



MILTON BERLE TELEVISION SHOW: IMPERSONATOR FLORENCE DESMOND, THE GREAT DELAGE, A MAGICIAN,



HARRY RICHMAN AT THE PIANO AND SINGING AN OLDTIME SONG, EX-BOXER SLAPSIE MAXIE ROSENBLOOM,



SID STONE DOING A COMMERCIAL, VETERAN VAUDEVILLIAN JOE PHILLIPS, AND THE TEXACO QUARTET.

What every family wants to know about

TELEVISION

by Miles Ginsberg

THE FRONTIER DAYS are back in one sector of the American economy. The television industry, only a shadowy outline a year ago, is galloping toward giantism with much of the driving, mercurial spirit of an earlier time in this country. All a television executive needs to be completely in character is a six-shooter and a pair of spurs.

In the wild and woolly television industry, every company releasing information has an axe to grind and a

hatchet to throw at the next company's facts. Nevertheless, by balancing claim against claim, a reporter can compile an amazingly optimistic set of fairly solid facts about television. For example:

1. During 1948, the industry poured out over 800,000 sets; this means the country now has about a million TV sets;
2. There are between 50 and 60 TV stations;
3. Networks, absolutely essential to big-time broadcasting, are sprouting both regionally and across the country;

this month a coaxial cable is scheduled to open, linking Philadelphia to Cleveland and connecting the East Coast network with the Middle West; now people as far west as St. Louis will be able to see programs telecast in New York;

4. Set production will hit 1,500,000 in 1949, bringing total number of sets in the country to 2,500,000;
5. Within two years, as many as 400 stations may be on the air.

In this 11-page report you will find answers to some fundamental questions about television.

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How good is today's TV reception?

THE MOST IMPORTANT single question about television a prospective set buyer can ask is: "How good is the picture you see?" For this the picture at the right, taken off a television screen, presents a photographic answer. It gives you an approximate idea of what a good television set in proper adjustment can do. It has all the detail of a 16mm movie.

Much of the time, television reception is satisfying and clear. But sometimes a set owner runs into annoyances comparable to static on a radio, but a good deal more disturbing. Take the following incident as an example.

Burton Walder, a young engineer who lives in New York State's Putnam County, was seated before his television set one night recently when he noticed the picture growing dim and bright by turns. "There's a plane overhead," said Walder to three guests who had come to see some television. "How do you know?" asked one of the visitors.

Walder explained that the plane passing overhead had intercepted the waves coming from the television station. Waves reflected off the plane had neutralized and then re-enforced the incoming signal.

"Why, television is like radar," said a guest. "Yes," replied Walder ruefully, "and my set never misses a plane."

Burton Walder's trouble with passing airplanes is only one of the occasional irritations in store for set owners. The ignition systems of cars on a road within 50 feet or so of a set's antenna radiate signals that are likely to be picked up. These signals trace a disconcerting pattern of blank white stripes across the screen, or they trip up the steady succession of different pictures (30 a second). This loss of synchronization

puts the bottom half of a picture where the top should be, and vice versa.

There are other intermittent nuisances; any adjacent electrical discharge reveals its presence on a television screen. Thus oil burners and vacuum cleaners will vex television viewers. A television set is not even safe from itself; a nearby set can radiate disturbing waves. FM also plagues viewers.

But that's enough gloom.

The television picture is actually very bright; and almost all the troubles outlined above have solutions. Take the annoyance due to interference from automobiles. This is being eliminated slowly through redesign of auto ignition systems. In addition, television engineers are making sets less susceptible to interference. A new RCA Victor model appearing on the market now has increased resistance to FM, amateur and diathermy interference. This set also is less susceptible to airplane reflections.

The RCA set is cited only as an example. Other manufacturers including Philco and Zenith are coming out with new sets which have similar improvements. Broadcasters in two or three years will probably do their share toward improving reception by increasing station power. This would help neutralize interference and make indoor antennae more practical.

Hearing about such improvements, a citizen might well ask: "Will present models be obsolete within a few years?" To this the answer is no. Television sets made in these first years of the industry's history are not on the same performance level as the early radios.

A citizen who has been reading the papers recently might ask further: "What about this Federal Communica-



The most popular picture size

The smallest picture size



tions Commission hearing over assigning new and higher frequencies to television? Will present sets be able to take such frequencies?"

