

## Exhibits\*

MAYHEW DERRYBERRY, PH.D., F.A.P.H.A.

*Senior Social Science Analyst, U. S. Public Health Service, Bethesda, Md.*

HEALTH educators have recently become increasingly concerned about the effectiveness of their efforts. No longer satisfied with their own subjective judgments of their work, they have begun to ask: Is this poster attractive to other people? Is this pamphlet interesting? Will this exhibit teach what we think it does? Does the public really examine our material, and do our messages get across?

It is difficult to get reliable answers to such critical questions about methods of health education. A given poster, exhibit, motion picture, or pamphlet might be considered excellent by one leader and be labeled poor by another equally competent. Disagreements in judgment are, in fact, as common as agreements. Recognizing, therefore, that subjective evaluation, even by experts, fails to furnish an index of effectiveness, Homer Calver, of the American Museum of Health, suggested a comprehensive study of the exhibits assembled by the Museum in the Medicine and Public Health Building at the New York World's Fair. Firmly convinced of the need for more objective evaluation, the Museum and the Public Health Service undertook the study, from which a few of the practical conclusions may be given.

In this evaluative study, the analysis has been focused on the public's reaction to the exhibits, rather than on the characteristics of the exhibits themselves. Thus, in order to measure the effectiveness of the exhibits, data were collected to answer such questions as:

1. Does this exhibit attract attention?
2. Does it sustain interest?
3. Can it be easily understood?
4. Does the audience get the message?

In order to answer the first two questions, the behavior of a random sampling of 3,000 visitors to the building was observed. In each instance, a member of the staff followed an individual through the building and recorded each exhibit at which the visitor stopped, together with the length of time (by stop watch) he remained there. The summarized record indicates the relative popularity of the display and how well it retains the interest of those whose attention it attracted.

Answering the question, "Could it be easily understood?" required the collection of several types of data.

a. How long did it take to read the legend? This factor, together with the average length of time individuals actually looked at the exhibit, gives presumptive evidence of the extent to which it was possible for the total message to be obtained.

b. Were the words used too technical for the public to understand? The relative difficulty of each word in the legends was checked against the frequency with which it was in common use, as shown by the Thorndike

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\* Read before the Vital Statistics Section of the American Public Health Association at the Sixty-ninth Annual Meeting in Detroit, Mich., October 10, 1940.

Word List of the 20,000 most commonly used words.

c. Was the exhibitor's objective readily apparent to the spectator? A number of individuals were asked what they thought the exhibit was expected to teach, and their opinions were checked against the objective stated by the committee responsible for the exhibit.

Test questions based on the content of the several exhibits were used to measure whether the public learned the message. At a booth called the "Quiz Corner," individuals were tested and the tests were marked according to whether a given exhibit had or had not been seen. By comparing scores obtained before viewing an exhibit and those obtained after viewing it, one index of the effectiveness of the exhibit is secured.

Such then, are a few of the types of data obtained, and the present discussion will be limited to the items

listed above. The complete scope of the data will be discussed in the final report, but the examples given here are believed to be sufficient to indicate the method of attack on the problem.

What practical conclusions can be drawn as a result of this study? Even though tabulations are still incomplete, several well defined principles of exhibit construction are apparent from the preliminary analysis. Each such principle or indication of proper technic will be listed and discussed below.

*Panels of Statistical Data, Graphs and Tables Fail Signally in Attracting or Retaining Attention*—The Pneumonia Exhibit in the Hall of Man was displayed on two walls set at right angles to each other (Figure 1). The right-hand wall presented statistical material, whereas the left-hand wall was made up of panels describing the disease and its course. Adjoining the statistical panel



FIGURE 1—Pneumonia Exhibit—Statistical panel on extreme right

was one having to do with proper nursing. Out of 950,000 persons who viewed any part of the Pneumonia Exhibit, 9 out of 10 (88 per cent) spent some time examining the panel describing the disease, whereas only 2 out of 10 (18 per cent) spent any measurable amount of time examining the statistical panel. Even the nursing panel, which might have been considered disadvantageously placed since it was nearest the corner, attracted and held the attention of 3 out of each 10 persons who visited the exhibit. The conclusion here is quite obvious; namely, that any message that might have been conveyed by the statistical panel was totally missed by four-fifths of its possible audience.

