes over the loudspeaker. We are astonished at first—

it sounds as though he were actually standing in the room with us. His voice, broadcast by FM (Frequency-Modulation) has all the overtones of a live voice; there is no hum, no static. You listen carefully as he says: "May we offer a few suggestions to make sure that your television receiver is in proper adjustment? Change the brightness control of your set—that's this knob here—" and suddenly the test pattern vanishes, showing instead a close-up of the standard controls of a tele-receiver. A hand points to one of the dials. The voice continues. "Change the position of this control until each of the ten shaded squares at the bottom of the picture—from right to left—seems one shade darker than the square before it." Then the camera seems to move in toward the pattern, bringing the row of grey-ish squares into a close-up which fills the screen.

"If your television screen is set too brightly, it will look like this"—and now the test-pattern becomes a milky, whitish blur. "Or if your screen is too dark, it will look like this. . . ." And again the test pattern changes its texture, this time to a foggy, indistinct blackness. Now we see a medium-shot of the announcer, stand-

ing at the controls of a television receiver, bringing his own picture in at the proper brightness and focus.

This rountine—with minor variations—may precede each telecast period. It's called: "Get the Most Out of Your Set." It takes only a few minutes, and is the simplest, soundest insurance that neophyte watchers get the right idea from the beginning about the controls of their sets. The controls are simple, but the difference between careless and proper adjustment is the difference between partial and 100% enjoyment of television.

* * *

What about music in television? Top name-bands—especially when enhanced by interesting camera-handling—are inevitable program material. Some will be especially adaptable: the solid showmanship of Fred Waring's Pennsylvanians; leaders with singularly visual personalities, such as Kay Kyser and Cab Calloway; or Xavier Cugat, whose talents as a cartoonist can add a whimsical touch to his telecasts of South American melodies.

Music in a semi-classical or more serious vein may be given oblique sight treatment. Unusual

angles and groupings of the symphony orchestra, dramatic use of shadows and high-lights, close-ups of conductor and soloist—these can bring a depth and human interest to symphonic presentations which is unavailable even to those in the $6.50 seats of the concert hall. Television viewers will be able to see the beads of perspiration on Iturbi's forehead; from a distance of eight inches, they can watch the delicate fingering of Jascha Heifetz. FM sound will bring to the tele-audio channel a musical reproduction of incredible realism and brilliance—to the true music-lover, as different from today's network quality as a coarse half-tone from an oil painting. The intermission commentator, aided by illustrative inserts via the sight channel, can make his remarks much more entertaining.

Conventional opera will have its select group of devotees. But let us hope that the flexibility of television will challenge the young imaginations of the musical world to develop a new and freer language of operatic performance . . . Scored for the FM microphone and staged for the iconoscope, electronic sight-broadcasting will send a rush of ideas through the mind of the choreographer. For the television ballet can

be a thrilling musical and visual feature. The great musical comedies—current and past—will find quick acceptance. But video deserves to produce its own generation of composers and musical playwrights, to prepare scores and librettos expressly framed for the sweep of sight broadcasting. Dancers—eccentric, tap, acrobatic, satiric, surrealistic, and jitterbug—they'll all have their chance to parade across the tele screens of the nation, while the sound channels carry to the audiences the best of the world's music.

We may see other visual interpretations of music which are peculiar to television. A very effective video program might come from the teaming of Walt Disney and Raymond Scott—to provide color and tonal impressions respectively. Stations may introduce an "image-organ"—consisting of a cyclorama, upon which appears a kaleidoscopic whirling of patterns and shadows in cadence with the music. The "image-organ" might well serve as a setting for orchestral combinations; other times it will be a unique and flexible backdrop for dancers.

This is of cardinal importance. In presenting music, the sight channel must always be the

hand-maiden of the sound. When the video screen cannot conceivably add anything to a musical effect, producers must have the courage to leave it blank. This is true of much of the world's music. As a matter of fact, most great music can be best enjoyed in darkness; any activity on the screen would be distracting. However, in some cases, sight may be a "plus." With Debussy's "Nocturnes," for example, we can visualize a dramatic sequence of cloud-formations, photographed at slow-speed in infra-red, to accompany "Nuages"; or a climatic series of marine landscapes, with waves smashing against a coast-line, in careful synchronism with the musical surges of "Le Mer"; a photographic ballet of the Sirens; or the "Engulfed Cathedral" may rise again with the violins ponticello, as a model before an iconoscope equipped with a diffusion lens. Think what an artistic telecameraman might do to create a film-commentary on Borodin's "Steppes of Central Asia." And what opportunities there are for the cartoonist or puppeteer in "Peter and the Wolf."

The jukebox trade may call this "arty"; the music lovers may say that television is presumptuous for hoping to enhance the effect of

great music by visual accompaniment. This may be true. In the past, many attempts along these lines have failed. But video offers the honest musical imagination a challenge: accepting this challenge is no more presumptuous than a choreographer's attempt to translate music into the dance. Millions, who think more in values of sight than sound, may learn to enjoy music through television. The visual translation may give meaning to what seemed before only a jumble of tones. Creatively synchronizing their talents toward a common mood and purpose, the tele-cameraman and the musician may combine their efforts to produce a heightened emotional impression.

* * *

Sound radio has taught audiences to expect the most entertainment from the comedy-musical-variety parcel—which has been so successful throughout the history of commercial broadcasting. The same will probably tend to be true in television. A top comedy star of motion pictures and radio will no doubt be just as good in television. Fred Allen, Jack Benny, Bob Hope, Edgar Bergen, Ed Gardiner, Red Skelton, Fibber McGee & Molly—these, plus

(we hope) some bright new names of television's own discovery—will no doubt have top-billing on the video marquee.

However, because the headliner has won his first acclaim in radio or pictures, let's not be tied down in our thinking by what he has done in the past. A format which was sure-fire in front of a blindfolded mike may be a twelve-egg omelet to a television camera. If we try to borrow ideas from radio and pictures, we're running a long chance. It probably won't work. At best, it's a lame compromise. The iconoscope will show up the star as wearing a suit of made-over material—probably with the coat too short and the pants too long. Television is going to demand a fresh approach to the talents of established entertainers—unhampered by stale thinking. Certainly we can profit by past experience—being guided by what sort of material has made these stars successful. But the approach of star and television showman alike must be original. The thinking which brings about the finished sight-broadcast may have its roots in a parent-medium, but what comes out on the television screen should be as new as next year's car.

Several tendencies in variety show production

can be predicted. We may see a very happy and welcome swing to music and show forms which go back to the pre-movie-radio era before the first World War. The formats of the "Old Op'ry House," "The Minstrel Show," and the cliff-hanging melodrama will pay off in nostalgia and laughs; nor will such shows be too difficult to produce. Stream-lined vaudeville will find a re-awakened audience. "Down Easters" can sit on the top rail at the Big Rodeo. And all the drama of "The Big-Top"—with its clowns, freak-shows, wild animals, trapeze artists, and blaring brass-band—these too will come to the television camera. The circus—a glorious part of Americana which has grown almost as extinct as the bison—will play to a bleachers of millions through video's electric eye. You'll have to supply your own peanuts and pink lemonade—that's all.

Radio comedy—as we know it today—will require some changes in structure for television. But fortunately, our leading comedians are already moving in the direction of the required changes. Monologues and highly-stylized gag-routines will probably find less favor than comedy based on *situation*. A plotted story-

line is needed to reinforce comedy for the visual medium. That's true of pictures today; it will be true of tele tomorrow. Laughs from exaggerated situations will come more easily to the video comedian than stories about funny things that happened to him on the way to the studio.

The television audience is certainly going to demand—and get—a large number of high quality comedy-variety shows. But we all know that laughing is a mass business. If you've ever watched a motion-picture comedy in a projection room, you know it's hard work to laugh alone. Therefore, the comedy shows of future television will undoubtedly be framed to include a studio audience. Their laughter will join yours through the FM Sound Channel—and occasionally through the sight areas of your receiver.

An exceedingly potent tale commercial will be a weekly half-hour called, possibly: "Hit the Road"—a radio extension of Paramount's "Road To—" series, starring Bob Hope, Bing Crosby, and Dorothy Lamour. Thirty minutes weekly with these ace entertainers in a humorous situation-locale is a video natural. This program would probably be filmed for national release; as a matter of fact, most of the national

commercial sight-broadcasts will no doubt be videofilmed to provide coast-to-coast coverage.

* * *

A number of personalities who are currently very successful in both pictures and radio will certainly find a place in sight broadcasting: such personalities as Orson Welles, who will undoubtedly turn up with several tele programs of interplanetary interest. Video audiences will welcome John Nesbitt, whose "Passing Parade" is equally potent on screen or radio. Pete Smith Specialties will be great television material. Robert Benchley may very well appear in a series of fifteen-minute shorts entitled "Little Visits to the Homes of Uninteresting People." "The Aldrich Family," which seems to be at home in both pictures and radio, and may soon take up a new residence on the television wavelengths as well. Gracie Fields, whose vitality pours freely through the microphones and cameras on both sides of the Atlantic. "The March of Time"—to the presentation of which the editors of the weekly news-magazine will doubtless bring a fresh and individual television approach. Dramatic broadcasts starring motion picture talent, such as "Lux," "Screen Guild,"

"Sherlock Holmes"—these will be less difficult of translation into the visual technique. And the audiences which they have already established for themselves in radio and pictures will be happy to join them as they adapt their presentation to the iconoscope.

Because the sight-receiver is actually an accepted member of the family, a part of the home group, television can "let its hair down." It doesn't have to be conventional, stuffy, impeccably polite, or always on its best behavior. Television can be intimate, personal, direct—within the limits of natural dignity and good taste. Sight-broadcasters can't wipe their feet on the nation's mores, but they can enjoy a creative and artistic freedom not granted to any other entertainment group. Radio is inhibited by blindness. Motion pictures are curbed by precedent, and the conventions of theatre-going. Video can be most effective when it is informal and off-the-cuff.

A show which capitalizes on this feature is called "Hollywood Houseparty." It's a variety-show—in the broadest sense. The iconoscope is invited to a houseparty at the home of some Hollywood celebrity. What occurs during the

half-hour in the way of conversation and entertainment—in which the television audience joins the group of celebrated guests—can be very enjoyable listening and watching. Of course, "Hollywood Houseparty" would actually originate from the tele studio, and certainly it would be carefully routined and rehearsed. However, meeting the stars informally via the tele screen will have great appeal to fans everywhere.

The scope of the variety-show is vastly widened by the addition of the iconoscope alongside the microphone. For an enormous group of variety-artists, whose talents just don't register on the mike alone, will be extremely entertaining by television—people such as Charlie Chaplin, Bobby Clark, Durante, Jimmy Savo, Veloz and Yolanda. Magicians, dancers, vaudeville entertainers, dead-pan comedians, actors and actresses who must be seen to be fully enjoyed—all these will become potential guest-stars for the tele variety show.

Many of these television productions will be video filmed in New York or Hollywood—then rushed by plane to the iconoscope projectors of the nation's broadcasting plants. Others will

come before the iconoscopes live, for instantaneous transmission. There will be a considerable amount of local production by the individual tele stations across the nation. In many cases, they will be aided by vaudevision circuits, which book "name" talent into the local station in prebuilt shows. But very often the stations will be called upon to produce shows completely on their own, with the talent available in the locality.

Remember, there's no instantaneous, coast-to-coast radio network. Not yet. The outlying stations won't be able to turn on Hollywood and New York with the ease of snapping a light-switch, as is the case today. Local video stations will be thrown on their own—challenged to produce shows which compare favorably with the best output of the entertainment capitals.

We hope that good local talent will get a chance in front of the station's iconoscopes—in dramatically planned semi-professional shows. The larger tele stations will certainly have excellent house-bands, soloists, singing groups, dramatic staffs and writers to provide them material—all-in-all standing ready to build visual

programs tailored to the interests and needs of the individual community.

Maybe it's a good thing that the inexpensive coast-to-coast network presents such a hurdle to the television technicians. For lacking this network may be a healthy stimulus to the talent which lies outside New York and Hollywood. Stations won't be able to cut into the network whenever they choose; they must be prepared to produce more than spot-announcements and dance-band remotes. In the past, the superior facilities in the networks' key stations, and the natural gravitation of the best talent to these centers, discouraged much local production. Television will see a gradual *decentralization* of program-production. This will be welcome. Of course, the top shows will almost always come from New York or Hollywood, via videofilm. But we may expect a gradual growth of interest in local shows which may damp some of the industry's present-day provincialism. Local talent will get a better chance in its own bailiwick, without having to hitch-hike to the coast. Moreover, television will have the desirable effect of drawing off some of the excess concentration of talent in the Broadway and Hollywood reser-

voirs; this may help the industry to realize that there are a few people with talent east of Pomona and west of Jersey City.

* * *

How about television drama? Here sight-broadcasting really has a chance to feel its oats. The video-playwright has the most fluid, direct, and expressive medium ever offered a creative artist on this planet. Only stereotyped minds will not be intrigued by the possibilities of story-telling with the iconoscope.

The "thought-parcel" of the short story has never found true expression in the drama. The one-act play fails, in that a theatre audience wants a full evening of related entertainment. Narrative of short-story dimensions is just the right-sized bite for the video audience to swallow. Radio has explored this play-package blindfolded. Now the blindfold is about to be taken off.

