Million Watt Broadcasting Station

Radio

Broadcasting stations with a million watts power, twenty times as much as the most powerful stations licensed today, were forecast by Edgar H. Felix, radio consultant of the National Electric Manufacturers Association, speaking before the Institute of Radio Engineers.

"It is quite within the scope of the engineer's imagination to visualize ultimately a broadcasting system comprising transmitters of a million-watt power," said Mr. Felix. "Compared with other systems in daily use this is by no means a large unit; the power bill for such a broadcasting station might run from fifty to one hundred dollars an hour. We use several hundred times that power in transporting week-end excursionists to a single metropolitan bathing beach, and certainly radio broadcasting is of at least comparable importance in our daily lives. While a million watts represent a substantial increase in the power of broadcasting, such power need not be feared as a dangerous monster.

"A system of broadcasting with transmitters of this order of power would require somewhat altered receiver design. Obviously we would employ less sensitive receivers, and instead of an exposed aerial system we would use an adjustable pickup means shielded from incoming impulses to a degree determined by the field strength of the nearest broadcasting station. Stations of such power could serve the centers of population with antennas located at some distance from congested centers. It is quite conceivable that receiver development could keep pace with progressively increased powers of the order suggested.

"Allocations of wavelengths under these conditions would be simplified because the high-grade service range of such stations might well be as much as five hundred miles. Ninety such stations spread geographically over the country would give ten or twelve program choices at any point, and may be compared with present conditions where perhaps less than 40 per cent. of the area of the country is within the wide high-grade service range of any broadcasting station. Furthermore, the initial and maintenance cost of receivers would be lessened, and quality or reproduction improved, with the consequent result that the radio listening public would be enormously increased. This, in turn, would have a healthy effect on the economic position of the broadcaster.

"But such a system of broadcasting would also be considerably more costly than the present annual maintenance expense of approximately thirty or thirty-five million dollars. It might cost one hundred fifty million to two hundred million a year or more to maintain ninety stations of this order of power."

This is one way of reducing the annoyance of man-made interference, from electrical apparatus in the home, power lines, etc. If the signals are sufficiently powerful, then such relatively weak interference will have little effect. (*Turn to next page*)

Colorado Sun Effective

Physiology

Colorado sunshine has a high degree of efficiency in curing rickets. The great feature is that the sunshine in Colorado is as efficient in winter as in summer. White rats were fed on a diet calculated to produce rickets and were kept in the dark for all but short daily exposures to the sunshine in Denver. X-ray pictures of the bones and teeth of the rats showed that from ten to twenty minutes' exposure to this sunshine was enough to prevent the development of rickets, reported Prof. Robert C. Lewis, Herman B. Stein and Gerald M. Frumess, of the University of Colorado, at the meeting of the American Chemical Society.

The lack of seasonal variation in the antirachitic action of Colorado's sunshine is due to the fact that a large amount of ultraviolet light reaches the earth there in winter as well as in summer. The high percentage of winter sunshine, the relatively thin atmosphere, the low humidity and the comparatively small amount of smoke in the air account for this.

Science News-Letter, May 18, 1929

Now Tinted Film for Talkies

Motion Pictures

Tinted motion-picture films, with red for fire scenes, blue for night scenes, green for forest scenes or yellow where artificial light is represented, will now return to the theaters, from which they were forced for technical reasons with the advent of the talkies.

This is made possible with a new series of films announced at the meeting of the Society of Motion Picture Engineers at the Bell Telephone Laboratories. Dr. L. A. Jones, head of the physics department of the Eastman Kodak Laboratories, under whose direction the tinted film was developed, described their advantages.

Before the days of the talkies the familiar tinted films were obtained by printing on tinted stock, furnished by the various film manufacturers. This was like the ordinary positive film on which the pictures were printed, except that in its manufacture a dye had been incorporated into the celluloid base.

Most of the sound or talking movies today are produced with the sound record on a strip alongside the individual picture frames which carry the visual record. This strip varies in transparency. A beam of light passes through it as it runs through the projector. and thence to a photoelectric cell, which converts the variations of light to variations in electric current. This current is amplified, and operates loud speakers, where it is converted to sound.

Just as photographic plates are very sensitive to blue or violet light, and very insensitive to red light, for which reason a red light is used in their development, the photoelectric cell is also most sensitive to blue-violet light. Thus, when red tinted film was used, the color of the film prevented the light getting through to the cell. Yellow stock, though it did not absorb as much of the active light rays, also absorbed some of them, and even the blue film was not exactly the right color for the maximum sensitivity.

Sixteen separate tints have now been developed, running the entire range of the spectrum. A seventeenth is without color, but imparts a silvery hue to the picture. The peculiar thing about these new colors, however, is that (*Turn to next page*)