The Maze of Superstitions also included a statistical panel and similar observations were taken in that exhibit. Among all those who visited the exhibit, the proportion attracted to the statistical panel was much less than half of the number that visited any other part of the exhibit. One-fourth of all who saw the exhibit looked at every part of it except the statistical panel. In this connection it should be noted that the criterion of "looking at" or "viewing" was the ability of an observer to detect the individual being observed in the act of looking at the exhibit for a period of time measurable on a stop watch.

The Demography Exhibit, portraying various phases of population growth and distribution in the United States, although it occupied a prominent position in the Hall of Man, attracted fewer spectators than any other exhibit of comparable size in that part of the building.

The time required to read the legends in statistical panels was longer than for any other part of the exhibit. Nevertheless, persons who visited or looked at the statistical panels spent less time in such viewing than in looking at any other panel. It is apparent, therefore,

that the statistical panels not only failed to attract the attention of a large proportion of the visitors, but they also failed to hold interest in those whom they did attract.

*Statistical Panels Frequently Fail to Convey a Message*—In order to test how much spectators learned, a series of questions based on the statistical exhibits were presented to visitors. The answers were segregated according to whether or not the individual taking the test had seen the exhibit in question. When the following true-false and multiple-choice tests based on the Pneumonia and Demography Exhibit were used, no significant difference could be detected between the answers of those who had seen the exhibits and of those who had not. In some cases the proportion answering the questions correctly is slightly higher among those who had seen the exhibits, but the result could not be called statistically significant. The questions used are as follows:

More people die from pneumonia than from cancer. True False

The pneumonia death rate is higher in middle age than in infancy. True False

Among the causes of death, pneumonia ranks: first, third, fifth, tenth.

The number of deaths caused by pneumonia each year in the United States is approximately: 20,000, 130,000, 250,000, 460,000.

One-eighth of the world's population now live in America. True False

The greatest number of foreign born persons in the United States in 1930 came from: Germany, Italy, Russia, Ireland.

The conclusion stated just above relates to panels in which a number of facts are presented. In contrast to that conclusion, it appears, therefore, that if a single statistical fact is the major emphasis of an exhibit, it is much more likely to be learned. For example, two such facts in one of the exhibits appear in the pictures of Figure 2. When the following questions were used to test the educational effectiveness of such isolated statistical facts, the proportion

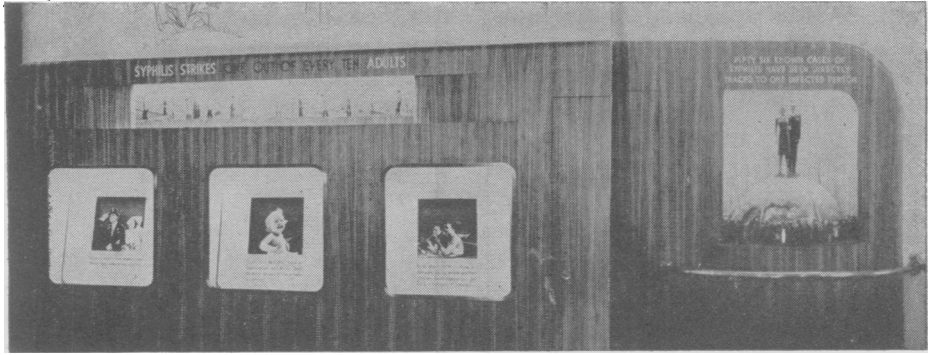


FIGURE 2—Syphilis Exhibit panel

answering correctly was significantly greater among those who had seen the exhibits than among those who had not.

