

need much the same electric, radio, telephone wire, acoustic, optical, projective, and microfilm equipment. It would be logical, therefore, to combine most or all of this equipment into one big apparatus, that might be called the audiovisor. It would be an expensive machine, like an automobile or a furnace, but it would be an indispensable one for leading a truly civilized life, in touch with the minds, speech and view of other men, through all space and all time. As such it would certainly fall in the province of the national Government, to regulate, standardize, use for public instruction and warnings, and also to *invent* such parts of it as are taken care of neither by commercial motives nor by our present governmental inventive programs, almost confined to war and fields other than communication.

[342] *Music*, of ever higher character, has become a main feature of our mass communication, including not only broadcasting but the cinema, phonographs, shop and outdoor music, etc. The character of music is largely determined by the instruments and voices which produce it: it is said that the inventions of the organ and the violin greatly affected the character of music. It is most surprising that since the pianoforte about 1720 A.D. no musical instrument of major importance has been invented, only the saxophone, accordion, reed organ, theremin, electric organ, and electric guitar, etc., while most of our instruments have been improved only by minute refinements, whereas invention in most other fields has had a vertiginous upsurge since 1720. As for vocal music, there has been no important invention since the introduction of harmony. One would suspect in music a failure of personal motive for invention. Is the case not that musical instruments are manufactured by small firms, each making only one line, and are bought by musicians and pupils who invest years of time in learning to play one instrument; so nobody has any interest in a radically new kind of instrument, that he could not manufacture, nor play, nor find anyone to instruct him in? Each man's pleasure, prestige, and profit are tied to excelling in the use or production of a particular, traditional instrument; so no one has a motive to invent anything but trifling improvements.

[343] How could invention in music be so activated, by new social arrangements for the support of invention there, so that music might be further improved, as have so many other sides of life in recent centuries? In brief, it could be done by advancing music from the handicraft stage in which it now languishes, to the factory and scientific stage. Music is produced today usually on portable hand instruments, or sung with no tools at all, unless it is played on a sizable machine—piano or organ. All of these must be standardized so that good musicians can travel about to reach wide enough audiences, either carrying their instruments with them or depending on the standard design of the instruments they will find on arrival. Yet a new era of possibilities is already opening up, in the recording, reproduction, and multiplication of music, through such inventions as the phonograph, jukebox, sound films, loud speaker, radio, and television, whereby one musician or group can perform for millions of auditors, at one time in one studio. Hence they can be well paid, for a most distinguished performance, and essentially they need never travel, nor require portable, traditional nor standardized instruments. Playing to the whole world, they could afford an instrument, studio or music-