The short-story packs the maximum wallop in the smallest space. It's the hand-grenade of literature. It's based on a straight-line plot, driving to a single dramatic kicker. Short-story structure no doubt will be the basis of the television play. Out of it may come a literature for elec-

tronics whose potency compares with the best of the world's drama.

Of necessity, today's radio makes effective use of sound. The movies are inclined to sluff off the microphone—forgetting the richness of background and perspective which it can provide. Many of television's producers will have been reared in radio. They will have FM's wide-range of audio quality at their finger-tips. We may expect in video drama a more effective coordination of sound with sight than has ever been seen—or heard.

Of course, the easiest source of drama for television lies in broadcasting movies. And this is probably the easiest way for television to commit suicide. The techniques of the two industries are different, and must remain different. The lazy television station which begs for movies to fill out its broadcasting schedule is sabotaging both industries. This practice ignores the characteristics peculiar to each medium, wastes one on the other. Moreover, it will infuriate exhibitors, and eventually precipitate a disastrous civil war in entertainment.

Television drama is a short-story technique; the movie feature is a novel. The video drama

must observe the peculiar advantages and disadvantages of the medium; whereas movies are not produced with these in consideration.

These things we must remember in drawing up a plan for television drama: our audience consists of watchers in handfuls; motion picture goers are massed in theatres by the hundreds and thousands. Tele audiences are not subject to "herd" influences. Television drama comes much closer to the watcher; he can reach out with his hand and touch the screen—the voice is only a few inches from his ear. There is an overall feeling of enormous "presence," lacking in the motion picture theatre. The dramatist can make ingenious use of this added "presence" in tele plays. Effects must be drawn in broader strokes; for despite the high technical excellence of the television screen, it still possesses foibles not present in movie projection—occasional static, careless tuning, smaller screen size. These plus distractions within the viewer-group—make it wise for the tele playwright to avoid unnecessary obscurity.

Then there are the inevitable limitations of rehearsal-time and budget; but these may turn into advantages for the television producer. For

they will be a challenge to his ingenuity. Instead of thinking with his pocket-book, he will have to rely on his brain. Much greater limitations have been imposed on today's radio dramatist; yet he has circumvented them—in fact, capitalized on what seemed at first to be nothing but debits. If tele's playwrights approach their task with the same constructive spirit, they will introduce a truly individual idiom of drama.

And that is an extremely important end. For despite all of our creative genius, we in America have never really succeeded in producing a national theatre, or a singularly "Western" dramatic expression. The peculiar sweep of the new art, its inherent dramatic quality, may stimulate our more youthful imaginations to come up with something really original in the way of drama—unhampered by precedent. No "aht," please. The interests vested in television will insist that the drama be popular. And the nation's radio-watchers will stand ready to give the toggle-switch razzberry to any writer who is too interested in pleasing only three people—the other two being his mother and father.

But the watchers of the nation will thrill en

masse to the imaginings of the television playwright who has something to say, and says it unaffectedly, forcefully, in the language of the people. They will be grateful if that language is made more articulate through the innovations of television.

Many of the dramatic features which appear on video screens will be adaptations; for naturally, we shall take advantage of the wealth of material available in the literature of the theatre, the novel, the short-story, motion-pictures, and radio. But in attacking these subjects for television dramatization, our approach will be creative. The idea is not to salvage dramatic material from other literatures. Although what we say in drama on television may have its source in another medium, television's playwrights, producers, and artists will add something which was not inherent in the original—a certain individuality, peculiar to the new language of expression. It is the job of the honest television dramatist to explore the full scope of his medium—and make use of it to the greatest extent.

What sort of drama are we going to see, then, on the television screen? The quality of "pres-

ence" will make mysteries and thrillers especially effective. And the video producer will not be afraid to use dark screen and effective pause. There will probably develop an original thirty-minute play-form which can range from farce to melodrama, from dramatic biography to expressionism. There will be news-drama, a la "The March of Time." Human interest presentations, related to today's "We the People," "Hobby Lobby," and other such commercial broadcasts. Situation comedy along "Aldrich Family" lines is certain of a following. Westerns, historicals, serials, detective stories, informative drama—the iconoscope will bring a freshness to these all.

Again, the lack of a nation-wide network may be a blessing to creative television: for there are many excellent community dramatic groups throughout the country which will find expression before the telecameras. Much of the theatre's most original and creative thinking has come out of colleges and little theatre groups; tie this thinking to a television transmitter, and it becomes enjoyment for all.

Related to both drama and comedy is the filmed cartoon. Tele will probably find a place

for both moving and "still" cartoons. Video versions of America's favorite comic strips—plus new ones created for sight-radio—will have a big following. The producers of moving picture cartoons for theatre consumption may find it profitable to devote some of their production to cartoons for tele; we can probably establish certain differences between radio and theatre cartoons. The tele versions will probably be in black-and-white—the latter in color. Again, the importance of keeping the program material for the two industries distinct cannot be overemphasized. This much is certain: the cartoon, with its broad, easily-understood comedy and forthright technique, will be welcomed by television audiences of all ages.

* * *

Audience participation will take on a new meaning when television screens arrive in the home. For it will be possible for the television audience to take a very active part in such shows. Visual games such as "Find the Error in This Picture" or reorganizing the parts of composite photographs of celebrities; these will have their place, with prizes for those who send in correct answers. Quiz shows will make a re-

vitalized come-back in television; the questions can involve highly visual problems and gags. "Information Please," "Kollege of Musical Knowledge," "Double Or Nothing"—these can be revised for television treatment and command vast audiences. The most vivid proof of this lies in the motion picture success of "Information Please," which entertains by the simple expedient of photographing the radio performers virtually "as is." Audience participation in which both the studio audience and the home-watchers participate will be most effective. Imagine "Truth Or Consequences" in front of a television camera; or Tom Brenneman's highly visual "Breakfast At Sardi's." There is an excellent opportunity for entirely new participation shows—such as a "Geography Quiz" or an "Airplane Quiz." The man-in-the-street's interest in the growing industry may be stimulated by sidewalk interviews or programs such as BBC's successful "Come and Be Televised." The Community Sing may return to the air—with the words to the songs flashed on the kinescope screen. Or television might go a step farther, and transmit words and music of new songs; a pianist-viewer—in his own home—

could watch his tele screen, see the music of a new tune, and learn to play it along with the video performers. Call such a show "Notes on Notes" and include song-writer Johnny Mercer as master-of-ceremonies—and the result is a very pleasant fifteen minutes.

In the field of community service, the television broadcaster will be an important figure. First among these services, of course, is news. The commentator on the sound channel will review the very latest news as we are accustomed to hear it by radio today—except that FM quality means much-improved reception. But, the commentator appears for only a few brief flashes at the beginning and end of the news-cast. During almost the entire news-period, the screen is filled with the most graphic pictures, movies, charts, maps, models, and on-the-spot cut-ins to dramatize the commentary. There is one grave problem: information can be communicated instantaneously, but it takes time to transmit pictures—even by the most rapid telephoto. Most of the pictures in station newscasts, therefore, will be telephoto stills: but this does not mean that the visual portrayal of the news will be static. These pictures will be as filled with ac-

tion as the best shots in *Life*. And the iconoscope will give them a "mobile" treatment; that is, the television camera will frequently change its views of the picture—zooming in for close-ups of certain high-lights, panning from one point of interest to another in the picture, as the commentary suggests. Often, a series of stills which forms a chronological action sequence will come in such rapid succession that the viewer almost has the illusion of motion. When this method of news coverage is coupled with live portrayal of local happenings, the resulting effect should be entirely satisfying.

Another vital service of the local video station is sports coverage. Summer-time should see the television camera at the local stadium, reporting both major and minor league base-ball games within the community area. Sponsorship of such sporting events on a local basis is very practical; the cost will be high, naturally—but negligible when compared with the extravagant cost of national sponsorship of such features.

But the broadcasters will do more than provide coverage of sports. The television mobile transmitter and flexible facilities must be constantly "on-the-go"; the station's remote equip-

ment will be a familiar sight at all gatherings of public interest. For despite the fact that much of the daily program schedule consists of videofilmed entertainment, the immediacy of television remains its most singular characteristic. This we must use to full advantage; for although the theatre tele-projectors are bringing their audiences instantaneous views of remote national events, the local station can be bringing its audience close-up views of important civic and public occurrences, within the effective radius of the station's coverage.

Among other special services which the video station may supply is a show called "The House Beautiful." This program—probably scheduled during the day-time—features a prominent interior decorator, who demonstrates artistic furniture arrangement and color schemes for beautifying your home.

The day-time tele schedule will logically be slanted to interest the housewife. A natural is a program called, "For Dinner Tonight," the first sequence videofilmed from a famous experimental kitchen. Here a chef or cooking expert will plan a sample menu "for dinner tonight," showing exactly how the meal is prepared—

step-by-step—from peeling the potatoes to carving the roast. The last five minutes of the show will be live, originating from the local station's studios. Here a housewife from the community, who has a particularly good recipe or culinary trick, comes before the iconoscope to share it with her neighbors. She demonstrates and describes her methods, proudly showing the finished results.

Another service to audiences is a classified "Shoppers' Guide," in which the iconoscope moves through the show-rooms of the various stores of the community—making a shopping tour for the housewife. In connection with this day-time feature will be style shows, displaying to audiences and potential customers the newly-arrived stocks of clothing. A service for men might show how to arrange a home-workshop; how to landscape the lawn, lay out a garden, construct a tennis court, a fish-pond, or a new and improved television antenna.

"Motorlog" is another natural. It outlines motor trips which can be made through the surrounding countryside in the family car. No doubt air travel will be booming sufficiently to

add another feature, planning week-ends in the family plane.

Closely akin to these programs of service to the community are the programs built for the purpose of passing on information to the viewer. We might call this "visual education by radio" —because television will do more than teach. Teaching implies merely the imparting of knowledge. Television can inform, then move the viewer to *act* on the information. It has an emotional dimension beyond the conventional text-books and class-rooms. Here are some examples:

One such program is "Learn to Fly!" Several of America's foremost pilots and aeronautical experts appear regularly before the telecamera to teach and demonstrate how to fly your own plane. This can spur air-mindedness—and can contribute much to air safety after the growing acceptance of air travel begins to crowd the air lanes.

Surely, the iconoscope will be welcome in the museums of the nation. The great works of Rembrandt, Van Gogh, Gainsborough, and countless others whose works hang in the galleries of the nation, will literally become a part

of the homes of Americans—to thrill an appreciative audience which might never have known them otherwise.

An extremely important location of America's television receivers will be in the school rooms of the nation. A national school of the air, conducted in co-operation with leading universities, the A.A.T. and the broadcasters, will bring visual education to a new high in interest and effectiveness. The graphic demonstrational possibilities are enormous. The possibility that Robert Andrews Millikan may assist the local high school physics teacher in instructing his class means a vastly better-educated youth. Albert Einstein, Walter Damrosch, Ernest Hemingway, Norman Bel Geddes—such nationally famous authorities may join students in the class-room by television to instruct in mathematics, music, English, and art. The public school-teacher, working side-by-side with the eminent authority on the television screen, may very literally be the educational team of the future. Nor will demonstrations be limited to the scope and facilities of the high school laboratory; the world's most vast observatories, planetaria, museums, galleries, zoological gardens,

the strongest microscopes, the most distant reaches of exploration—all these may be brought to the class-room effortlessly through television transmission. Civics by television is no longer a dull editorializing on history. Visual electronics gives "education for citizenship" a new stature, a new vitality and importance. To the television screens in America's class-rooms, we shall bring the drama of social responsibility and the understanding of our neighbors in a telling new language. Such programs, vividly presented, can be a tremendous force in awakening a social consciousness in the youth which will be the next generation.

Popular programs can teach the public to take up new hobbies—can show the youth of America the methods of building model airplanes, can show sports enthusiasts the techniques of the masters in tennis, swimming, football, baseball, and golf. Video will stir up interest in leisure activities which have previously been enjoyed by relatively small groups: billiards, bowling, fencing, badminton—and less athletic recreations, such as bridge and chess. By acquainting the tele audience with a broadening field of leisure activities, sight-broadcasting can

easily point the way to fuller, happier lives for millions.

One of television's most exciting programs—and incidentally, one of the most commercial—is a show called "EXPLORE!" This thirty-minute weekly brings its watchers to new frontiers in every field of human endeavor. Through that incredibly flexible eye, the iconoscope, the audience sees the squirming of microscopic bacilli, magnified electronically one hundred thousand times; as the guest of one of America's leading astronomers, the audience looks through the eyepiece of a huge reflecting telescope, and sees a hundred million light years into space toward another universe; with the flexibility possible only to the team of iconoscope and motion-picture-camera, viewers circle the globe in ten seconds, to see natural miracles which explorers have fought through three months of jungle to observe; the iconoscope takes the tele watcher on a tour of his own body, by broadcasting a human X-Ray. The mysteries of modern physics, electronics, and of television itself are made clear as eminent scientists appear on the broadcast "EXPLORE" to explain them in terms that the average man can understand. New fron-

tiers of the high arctic, the vacuous stratosphere, the nightmare of the ocean's floor—all of these come effortlessly to the video screen. "EXPLORE" can thrill the nation, enrich us—make us wiser, happier, and less afraid through knowledge.

