NEW DEVELOPMENTS
in
TELEPHONIC COMMUNICATION

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Communication is and always has been an important aspect of man's social and economic life. Throughout history man has used many methods of communication, and one significant method which has been developed in the last one hundred years is the telephone.

However, certain limitations of the telephone, as we know it, have become evident in recent years. These limitations have been brought about by modern society's increasing demands for greater efficiency in communication systems. Two major demands which society has presented to the communication industry, in terms of primary needs, are (1) the servicing of a greater total number of calls, and (2) the sending of many calls over long distances simultaneously. Attempts to accommodate society's demands for greater efficiency in servicing these needs have given rise to the development of several new communication devices.

Two of these devices which may someday significantly alleviate difficulties in the simultaneous sending of calls are the microwave transmitter and the laser. One important characteristic that both these devices have in common is the emission of radiant energy in the form of electromagnetic waves. This kind of energy requires no medium for transmission from place to place, and has been found capable of transmitting telephone calls from one location to another. Hence, the need for connecting wires is eliminated when

microwaves and laser beams are used. Furthermore, it has been found that these waves have the ability to transmit many telephone calls simultaneously.

However, the problem of transmitting telephone calls over very great distances, for example, around the world, is not solved by the use of microwaves and laser beams, because the waves of each only travel in straight lines. This means that they do not bend to correspond to the curvature of the earth. The first attempt to solve this problem was to place relay stations every thirty miles along the earth's surface. The primary function of these relay stations was to receive the electromagnetic waves and redirect them to another station or to the final receiver so that they would not follow a tangential path into outer space. These stations were a feasible solution to transmitting calls over land surfaces but should not be used over oceans simply because it would be impractical to construct them in such an environment.

The launching of communication satellites proved to be an adequate solution to the problem of transmitting telephone calls across the oceans. These satellites are placed in orbit above the atmosphere of the earth with the primary function of receiving microwaves and laser beams and redirecting them back to the earth's surface. Experimentation with communication satellites has been carried on quite extensively in the last decade with much success in directing calls across both the Atlantic and Pacific Oceans. It is hoped that eventually a world wide communication satellite system will be developed.