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TWO YEARS OF COMMERCIAL OPERATION OF THE AUDIMETER AND THE NIELSEN RADIO INDEX

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A. C. Nielsen Company

EDITOR'S NOTE: Mr. Nielsen, President, A. C. Nielsen Company, presents a most informative picture of the practical use which can be made of the Nielsen Radio Index. His article is further convincing proof—if any is needed—of the importance of market research.

READERS of the JOURNAL will perhaps recall the article in the January, 1942, issue in which was presented the A. C. Nielsen Company program for the mechanization of radio listening research. That program, which had already been in progress six years, included five major stages of development, outlined as follows:

- (1) the drawing up of specifications for an Ideal Radio Research Service;
- (2) the mechanical development of the Audimeter,¹ the instrument which is uniquely capable of providing the basic data for such a service;
- (3) the trial operation of this service, *without clients*, for a period of three years;
- (4) the expansion of this service to five times its previous size for its initial commercial operation;
- (5) final expansion to a nation-wide service ready to provide facts for the solution of every kind of radio advertising problem.

¹ The Audimeter is an ingenious graphic recording instrument by which the listening habits of the radio audience are measured. After installation in a radio receiver, the instrument records on wax-coated tape each time the radio is tuned, the station listened to, the length of listening, any and all dial changes, and the time

When the previous article was written, the third stage of the development of the Nielsen Radio Index ("NRI") had been completed, and we were ready to undertake commercial operation with an enlarged sample. Today the fourth stage is behind us with nearly two years of successful servicing of 45 clients including advertisers, agencies, and networks, highlighted by steady development in the number and precision of the various measurements computed, and by the constantly increasing knowledge of how to attack and solve the radio problems of our clients.

EXPANSION OF THE NIELSEN RADIO INDEX

Nielsen Radio Index Service was first offered to clients in August, 1942, based on 1000 Audimeters installed in a carefully selected cross-section of homes in nine Eastern and Central States. This sample includes the correct proportion of homes in each state, county, and city size, and in each income class. It is also controlled for correct distribution by size of family, nationality, possession of telephone, and number of radios owned. Within the area covered, these homes meet all the requirements of a scientifically constructed sample with proportional representation of every important section of the entire radio audience.

The service received immediate acceptance from many of the same organi-

fuel, light, heat, and refrigeration, the estimates are reasonably comparable. The figure which they reach is 46 per cent higher than the average of 1935 and 1936. Compared with the range of the estimates it is a middle-of-the-road figure and is probably as good as can be found to use as a basis for adaptation to particular market analyses.

OTHER CONSUMPTION ITEMS

Without attempting to discuss each item in detail, Table I presents the various estimates for each of the eleven consumption items included in this study.

It should be pointed out that the original data for 1935-36 compiled by the National Resources Planning Board do not agree very well with the estimates made by the Department of Commerce for the same period. A glance at the first two columns of Table I will show this very clearly. It is interesting, however, that the estimates for the postwar period show no greater disagreement than do the estimates for 1935-36. Moreover, there is a tendency for the relative size of the discrepancies to remain about the same, suggesting a constant error due to a difference of definitions as to what is included or excluded. Consequently, the data were put into terms showing the percentage increase over 1935-36, since it was believed that this would tell the market analyst more

than would any amount of discussion of discrepancies in dollar expenditures.

To some extent the comparison of the two series has been prejudiced by the fact that the basic data refer to somewhat different time intervals. The budget data are based on the twelve-month period centered on December 31, 1935, while the business data used by the Department of Commerce are for calendar year periods so that the best that could be done was to center the twenty-four month period on December 31, 1935. This probably accounts in part for the higher estimates of the Department of Commerce in "1935-36," and would tend to make their percentage of increase a bit conservative.

SUMMARY

The purpose of this paper has been to present another set of estimates of consumer expenditures at high levels of national income to market analysts and to compare this set of estimates with the projections made by the Department of Commerce. This comparison is thought useful since the approaches used were so different as to give independent measures of postwar spending. In general, the two estimates were reasonably close together, although not unlikely alterations in the distribution of income and in average spending patterns of consumers may materially change the results for particular classes of goods.

at present writing (August, 1944) the clients served by the Nielsen Radio Index sponsor nearly one hundred radio programs which are regularly analyzed and reported. This group of programs represents 47.7 per cent of the listening to all commercial network broadcasting based on total minutes of listening to all network shows. In addition to the client shows, all competing and similar shows are also regularly studied and reported so that the total covered by the NRI is well over 250, including about 40 leading network sustainers.

SOME IMPORTANT NRI YARDSTICKS

A brief résumé of the types of information regularly computed from the Audimeter tapes is in order here for those who have had no previous acquaintance with the NRI. Reports are issued covering each four-week period, and are sent to clients in two large volumes, plus a bi-weekly "Advance Report," which covers ratings and holding power.

The general listening habits of the radio homes are presented as follows:

- (1) Average hours listened per day.
- (2) Per cent of sets in use each hour, half hour and quarter hour.
- (3) Average minutes listened each hour, half hour, quarter hour.
- (4) All hour figures are shown separately for each time zone, income class, and city size.

All commercially sponsored network programs, and certain non-network and sustainer programs reaching the NRI area are rated by the following yardsticks:

- (1) Per cent of all homes listening at any time during the broadcast

the average, per minute (average audience rating).

- (3) Per cent of total program minutes heard by the average home (holding power).
- (4) Per cent of radio receivers in use tuned to the subject program at any time during broadcast (share of audience).
- (5) Per cent of homes listening during *each* minute of the broadcast (minute profile).

The following additional figures are computed for all client-sponsored programs and any additional programs in which clients are interested for comparison purposes:

- (1) All of the above ratings separately for each section of the market.
- (2) The proportion of the total program audience listening 1-2 minutes, 3-5 minutes, etc.
- (3) Per cent of all homes reached at least once in a series of broadcasts (cumulative audience).
- (4) Per cent of homes hearing 1 broadcast of a series, 2, 3, etc. (frequency of listening).
- (5) Gains and losses each minute, with source of gains and direction of losses.

Supplementary to the actual program data, figures are obtained which reveal:

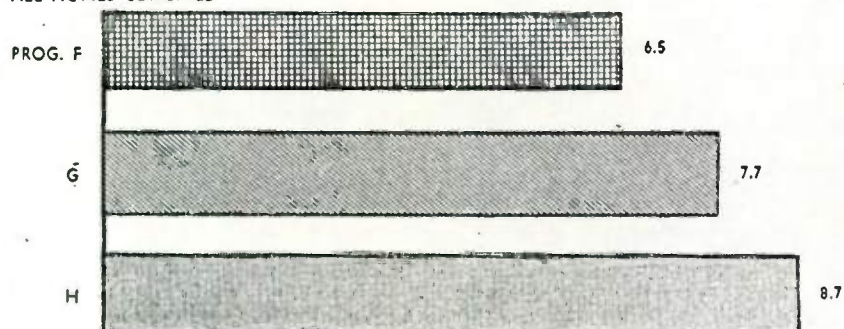
- (1) Listening to each station by per cent of homes and per cent of listened minutes (station rating data).
- (2) Per cent of homes stocking each brand of radio-advertised commodities.