High in importance will be those television features which inform viewers about their fellow-men throughout the world. No impersonal travelog this. No condescending "tourist-photographer." The iconoscope—extended with the added range of the moving picture camera—will help us to understand the other two billion people with whom we must learn to live in this post-war world. The title of this broadcast may very well be "FREE WORLD!" Each half hour in the series is an iconoscope-hand-shake with another of the United Nations: a sympathetic study of their problems, what they need, what they want, what they live by, and what they are striving for. Harnessing the full sweep of electronic sight to this theme can add enormously to the good-will which must guide the actions of all nations in the world-after-the-war.

Another program, related to "FREE WORLD," is a broadcast to teach the television audience

Basic English, or whatever international language is adopted as standard in the exchange of ideas. Think how excitingly this can be taught. With a bright, well-known commentator to handle the lessons. With pictures, cartoons, and models to convey unforgettably the meanings and usages of the various words. An effective teaching job can be done on a mass-scale, and in an astonishingly short space of time.

Here's another highly commercial idea for the iconoscope—one which informs and vitalizes as well as entertains. It's called "BACKSTAGE!" The idea is simple. The television camera goes "backstage" in a thousand different industries and fields of activity which have hitherto been curtained to the masses of the nation. We go "Backstage" in an aircraft factory—show the super-liners and the cargo ships of the future in construction. We go backstage in a synthetic rubber plant—in a steel mill—in a photo-engraving shop—a rail-road yard—an enormous power project—a slaughter house—a coal mine —or backstage in the stock-exchange, or Congress. Or in the motion picture and television industries themselves. A thousand-and-one in-

formative and enormously entertaining half-hours are possible.

This is a much-needed show for the television screens of the future. Call it "WHITE PAPER." A truthful analysis of the "why" of world events, revealed full scope by responsible spokesmen as soon as security permits. Nor is this a dry symposium. The men who frame "WHITE PAPER" will be men who know the medium in which they are speaking; they will make it engrossing through all of the visual and audible techniques known to the industry. Here is a program interesting enough to command a mass audience, important enough to shape the thinking of a nation in the direction of progress and enlightenment.

* * *

That's the gamut. More rangey, more subtle in chromatics, more true of pitch than any other scale yet invented for playing on men's minds. The foregoing is merely an improvisation, a rough concert sketch of the visual symphonies which the program-builders of the new industry will create for us. For by television, anything is possible: from the broadest slap-stick to the

music of the spheres. Programming for television will be an enormous task. But for men with minds-at-work, it is the most direct challenge ever offered to our ability to create.

8

"ENTER THE NEW ART—"

HERE'S a pass to visit a television studio. Hang onto it. They're hard to get. Oh, it isn't difficult to get a ticket to attend a telecast; your radio set dealer can arrange that for you easily. But there you sit in a large auditorium with five hundred people, and see most of the program by projection on a theatre screen. Only occasionally do the dazzling over-head lights go up in brilliance, while the television cameras photograph you, the audience—laughing or applauding.

No, this is a much rarer privilege. To go into the control room. Stand beside the men who are actually directing the program, and watch the whole production over their shoulders.

This is a commercial broadcast we're going to see tonight, a half-hour weekly show, sponsored by a nationally-famous food manufacturer. The date—roughly fifteen months after the war. The industry is bean-stalking through its adolescence. A coast-to-coast theatre-network has

almost been completed, and sight-broadcasting plants have sprung up in every metropolitan center across the country. They estimate that two million or more people will watch the show that we are about to visit.

One of the men from the public relations department of the television studio meets us at the gate, smiles, shakes our hand.

"I'm to be your guide," he says. "Just to show you around, see to it you don't get lost, and answer any questions that may pop into your head."

We thank him, and together go through the gate onto the lot of the television studio proper. In general appearance it is not unlike a present-day motion picture lot. It is a small community of modernistic, windowless buildings. However, we soon realize that this television production unit is much more compact than the usual rambling acreage of a movie studio. There seems to have been very careful planning to insure maximum use of every foot of space—with the shortest possible distances from one building to the next. As we walk along, our guide tells us something about the organization.

"You know," he says, "there are a number of

different groups producing broadcasts for television: the movie studios, the networks, the individual radio stations, and several independent companies. This is an independent; but we often loan out our facilities to other production groups. This business is growing so fast these days that we have to help each other out.

"You'll notice that our plant here is made up of fifteen different buildings—above the ground, that is. Three of these buildings are given over to administration, offices, and so forth. Over there on the left you see our film laboratory, where we edit and print the 'videofilm' which is shipped out to the stations making up the tele network. Master control is in the same building. There are two auditoriums, where the public can come to watch shows being filmed and broadcast; of course, these audiences seldom see actual shooting, except when they themselves are being televised. During most shows, we cut in an auditorium shot from time-to-time, to show the audience laughing or applauding; when possible, we bring the performers before the studio audience for a simple part of the production, or for an after-show. All the rest of the buildings on the lot are 'clover leaf' stages."

"What do you mean—'clover-leaf' stages?" we ask.

"Both of these buildings in front of us are 'clover-leaf' units. Suppose you were flying above here right now in a plane. Looking down you'd see how much the lay-outs of these stages resemble a four-leaf clover. Some are three, and a couple have five-leaves. You see, the clover-leaf isn't a single sound-stage—it's a cluster of several sound-stages around a central unit of cameras. Here's the unit where most of our show is originating. Come on inside, and look around."

We step inside the clover-leaf. Batteries of artificial lights glare in our faces. Shielding our eyes, we follow our guide across one of the "leaves" of the unit. The general appearance is not unlike the back-stage of a Broadway playhouse or a Hollywood motion picture set. Except that, again, there is that *compactness;* careful planning seems to have wrought an economy of arrangement throughout the studio. Everything has its place.

We notice that the stage is not cluttered up with a lot of "flats" and scenery. Instead, the

backdrop seems to be nothing but a large motion picture screen.

"We call that a 'process,' " our host explains. "Instead of using an actual painted setting, we merely project a picture on the screen; sometimes it's a movie—traffic, for instance. Other times, it's a 'still.' We flash it on the screen from behind. When the actors perform in front of that 'process' nobody tuning in can tell that the background is only a picture."

"What's the advantage of the clover-leaf design?" we ask.

"More compact. See how easy it is for the performers to go from one stage to another in this lay-out; think how difficult it would be if the different stages were scattered all over the lot, or were located on different floors of a building. Another advantage lies in camera-handling. Let's go upstairs, so you can get the whole lay of the land."

We follow our guide to the center of the clover-leaf. A swift, silent elevator lifts us to the control-room level, overlooking all four stages. This sound-proofed, glass-walled second-story is perched directly over the heart of the clover-leaf. The control-room is a mass of equip-

ment, the center of which is the control console —a curved, organ-like structure—dotted with controls, "pots," "V.I.'s," and all the gadgets of radio. Along the "cowling" of this console are a half-dozen monitoring screens.

Our guide draws us over to one of the control room windows. "That's Stage One—the largest set we have. You'll notice that the television cameras—three of them—are set up on that circular platform in the center of the clover-leaf, right beneath us. The center platform turns, so that these three cameras can be brought to bear on any part of Stage One or Stage Two—over at the left. Another segment of this central turntable rotates to face another crew of cameras toward either Set Three or Four. Thus we have flexible camera-coverage of four possible stages, with only two camera crews; this is smart economy and simplification."

"Is each leaf of the unit sound-proofed from the others?" we inquire.

"See those heavy panels which wall in that segment of the camera turn-table? Those walls swing around as the platform rotates. So, whichever 'leaf' the cameras are trained on is effectively sound-proofed from the others."

The engineer presses a switch on his console, and we see the platform on which the iconoscopes are mounted begin to move—rapidly, silently. A few seconds later, the trio of iconoscopes is trained on Stage Two, and the walls of the camera segment are locked into the walls of the new set, making it an acoustic island.

The guide smiles at our astonishment. "Two of these cameras are mounted on dollies—they can be wheeled about to any position we choose. The other is on a boom, which can hoist the iconoscope high above the stage for interesting angle shots. From this clover-leaf, we can put together as many different camera positions as almost any movie lot in Hollywood."

"Does all of tonight's broadcast come from these four stages?"

"Most of the principal action," our guide replies. "However, I pointed out to you the audience theatre, from which we pick up an occasional glimpse of the audience-reaction. The orchestra, giving us the background music, is a quarter of a mile away on the music stage. Several complex sequences in tonight's drama had to be filmed before-hand. They will be inserted on cue by means of film-projection-iconoscopes,

located in still another building. Of course, we're in constant touch with all these groups by telephone; everything's carefully rehearsed. As a rule, nothing goes wrong—we hope!"

"Ever shoot outside?" we ask.

"We can, easily enough. Most remote pick-ups and special events are televised by daylight. Matter of fact, the 'orthiconoscope' will register a better picture on a dull day than the most sensitive news-reel cameras. However, we don't have much control over Mother Nature. Generally speaking, on dramatic shows and polished studio productions, we prefer to work inside, where we can control our lighting conditions. You'll notice the lights don't have to be distressingly bright—about the same as you'll find on an average motion picture set. Our experimental department is testing some new 'cold lights,' which may help to make the actors' work less tiring."

"When the actors have to change make-up between shots, how do you manage that?"

Our guide shrugs. "Make-up takes time. You can't rush grease-paint. If the changes are drastic, we have to pre-film the sequence which involves the make-up change. However, we have

some split-second wardrobe switches. You see, the dressing rooms are directly beneath us, underneath the center platforms of the clover-leaf. So, as the actors move from one set to the next, they pass directly by their dressing rooms, and can make quick changes without much trouble. I might add that we're much indebted to the man who invented the zipper."

By now the cast and technicians are beginning to assemble on the various stages below us. The engineer is warming up his equipment. A melange of sound rattles the control-room speakers.

"Where are the mikes?" we inquire.

Again our guide draws us close to the glass of the control-room window, and points to the stage below. "Those are the microphones, down there alongside the telecameras. The mike is rigged up on a long boom, which telescopes in and out by a system of cranks; the movies use identical equipment. A fellow rides around on the top of that crane, and keeps swinging the mike back-and-forth to pick up the performers' voices. But he's careful to keep the boom out of the picture. We have some other mikes hung from the ceiling. They can't be moved about so flexibly, but we sometimes tap them for an over-

all effect. When we can't get the boom-mike close enough to the speaker—or when the boom would cast a shadow on the set—we use 'hidden mikes'; they're concealed in vases, lamps, table legs, or behind chairs. The boom means more work on the stage and less in the control room, hidden mikes mean an easier time for the boys down on the set, but the engineer up here sometimes has to mix ten or twelve channels at a time, which is no lark."

Here's the question we've been waiting to spring. "How do you change scenes?"

The guide gives us a wise smile. "I was waiting for that. You'll see."

* * *

Things are getting under way now. It's just a few minutes before show-time. The engineer flicks a button, swinging the trio of iconoscopes back to Stage One of the clover-leaf. The second camera-crew is busy lining up a close-up on the diminutive Stage Four. The engineer mutters into his telephone; a second later, the process screen at the rear of Stage One lights up, showing the interior of an airplane hangar. The backdrop projected on the screen blends uncannily with the "props" in the foreground. The

cast take their places on the set; the over-all effect is startlingly realistic.

"Is that process backdrop a motion picture?" we ask.

"No," replies the engineer. "That's just a slide projection. For stationary settings, they're easier than moving processes. We don't have to worry about synchronizing 'em."

The cameras are swinging into action now. One of the iconoscopes has dollied off the platform and is framing an angle shot across Stage One. The boom camera-man is jockeying his machinery up to a position almost level with our control room window.

* * *

Now the producer of the program arrives—takes his place at the center of the console—flanked by the sight and sound engineers. His manner is business-like. He clamps one earphone over his head, draws a hand-mike to his lips, presses a button on the control panel, and speaks softly into the mike.

Our guide explains how the producer does his job. "You see, there's a stage-manager on each of the sets in the clover-leaf. The producer can talk to any one of them, and all at once,

through his hand-mike; he can also talk to the camera-men, the mike-handlers, the music stage, the auditorium, master-control, or the projector-booth, where the pre-filmed sequences of the show will be inserted into the broadcast."

"How many stations is this particular broadcast going over?"

"Tonight? Only four. The local transmitter here in Los Angeles—and the stations in Long Beach, Pasadena, and San Bernardino, which pick up our signal and rebroadcast it to cover their own areas. You understand, of course, that each of these telecameras is more than an iconoscope; side by side with the cathode-beam tube which records the picture electronically is a standard 16 mm. movie-camera. This photographs the 'videofilm' version of the performance, which is edited immediately after the broadcast into an exact duplicate of the show which goes out over these four transmitters. Film-prints of the assembled show are run off in the film laboratory, and before dawn tomorrow they will be aboard air-liners—on their way to other television stations everywhere in America."

"Why don't you simply film everything? Why

present any of the broadcast live for just four stations?"

"I'll answer that," interrupts the producer. "As you'll see when we get on the air, many of the more difficult production sequences have been filmed in advance. But we like to do most of the show in front of live iconoscopes which are on-the-air right *now*. For that's television. The effect on all of us—actors, directors, technicians—it's more electrifying. We get better shows. Not from a perfectionist viewpoint, perhaps. But our shows are more vital, more alive. Because the actors, the musicians, the cameramen, the engineers—all of us know there's an audience out there watching what we turn out this very second. It's a live audience. They're reacting *now*. That makes a difference in the way we work. It makes a difference in what goes up the television antenna, and what hits the 'videofilm.' Some day we're going to feed the whole country live, instead of by videofilm. We're going to be ready for that day. You see, film alone is the movie way; they take months to get a workmanlike production. Here we have to turn out hours of visual entertainment in a matter of hours of rehearsal. Knowing that

there's a curtain-time—that 'this is it'—keeps us on our toes. When we're up against a real dead-line, there's no time to fool around. Say, look at the time! Dead-line, here we come!" Then, into the mike. "One minute! Stand by, everybody!"

