



AUDIO engineering society

Containing the Activities and Papers of the Society, and published monthly as a part of AUDIO ENGINEERING Magazine

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No Coded Signals

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A discussion of the advantages of voice sound systems over the rapidly obsolescent bell or whistle signals so generally used heretofore in industrial installations.

THE REQUIREMENT "No Coded Signals" is beginning to appear in important bid specifications. This is of significance to us on two scores.

First, it announces recognition by industrial planners that the various forms of coded signal systems commonly used in the past for warning purposes, and to give routine directions to large or scattered groups of persons, are no longer capable of coping effectively with the rapidly growing variety of situations which must be anticipated in modern industrial and everyday civil life.

Second, to us who make our livelihood in audio, this accelerating trend towards discarding coded signals as unsatisfactory tools for mass directions may well open the largest of all fields for Voice Sound Systems. Since a prime mover in this shift is the need for a reliable way to communicate detailed and changeable instructions to large numbers of persons in the event of enemy air attack, this application of Voice Systems embraces every conceivable place where people may gather in numbers—not only industrial plants, but office buildings, hotels, department stores, apartment houses and whole communities.

By coded signals we mean simple signal systems, usually audible systems, that can be coded to emit combinations of long- and short-duration sounds to communicate different meanings. Widely used devices for this purpose are sirens, bells, whistles, buzzers, gongs, air horns and howlers.

One of the first signal systems used early in our civilization was the church

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bell. There was a time when this simple signal served all needs adequately for warnings and to assemble the populace in unusual situations. The bell was well located high in the church tower, its tone was powerful and carried well enough to blanket the usual-sized community and to penetrate the small industrial activities and crafts of the day. A form of coding existed when it was rung at times other than for religious purposes, and in this respect it served as an alarm to bring people running from their homes and shops to learn the nature of good or bad news—of portending disaster of fire, flood, or enemy attack.

With the "steam age" came the steam whistle which even today remains one of the most powerful of all signals. The steam whistle was capable of transmitting coded signals, so combinations of blasts were soon composed and used as a valuable assistance to direct growing industrial organizations to call employees to work, for quitting signals, to time routine operations, and to sound warnings of emergency nature.

The advent of public electricity developed a variety of signaling devices, and for the first time, signals became available that could be actuated readily at remote locations and in infinite numbers. The facility offered by electrical signal networks opened many opportunities to promote efficiency in sprawling industrial units and commercial operations. Complicated coding was often resorted to in an effort to provide a many-function service to meet ever-growing needs—to time work periods, to page executives, to coordinate widely located operations, to supervise processes, to call watchmen, to summon repair and clean-up crews. In addition, the same over-worked signaling system was supposed to serve for all-important warning purposes, should any kind of emergency occur.

It was inevitable that these simple

signal systems would become overloaded to the point where their usefulness was jeopardized. This point was hastened by the continued growth of more complicated industrial and commercial organizations, with attendant problems of efficiently directing hundreds or even thousands of employees or the public, together with management's greater safety responsibilities in the face of multiplied hazards to life from dangerous processes within the plant and threats from without. Both of these problems continued to become more extreme with technological development.

While it is true that sirens, bells, and whistles are effective in commanding attention, their real value stops right there. The number of instructions they can deliver without confusion is very limited. The successful completion of instructions depends upon the listener being previously instructed on the code, that he remembers the code, and that he correctly interprets the code even under conditions of great mental stress.

One serious fault is the danger of regular employees becoming so accustomed to hearing signaling systems used all day long for routine directions that, like the boy who cried "Wolf" too often, they may disregard that once-in-a-million case when the system is used as an emergency warning.

Another serious limitation is that all possible situations have to be anticipated in advance and associated codes pre-specified. When the meaning of a signal is once defined, it is impossible to change it quickly to convey other instructions to cope with an unforeseen or opposite emergency situation. Take, for example, the tragic case of the school building in which one-half of the top floor pupils were carefully drilled to use one stairway and the other half another stairway whenever the fire bell sounded. One day the fire alarm went off in earnest. Teacher quickly marshalled well-drilled charges down their respective stairways.