Facts about "sales effectiveness" will be presented later in this article.

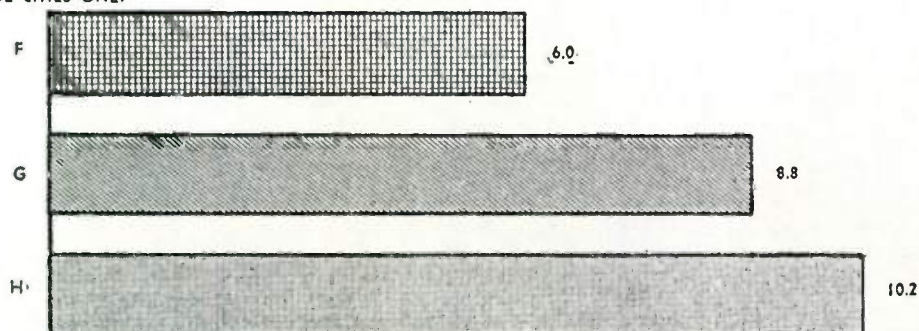
THE SOLUTION OF IMPORTANT

CHART I
VARIATION OF RATINGS BY MARKET SECTIONS
For Three Daytime Serial Dramas
(% Total NRI Homes Reached Per Broadcast)

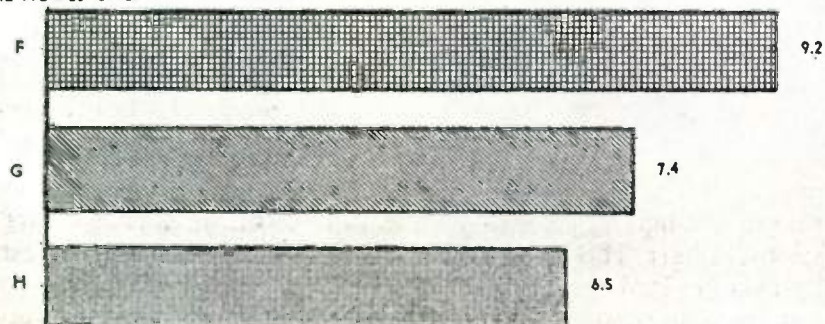
ALL HOMES COMBINED



LARGE CITIES ONLY



RURAL HOMES ONLY



NRI service to its clients in the past two years has resulted from its ability to ferret out and solve important problems of types which cannot be solved through the use of radio research techniques based on the *telephone*. Some of these will undoubtedly be of considerable interest to the readers of the JOURNAL.

Many radio-advertised products are designed for consumers restricted as to age, sex, income, or type of dwelling. Therefore, the task that many a program sponsor faces is to reach listeners in his own limited market. Take, for example, a company marketing a product whose primary appeal is to rural homes. Chart I shows, for three current daytime serial dramas, the total audience rating for *all homes* combined, as contrasted with the *rural* and *large city* ratings. Considering the special type of product to be sold, the best buy is seen to be Program F, in spite of the fact that it has the lowest total and lowest large city ratings! Only NRI's complete coverage of all sections of the market can supply this advertiser with the facts he needs.

Different products have different requirements for the effectiveness of their commercial message. For some, the mere hearing of the established brand name furnishes the necessary reminder to buy. With others, there is a need for frequent repetition until an educational message has been assimilated. Nielsen Radio Index data, revealing the holding power of each broadcast and the frequency of listening to successive broadcasts, make possible the completely scientific selection of a program adapted to each of these situations. Chart II shows two multi-weekly evening shows which have quite different listening patterns as regards faithfulness of their audiences. Note that Program I, although reaching

percentage of each broadcast, nevertheless reaches more homes in a span of 12 broadcasts than does Program K. If a simple reminder is all that is desired, Program J is undoubtedly highly satisfactory. Program K, on the other hand, reaches each home more often, and for a longer interval each time, assuring repetition of the sales message.

NRI figures have revealed significant differences in the seasonal behavior and long term trends of different program types. These factors are important to consider in the planning of a new program or a summer replacement show. Since figures are regularly computed on *all* commercially sponsored network shows heard in the NRI area, average performance by type of program can readily be computed. Chart III shows the trend in ratings of three different types of programs after all variations occasioned by changes in the programs on the air or by variations in total listening have been corrected. All types show a slight summer decline (which probably reflects a swing to local program listening) but the timing and extent of the decline varies with the type of show. It is obvious, of course, that it is possible to compute data such as this by each market division for sponsors and others whose products are designed for limited and restricted markets.

REACHING VIA RADIO THE MAXIMUM POTENTIAL MARKET FOR A CERTAIN PRODUCT

One of the things an advertiser with a number of shows always wants to know is whether he has made the best possible allocation of the commercial time on his several programs between the different products advertised. With the data available from the Audimeter tapes it is

