Transmitting the changing scene.

This girl's picture was produced on a special Picturephone™ system; it will never look like this in your home. The white areas mark the only picture points which changed in 1/30 second (the duration of one video frame). The remainder of the picture was blanked out.

This emphasizes how Picturephone use differs from ordinary television: the Picturephone camera usually points at a single scene throughout a call and most of the motion is confined to the subject's lips and eyes. Everything else—perhaps 90 percent of the picture—remains stationary.

Frank W. Mounts of Bell Laboratories used this fact to design an experimental video system that may make it possible to transmit three Picturephone calls over a channel that otherwise could carry just one.

An ordinary Picturephone system sends thirty complete pictures each second. In Mounts' experimental system, only changes from one picture to the next are transmitted. A complete picture (information about dot positions and brightnesses) is stored at both the transmitting and receiving ends. As the camera's electron beam scans the original image, the brightness at each point is compared with the stored value. Whenever there is a significant difference, the system updates the stored frame and transmits the new brightness level and dot position.

At the receiving end, as the picture tube's beam arrives at each point, the incoming information is checked to see whether a picture-point revision has arrived. If so, it is displayed and stored.

Because some areas of the picture do not change, while others change extensively, revised points may come in bursts. Transmitter buffers smooth the flow by reading the information out onto the line at a constant rate.

This new technique, one of several now being investigated at Bell Laboratories, promises to help keep transmission costs down when the Picturephone service becomes generally available.

From the Research and Development Unit of the Bell System—