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Electronics Park
Syracuse, New York
December 9, 1954

TRIP REPORT - Hazeltine Projection TV Demonstration

DATE - December 3, 1954

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On December 3, 1954 the Hazeltine Corporation in conjunction with the American Optical Company, demonstrated sample units of projection type color television suitable for home use. The demonstration was held at the Garden City Hotel, Garden City, Long Island, and was attended by approximately 50 representatives of various Companies.

The primary purpose of the occasion was to demonstrate the feasibility of providing adequate and reliable registration of three images in a color projection assembly. In addition, other considerations pertaining to the desireability of projection assemblies for use in color television receivers such as cost, convenience, performance, and reliability were briefly discussed.

A list of the major results of the meeting is as follows:

1. The demonstration proved very satisfactorily that the problem of providing adequate and assured accuracy of registration of the several images in a color projection assembly has been brought under control.

2. A shallow depth cabinet console design for home television receivers is technically feasible (cabinet depth 24 inches). Also table model designs were stated as being practical. The picture size of the demonstrator consoles was approximately 18 1/2 x 13 1/2 inches.

3. An excellent quality picture (color & monochrome) is possible with a color projection assembly under low ambient lighting conditions (semi-darkness). The group in general considered the picture quality as commercially acceptable.

   (a) "Highlight brightness" figures were quoted as 25 ft. lamberts. The brightness was very satisfactory and appeared to be very acceptable even when the ambient lighting was increased to the lighted room condition. (Low ambient light condition still prevailed).

   (b) Excellent uniformity of focus and good contrast were exhibited in the demonstrator units. Excellent detail was evident even under the conditions of harsh highlights & deep shadows.

4. The complexity of the system and the present cost of the components is the major disadvantage of the design. The demonstrated units consisted of the following "special" components:

   (a) Three Schmidt optical systems using 3 inch tubes with colored phosphors. (Blue, green and yellow with appropriate red filter). These systems were the standard North American Phillips Protelgram Units.
   (b) Dichroic Mirrors (approximately 7 x 9 inches)
   (c) Rugged, stable mount for optical components
   (d) Plane, front surface, mirror for folding optical path.
   (e) Standard North American Phillips Screen.
   (g) Special servo loop circuit regulating the picture tube high voltage relative to the centering magnetic fields, or vice versa.

5. The American Optical Co., being very interested in entering the television business, is very enthusiastic about possible improvements in the system and possible cost reductions which could be attained by mass production.

   (a) American Optical Company is offering pre-production samples of an improved pre aligned optical package at a cost of $900 each. These units will be available within four months, December 15th has been set as the deadline on all orders. These units will include tubes, deflection yokes, optical lenses, mirrors and screen.

   (b) American Optical Company states that packaged units, similar to the samples offered, will be stable prealigned units which could be installed directly by receiver manufacturers. These units supposedly will incorporate the following advantages immediately:

      1) Slightly improved efficiency due to superior corrector lens and low reflective coatings on all glass surfaces.
      2) Improved contrast (approximately 4 or 5 : 1) from improved optical design.
      3) Improved screen with increased horizontal viewing angle.

   (c) The estimated price of the above units, if mass produced, is less than $300. In addition, it was estimated that if 100,000units/yr were produced the price would be $250. (This price includes all necessary equipment except chasis and High Voltage supply).

6. Even though projection assemblies for color television have not entered the realm of economic feasibility, the progress made to date may indicate that the use of projection techniques may deserve renewed study.

7. A brief report on "Projection Display Assemblies for Color Television Receivers" by the Hazeltine Corporation was distributed to all persons attending the demonstration.

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Materials and Processes
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Room #224

December 13, 1954

MEMORANDUM

In reference to Trip Report, dated December 9, 1954, Hazeltine Projection TV Demonstration, kindly add the following sub-headings under 3.

(c) The color purity problem is non existant when using projection techniques.

(d) Wide angle viewing is possible even though there is a perceptibe loss of brightness as the observer moves away from the normal viewing area. Brightness figures were quoted as being:

30% at ± 30 degrees in the Horizontal Plane
30% at ± 10 degrees in the Vertical Plane

Thank you,

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