CHART II

TOTAL AUDIENCE PER BROADCAST, HOLDING POWER, CUMULATIVE AUDIENCE & FREQUENCY OF LISTENING

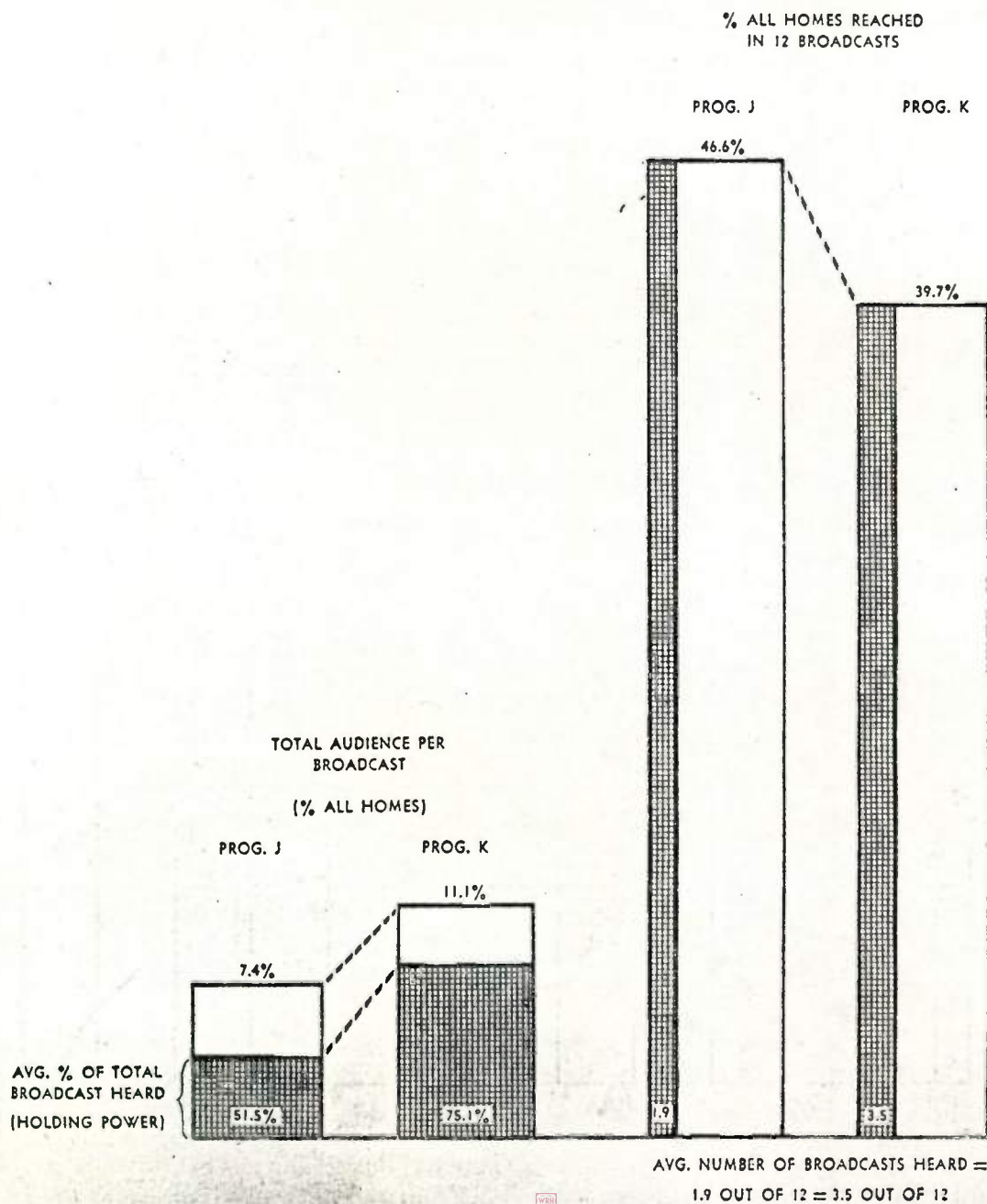
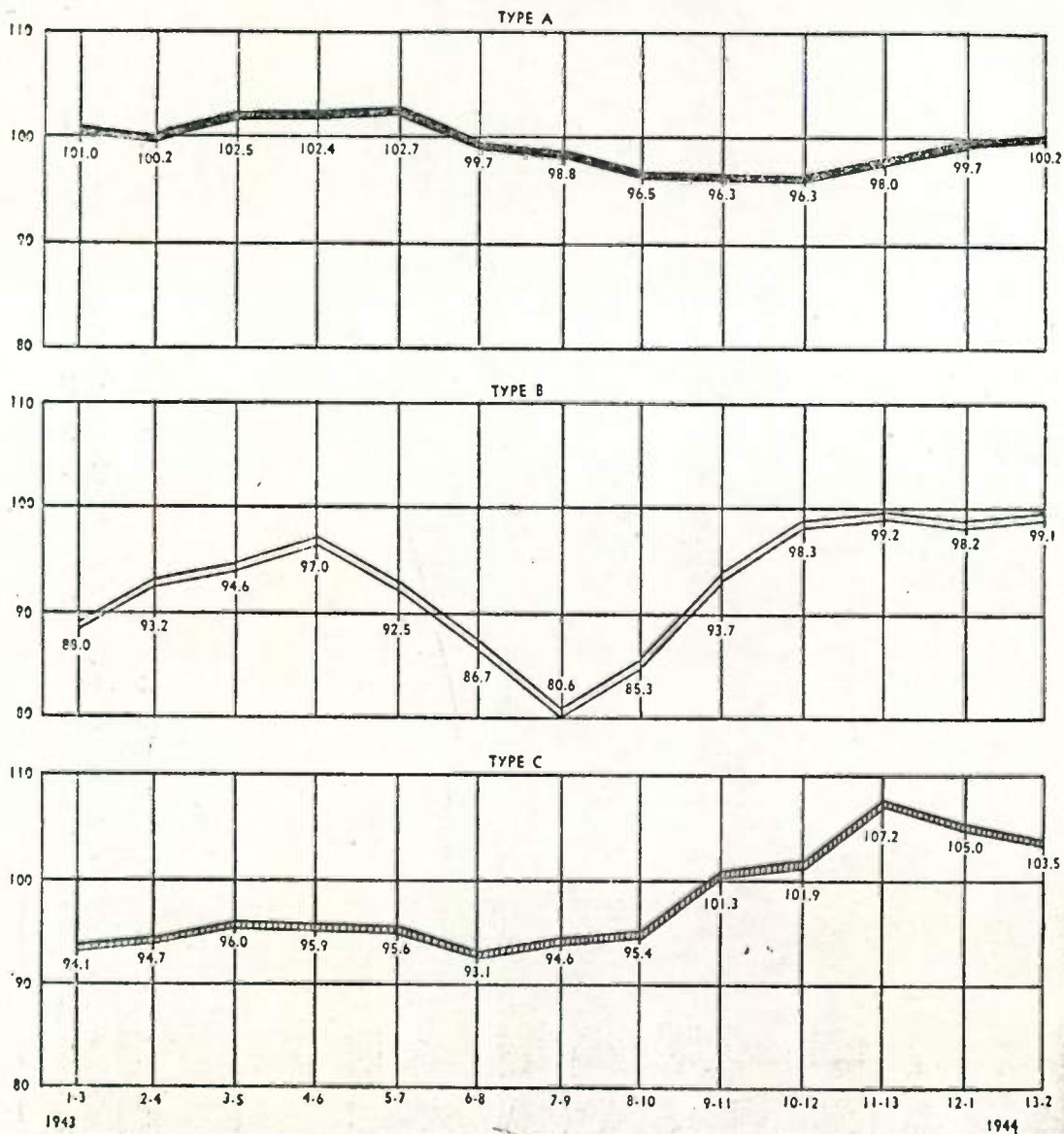


CHART III

SEASONAL PERFORMANCE BY PROGRAM TYPE

3 Period Moving Average . . . Per. 1, 1944=100
 (Figures Corrected for All Variations in Total Listening)



Nielsen Radio Index Periods

programs, and the average number of broadcasts heard by these homes. These facts enable the advertiser to determine whether or not he has made the optimum allocation of commercial time. Duplication studies, as we call them, are frequent features of presentations to clients using more than one program.