The percentage of the adult population stricken by syphilis is estimated to be: 1%, 3%, 5%, 10%

The largest number of cases of syphilis reported as traced to one infected person is: 2, 24, 56, 106

This small sampling would suggest the importance of limiting statistical material to one or two outstanding facts which are given prominence. This point is being emphasized because many health exhibits consist almost wholly of statistical material, and especially since it seems possible that those whose major interest is in statistics may have overestimated the public's concern for that type of information.

*The Message to Be Conveyed Must Be the Focus of Attention*—The exhibit called "The First Year of Life" (Figure 3), through its arrangement focused attention on a number of models illustrating the physiology of pregnancy. The sponsors of the exhibit, however, stated as their objective the education of the spectators in the hygiene of pregnancy. Material on the latter subject was arranged in front of and below the models and thus was not the normal focus of attention. In testing the effectiveness of the exhibit, the questions used were limited to the subject of

hygiene. The result was that, for each question, the number of correct responses was approximately the same, regardless of whether the exhibit had or had not been seen. Furthermore, this was the only exhibit tested on which we failed to obtain for at least some of the questions statistically reliable differences between those who saw and those who did not see the exhibit. Upon learning of these findings, the association sponsoring the exhibit decided to study the problem during the 1940 Fair. The conclusion stated above is substantiated by the fact that, for questions based on the material in the models, significant differences are obtained in the responses of those who have seen the exhibit as opposed to those who have not.

*The Use of Even Common Professional Words May Be Misleading to the Public*—Our study of the vocabulary used in legends indicates that even the most common professional words may be incomprehensible or unknown to the group intended to be reached. By selecting 50 words of varying difficulty from the legends of exhibits and asking classes of college students and a group of WPA clerical workers to define the terms, an unexpectedly high proportion of the terms were found to be completely misunderstood. For example, one-half of those responding had no idea

of the meaning of "nephritis" and an additional one-fourth had incorrect ideas about the term. It was thought by some to mean nervous disorder; by others, rheumatism; and by still others, blood disease. Similar results were found when the test words were "strabismus," "placenta," and "therapeutic." Public health workers, to whom these are everyday terms, may well beware of their use in exhibits designed for the general public.

*Even Expertly Designed Exhibits May Impart Misinformation*—In one exhibit there were a number of pictures of contrasts in the appearance of healthy and abnormal conditions in children. With one exception, the pictures showed white children. In the illustration having to do with rickets, however, the two contrasting pictures were both of Negro children. When the statement "Rickets is primarily a disease of Negro children" was scored by those who saw

the exhibit, it was regarded as true almost twice as frequently as by those who had not seen the exhibit. The variation of more than one factor in a series of contrasts in this instance left a completely wrong impression.

Similarly, in the exhibit on Anemia, inadequate labeling was responsible for misinformation. In this instance, the misinformation was due to individual misinterpretations of unlabeled color transparencies. One particular color transparency pictures the foods that are rich in iron. However, since the individual foods were not labeled in the picture, persons tended to draw their own conclusions as to what specific foods were meant. Of the number of persons asked to name the foods in the exhibits, universal agreement was obtained for only three items. One particular picture, for example, was variously considered to represent apricots, new potatoes, plums, tomatoes,



FIGURE 3—First Year of Life Exhibit (Note the material in the trough below the shelf on which the models are shown)