The whole clover-leaf is alerted. We feel the tingle of anticipation flashing in on the telephone wires from the outlying sound-stages. Everybody's ready. The stars—many of them familiar faces from motion pictures—are in their places on the various sets, waiting for the "on-the-air" signal. The monitoring screens on the control console are lighted with views from the cameras on different sets. The producer slips the paper clip off his script, checks his stop-watch. Just a few more seconds. . . .

"Channel one. Music." The engineers nod. Pause.

"Roll 'em!"

The producer flashes a cue light. There is a tympani roll, a dramatic flourish of music as the center screen on the control room console fades in a series of trick-titles, announcing the evening's broadcast: an original mystery drama,

written especially for television. We motion to our guide, whisper in his ear.

"Where's this coming from?"

"Pre-filmed. It's coming off the sixteen-millimeter projectors down in the lab. Watch Stage Four."

The producer isn't following the monitor-screen which shows the titles. He's busy lining up the shot-to-come, as it appears on another of the screens in the console. Again he speaks quietly into his mike: "Move camera two back about eighteen inches. You're too close."

Glancing through the window, we see the stage-manager carry out the instructions on Stage Four below. The titles are over. The producer flicks another cue light. The music dies away. The action on Stage Four begins. "Move 'er in. Slow . . . slow. That's good. Hold it." The producer's voice purrs on. "Sound at low level. Can you get the mike in closer?" The sound engineer turns to the producer: "I'll pull it up." The producer nods. "Stand-by to cut to camera one. On my cue." He makes a clipped motion with his left hand. The sight engineer switches channels—starts following the action on Stage Four through the eye of another camera. All

watch the monitoring screens intently. The producer frowns. "Damn it, I told him not to cross that far to the left. Cut back to camera two." Again the quick hand signal; again the perspective changes to another camera viewpoint.

The producer speaks into the microphone again. "Ready for film insert. Stand by."

The action on Stage Four completed, the producer signals a slow fade-out with his hand, and the video engineer clamps down one of the "pots" on his control panel, draining the light from the monitor screen. The producer flicks another cue, and a pre-filmed montage sequence appears in the monitor. The principals on Stage Four hurry down the ramps into the dressing rooms two stories beneath us. "Step on it," the producer warns. "This montage only runs fifty-two seconds." The stage-manager makes a spiral with his index finger; the actors nod, and rush down the ramp on the double. Seconds later they come up the connecting passage-way onto Set One. They have made simple but conspicuous wardrobe changes.

Now the action begins on Set One. And out of the corners of our eyes, we see the camera crew from Set Four swinging around on their

rotating platform, bringing their iconoscopes to play on Set Three. The process back-drop flashes on. The camera-men line up their forthcoming shots, while the action continues on the large set diametrically opposite them.

The producer goes about his job of fusing action, sight, sound, and music into an integrated whole. Signalling for changes in camera positions. Giving cues to the stage directors on each set, to the engineers at his side, the musical conductor, and the technicians who are unseen but listening at the multiple ends of his microphone cord. We notice that he is using the mobility of his cameras to the fullest extent—deftly cutting from the high, long-shot provided from the boom-camera to a dramatically lighted close-up in the foreground.

"How can you be sure that the videofilm is edited into the same precise sequence as these shots are being mixed now?" we ask.

"We use an electrical recording device which registers every shift from one camera channel to another," replies our guide. "Cutting and editing the videofilm master from the magazines of the different cameras is a purely mechanical matter. The laboratory men simply follow the

markings on the recording tape as a cue. Patching the film into a sequence identical with what is now being broadcast is only a two-hour job for a good film cutter."

"Look at the screen," we say. "There's a close-up shot of a girl's face. How do you get that effect when there's no camera within twenty feet of her?"

"They've changed lenses on the number two camera," explains our guide. "They're using a lense with a longer focus now; that gives the effect of a close-up. We use a wide variety of lenses and filters to get different effects. Wide-angle to give us depth, telephoto for flat close-ups, zoom lens for dramatic distortions, and half a hundred different variations. Optically and electrically, we use all the tricks of the trade."

Now the action shifts again. The producer cues a pick-up from another set, and on the main stage, an astonishing transformation occurs. The backdrop of the aircraft hangar vanishes from the process screen. Suddenly, the entire floor of Stage One begins to sink! All of the foreground props—an airplane engine, chairs, a bench cluttered with machinery—all this dis-

appears slowly below the level of the stage. The scaffolding overhead, upon which most of the lights are mounted—this, too, drops into the yawning cellar underneath. Now the top of the light scaffolding is below the level of the stage, and we can see it being rolled off the "elevator" by the scene-shifters underground. They wheel the entire stage—props, lights, scaffolding, and all—into a spacious cellar store-room. A few seconds later, the top of another set can be seen sliding onto the elevator platform. Another button is pressed, and the floor of Stage One begins to rise again on its hydraulic lift. A few more seconds, and the new set is in place.

This time the stage contains a full-sized airplane, mounted on a system of springs to simulate rough flight. The propeller is spun by a quiet electric motor, while a sound-man at stage-right, drops his phonograph needle on an appropriate recording of "airplane-in-flight." Now, the process screen comes alive with a moving pattern of sky and clouds. The actors take their places in the cabin of the plane. A stagehand stands just out of camera range, ready to rock the ship as if it were actually flying through rough air. The camera-men line up their shots,

with coaching from the producer who watches through his monitoring screens. The mike-man cranks out his boom in order to pick up the actors' voices; he plants another mike in front of the sound-man's loudspeaker, to catch the recorded plane roar. The lighting of the stage has all been previously set: the various floods, spots, and overheads have been locked in place on the scaffolding during rehearsals hours before.

Barely ninety seconds after the previous shot from this stage was finished, everything is ready for an entirely different scene in an entirely different locale.

The show goes on. It's an exciting mystery drama; and the unseen orchestra adds much to the suspense, with its mood music connecting scenes, against a dark screen. What with the combination of shots from the many different stages—in this clover-leaf and elsewhere—the pre-filmed sequences—the process shots—the over-all effect seems nearly as mobile and graphic as anything we have seen in a motion picture theatre. One difference we note: the writer has taken pains not to demand that the members of the cast fly from one scene to another without sufficient time. But this is no real

handicap. And if we were not here in the control room, observing all the mechanics which make this broadcast a reality, we would not even be conscious of this compromise.

"Do the actors ever forget their lines?" we ask.

"Of course," our guide smiles. "Then we prompt them." And he points to a black box-on-wheels. There is one on each sound-stage. It's something we hadn't noticed before. The front of each of these boxes contains a ground glass screen, perhaps three feet square. On this screen the actors' lines are projected from a roll of script. It's something like the projector that shows your score in a bowling alley. So if a television actor forgets his next line, he can contrive a piece of business which requires that he glance in the direction of the prompting screen—and get back on the beam again.

"Most of our experienced tele-performers pride themselves on never using the prompter-screens," our host observes. "After an actor gets a few dozen television shows under his belt, he develops a remarkable self-reliance. At first, casts are staggered by the task of memorizing their entire parts—especially when rehearsal

time is short. But everybody gets the hang of it soon enough. If a slip occurred on the sound-stage right now, there isn't an actor down there who couldn't 'fake' his way out of it. The prompting screens are insurance, that's all."

We come to the first act break, see and hear the audience applauding in the theatre. And there follows a brief, entertaining, and informative commercial; then the plot resumes. We watch the maze of activity with continued interest, noticing what a high degree of attention the producer gives to the sound-portions of his show —making vivid use of music, sound-effects, and mike-perspective. At one point, we are astonished to see the actors performing on an apparently blank stage, while the monitoring screen shows them to be standing on a busy street corner.

"It's no hocus-pocus," the guide explains. "Now the engineer is mixing sight from two channels. The actors in the foreground are being picked up by the iconoscope on the stage, while the street-scene in the rear is a motion picture stock shot, being run off in the projector-booth half-a-mile away. You'll notice that the engineer has two of his pots open on the control panel.

Put them both together, and they spell a complete picture."

We shake our heads in amazement. We watch the hydraulically-operated clover-leaves heave up whole new scenes, then swallow them again in the cavernous underground store-rooms—only to hoist another scene in front of the cameras a few seconds later. Then, for a while, we concentrate on watching the master monitoring screen—trying to forget all the mechanical and electrical ingenuity which is contributing to the picture before us. The effect is most pleasing. The story-line is simple, straight, and fully-developed, after the manner of our best radio dramatists. The result seems to have all the "everywhere-ness" of a motion picture—plus a certain splash, a certain vivacity, sparkle, "now-ness"—which the more carefully-drawn motion picture so often lacks. The story builds to its climax, and the mystery resolves. Again, applause—an entertaining picture-story from the sponsor—a brief trailer for next week's broadcast—and the sign-off.

The producer sits back, folds his script, and thrusts it in his pocket. He looks a little tired.

We step over to him. "It was a swell show," we say, shaking his hand.

He smiles back. "Glad you liked it. A little rough in spots. But nothing I can't clean up in the edit."

We invite him to join us in a snack at the commissary. He shakes his head a little ruefully. "No can do. Got another rehearsal over on Clover-leaf B in fifteen minutes. Then I have to look at the master assembly on this show, and make a couple of changes before they print off the videofilm copies for the network."

"How much rehearsal time did you have for tonight's show?" we inquire.

The producer looks off in the distance, thinking. "Oh, about—about twenty-five hours, I'd say—spread out over three days. That is, twenty-five hours' actual rehearsal-time on-set. That doesn't count the time I spend with the camera crews before hand, plotting angles and camera sequences before we even hit the stage. And that doesn't count the time the actors spend memorizing their parts. Of course, you realize that we can't aim at perfection. More often than not, the timing, the cueing, which shot I happen to pick—this depends more on the inspiration of

the moment than on studied planning. But I think it's better that way. Fresher. We're getting things down to a pretty smooth system now. I'm handling four shows a week."

"You doing any color productions?" we ask.

"One. And, believe me, it's a toughie. We have two clover-leaves equipped for full-color. The results are beautiful—but it makes production much more difficult and naturally, video-film prints in technicolor run into big money. But, we're learning all the time—how to do things more easily, more effectively. We're makin' this television baby grow up into a he-man with hair on his chest. You'll see." He smiles, waves good-bye, and is off to his next rehearsal.

In the hall we chat for a few seconds with one of the actors. We tell him how well he played his rôle.

"I wouldn't know," he says, wiping a mixture of perspiration and grease-paint from his forehead. "We're so busy out there that we never get an idea of what's really going on. Of course, we can tell which camera is shooting the picture; the signal light on the front of the 'scope indicates which one is live. That way we know which camera to play into.

"This is tougher than any job I ever had in pictures. Acting for television is a combination of work in movies, stage, and radio—all at once. If you're a track man, it helps you sprint from one 'leaf' to another. And sometimes I wish Houdini could give me a little coaching on how to make my wardrobe changes. But we always make 'em. It's a tough grind. Long hours under hot lights. It's no place for a lazy man. But they make it worth our while. And I get a thrill out of television shows that I never get any other way. When I think of the miracle of acting on all those millions of television screens from here to Bar Harbor—it gives me a kick! This is *theatre*. Not the theatre of footlights and canvas. Nowadays it's cathode-rays and cloverleaves, fluorescent screens and microphones and iconoscopes. But every broadcast is a first-night. Television's brought us back to a living theatre again. And I'm glad!"

* * *

Now let's take the forty-cent tour in a different kind of television production unit; an organization which is not engaged in broadcasting, but in the hourly feeding of news along the network trunk lines to the theatres of the nation.

We'll have to go to New York for a glimpse of this operation—for the Eastern coast is more nearly the news nerve-center of the nation.

Our cab pulls up in front of the studio—probably somewhere in mid-town Manhattan. The building may be an old newsreel soundstage, revamped to suit the needs of modern electronic news-gathering. A friend of ours who used to be a commentator back in the old sightless days of radio meets us and volunteers to show us through the "mill."

"Just follow me, folks," he says. "I'll give you a lightning tour of this television newspaper. But we'll have to make it snappy. I'm due on-stage in a few thousand theatres just twelve minutes from now."

He leads us down a hall into a large, noisy office which is vaguely reminiscent of the city room of a metropolitan newspaper. There is a battery of teletype machines along one wall. A staff of writers is busy pounding out copy from banks of typewriters. In one section of this room, a group of editors is scanning telephoto prints under a "daylight" lamp. In still another area, we see a group of men who are busy telephoning

—and we happen to overhear one of them talking to New Delhi, India.

"This is the hub of the theatre news-tele," our guide explains. "Here the news comes in over the teletype machines, just as it does in a modern newspaper office. Of course, we have our own specialists and reporters in the field—all the way from Yonkers to Yakutsk. We have better than one hundred camera crews out all the time; we're constantly checking with them by phone and radio—sending them to new assignments, finding what available material they have on hand.