Let us look at the important points of

these two programs might be combined to feature a product which does not have much of a rural market anyway.

The duplication studies performed for each of 6 possible combinations of the 4 programs of Table I, covering the listening for two weeks, are shown on Chart IV. This chart shows the per cent of all homes reached by each pair, and the average

TABLE I
BASIC DATA FOR 4 PROGRAMS IN A DUPLICATION STUDY

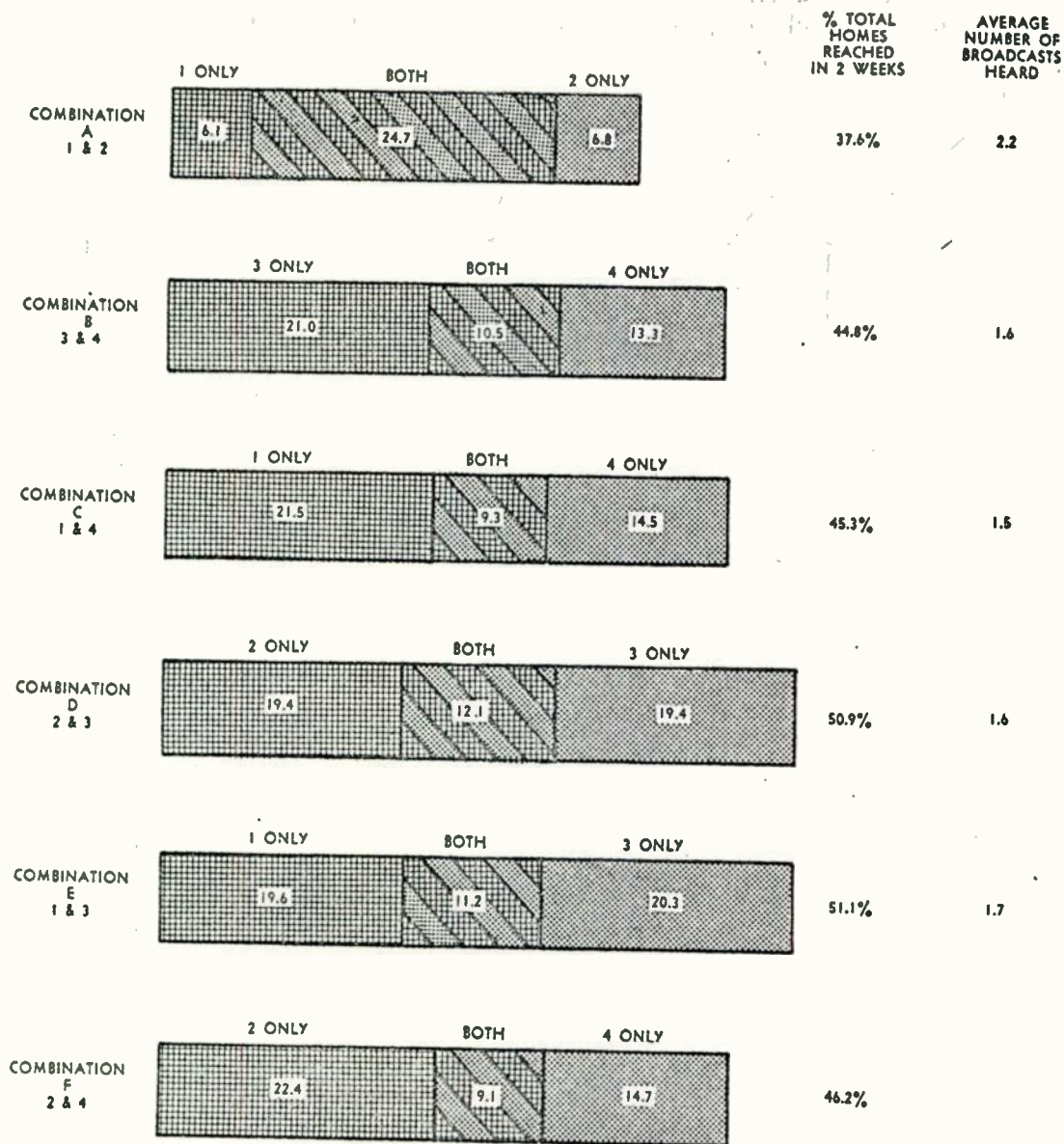
PROGRAM #	PROGRAM AUD. PER BROADCAST (ALL HOMES)	PROGRAM AUDIENCE (CITIES ONLY)	PROGRAM AUDIENCE (RURAL AREAS)	TOTAL AUDIENCE REACHED IN 2 WEEKS (ALL HOMES)
1	21.3	20.6	22.1	30.8
2	19.3	20.6	15.6	31.5
3	21.3	21.6	20.7	31.5
4	15.3	17.9	9.3	23.8

a duplication study covering numerous possible combinations of four programs of one client, the purpose being to determine the size and nature of the audiences reached by each of the possible combinations of two. Inspection of the program data shown in Table I reveals that two

frequency with which each home is reached. The middle section of each bar shows the portion of the audience which hears *both* of the programs. Combination "A" reveals a high degree of audience duplication between programs 1 and 2. As a result, we see that combination

CHART IV

DUPLICATION STUDY OF 4 PROGRAMS



degree of repetition, this combination recommends itself. If neither of the products is outstanding in this respect, then the other combinations seem preferable. Each of the others reaches a larger audience than the first combination. Combination "F" should take into account the fact that programs 2 and 4, as noted above, have *relatively* small rural coverage. Which combination is most desirable will be determined by the markets sought for the different products that are to be sponsored.

Taken as a whole, this duplication study gives an excellent picture of the usefulness of the data produced. A study of this kind for identical programs broadcast on two different networks proved to be extremely interesting and useful. The detailed analyses of the client's and competing programs which are now possible provide him with the kind of facts that take the guesswork out of his basic decisions.

MEASURING THE EFFECT OF PROGRAM COMPETITION

Here is a situation which arose very recently. New competition had appeared on the airwaves opposite the second half of a client's program. The competition of the shorter show soon cut into the audience reached by the latter part of the client's show. Chart V shows the minute profile, for each half of his program, for the periods before and after the competition went on the air. We were asked to determine the extent to which the new commercial audience in the second half of the show had been reduced. A duplication study, covering the periods immediately before and after the change occurred, showed how many of the homes hearing the commercial in the second half of the program had also heard one of

mercial audience gave to the client *an exact measurement of the effect of the new competition on the commercial value of the second half of his show*. This is typical of the important specialized information which the Audimeter alone can provide to help answer key problems in radio advertising.