Here again there are definite answers. Set owners have the word of Wayne Coy, chairman of the Federal Communications Commission, that the 12 channels



HOWDY DOODY, puppet star of a tremendously successful children's program, asks clown to vote for him. Howdy ran

for president on children's party ticket, might have beaten some adult candidates if kids voted (other pictures p. 29).

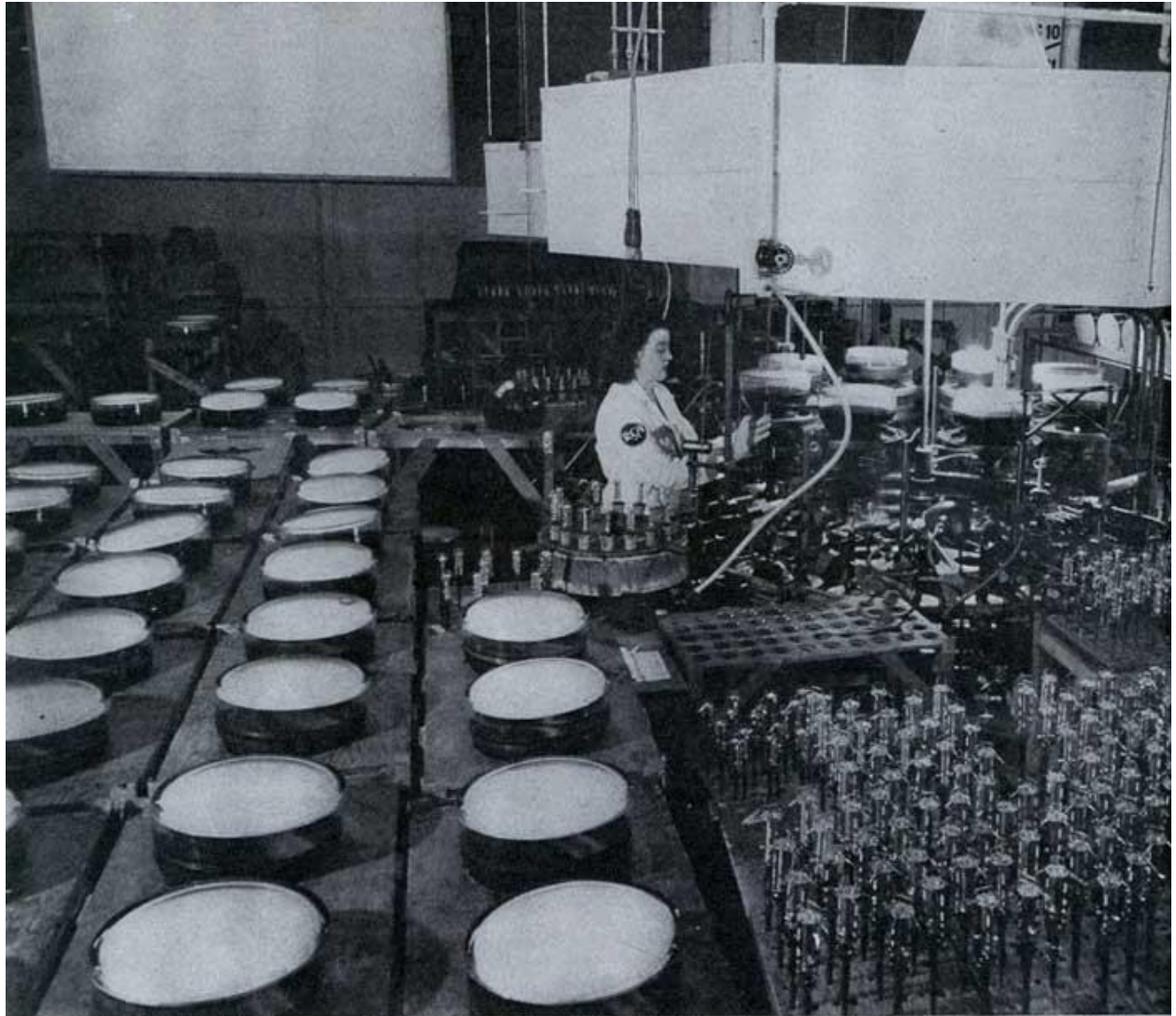
on which TV now broadcasts will not be abandoned. Nor need a set owner be very concerned about the opening of the ultra-high frequency band. This probably will take place within the next year, but it is not a step toward obsolescence of your set. If new UHF stations are opened in your city, you will

be able to buy a converter enabling your set to receive UHF (at about \$50).