"For national coverage here in the United States, we use mobile television transmitters to bring theatre-viewers an actual on-scene glimpse of the news the same instant it's happening. We don't have transoceanic television service yet; so outside the U. S. we have to depend on telephoto and news-reel photography. We get thousands of "stills" daily by telephoto, from virtually every spot on the globe where news is happening or is likely to happen. Also, every flight from overseas brings in thousands of feet of news-reel material, with shots seldom more than twenty-four hours old.

"We have fleets of mobile television units, ready to swing into action anywhere in the United States. What those telecameras record on their 'mosaics' is hitched into the transcontinental network on cue, and is flashed onto a few thousand motion picture screens a few millionths of a second later.

"How bulky are these television mobile units?" we ask.

"Oh, nothing you can't get into a truck and trailer. These units have their own amplifiers and power supply, plus a low power, ultra-high-frequency transmitter to beam back what they pick up in the field to the nearest junction of the transcontinental network. Maybe you noticed some of our 'sight-trucks' parked in the garage underneath the building. We have a half-dozen air-borne mobile units, too. I don't think there's a point in the entire U. S. where, if a headline should break, we couldn't have a trio of iconoscopes on the spot within sixty minutes."

"How often do you go on the air with news telecasts?"

"We don't," our guide smiles. "This is theatre television, remember? What we call a 'piped' service, to the theatres exclusively. The only

time out pictures ruffle up any ether is when the mobile transmitters are tying into the national network. That's on a commercial band of the radio spectrum, which standard television receivers can't pick up. If you want to know how often our tele-news editions are piped to the theatres of the nation, the answer is—every sixty minutes. Every hour at 'straight up'—from noon eastern time to midnight on the Pacific coast—we grind out a telecast timed to exactly eighteen minutes. Considering for differences in time zones, that means fifteen transmissions per day."

"Don't you find it pretty tough, turning out a new show every hour?"

"Oh, it isn't always a *new* show. Very often the two o'clock telecast will include only a couple of stories which weren't in the one o'clock transmission; the rest of the show may be identical with the one which preceded it. Other times, if there's a big news break between shows, the next hour's transmission may be a complete revision."

"I understand how you get your views of news events which break within the U. S.," we reply. "But how about the instantaneous news-coverage from overseas?"

Our guide gestures for us to follow him. "Here's the best way to answer your questions. We'll be piping in just a few more minutes. You come on-stage and watch. Then you'll see how we get video coverage of foreign news-fronts. Truth is, it isn't actually instantaneous. The only way we could accomplish that would be through having actual tele-mobile-connections into Reykjavik, Ankara, Teheran, Saigon, and Timbuctoo. Tele-network connections into Seattle were just finished a couple of months ago; so the service from Timbuctoo is pretty lousy. In fact, it looks to be a long, long way off. However, if there's a big news break down in the Pacific islands, we rush out a photographer by air from Manila. He has an Eyemo and a Graflex—to photograph what's cooking in both movies and stills. As soon as he's covered the incident, he rushes his still-pictures to a telephoto relay station, and we have them here in our news-room an hour later. His movies, undeveloped, are slapped into a tin can and flown to the States aboard the next clipper. Often we swap telephotos with other picture agencies.

"And here's another gimick we sometimes use in covering stories from overseas. There's prac-

tically no place in the world from which we can't pick up a sound-channel instantaneously. Therefore, to go back to our South Pacific incident, our Manila representative may take a mike-man along with him; he'll give us an on-scene description of what's happening that very instant, while editors dig into the vaults and roll a sequence of stock-shots—movies and stills—to illustrate what the overseas commentator is talking about. We have one of the world's best libraries of stock news shots. And we have everything cross-indexed with a tickler system, which enables us to dig up film material on anything from Papa Dionne to the Great Wall of China in thirty seconds. Come on in the studio. We're hitting the line in less than a minute."

He shoves open a heavily-padded door, and we step onto the sound stage. To our surprise, we see a familiar American dance band—poised and ready for a go-ahead from the control room. Cameras and mikes are arranged as in the television broadcast which we watched previously.

"What's the idea of the dance band?" we inquire.

"Sshhhh! They're going on," cautions our guide in a soft voice. The band takes a down-

beat from the conductor, and begins the theme. The commentator whispers softly in our ear, so that the live microphones won't pick up our conversation. "We always run a twenty-minute musical filler ahead of each news period. This provides a 'cushion' for the individual theatre operators, so that they can synchronize their film schedules with our time of news transmission. You see, we're going into thousands of theatres, all of which are showing different feature pictures of varying length. Naturally, they don't all end at the same moment. This musical filler gives each theatre twenty-minutes lee-way in joining the network. Perhaps one theatre in Chicago finishes its main feature twenty minutes before the hour; therefore, they'll carry the whole dance band program. In other theatres, features or short subjects come to a conclusion at varying times during this musical cushion. Each projectionist has a standard title-lead on film which he uses to announce this musical feature. By 'straight-up'—on the hour, that is—all the theatres which are going to carry this particular news-cast are tied into the net and ready to go."

"Does every theatre carry every newscast?"

"Only the news theatres which operate on one-hour programs. Exhibitors carrying a single-feature usually catch us every other transmission. Double-feature houses pick up our telecasts only at three- or four-hour intervals. However, the system of hourly transmissions gives exhibitors a maximum flexibility in arranging their programs."

As the orchestra plays a novelty selection, we have an opportunity to look about the studio and see how it is laid out. The technique here is different from that used in broadcasting. This is not a clover-leaf. It is a large, high-ceilinged room acoustically treated to kill "boominess." There is a plentiful supply of high-powered lights—some on wheeled standards, others hung from beams which can be raised or lowered with ropes. There are probably a dozen or more iconoscopes standing about the studio—several of them aimed apparently at holes in the studio wall. We inquire what these "scopes" are for.

"They are lined up with film projectors in a sound-proof booth on the other side of the partition," explains our host. "They're used for picking up stock-shots, or filmed news-reels which have just come in by plane."

In another area of the studio-stage, we notice a group of camera-men with an odd, hooded arrangement clamped to the front of their television cameras. Each camera-man is seated in front of this instrument, and seems to be inserting "slides" into the machine, after which he fiddles with a system of thumb-screws, watching all the while through an eye-piece.

"What goes on?" we ask.

"Those fellows are lining up telephoto stills. They've been printed on transparencies, which can be televised with the light shining through them from behind. These transparencies are only a few inches square, but that's ample for the iconoscope to view through the optical arrangement in the hood. The thumb-screws are a system of verniers for sliding the transparency back and forth in front of the camera's field of view. Another vernier gives the effect of dollying the camera in for a close-up, or zooming it away for a long-shot. All of these dramatic effects, which seem to involve rapid and distant movements of the camera, are actually accomplished by the camera-man with only a few twists of a thumb-screw.

"You see, we do more than simply slap a still

picture in front of a camera. We try to give these telephotos a dramatic movement. In today's broadcast, for example, we have some shots of a parachutist going to the rescue of a plane crew which was stranded in a crack-up on a mesa in the Atlas Mountains over in North Africa. The rescue was completed only a couple of hours ago. Naturally, we couldn't get a news-reel back from Africa in that time; and we've told you how it's technically impossible to get instantaneous video from over-seas.

"But we do have a series of about twenty damned good telephoto stills, covering the whole action. And the way we televise them, laymen are scarcely conscious of the fact they aren't movies. The first shot is the inside of the plane, flying above the mesa. The thumb-screws on the iconoscope zoom us in for a close-up of the pilot, then pan across to show us the rescue-worker, adjusting his 'chute-straps in another part of the still. Telephoto two: he's standing in the open door-way of the plane. Shot three: he jumps. Shot four: his 'chute is opening. Shot five: the silk umbrella blossoms out beneath the plane. We cut so rapidly from one shot to the next in this 'jump' sequence that people in the theatre

get the illusion of continuous action. Then the iconoscope gradually pulls away from the still of the parachute, giving the impression that it is falling away from the rescue plane. The remaining news-shots—all of them as exciting as the best views in a top picture magazine—are handled with a similar mobility. I give a continuous commentary on what's happening. Result? We can give a million people in ten thousand American theatres a complete, dramatic picture of a news event which broke two hundred minutes ago five thousand miles away.

"Stand by, folks. We'll be hittin' the net with the news in just above five more seconds."

The band comes to the finish of its number, the leader says his farewell, and the news broadcast begins. The first shot in the telecast is a close-up of our host, the commentator, who announces the news-transmission. In a control room at the far end of the studio we observe much the same activity going on as we watched in the broadcast of a dramatic show. Engineers are deftly cutting from film to transparencies to live shots in the studio. Appropriate musical backgrounds are dubbed in. Each sequence blends smoothly, one to the next.

Now our friend at the microphone is announcing a cut-in to a beauty contest in Miami, Florida. The studio signal-light goes off, and everyone coughs and relaxes for a few seconds. Over a distant speaker, we can hear the sound which is being "piped in" from the remote and on the monitoring screen we can see the cheesecake coming in from Miami Beach.

Next comes a brief interview with a Russian pilot who has just broken the non-stop trans-polar flight record, from Murmansk to Minneapolis. We notice that an iconoscope and movie camera are placed side-by-side for this pick-up, for in subsequent editions of today's theatre telecast the interview will be taken off the film.

Suddenly the sliding door which leads to the news room is forced open, and a wild-eyed editor dashes across the studio to the control room. He is clutching a fist-full of telephoto transparencies, and a long roll of teletype paper streams out behind him. Through the control-room window, we watch him confer hurriedly with the producer. Now both of them rush into the studio; they go to one of the camera-men, hand him the slides. There is another hasty conversation, sotto voce. The editor takes the camera-man's

script, crosses out one bloc of it, and inserts a freshly typewritten page. Meanwhile the producer has stepped over to the commentator to give him the new page. Now, during a live pick-up from the West Coast, the producer makes frantic rearrangements in the commentator's script.

There has been a fresh news break. Cold, without a rehearsal, these theatre telecasters will send out a full description of what has happened, with accompanying pictures. All this within a matter of minutes since the event took place. The commentator arrives at the new page in his script. He reads it at sight, without a fluff. The technicians at the iconoscopes skillfully handle the televising of the new transparencies—without the benefit of even thirty seconds' rehearsal. Several more on-the-spot cut-ins from mobile units from various points about the country—plus several news-reel sequences rushed in from overseas—and the eighteen-minute news period is over. It finishes on the dot. The timing of these theatre transmissions is very critical for running over only a few seconds can dislocate schedules in thousands of theatres. Now the red "Silence" light is turned

off; cast and technicians have a chance for a breather until the next transmission—twenty-two minutes later.

* * *

The local television broadcasting stations will handle their news programs in much the same way. With this difference. A more or less pre-edited series of telephoto stills, with accompanying commentary, will be piped in as a station-service over ordinary telephone lines. The coverage will be less rapid, less replete with instantaneous cut-ins since the radius of on-the-spot news-coverage for local stations is limited to the transmitting range of the tele-mobile-unit.

* * *

In other branches of the new art of electronic photography, variations of the techniques we have just described will be common. We mentioned "vaudevision," in which local stations will transmit pre-packaged variety shows from the stages of nearby theatres. Here there will be little room for moving iconoscopes or microphones about. The performers will probably play to unconcealed mikes, as in current radio practice. 'Scopes will be set up at standard dis-

tances and angles with relation to the stage. It may not even be necessary to assign a cameraman to each pick-up point; a turret of lenses may be operated electrically from the control room to produce long or medium shots, or close-ups, as desired.

The vaudevision shows produced locally will be comparatively static, but if the action on the stage is rich in movement and interest, the result can be pleasing. It is probable that a complete cue-sheet will be carefully prepared in advance as a guide to local station producers in cutting from one camera to another.

As for the televising of sports events into the theatres of the nation, we can expect that the iconoscopes will be given more preferential treatment than the highest-paying cash customers. The electric eye of the iconoscope at Madison Square Garden may represent a million dollars or more in box-office grosses across the nation. Consequently, we may expect that a major sporting event will be handled with more consideration for the tele audience than for the spectators in the flesh at the ring-side.

* * *

All-in-all, here is the chief difference between the old arts of motion pictures and radio, and the new art of television: the difference is summed up in one word—*NOW!* The manufacture of a movie is a piece-work assembly job, in which the time element is not of compelling importance. Television, like today's radio, must be frugal of seconds. Time allows the movie-maker the luxury of the cutting room; his production takes shape on a Moviola, with scissors and cement. The television director must cut his show while it's going on; the stop-watch will make re-takes a rarity.

This will lead to imperfections—but they are imperfections which the public will almost welcome, as the unmistakable mark of spontaneity and a fresh technique.

Of the man behind the Remington, television demands wholly original thinking, in terms of new art. And of the man in the center of the control-console—ideally the same personality—television asks a skill and genius new to the arts of entertainment. To the writer-producer who realizes this, all things are possible....

9

"TELEVISION COMMERCIALS"

CONFUCIUS is responsible for the sagest comment on television commercials: "One picture is worth a thousand words."

Television offers the advertiser so rich a medium for telling his story that no embellishment is necessary. What it takes seventy seconds to say through a microphone alone can be expressed on the television screen in a single flash of light. The smart advertiser knows that the concise message is the one which drives home. Most effective use of the new advertising medium means a maximum economy of the viewer's time, a minimum drain on his interest.