AUDIENCE DIAL SWITCHING AT THE HALF HOUR MARK

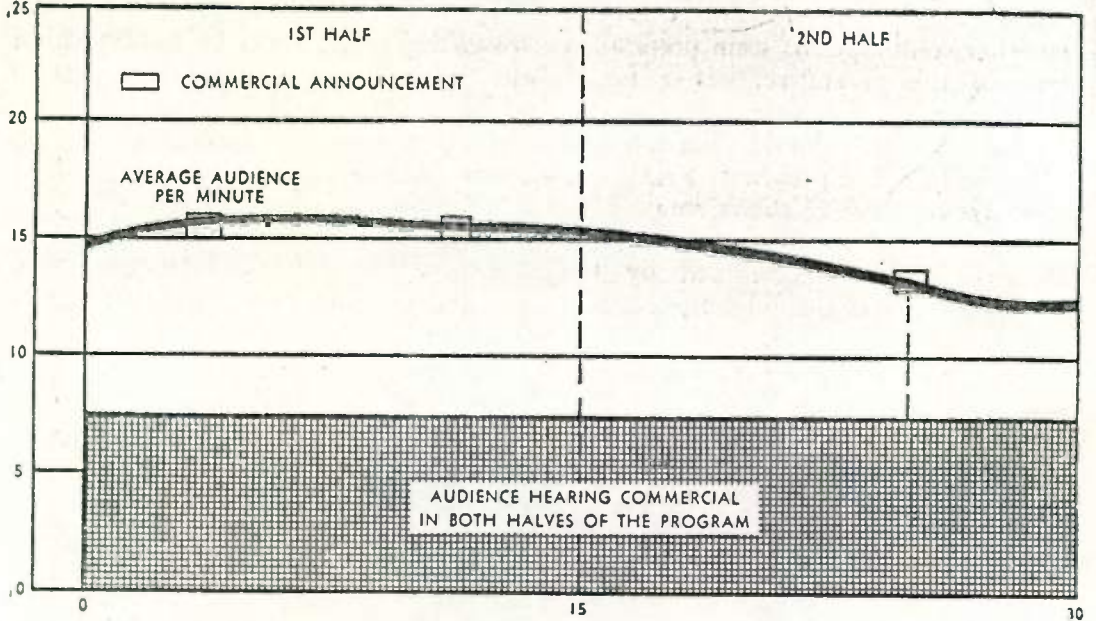
Another problem which confronted a client was the measurement of the amount of dial turning during the single minute preceding and following each half hour station break. More than 40 evening half-hour shows were selected for this study. Audience gains and losses in the two minutes specified, and the minutes adjacent to them, were tabulated and averaged for these 40 programs. Chart VI shows the per cent of the average program audience which is turning its dial during each of the four minutes immediately preceding and following the half hour break. Consider that in a study of this kind 800 Audimeter homes are the equal of 800 coincidental calls made each minute in each one of eight minutes of each one of 40 programs—in other words, the equal of 256,000 coincidental calls! In addition, the Audimeter tapes reflect listening in *all types* of homes, telephone and non-telephone, city and country, in correct proportion, and, what is also important, this information was available in *existing* NRI tabulations.

ANALYSIS OF SUMMER LISTENING AND THE SUMMER HIATUS

Accurate knowledge of program performance during the summer season has resulted in *continuing* certain shows through the summer months, either because

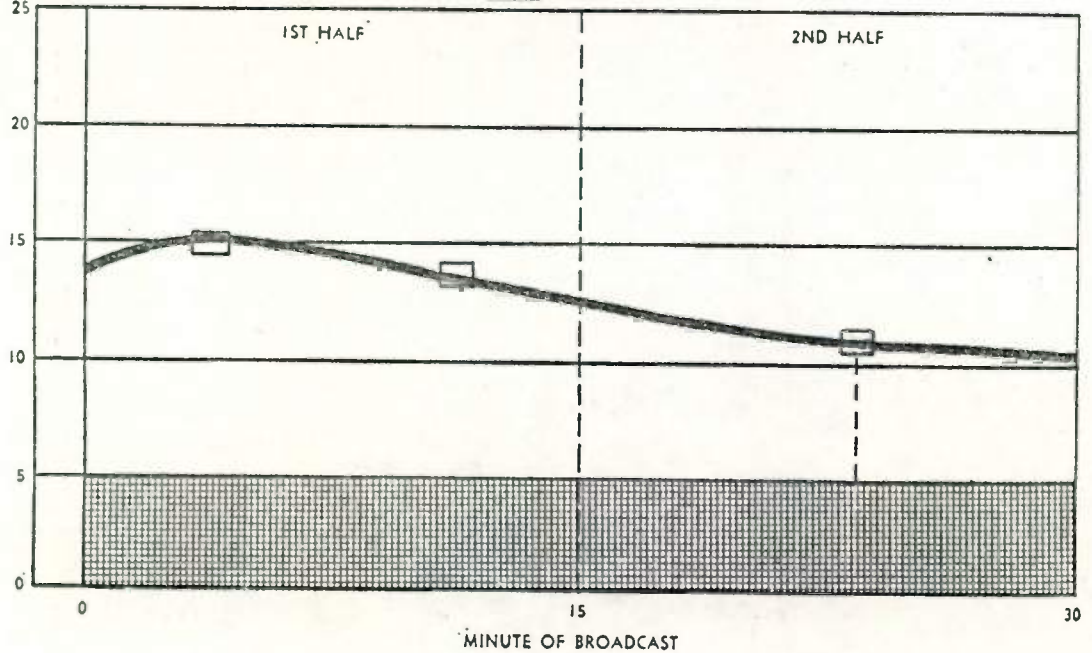
%
TOTAL
HOMES
25

BEFORE COMPETITION



%
TOTAL
HOMES
25

AFTER COMPETITION



MINUTE OF BROADCAST

broadcast *warranted* continuance, or because

- (2) The data indicated that the summer program would reach a substantial number of *new listeners*, i.e., homes not normally reached by the program in other months.

In other cases, 'the sponsor has *improved the placement of the summer vacation period, or hiatus, for the show, without shortening that vacation period*. Chart VII contains one of a number of examples of the latter. Here the program had been continued *too far* into the summer and was resumed *too late* for purposes of drawing the maximum audience. In other words, the interval selected for the vacation of the principals in the show was not chosen wisely with regard to the summer dip in evening radio listening. As shown on Chart VII, on the nights of June 21 and July 5, the last two actual broadcasts before the vacation, Program M received an audience of 10.1% and 11.3% of the radio homes, respectively. This represents 46% and 55% of the homes which were using their radios on those nights, a typical share for this program. But the available audience on these two nights is seen to be the lowest of any during the entire summer. Had Program M begun its vacation during these two weeks and come back on the air on August 16, when more people were home using their radios, the same *share* of audience would have resulted in a rating of 14.3% and 17.2% of all homes for the two August broadcasts, as indicated on Chart VII. This represents an increase of nearly 50% in an entire month's audience, or, expressed in terms of the cost of the program for 4 broadcasts, a gain of more than \$20,000.