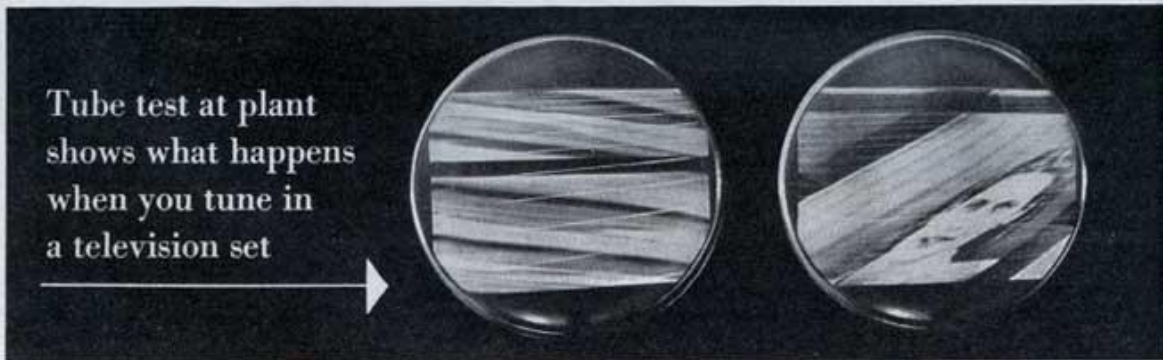
When color television comes, it, too, will be broadcast on UHF. And color TV may be here sooner than anyone had expected. Columbia Broadcasting System has overcome one of the initial objections to color—the width of the

frequency channel needed to carry it. CBS has cut this frequency from 16 megacycles to six megacycles, which is the same width now used in black and white telecasting. It has also developed a converter which would make color sets of present black and white models. This converter might sell for under \$100.

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TELEVISION TUBES are assembled under the circular, white hood. Here electron guns (front) are welded to glass envelopes (left). From here tubes go to pump for air evacuation (see sign above right corner). Tubes are produced at rate of one a minute.



Tube test at plant shows what happens when you tune in a television set

- 1** You turn knob and a strange set of white lines and blurs appears. But wait.
- 2** By turning the vertical control, you shift tube's magnetic field and get this.



A new TV tube coming?

THE PICTURE on a television screen is a painting made with electrons sprayed at it from a gun. The screen glows every time an electron strikes it because it is coated with phosphorescent material. And the varied glowing of many spots on the television screen forms a picture. The unit in the television set which contains this electronic painting attachment and screen is called the picture tube.

Although it is easy to understand the general function of picture tubes, manufacturing them is tough. They are shaped roughly like headlights—a hard form to fashion in glass.

When the television industry first got rolling, these tubes were a real bottleneck. They had to be blown individually with much spoilage and waste of time. Now the Corning Glass Company has mechanized blowing of 10-inch bottles or blanks for the tubes (those with a screen face 10 inches in diameter). And the leading tube manufacturers like RCA, Sylvania and General Electric have put tube finishing operations on an assembly-line basis. This, along with establishment of set production lines during 1948, is the main reason that the industry will be able to turn out 1,500,000 sets during 1949 (estimates run as high as 2,000,000 sets).

The pictures on these two pages were taken at the Lancaster, Pennsylvania, tube plant of RCA. Here, one 10-inch tube a minute comes off an intricate and delicate assembly line.

The huge Lancaster plant was the first to mechanize production of 10-inch tubes, the most popular size by far. Now the plant is getting ready to pioneer once more. Its engineers and mechanics are busy setting up a production line

for a revolutionary type of tube made of metal with a glass face welded to it.

Everyone in the industry knows the new tube is a 16-incher. But other facts about it are supposed to be secret for some time to come. Anyone with reasonably good hearing and eyesight, however, can discover that RCA engineers are very proud of this new baby and expect big things of it. Some of the reasons:

Its price will be lower than that of the all-glass 15-inch tubes now being turned out. Its cost to manufacturers may, in fact, be close to \$50. By the end of 1949, television sets with large 16-inch tubes (10" by 14" picture) may be out at about \$500. At present, slightly smaller 15-inch tube sets cost about \$700 or more.

The metal-glass tube has other advantages, too. It weighs only about six pounds—30 pounds less than the comparable glass tube. And it is sturdier.

Completely characteristic of the wildly sprouting TV industry is the fact that several companies have already beaten RCA to the draw with announcements about metal-glass tubes. The pint-sized Tel-O-Tube Corporation revealed, several months ago, that it was making such a tube. However, set manufacturers say this company's production is but a drop in a bucket.