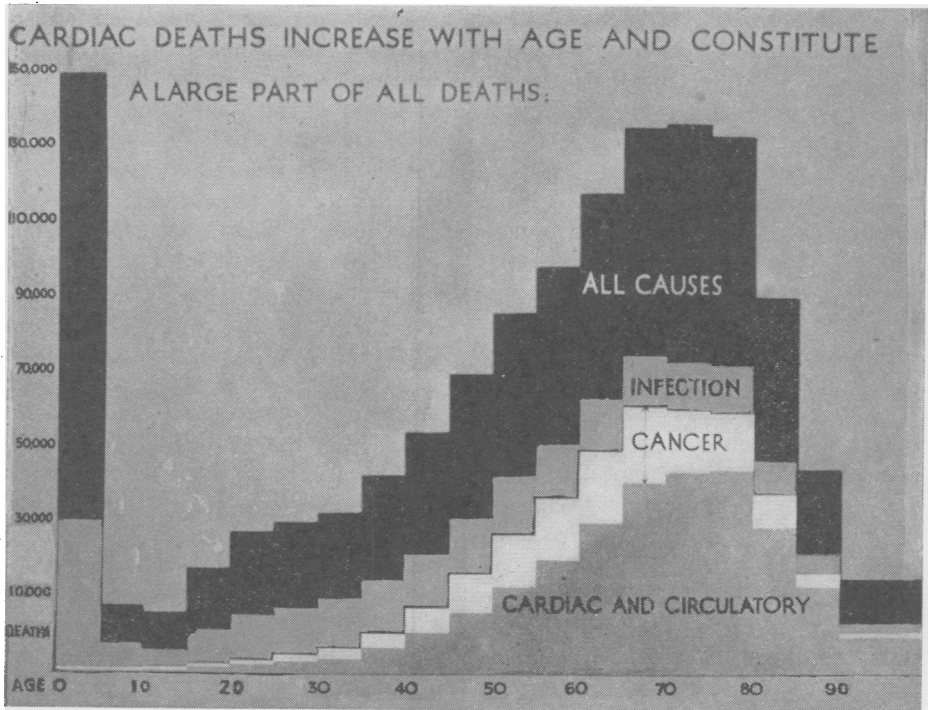


FIGURE 4—Heart and Blood Circulation Exhibit panel

and peaches. Another was thought to represent prunes, mushrooms, kidneys, or chicken livers. Incidentally, a similar situation has been observed in the Diabetes Exhibit in the San Francisco Fair. In this instance, the foods pictured as proper for a diabetic were not labeled, so that a number of spectators, being asked what meat was pictured, gave various answers, such as ham, pork, lamb chops, and steak.

Fifty-four individuals were asked which of the three groups of diseases shown in Figure 4, cardiac, cancer, and infection, causes the most deaths. All but four replied "infection." Although the chart is accurately drawn and does not indicate that infection causes more deaths than cardiac disease, it gives that impression to the casual spectator, and it is these wrong impressions that are learned rather than the truth.

*Tests as an Educational Technic—*  
In the course of our study, we more

or less accidentally discovered what seems to be a valuable health education technic. It was carried out with 35,000 visitors at the 1939 New York Fair and has been repeated with double that number at the San Francisco Fair in 1940. Seven tests on health information were used to determine what the public knows about health. Visitors gladly took the tests but also demanded to know the correct answers. Accordingly, brief answers to all questions were prepared and each such answer gave not only the correct response but some explanation of the reason for it. Originally sent out to those who had requested them, the answers were later given to the visitors immediately after taking the tests. We have found that practically all who took the tests read the answers.

Additional interest in the technic is indicated by the volume of requests for additional copies for unions, schools,

Civilian Conservation Camps, and individuals who desire the tests to give to their friends. Although we have no direct evaluation of the effectiveness of the device in teaching health to the public, it does meet our first two criteria of attracting attention and sustaining interest, at least until the material is read.

A practical adaptation of the technic has been worked out for use in community groups by a few health educators. Questions based on the material which is to be taught are given to members of group meetings at the beginning of the meeting. During the meeting the

major portion of the time is given over to discussion of the answers. This method has been found to arouse active interest in the material to be taught.

While it has been impossible in a brief paper to describe the many interesting and outstanding exhibits, an attempt has been made to caution against the hazards of presentation, as well as to indicate the need for experimental study of our educational efforts. In this attempt, emphasis has naturally been given to some of the minor limitations in exhibits so that the need for care in selecting material and organizing it may be stressed.