One of the newer radio yardsticks developed in recent months is the measurement of potential coverage with different network lineups, which, as is well recognized, vary considerably with the individual programs. With the complete record of each family's listening, which is obtained from the Audimeter tape, it is now possible to determine this potential coverage very scientifically. Without resorting to the dubious method of *asking* a home whether it *ever* listens to a certain station, it is now possible to find out whether it *does*! Once this information is punched on the tabulating cards, the per cent of all homes which can be reached by any combination of stations can be computed. Ratings of different programs, and periodic ratings of the same program, can now be adjusted to remove largely the effects of unequal station line-ups.

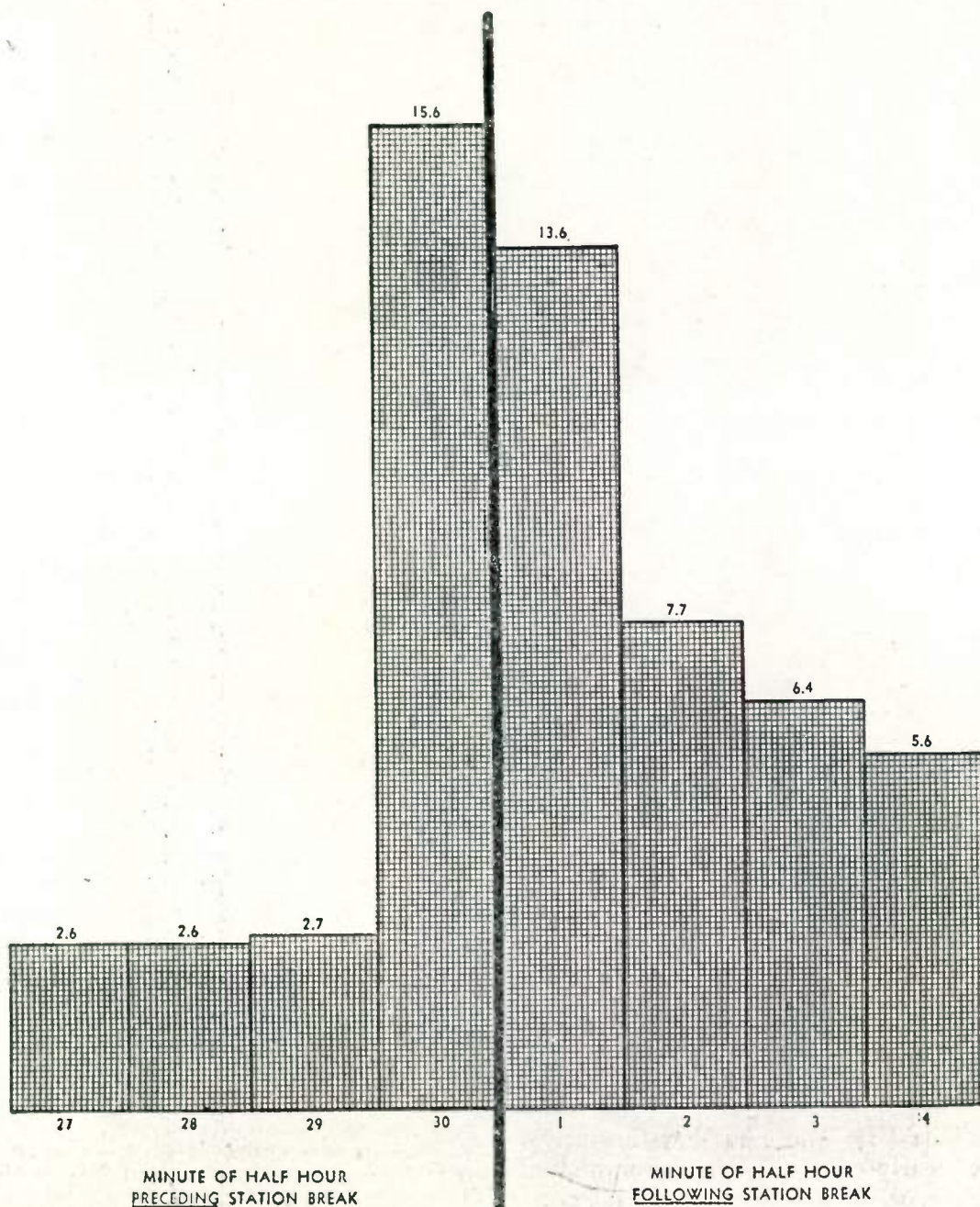
Chart VIII shows the average audience ratings of five daytime serial dramas in a recent period, first unadjusted, and then adjusted to place all ratings on a *full coverage basis*.² Program E, although actually a relatively popular program in the estimation of those who are able to receive it, suffers in the *unadjusted* figures from low coverage, and appears to be weaker than B, C, and D. However, after the adjustment that is made for differences in stations carrying the pro-

² In adjusting program ratings to the "full-coverage basis," the first step is to find out what homes usually never listen to any of the stations in the lineup used by a given program. It is assumed that, other things being equal, these homes would listen in about the same proportion as the others if the station lineup included a station which they customarily tuned in. The *full-coverage rating* is then the actual program rating adjusted up to what it would have been if *all* radio homes were able regularly to tune in the program. It is an absolutely essential figure in arriving at the relative popularity of programs with unequal station lineups.

CHART VI

MINUTE-BY-MINUTE DIAL SWITCHING OF THE PROGRAM AUDIENCE

% of Average Program Audience Gained or Lost During Each Minute Designated



gram, Program E leads all except Program A. Studies of this kind have been particularly useful in rating *sustaining* programs where station line-ups are often quite restricted and vary drastically from week to week. With this development in the measurement of network coverage, the Audimeter has removed one more obstacle in the way of truly scientific measurement of programming.

THE MEASUREMENT OF SALES EFFECTIVENESS

Size of audience is, without question, an important measure of success in radio advertising. But it is not the *ultimate* measure, because mere size of audience reflects neither the make-up of the audience nor the success of the commercial message. The NRI service, maintaining a continuous record of listening in a unified sample of homes, and a periodic record of usage (in these same homes) of the different brands of commodities advertised, offers an excellent opportunity to study *the effect of radio listening on buying habits*. The marketing world undoubtedly will agree that such a measurement is the ultimate goal of radio research.