More recently, Dumont, biggest producer of large-screen tubes in the country, launched its own metal tube. It comes in 12" as well as 16" sizes; and it, too, is in limited production only. RCA, on the other hand, has been producing many tubes for months and stockpiling them. Industry-wide sale of the RCA tubes in small quantities will probably begin within 30 days.



3 Now you're moving horizontal knob, straightening out picture of the girl.

4 You just about have it; the split picture is caused by some vertical drift.

5 There it is, a clear picture. As a rectangle, it covers only part of tube.

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How much does

TV cost?

As much as a Cadillac...
as little as a good radio

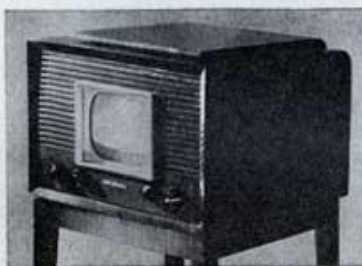
THE AVERAGE PRICE of a television set during 1948 was about \$375. But this is a useless statistic undoubtedly compiled by little men who do their figuring on high stools. A consumer wants to know such things as: "How much would a little set to go on the living-room table cost?" In these pictures **SCIENCE ILLUSTRATED** helps to answer such questions.

Set prices during 1949 may decline slightly, but will take no steep nosedive; manufacturers say that rising labor costs have just about neutralized savings due to mass production. Nor will some startling technical innovation bring you a standard-size TV set at under \$100.

You will find sets with seven screen sizes pictured below. The bigger the picture, the more the set costs.



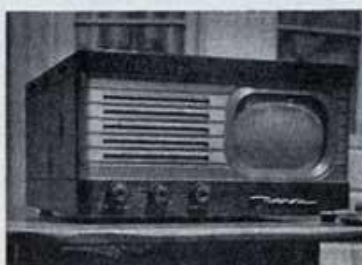
20-INCH screen of \$2,495 Dumont set is largest direct-view size. Screen measures $12\frac{1}{8}$ by $17\frac{1}{8}$. Note relative sizes of 10" and 20" tubes in picture at right.



10-INCH RCA table model (above, left) costs \$325; console (right) costs \$575. Both have TV chassis (right page). But console has phonograph, other features.



\$99.50 Pilot 3" tube set; weighs 15 pounds, portable; screen picture p. 20.



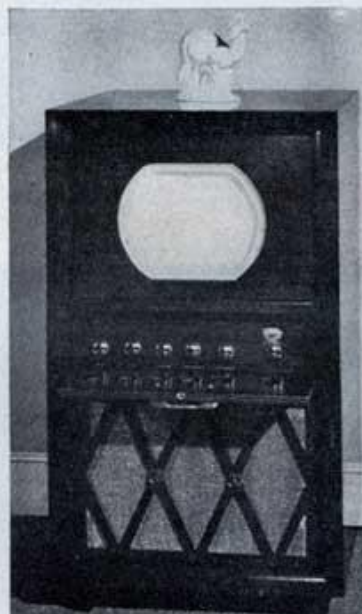
\$189.95 Motorola has 7" tube; picture $4\frac{1}{2}$ by $5\frac{3}{4}$, is often used with a lens.



\$325 General Electric 10" model; this size, about 6 x 8, is the most popular.



\$349.50 Philco 10" set; has built-in legs which do not show in this picture.



\$524.95 U. S. Television 12" model. This screen's picture size, $8\frac{1}{8}$ by $10\frac{1}{8}$.



Chassis of RCA (left) and Dumont sets show: 1) How much more there is to TV set than to radio (average TV set has over 20 tubes); 2) Amazing bulk of 20" tube; this hollow glass bulb weighs 67 lbs.



\$695 Dumont 15" set has screen about 9½ by 12¾. Its tube weighs 37 pounds.