Even with the financial savings of videofilm, television is the most expensive way of selling things that man has ever concocted. The fabulous expense of the medium can be justified only in sales results. And satisfactory sales will come only from the most ingenious, tasteful, and subtle commercial use of the medium. The costs

will be so high that the sponsor *must* produce intelligent commercial messages. The moronic promoter with the intelligence of a cash-register has no place in the new industry.

Television offers the manufacturer a million show-windows in which to display his products. It gives him a mail-order catalog that talks, moves, and demonstrates. It is the most dramatic chance a salesman ever had to tell the truth about a worthwhile product. The intelligent salesman will understand these facts; and he will approach the new medium with due respect and humility.

Here is the crux: There is no "divine right of sponsors." This ether they use for advertising belongs to the people. It is the people who grant the license fee for its commercial use, and they expect much in return. Broadcast advertising—by either sight or sound—is rigidly forbidden by the government in many parts of the English-speaking world. It is well to bear this fact in mind and to be fully aware of the responsibilities which commercial broadcasting implies.

Radio and television do not exist as a service to the sponsor. A television station is not like printed media or billboards, which exist pri-

marily in the interests of the advertiser. Radio belongs to the people. The sponsor is given franchise, so that he may perform a public service and raise the entertainment standard of American living; in return for this, he expects and is expected to make a discreet expression in his own interest, which may result in mutual profit for himself and his listeners.

The advertiser isn't the "boss"; he's the ticket-taker. He isn't showering beneficences on the masses; he is accepting a trust from the people, and he is expected to respect that trust. If he violates his trusteeship, he is committing a criminal act against the people and the state which represents them. And he should be legally tried and punished.

Unfortunately, what represents a violation of "trusteeship" in radio cannot be weighed judicially by a court. The following is a fair example of what might be called grand larceny in the medium of commercial television. Let it be hoped that, when the F.C.C. grants commercial licenses, we shall not snap on our radios to see a flaxon-haired youngster come bounding down the stairs to exclaim, "Oh, Mums! Wheatsy-Flakes!"—followed by mother's saying how

glad she is Junior likes Wheatsy-Flakes because they contain whole wheat-germ, toasted in by a secret process and enriched by a vitalizing new ingredient which gives Wheatsy-Flakes 40 per cent more "zip" than any other cereal, and they taste so good, too. During which Junior is making a pig of himself, while the announcer says: "Right! Switch to Wheatsy-Flakes *today!*" There is an open-and-shut case for "The People vs. Commercial Radio." It is too bad that the courts offer us no recourse in such cases. All we can do is take a solemn oath never to put spoon to Wheatsy-Flake as long as the breath of life is in us.

Cheap, lazy advertising methods will be the kiss of death for television. Sound radio has proved a hardy specimen despite a scrofula of spot-announcements and day-time-serial beri-beri. It has survived these all too frequent fits of commercial nausea, occasionally to say something fine and decent and worthwhile. And these occasional flashes of genuineness, out of a welter of sordid commercialism, seem to justify the system, although we may pray nightly for the growth of a more-than-microscopic commercial conscience.

Television, on the other hand, is not so robust a youngster as his radio brother. Video is much more sensitive. Sight audiences give much more attention than listeners to sound alone. Impressions reaching eye and ear simultaneously impinge more dominantly on the consciousness than what comes only from a loud-speaker. Most radio listeners have developed a cerebral relay, which automatically clicks off the attention when a commercial becomes boring. Not so television. The viewer must give most of his consciousness to the tele-screen; moronic commercialism will make him leave his receiver in disgust. It is apparent that video broadcasting has a digestive track which cannot stomach a plethora of cheap ads. Television will gag on Wheatsy-Flakes.

Those two prize parasites—spot-announcements and hitch-hikes—have no place in visual broadcasting. For nothing will let the air out of the tires of the new industry more promptly than a spewing of spot-announcements. The "station-break commercial" is an unashamed violation of the sponsor's trusteeship. The spot advertiser demands audience attention, but gives nothing in return. He's a chiseler. His message

is a barnacle, sucking its hold on the programs which precede and follow it. The spot must go.

This is not meant as an indictment of those who have sold, purchased, written, or listened to spot-announcements in the past. The fault is in the system. However, the system in television is going to be different. The wanton, unasked-for, offensive dragging of commercial red-herrings across the nation's television screens is a practice which must be stopped before it has a chance to begin. In video broadcasting, provisions will be made for local stations to enjoy ample profits without recourse to selling station-breaks.

Commercialism fosters another radio abuse which must be avoided in television: that is a tendency to be satisfied with mediocrity. If a program has a Crossley of ten-points and is paying its own way, sponsor and agency are inclined to sit back and relax, although the program may smell to high heaven. Only a few courageous advertisers have sought the peaks. Too many are satisfied to follow the easy course, sponsoring programs which are imperfect carbon copies of the successful shows of others. This advertising ailment may be called "dishpan mind." It

leads a sponsor to foist on the entertainment-thirsty public gallons of radio dishwater daily. Though dishwater will assuage the thirst and keep a man alive, it's still dishwater. The sponsor's protest that "that's what the people want" doesn't hold up. Naturally a man who is sick with thirst will swallow dishwater if there is nothing else to drink; that doesn't mean he prefers it to a draught from a pure mountain stream.

Please understand, this is not an attack on all commercial broadcasting. Many far-sighted sponsors have achieved much and done measureless good through the intelligent employment of the time which they have purchased. And a grateful audience has made it worth their while. But for the cheap little advertisers with cheap little minds, television has only two words: "Stay Out!"

We come to these conclusions: The television commercial has no right to stand alone; it must be coupled with a program which aims to be the best of its kind. The commercial must be brief—never to exceed ten per cent of the program time, preferably much less. The message

must be honest. And, most important of all, the commercial must *justify* itself.

There are, in general, three ways that a telecommercial can justify itself. The first is as a public service. If the advertiser's message has inherent in it knowledge or intelligence which is useful to the viewing audience, it justifies itself. One of the most effective advertisements we can imagine for a quality watch manufacturer is a close-up of a wrist, bearing a beautiful watch; the only commercial, the maker's name, modestly inscribed on the watch face. This commercial serves, by giving the correct time and not outstaying its welcome.

Another service feature is the daily weather-map. Or a shoppers' guide, in which the iconoscope moves through the various sections of a department store, in an effort to be of genuine service to the viewer. Style shows fall in this category. A gasoline retailer might broadcast a map suggesting routes for automobile drivers using his brand of gasoline. The local theatre exhibitor may sponsor a program, to include a trailer of the picture he is showing currently. "How to get the most out of your set" is another service which might be the basis of the commer-

cial message of a manufacturer of television receivers.

Suggestions which contribute to health are also a public service, and justify commercials constructed from such a spring-board. When the considerable genius of the nation's better copy-writers is applied to this problem, they will undoubtedly produce a number of services which are closely coupled with the advertised product, and therefore save the commercial from being merely a Tarzan-like thumping of the sponsor's breast.

One caution: let's not kid ourselves about what constitutes "public service." Trumped-up devices, contrived only to mask outright advertising ballyhoo, will fool no one. To some warped intelligences, the previous cluster of cliches about Wheatsy-Flakes might be considered a service in the interest of public health. Only three people will be taken in by such rationalizing: the sponsor, the agency-man, and the announcer who gets AFRA scale for reading the plug.

A second means by which the television commercial can justify itself involves the expansion of an advertising technique little used in sound

broadcasting. The eyes of television, however, make this device singularly forceful. It is the "documentary commercial." This is a commercial message which *informs*—genuinely and honestly—about people or processes related to the product advertised.

We might see a series of "documentary commercials" constructed on the theme, "The Story of Steel." Each message dramatizes briefly and concisely a phase of the making of steel; the product advertised, of course, is the product we see in manufacture.

Other documentary commercials might show the history of the growth of a product, the story of its invention, portray unusual facets in the manufacturing process, introduce interesting personalities associated with the sponsor's organization. The institutional value of such commercials would be priceless. That they be short is a foregone conclusion. But each commercial can be related, one to the next, so that a sustained viewer-interest is built up in the continuity of the commercials themselves. These messages justify themselves because they add to the knowledge of the audience which sees them. Effectively produced, the documentary commercial

can be a high-light on the most entertaining program. The scope of sight-broadcasting suggests numberless informative stories which can be told in this documentary technique, providing at the same time an oblique but forceful impression of the product advertised. Unfortunately, some sponsors who have dabbled in this technique before the microphone alone, have made the unhappy mistake of taking a single idea which might sustain very nicely for one or two commercials and milking it dry over a period of half a year. It stands to reason this won't work in television. However, the advertiser who plots an interesting sequence of documentary commercials will find ready response from those who view his program.

There is a third way in which the video sales message may justify itself. If it is genuinely entertaining to the masses of viewers, it has earned its niche in the television spectrum. Many of our better advertising agencies have realized this fact, and have bent their commercials in the most entertaining directions possible. Television is sound radio *cubed*. The entertainment possibilities open to the video commercial writer are limitless. Clever animated cartoons are a

natural. Routines with a comedian, involving the use of a product, can win laughs and customers at the same time. Commercials which are conceived with a flare of genuine novelty and freshness make themselves welcome—use of puppets, for example. Or human interest material. Or original humor. If a disinterested viewer can say sincerely, "This is entertaining" —then the commercial deserves the stamp of approval.

* * *

For the intelligent advertiser, the foregoing is only common sense. To the sponsor who is also a good citizen, his responsibility as a trustee of the ether is obvious. The manufacturer who is proud of what he sells does not need to be cautioned against cheap half-truths. The salesman who has good taste will not tolerate offensiveness in his manner of selling.

This reminder only: the television advertiser is a guest on someone else's property. He is welcome to use the swimming pool. But his stay will be a short one if he starts digging up the rose-bushes.

10

"MONKEY WRENCHES"

SABOTEURS will find television an easy target —at first. The infant industry has many vulnerable points where a well-aimed monkey wrench can gum up the works for months, or even years. But the flingers of monkey wrenches are playing a losing game. They may delay the early progress of tele and get it off to a bad start, but no one can stall it permanently. The man-in-the-street wants good television. Eventually he is going to get it. Nothing short of an interplanetary collision can prevent sight-broadcasting from coming into its own.

There may be some post-war businessmen who will try deliberately to wreck the machinery of television because it seems to threaten their interests. Among the men who matter, such shortsightedness will be rare. Most of the people connected with entertainment today realize that tele is a broad opportunity for all. The great danger of sabotage comes from those who don't

mean to be saboteurs; who, in spite of good intentions, may be working at cross purposes without consideration for the interests of others or the long-range progress of the industry as a whole. It will be an easy matter for them to kill the goose before it has a chance to lay the golden egg. Or at least slip it a mickey.

In general, the greatest of television's enemies is *fear.* Among entertainment's more timid minds, there is a Frankenstein-esque terror that the industry has given birth to a monster which may grow up to devour us all. Nothing could be farther from the truth. It is more accurate to say that the arts of entertainment have discovered a new continent. As yet, it is as wholly unchartered as was the New World in 1500. Only coastal fringes of television have been explored. It is a territory almost without population. We can only guess at its resources. But in no way does it represent a threat to the status quo. Tele is a new area to be explored. No doubt many young men and women will leave the old world of radio and pictures to pioneer on the frontiers of sight-broadcasting. But for those who choose to stay behind, there is no danger in the new discovery. In fact, it is almost certain

to mean expanded benefits for New and Old Worlds alike.

This fear may find expression in the motion picture executives who, like the three monkeys, are determined to, "See no television, Hear no television, and Speak no television." The motion picture studios now control much talent which will be very useful to tele. Of course, the new art is going to develop personalities of its own. But if television is to grow rapidly into red-blooded manhood, some transfusions will be required from the picture studios.

No new entertainment field can create its own firmament of stars overnight. The program-builders of the new industry must borrow players and craftsmen from radio, theatre, and particularly motion pictures. If these kindred entertainment arts decline to release their talent for visual broadcasts, tele will get off to a strictly bush-league start.

This will be unfortunate. It is crippling the new industry for no good purpose. With top names appearing on the tele soundstages daily, sales of receivers will sky-rocket. The video audience can become a major box-office within a few months. But if television must build an

acceptance of its stars as well as an acceptance of its technique, the expansion will be much less gratifying.

The best way that the picture interests can sabotage television is by refusing to release the players, whom they control, for video broadcasts. The thinking is protective: "Why allow the public to enjoy motion picture talent free? We have spent millions on publicity for our stars. Painstakingly we have built them into the most valuable assets of our organizations. Through their past performances in pictures, they have proved their ability to draw enormous audiences. Why give television a free ride? Especially since these player-assets may depreciate through television appearances. Why let these players appear, so that the public may grow tired of them?"

That reasoning can best be answered with another question. To what extent has Bing Crosby depreciated as a picture property because of his weekly radio show? In the early days, picture studios were leery of sound broadcasting. They were afraid to let their players near a mike, for fear it would dull their box-office draw. But that isn't the way it turned out.

Picture producers soon realized that radio offers them staggering opportunities for publicity and that a star who can ring the bell with radio audiences is even more in demand on the screens of the nation's theatres.

True, the critics may say. But television is more closely akin to motion pictures than to radio. Why will people pay to see a star perform on a movie screen when they can see him at home on their television receivers for nothing? Because what that star does in television will be much different from his performance in front of the motion picture cameras. The technique of television broadcasting is deliberately different from pictures; there must be as great a gap between video and movies as there exists today between movies and sound radio. Realizing this, we can see in television a potent medium for adding to the stature of motion picture performers. Tele previews may turn out to be the most lucrative "trailers" Hollywood has ever produced.