For the past five years NRI service has been exploring the job of measuring the sales effectiveness of radio advertising. Initial reports of the results were made to clients beginning a few months ago. But let no unwary soul conclude that this job is as simple as the production of program ratings! The research work already devoted to this single phase of NRI service has now mounted to more than *ten times* the effort which Madame Curie and her husband expended in their famous research program to isolate radium. It is not in order here to attempt a detailed report

sales effectiveness, but it can be reported that excellent progress has been made in this comprehensive undertaking, and that NRI clients are now receiving figures which reveal, for each of many important programs, the sales produced per *radio* dollar expended.

AVAILABILITY OF ACCUMULATED DATA

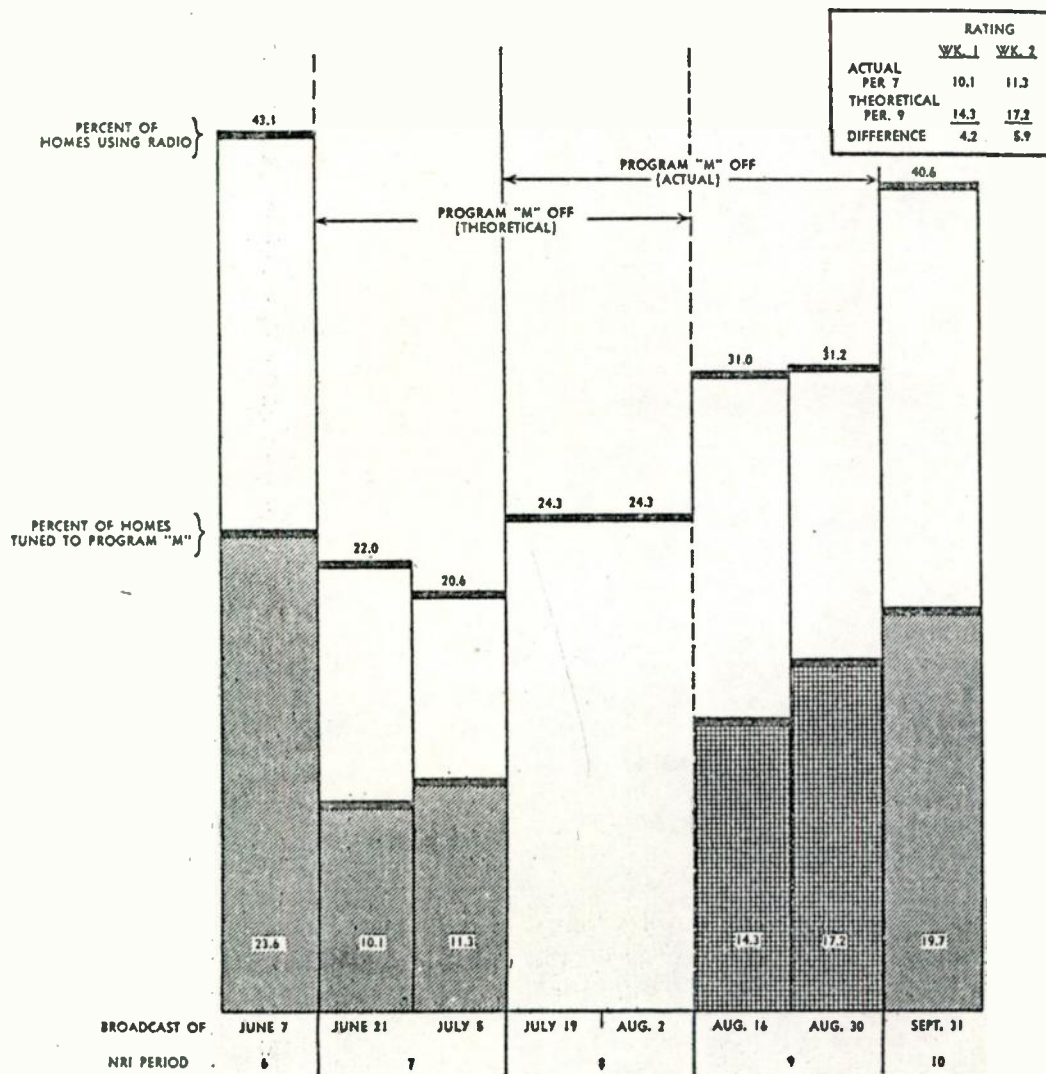
Another important operating asset of NRI service, ripe with potential value for the marketing world, is its rapidly accumulating fund of *continuous accumulated data on every commercially sponsored network program, on leading sustainers and on some non-network programs*. New problems can now be studied as soon as they are recognized in the full light of past experience. When unexpected changes take place, hindsight can be used to determine the type of information which is necessary to measure the nature of the change, and that type of data then will be available, in most cases, as far back as it is needed! Few sciences have had all the facts affecting their operations available to them *retroactively*!

WHAT OF THE FUTURE?

Valuable as NRI service has been to date, it has undoubtedly produced only a modest fraction of the values of which it is *ultimately* capable. The principal respects in which substantially improved results can be expected in the near future are:

1. *Expanded territorial coverage*. War-time limitations on the manufacture of Audimeters have restricted NRI service to an area which includes about 25 per cent of all U. S. radio homes. While this coverage is substantially in excess of that afforded by either of the leading telephone research services (which are confined to the 20 per cent—approx-

CHART VII
SUMMER HIATUS ANALYSIS



ly—of the radio market represented *telephone homes* in a limited list of *cities*), the ultimate goal should obviously be coverage on a nation-wide (including, as at present, *all types* *homes* in cities of *all sizes* and in *rural* *areas*.)

Each passing day records added stress for the arms of the United Nations; we draw closer to the time when additional Audimeters can be manufactured, and NRI service expanded to rural areas.

Faster deliveries of NRI reports. Generally speaking, American advertisers and agencies seem convinced that, for radio is a “fast-moving” medium, research reports on the subject must have fast delivery. Without denying the obvious fact that, other things being equal, fast delivery is better than slow delivery, it should be pointed out that, in most instances, rapid delivery of reports is of little, if any, practical importance—for the basic but usually over-looked reasons:

(a) That the basic popularity of a program seldom changes *substantially* in a short period of time (public tastes do not change over night) and this fact, compounded with the margin of statistical error inherent in any measurement of program ratings, means that, on the average, change revealed by a new telephone rating is significant *only about one time in six*! The advertiser or agency who impatiently awaits the next weekly telephone rating, with the idea of basing the vital decision on the trend to be revealed, needs re-education on the reliability of statistics and on the rate at which public tastes can be altered. Until these plain facts are understood and accepted, many vital radio decisions will *seem* to be based on facts, and substantial losses (due to unsound decisions)

(b) That the *most vital* types of radio decisions are not, as a rule, those which require fast action (e.g., the extension or termination of a specific program or feature), but rather those broad decisions of *policy* which *must* be based on long and profound study. Examples are:

- (1) Whether to use daytime or evening radio (for a specific product)?
- (2) What to do about summer radio?
- (3) How many programs to use?
- (4) Whether to confine each program to one product?
- (5) When (if ever) does a program become unprofitable because of age?
- (6) Where to locate the commercials?
- (7) Whether to use spot radio?
- (8) What network (*or networks*) to use?