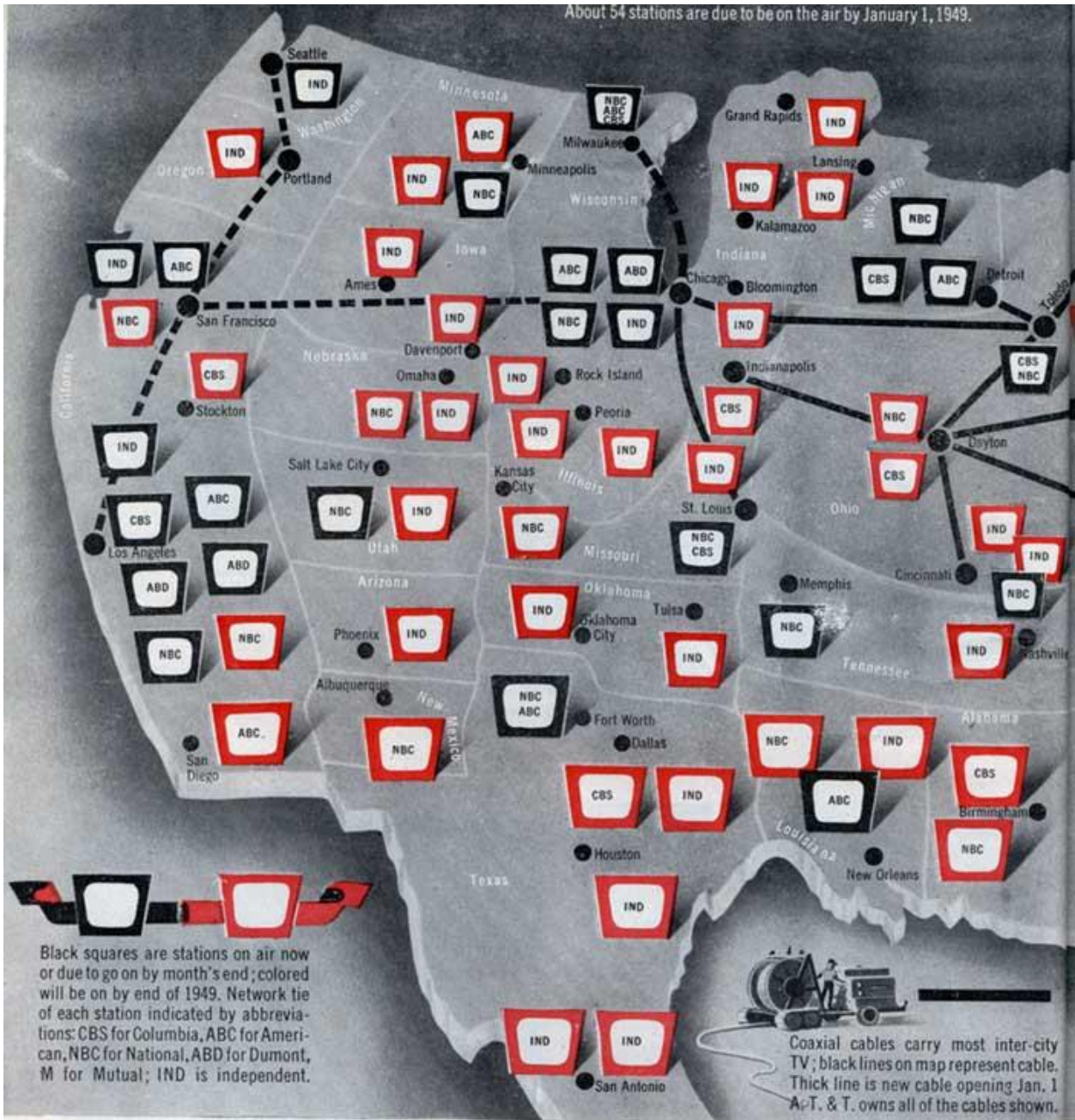
\$1,095 Dumont 15" console. Has same chassis as set above plus radio phonograph.



\$4,100 custom-made projection set has 15 by 20 screen; made by RCA and Baker Furniture Co. Projection sets in general are larger, more expensive than direct-view models.

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About 54 stations are due to be on the air by January 1, 1949.



When and where will you see TV?