Earlier we mentioned a television program, a weekly commercial, to feature Bing Crosby, Bob Hope, and Dorothy Lamour. The thirty minute visual stanza might be called, "Hit the

Road"—being based on Paramount's highly successful musical series based on the "Road to—" theme. At first glance, such a telecast might seem to jeopardize the box-office value of subsequent "Road" pictures. Actually, this tele series will probably send even longer lines to the theatre box-offices. Video fans who have derived much pleasure from the thirty-minute broadcast will be eager to see a movie on the same theme. For the television show is a half-hour, pleasant, spontaneous, fresh, enjoyable in every respect. But the movie version is a "topper." It represents the best of a good thing, because the movie is more than three times as long and provides a full evening's entertainment. It is many times as lavish, with months instead of hours in the preparation. The motion picture version will have a perfection and attention to detail which video broadcasting cannot approach.

Here is the fundamental point: American entertainment is founded on an "economy of plenty," not of scarcity. Never has a valuable picture property been produced by hiding it under a bushel. Americans want a lot of what they like. If a performer is good, it is almost

impossible for him to wear out his welcome. The idea that the public can ever become "saturated" with the talents of a genuinely popular entertainer is an exploded fallacy. On the contrary, the more the people get of a good article, the more they want. The saturation bug-a-boo vanishes. Studios and stars need not be afraid to display their talents before the iconoscope. For if those talents are great, they will be even more in demand after the broadcast is over.

That's monkey wrench number one—the possible reticence of picture interests to play ball with television program producers. The "saturation" theory—the handle of this monkey wrench —is a myth. The motion picture studio which fails to take advantage of tele appearances for its stars is cutting off its nose to spite its face.

* * *

A second monkey wrench is the danger that America's theatre exhibitors may be squeamish about the widespread acceptance of television. Such a feeling has perfectly natural roots in the fear that tele threatens the exhibitor's investment and continued profits. Even after sight-receivers have become commonplace in every home in the nation, people will want to go out

and see feature-length films as much as they do today. The home tele screen is a splendid advertisement for what the theatre operator has to show on his larger screen. Network television services to theatres provide the exhibitor with more to offer his customers than ever before. Don't worry. The theatres of the nation are not going to fold up their marquees like the Arabs, and silently steal away. Yet the operators who fail to realize this can do much damage to the growing industry by fighting it or refusing to convert to television equipment and failing to co-operate with those interested in television. Such friction is silly and futile. We may hope and expect that the men who show the movies to the nation will not seek a pitched battle with the men who are nurturing television.

The men who look on the television receiver as a midget movie theatre are a grave danger. For, in the best interests of both tele and pictures, the two arts must be kept poles apart. As we've seen, there are marked inherent differences between video and movies. Our job is to emphasize those differences. Tele is more than an extension of the present market for filmed entertainment. One of the worst monkey wrenches

anyone can throw into the machinery of television is the repeated practice of broadcasting standard feature-length movies—begged, borrowed, or stolen from Hollywood. This is a deliberate spit in the eye of the exhibitor. It could undermine the present market for motion pictures. Also, it is a practice which denies television the chance of developing its own techniques and manner of expression. Broadcasting movies, designed for theatre showings, is giving a crutch to the new industry instead of encouraging the child to learn to walk on his own two legs.

* * *

A fourth monkey-wrench—and unfortunately a likely one—is the possible reluctance of the existing radio networks to accept the idea of a filmed service to broadcasting stations. An almost fanatical aversion to any sort of delayed broadcast has been bred into the network mind for decades. Often the observance of this fetish works an injury upon the public as, for example, during the war, when certain networks declined to broadcast transcribed on-the-spot reports from battle fronts. On the other hand, some agencies have found in the disregard of this

policy a fruitful source of program material and revenue.

Actually, the introduction of a filmed network service to television stations on a nation-wide basis need not work to the disadvantage of the existing chains. There's no reason why the sight-broadcasting links cannot follow a structure identical with today's sound networks; except that the programs will arrive at the stations in tin cans instead of wire cables. The networks can supply commercial and sustaining services to their affiliates exactly as today. The problems of clearing time and of zone differences will be vastly simplified. True, the service will not be instantaneous. But the network executives seem to be much more concerned over this than is the public. The local stations will provide many instantaneous transmissions to satisfy this demand of the viewing audience.

Of course, the film network is not ideal, but until some bright young mind figures out a way to send a television picture from Portland, Maine, to Portland, Oregon, at sea-level prices, videofilm seems to be our best bet. And of the networks which show a tendency to balk at serv-

ice by film, we can only ask, "Do you have any better ideas?"

Some day the problem will be solved. There was a time when telephone communication from coast to coast was considered impossible. New York to Denver was the limit of understandability. Then Dr. Lee de Forest devised a little glass-and-metal gadget called the audion tube, which gave us wire and radio communication around the world. This generation will produce another Lee de Forest, to solve the problem of economical sight transmission over long distances. But the solution hasn't arrived yet. When it does, it probably will take years to perfect and put into operation. Television can't afford to wait. For the time being, film networks are a sensible compromise.

* * *

If anyone has it in mind to get a monopoly on the television medium, or to parcel it out to a chosen few, such a plan is certain to fail. That's monkey wrench number five. Television should and must belong to the people. It must express what they want to see and hear. The best way to achieve this is through a truly democratic organization of the television network services. If

some tight little group attempts to gain "sovereignty" over television, the result will be disaster. Sovereignty went out with the Bastille. There must not be a genealogy of television "first families" which run the industry. The new art is expansive. There is room enough for all. There are plenty of fair profits to be made without knifing competitors or bleeding the medium into atrophy. Nor was television born to be the lap dog of native fascists.

We may hope that intelligent government regulation will forestall any such bids for sovereignty, and put the skids under would-be exploiters. But it is possible that this government regulation may, in itself, become a monkey wrench; excessive paternalism, too stringent licensing requirements, or holding tele too long in its incubation period—these might slow the growth of the new industry.

* * *

Before television can be important, it must have an audience. An audience must have receiving sets. Therefore, the rapid manufacture of sight-receivers, *which people can afford to buy,* is very important to the growth of visual broadcasting. As soon as tele goes commercial,

there must be a courageous marketing of inexpensive sets. The public will be satisfied with nothing less than the best—and some models priced well within two figures. This will call for a good deal of co-ordination between manufacturer, retailer, and program producer.

First, the image must be standardized. We must jell our thinking on scanning structure and technique. For if sets become obsolete every year because of changed transmitting standards, the audience is going to say, "Oh, nuts!" and lose interest. What the public sees, and what it sees with, are inseparably related. We can't ignore this. Those who sell sets and those who sell broadcast time must know each others' signals, and not get them mixed. Without reciprocal planning, the program producers may find themselves with only a microscopic audience, or the set manufacturers may be left high and dry with no decent pictures to pull out of the ether.

Among the set-builders themselves there must be a sensible co-operation. Standardization of basic parts, interchangeability of tubes and equipment, uniform tooling, well-planned mass production. These will bring us better sets, cheaper and faster. Here the war-tested genius

of American manufacture will see us through. Servicing sets—keeping them in top running order—will be simplified and made more economical by co-operation.

This standardization is something we can start working on now. It should be a cardinal purpose of the meeting of the Association for the Advancement of Television.

* * *

If Television is to be great, most of the creative credit must go to the members of the various guilds and crafts who will be the spine of the industry. The writers, directors, cameramen, actors, set-designers, lab men, cutters, engineers, musicians, electricians, stage-hands—these thousands and tens of thousands of artists and technicians have a right to a fair share in the profits of sight broadcasting. And their fair share is a large one. If the industry tries to cut corners at the expense of the men and women who are actually turning out the programs from day to day, there's going to be trouble.

On the other hand, unfair demands on the part of the guilds and crafts will work an equal hardship. Possible differences should be ironed out now. The sooner the better.

Video broadcasting poses some problems from this angle that are new to entertainment. Certain concessions must be made on both sides of the fence in the interest of speed, for speed is vital in successful television. We must forget certain limitations imposed on theatre and pictures regarding the use of process photography. Working conditions in television are going to be tougher. Hours will be longer, deadlines shorter, rehearsals more strenuous. In arranging fair working agreements in television, we must forget completely the precedents established in other media in the past. Because television is a *new* medium. It has its own requirements. All of us who hope to contribute to the science and art of sight broadcasting must understand that the problems are unprecedented. They call for unprecedented solutions. When the working agreements are drawn up for tele, they must take into consideration the strenuous and peculiar demands of the new art. No one must be subject to hardship, or injury to health. At the same time, the tele stage is no place for licensed goldbricking.

In the matter of scales, fairness is again our guide. Television demands more of its workers,

therefore the pay-checks should be correspondingly larger. Eventually—and soon—broadcast and theatre television will have the most generous bankrolls in show-business. But not at the very outset. It seems sensible to look on the television guilds as partners in the industry. Then the artists and technicians would share in the expanding profits as the industry grows. This would call for initial scales to be set up, basing compensation on the expected grosses of the industry for the first six months. Semiannually thereafter, the scales would be "upped" proportionately, to keep step with the expanding grosses. Under this plan, every participant in the television industry—regardless of his place—has a share and a mutual interest in the growth of the business. All members of the guilds and crafts will be equally concerned with the long-range progress of the industry as a whole, for they stand to receive a direct share of the increased profits.

This arrangement is eminently fair. It extends to the artists and technicians the privilege of being entrepreneurs, along with the administrators of the new industry. It is a joint investment of talent and funds. Those who contribute each

stand to share equitably in the inevitable profits. What fractions shall be considered fair must be carefully decided, for they will form the flexible basis for subsequent reimbursement—perhaps for years to come.

This plan has another advantage. It helps to catapult television to an early commercial success. If fixed scales were to be set up now, based on existing rates of pay for comparable work in radio or pictures, the costs to the video advertiser would be out-of-line with the value he receives. Remember, television must start with only a tiny audience, and a skeletal network of theatres and stations. A sliding scale takes account of this—beginning, perhaps, somewhat below prevailing rates of pay for similar work in other fields, but providing semiannual adjustments to an almost limitless potential. This way, advertising costs can keep pace with advertising value received. As the mass of viewers increases, revenue increases; the predetermined fraction of this revenue which goes to the various guilds will correspondingly increase. When the earnings from sight broadcasting reach their staggering potential, the share which artists and technicians will receive through this partner-

ship will be much more generous than any fixed scale demanded at the outset.

This sliding rate of pay, with semiannual adjustments made more-or-less automatically, seems a practicable way of forming the people of television into a working partnership. Perhaps someone will have a better suggestion. But these matters are too far-reaching in importance to be left to chance or to the inspiration of the moment. These contingencies must be planned for *now*. Otherwise, the early months of commercial television will be wracked with petty squabbles, misunderstandings, ridiculous propositions and equally ridiculous counterproposals. Even the most patient sponsor may give up the whole thing as a bad job and tele may strike out the first time it comes up to the plate.

Laying the groundwork for this relationship between the various participants in the new industry is probably the most important single contribution which an early meeting of the Association for the Advancement of Television can perform. Let us hope that representatives of all the interested parties can sit down together around one table—discuss the probable requirements of the new industry—consider each other's

interests fairly and impartially—and come to an agreement which will work to the benefit of all concerned. Greed in any quarter will defeat itself and the whole industry. If tele prospers, so will those who work in it. But excessive self-interest can brake the early prospering of television. Result? Lean months, perhaps years.

* * *

Now we come upon the monkey wrench to end all monkey wrenches. Chromium-plated, made from the highest-carbon steel, two speeds forward and one back, enriched with Vitamin B-One, approved by the Good Housekeeping Institute, and preferred eight-to-one by men who know monkey wrenches best. In other words—excessive commercialism.

People like good commercials. An interesting complaint from troops overseas during World War II has been the absence of commercials in their radio diet. But people want commercials which are honest, helpful, in moderation and good taste. The intelligent sponsor remembers that the ether was not created for the sole purpose of letting him jam it with pictures of his product. Fortunately, the agencies which work on the principle of exploiting a medium are

rapidly going out of style. Let's hope that the industry itself will set up barriers against its own members who are inclined to abuse the privileges of sight broadcasting. Here again the Association for the Advancement of Television has its work cut out for it. At its earliest meeting, the A.A.T. must reaffirm the responsibilities of commercial sight broadcasters and clearly define what constitutes breaking faith with the viewing public.

* * *

Our final and most acrid concern is with that termite in the woodwork of almost all commercial arts—the lazy "milk-toast" craftsman. Television is a vital word. The people who guide it must be alive. Young in their thinking. Enthusiastic. Ready to try new ideas.

This must be true of television's executives. They must be men who can think courageously —especially at the start. They must have vision. This is no place for pussy-footing and negative thinking. The rapid growth of the industry calls for decisive and unconventional action. The best administrators of television will think on an *industry-wide* scale—realizing that the best way to improve their own lot is to improve the whole.

Sometimes this may lead us in unaccustomed directions. But we must not be afraid. Narrow, timid thinking is television's worst monkey wrench.