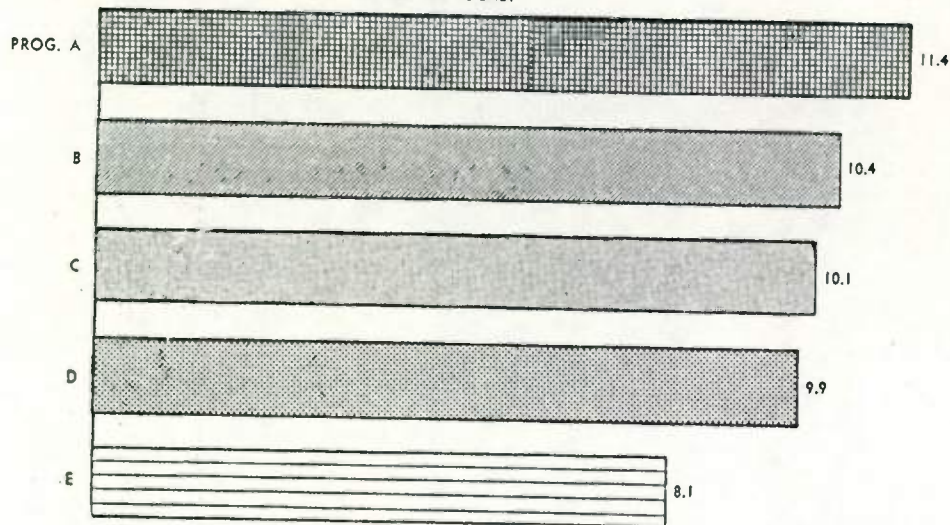
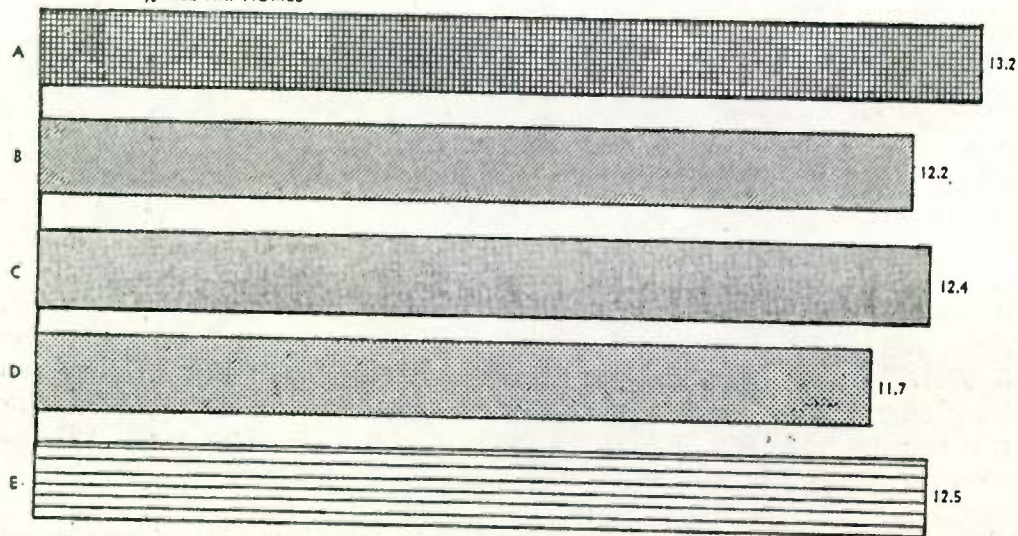
Basic decisions such as these are not often substantially affected by the delivery schedule of the research work. The important consideration is to make the *right* decision—because the effects are very far reaching.

Irrespective of the extent to which the reader may agree with the foregoing views regarding the practical importance of fast delivery of radio research work, it should be kept clearly in mind that the current delivery schedules of NRI service are dictated solely by war-time shortages of Audimeters and personnel. They are *not* inherent in a radio research technique based on the mechanical recorder. The *ultimate* delivery schedule can be set at any point, within reason, which seems to offer the wisest balance between cost considerations and the practical needs of clients.

3. *More skilful application to client's problems.* It would be folly to contend that, within the short space of two years, any research organization could (a) *learn* all the problems faced by radio users and (b) *figure* out how to *apply* a new

CHART VIII

ANALYSIS OF 5 DAYTIME PROGRAMS WITH APPRECIABLE VARIATIONS IN STATIONS USED

ACTUAL RATINGS—BASED ON UNEQUAL COVERAGE
% ALL NRI HOMES REACHED PER BROADCASTADJUSTED RATINGS—FULL COVERAGE BASIS
% ALL NRI HOMES

We can say, however, that an excellent *start* has been made, and that current progress is rapid. It will undoubtedly be true with NRI service, as it has been with Nielsen Food and Drug Index techniques, that progress in the art of *application* will continue for many years.

It has been very interesting to observe that, in the radio field, progress in application of the new research technique has often been hampered by a conviction, on the part of many radio advertisers and agencies, that most radio problems are essentially so intangible as to be insolvable!

Evidently the fact that most radio problems have, for two decades, defied solution by any research techniques then available has convinced certain radio men that "you simply *can't* reduce radio to definite measurements." These people are reluctant to place their allegedly insolvable problems on the operating table, and the new solutions developed are often greeted with an unreasoning skep-

ticism which, at times, even seems to contain a bit of hostility! Can it be that certain elements *prefer* to keep radio largely in the field of a mysterious art, instead of permitting it to be graduated, to the maximum possible extent, into the realm of science?

We hope not, and we pledge ourselves to continue with all the intelligence and physical resources at our command, the effort (now in its ninth year) to bring a constantly increasing stream of light to bear on the art of radio advertising—so that, in the postwar world, sales may be accelerated, distribution costs decreased and prices lowered, thus contributing to the increased standard of living toward which the whole world is striving.

In this difficult effort, we confidently rely on the continued cooperation of the many advertisers, agencies, and networks who are sufficiently far-sighted to appreciate the vital nature of the goal toward which we are advancing together.