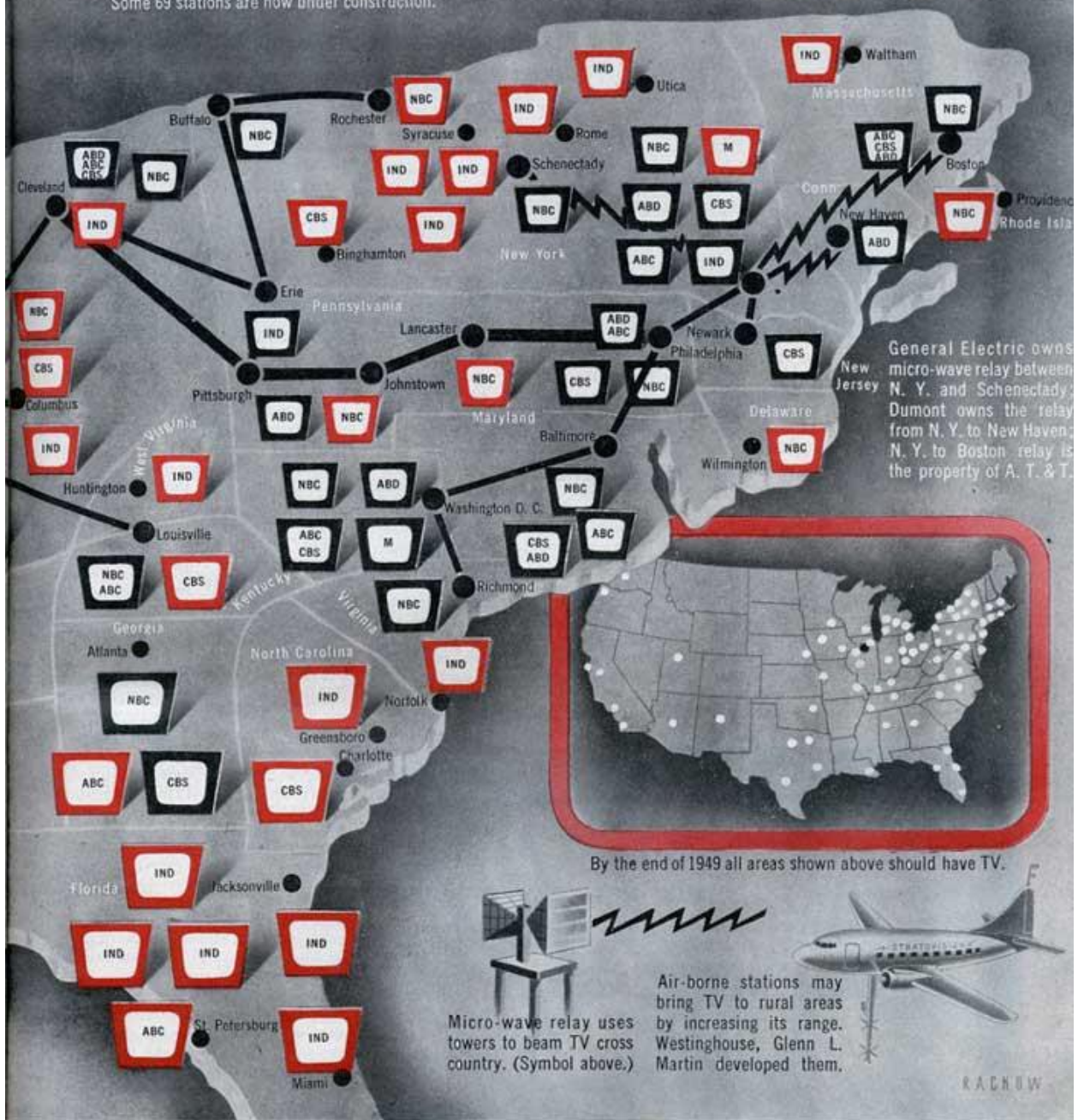
THE distorted, sometimes upside down piece of cartography above is a television magnate's view of the United States as it looks now and as it will look at the end of 1949. In it states loom

large where they have many TV stations; 14 states without stations are missing.

If Milton Berle's famous mother happens to be in the Middle West any Tuesday night from January on, she will

get a chance to watch her six-foot-two darling mugging, hoofing and telling jokes. Son Berle will not be touring the Midwest then but his image will. After January 1 a new coaxial cable

Some 69 stations are now under construction.



is scheduled to carry Berle's and other television programs from studios in New York City to stations in the Middle West. The cable runs underground between Philadelphia and Cleveland, linking the East Coast television network with the Middle West.

This development is among the most significant in television history; it is one of the biggest steps toward making tele-

vision broadcasting pay for itself; and toward bringing top-notch entertainment to all cities. Only by broadcasting on national hookups can TV afford to pack its programs with famous names. Unless the audience is huge, a sponsor cannot pay heavily for a single program.

Just how fast television networks will proceed to grow is a toss-up. Even the American Telephone & Telegraph Com-

pany is uncertain. Its officials say their East and West Coast lines will not meet until sometime in the early 1950's.

It is the thinness of population in the West and parts of the South which blocks extension of the lines. In such areas, few big-time stations will spring up. Because few small stations will want to buy A.T.&T.'s transmission service, the company is reluctant to add lines.