Especially is this true in the building of programs. Much of the experimental television which we have seen to date has been very imaginative. But an unfortunately large amount has been lame, uninteresting, and quite uninspired. Of course, while television remains non-commercial, there will be no mass-emigration of top creative minds into the new field. As a consequence, a good deal of pre-war television was extremely stilted. The approach to telecasting must be fresh. The newness of the medium makes stale thinking a disaster. Video demands top performance from every person on the "clover-leaf." The "easy-come-easy-go" director, writer, or actor doesn't belong in sight-broadcasting. Television calls for men who know the meaning of a "labor of love." The lazy program-builders who try to dump old celluloid and rehashed radio shows on the viewing public will rapidly gum up television's carburetor. And the artist who puts obeisance to his pay-check and sponsor ahead of his responsibility to

the public—this man has nothing to contribute. It isn't trumpery to harp on the importance of artistic integrity. The real artist is the man who can make integrity pay off. Laziness is the easy way to ineffectuality.

There has developed in modern entertainment a singularly complex and labored way of achieving nothing. This is the committee system, so dear to many an agency and motion picture studio. The theory is: two minds, twice as good; three minds, three times as good; four minds, etc. But it doesn't work out that way. The process is subtractive, not additive. Subsequent rehashing generally cancels out everything which was fresh and entertaining in the original idea. It is so thoroughly chewed up by interoffice memo, telephone, and teletype that nothing remains but a mentally masticated blob, which deserves to be stuck under a folding theatre-chair, along with other articles which have been chewed beyond usefulness. Too often this shapeless pulp is shoved into microphones and movie lenses, fraudulently labeled "entertainment."

In some fields, the committee system may work ideally. But not in creative entertainment. Almost without exception, the greatest concep-

tions in the arts of radio and pictures have come from a single mind—or, at most, a small group of men drawn together by the force of an idea to think as one. No one can climb artistic peaks carrying a conference table on his back. The summits are reached singly. There are no teletypes to the mountain tops. The committee system is the refuge of mediocre men. Unable to stand on their own creative feet, they lean on each others' shoulders, mill about, pull this way and that. If a good idea accidentally turns up, it is torn to shreds in the melee. The result is usually shapeless and safe. In frantic desperation to avoid what is bad, the committee automatically rules out what is good. Their idea is to level off the hills and fill in the valleys ending up with a dull prairie, slightly below sea level. If the committees are turned loose in television, they will kill it. No, they'll turn it into a walking zombie. Can you imagine a roomful of people sitting down to write a book? Or a symphony? It is just as absurd to expect a bevy of television "experts" to collaborate on anything more than insipid. Of course, we can't give carte blanche to any starry-eyed, self-styled "genius" that happens to wander into a producer's office.

But we can commission competent people, give them free rein, and let them stand or fall by what they turn out. The results will be worthwhile.

* * *

Television is a clean slate. A chance to do something new and decent. At least we can try.

11

"TELEVISION AS A FORCE FOR FREEDOM"

WE ARE the generation that did the splits. We have straddled the most appalling inconsistencies. In contrast with our position, the Colossus of Rhodes was standing at attention.

Our feet have been planted a thousand years apart. At one point, we are grounded in the most advanced frontiers of invention and science. But far too much of our weight rests on thinking which was fashionable at the coronation of Charlemagne. Only one thing could happen to society so indiscreetly poised. It must lose its balance, and fall. But in scrambling to our feet after this world war, let us hope to recover a stance with more secure footing than before.

We've seen the results of fastening Radar eyes to brains which are tuned to the Norman Conquest. To our sorrow, we've found out what happens when a 2,000 horsepower engine is throttled by a cerebellum wearing chainmail.

World War II has seen a fantastic lag between the way we think about tools, and the way we think about men. As scientific craftsmen, we have done well. As responsible members of a society, we are still wallowing in the muck of the Inquisition.

Obviously, we must dissolve this anachronism. Our feet must be planted firmly, side by side. Our thinking must be equally modern—on matters of both science and society. Otherwise, we're slated for another plunge. And everybody knows what happens to the man who goes under the third time.

This is a book on television. Maybe discussion along these lines seems out of place. It's not. One of the reasons we lost our balance is the phoney aloofness with which scientists are inclined to consider the social implications of their work. When we move one foot farther forward, we must figure a way to bring the other foot promptly along side. Television is humanity's farthest step forward in mass communication. The ideas which we communicate must be equally advanced. And here is television's particular usefulness. So potent and far-flung is its force that in a few years' time, it can help every

man come up to date in his attitudes toward the other people in the world. Television can make a billion men and women clearly see the absurdity of the pre-war stance. Our video screens can enlighten us—help us to stand firm on solid ground.

It isn't our purpose here to say exactly what constitutes up-to-date thinking. But we must agree that television is going to have a lot to do with what we think from now on. Our television receiver is more than a plaything in our living room. The way we react, how we vote, what we consider right and wrong, fair or unfair, all of our opinions will be influenced greatly by the ideas which take form on the screens of our receivers. And this is no force to be underestimated.

Let's glance over the physical dimensions of the industry. Within our lifetime, we can expect to see more television transmitters than there are broadcasting stations today. They will be linked into networks—first by film, later by instantaneous electronics. Far and wide across America, we will see the growth of theatre television networks bringing paying audiences the choicest views of sports events and world news at the

speed of light. And it is not too sanguine to expect—still within our lifetime—that men will find ways to send sound and sight from any point on the earth to any other point, regardless of distance, instantaneously.

But what does it all mean?

For one thing, the word "provincial" isn't far from being obsolete. Telecasting will make provincialism almost impossible. We're going to find a much greater *awareness* on a world-wide scale, thanks to sight broadcasting. Sound radio started this tendency. Sight radio will accelerate it to the "*n*th" power. This trend is going to put a great deal of stress on certain traditions which have always seemed cozy and comfortable. Television is dissolving the physical barriers to thought-exchange as acid dissolves tin. The more-or-less traditional barriers to the free transfer of ideas also must go. If we cling to our comfortable pre-television habits of thinking, we'll be trapped in another anachronism.

With the deposing of provincialism, the "sticks" will come into their own. The backwoods television viewer can see in his distant sitting room as much of the world's art and news-drama as if he lived in the largest city on

the planet. Arkansas' man-in-the-street will know as much about what's stirring as the inhabitants of the national capital, or London, or Nanking. No one will actually be removed from any scene of important activity. Therefore, everybody (thanks to television) will have a fairly equal chance to observe what's going on, while it is going on. And an equal chance to see means an equal chance to judge. With television widespread, it will be impossible to discount any opinion on geographical or provincial grounds. Tens of millions—previously cut off because they were too far away to be informed—will find through their television screens a competence to contribute to the world's thinking and doing.

* * *

What's television going to mean to troops coming back from overseas? In a very real sense, it's going to mean jobs for many of them. For thousands of our service men are receiving technical training which will be invaluable in television careers. The radio specialists, the Radar experts—these men have had an ideal education for jobs in the personnel-hungry field of postwar television. For millions of young people,

television means a chance. A chance to express themselves—to say something. Perhaps as writers or performers. More often with screwdrivers, with soldering irons, with the potentiometers of television's control consoles . . . or with eyes focused on television screens. This is going to be a field for young people. For men and women who will not admit the limits of any horizon.

But to the veterans of World War II, tele means more than a job, and a chance for expression. The men coming back from this war will be recovering from a tremendous strain, less physical than spiritual and ideological. They will be returning from hardships shared with men of every color and nationality—men whom otherwise they never would have known, but whom they have come to like and respect exceedingly.

The veterans of the '40's are coming back with the determination to build better than their fathers. Inside them is a deep disgust for everything which contributed to the tragedy they have just come through. They will return with a hunger for idealism. An enthusiasm for thinking on an international scale.

These enthusiasms and ideals are quickly spent. The men who return with the determination to make the world better are quickly caught in the ebb-tide of what used to be; and that priceless drive for improvement is lost in dead nostalgia. It happened before. In our own lifetime, we have seen bright post-war idealism tarnish into negative, "do-nothing" conservatism.

Here is where television comes in. It is our most effective means for brewing thoughts in men's minds. If the people of television hang onto their principles, they can preserve the momentum of post-war internationalism. They can employ the emotional power of the medium to keep the ball rolling. To prevent a reactionary backsliding to a state more hopeless than before. Telecasting can keep idealism in style. If the eyes of television burn bright with an enthusiasm for a better post-war world, our chances for achieving it are substantially increased. Video broadcasts can integrate our thinking, steady it, and speed the realization of a happy, stable world society.

But television will be far from its full stature when the problems of the peace are ironed out. Not for years will we realize the entire impact

of television's force for good. A generation will soon grow up to accept the video receiver as a matter-of-fact piece of furniture in the living room. These young minds will be most affected. For television can be a mass educational force equal to all the world's universities lumped into one. The best thing about tele education is—it's painless. Unfortunately, we generally dislike things which are good for us. But sight broadcasting makes education at all ages a remarkably pleasant process. Television can make us much better citizens—not only of our own nation, but of the world. We will be much more awake to what's going on. The concept of things *foreign* will vanish. You can't consider a man a foreigner who has sat down to chat with you as a guest in your own living room—albeit electronically. The barriers dissolve. From the fluorescent screens of our video receivers we will glean the knowledge to judge wisely. And we can hope that the iconoscope will be a lens to focus on every injustice—that our antennae will reach out to burn awareness into every television screen in the nation. Our sense of indignation will be closer to our eyes. Clearly seeing our responsibilities, we will be more ready to assume

them. Every twenty-four hours, the tele screen can provide rigorous calisthenics for sickly social consciences.

Eventually no place in the world will be strange to us. We shall have visited it by television—the electronic Baedecker. To our children, no way of life, however distant from our own, will seem absurd or unfriendly. Television will encourage more sympathetic and generous understanding among people of all nations.

All this is going to be slow in coming. The machinery isn't ready yet for national telecasting, let alone a world-wide service. It will come —within our lifetime. We are taking the long view.

* * *

Knowledge has freed men from enslavement to superstition, disease, inclement environment, fear of the physical unknown. But knowledge does good only to the extent that it is widespread. Radio is the greatest agency we've known for conveying accurate knowledge in large quantities to masses of people. The microphone alone has done a great job. Add the telecamera and radio's genius for delivering information increases a thousand-fold. With

iconoscopes, we can begin laying a "knowledge-barrage" on threatening salients closer to home.

Video is so direct and fluid that the knowledge it imparts may bring freedom from more evasive enemies. Freedom from the social diseases and maladjustments which wrack us. Freedom to escape the reality which is a lie, and achieve the ideal which is truth. And the realization—in concrete terms—in every nation on the planet—of the Four Freedoms defined by the leaders of the democracies.

It is possible that a well-integrated campaign against these enemies of happiness in society can succeed in a remarkably short time. For the forces heaving us upward have a new weapon. Not a secret weapon. A *public* weapon. One which will soon be familiar wherever there is civilization. Television. Knowledge discovered can be transmitted graphically and instantly to the places where it will do the most good. And television does more than merely spread information. It can transmit *feeling* as well as information . . . *emotion* as well as knowledge. What feels right in our hearts, as well as what looks right to our eyes. Sensitively created television can well up in a million viewers a surge of

indignation or abhorrence, sympathy or love. When these simultaneous nation-wide—or even world-wide—swells of feeling are channeled in the best interests of humanity, who can measure the resulting good?

Of course, any momentous force works both ways. Electricity can light your home or kill you instantly. An airplane can speed you across the ocean in a few hours or bomb Coventry. Television can be a force for freedom, or it can break faith with humanity; it can lift us toward a working world society, or drag us into worse chaos than before.

The Association for the Advancement of Television—made up of the most far-sighted and conscientious men from all segments of the industry—can aim television's sights at worth-while targets. Only the least sensitive of those connected with the new art can fail to be conscious of its enormous potential for the good of mankind. And, that consciousness will bear a conscience to insure the wise and worth-while use of the television medium.

But all these safeguards of the high purpose of sight broadcasting will occasionally fail. Then it is up to the people. It's up to us—the

viewers—all of us—to scream our protest against any man or group of men which tries to use television as a force for even the fractional enslavement of mankind. We must press our opposition to any thinking in television which tends to contract rather than expand. We must be alert to lies, to half-lies, to perversions of fact. We must judge fairly, then attack the offenders in earnest. This means a wholehearted boycott of the offending voice. It means knowing who our friends are, and organizing to give them real help in combating the influences which would deter us. The Association for the Advancement of Television can be such a friend—provided it has the enthusiastic support of the forward-thinking television audience.

That enthusiasm must not lag. We the people must *care*. Too often we are docile, placidly accepting the distortions which are shoveled in our ears, and paraded before our eyes. In the interests of self-preservation, we must stir ourselves out of this lassitude. Television is too explosive a force to be jostled about carelessly and disinterestedly. We must be alert to its proper use. In the hands of conscientious men, it can make living a more worthwhile experience for

every human being in the world. As a lever for vicious exploitation, it can pry us loose from the way of life we long to believe in, and let us fall into uncertainty.

* * *

There is cause for hope today more than ever before. From Isaiah to Wilson, one man could reach only a small audience at a time. Through the microphone, our voices span oceans and continents. Now television projects views in movement and color instantaneously through the ether. One picture can touch the minds of half the world.

Here is an instrument for great good and great evil. A glib Goebbels can stampede a continent into animalism. But if we *sell truth* as capably as our enemies have sold lies and treachery, the people will respond. If we use as much ingenuity and persuasiveness selling human decency as we use plugging tooth paste and breakfast food, television will be the greatest force for good and for freedom that this planet has ever known.

* * *

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