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FURTHER DEVELOPMENT AND IMPROVEMENT OF
TELEVISION TECHNIQUE

- USSR -

By S. Kaftanov

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FURTHER DEVELOPMENT AND IMPROVEMENT OF
TELEVISION TECHNIQUE .

[This is the translation of an article by
S.Kaftanov in "Tekhnika Kino i Televideniya"
(Technique of Movies and Television), Nr.5,
May 1960, pages 1-31.]

The Central Committee of the CPSU adopted a resolution for further development of television in the USSR. The resolution emphasizes that television is now more and more extensively used, and telecasting covers a territory with over 70 million population.

Already television is one of the major information media on most important events in the country and abroad, on progress in science and engineering, culture and arts. Its massive volume exceeds all other types of performance.

The potentiality of television is not used to the full extent by far, which can be explained by great imperfections in the work of the telecasting studios, and the defects of the equipment used.

Up to the present time our TV broadcasts are single-programmed. The broadcast duration of many studios and broadcast stations is inadequate. Development of a network

of radio relay systems and cable lines for exchange of TV programs definitely lags behind the development of TV broadcasting and relaying stations. For example, up to now there are no communication lines between Moscow and many other capitals of Union Republics for transmission of TV programs.

In connection with this a broad exchange of filmed programs would be of great value to our TV. But, as before, the production and conservation of valuable TV programs is poorly organized. Up to the present time we do not have a centralized system for filming of programs, which is the basic method of improving local TV broadcasts.

The equipment of TV studios does not satisfy present day requirements. As an example, the camera tubes of studios have low sensitivity. Therefore a large number of powerful light sources must be used in the studio, consuming much electrical energy, and causing a high temperature in the studio. To improve working conditions of studio personnel and artists powerful air conditioning installations are needed in TV broadcast stations, which causes a high electrical energy consumption.

The telecasting centers do not possess facilities for bilingual TV broadcasts. Besides this many studios are not equipped for a broader dissemination of educational TV.

Our technical equipment for out-of-studio broadcasts is also unsatisfactory. TV reports are often impossible because of the clumsiness and poor mobility of our mobile TV broadcast stations (PTS). It should be mentioned that in order to make a mobile station ready for a 15 - 20 minutes reporter's broadcast, 8 - 10 hours of preparatory work are needed. The knapsack-type portable reporter's TV broadcasting set, developed in our country, still has not reached the production stage because of lack of high-quality photoconductive tubes.

The techniques of motion picture filming, which form the basis of producing regular TV programs, and of news broadcasting, are also not used to a desirable extent by far.

During the last 2-3 years all operating television studios received a considerable amount of phototechnological equipment and cameras for motion picture production. All TV studios of capitals of Union Republics and base studios of large cities received equipment for filming on 35 mm and 16 mm movie films, but all the others received equipment for 16 mm only. A considerable handicap in using 16 mm movie films is the absence of equipment for synchronous filming and sound recording for 16 mm films. Our industry and development organizations are very slow in developing this equipment in a more perfected form and in carrying it to

the production stage.

The 16 mm film supplied for TV motion picture filming has low sensitivity and a low degree of contrast. The movie film manufacturers of this country should immediately take all steps in order to produce high-sensitivity negative and positive 16 mm films on a non-inflammable base. It is necessary already in 1960 to start the production of 16 mm movie films with a magnetic sound recording strip for synchronized filming and sound recording.

Our industry has not yet constructed a copying machine for 16 mm motion picture film supply exchanges.

Up to the present time the only method of preserving and exchange of TV programs is by movie films. Due to the lack of other TV program recording methods for our TV broadcasting stations, we have been forced to use the movie film technology with the clumsy chemical processing.

Some progress in this direction was made by filming TV programs from the kinescope screen. For this purpose equipment for filming from the monitor was developed in the country. This method did simplify the technology of program filming. But, of course, it is inferior in many respects to the magnetic method. Specialists of our country already developed our own designs of magnetophones. Their production is, however, not organized yet.

The imperfection of our technical TV equipment is made worse by the lack of highly qualified personnel. For example in all TV studios of our country there are only: 7 chief engineers for motion picture equipment, 8 engineers for motion picture equipment, 1 chemical engineer, 3 engineers for sound recording. There is also a shortage of medium level technical personnel (motion picture laboratory foremen, mechanical technicians, laboratory technicians, lighting electricians and others).

As is generally known, operators of TV studios must be very highly trained. They must know all the achievements and results of practical experience of the motion picture technique and specific details of the TV technique. Up to the present time, however, there are no schools for training such specialists. Usually TV operators are practically-experienced people, who do not have any special training. This reflects considerably on the quality of our TV broadcasts. The resolution of the Central Committee of the CPSU mentions a number of definite measures to be undertaken for further improvement and development of the Soviet TV.

Within the next few years the total number of TV broadcasting stations will be increased to 160, but the number of TV receiving sets will increase 5-7 times.

In accordance with the prospects of TV broadcasting development, a region with a population of 160 million will be included in the broadcasting system. Many viewers will be able to receive two-program and three-program broadcasts.

Two-program broadcasts will be available in all capitals of Union Republics, capitals of autonomous republics of the RSFSR, and also large regional cities.

In capitals of the Union Republics color TV is planned as the third program.

At the end of 1965 nine capitals of Union Republics will receive TV programs from Moscow over radio relay lines, but the people in Moscow will have the opportunity of receiving TV programs from these cities.

For a centralized production and large scale exchange of regular TV programs it was decided to organize in Moscow a "Telefilm" studio. In this studio several film lots are planned for the preparation and recording of regular TV programs, and also a large office for program exchanges on a large scale in order to satisfy the requirements of all TV studios in the country.

In the beginning the programs will be recorded in the "Telefilm" studio by the motion-picture method: direct filming or filming from the monitor. A parallel experi -

mental recording on magnetic tape will be done, in order to⁷ change over at a later time to this last method, which is the most progressive one.

Great emphasis will be put on improvement of the technology of producing TV programs : automation of the separate technological stages, use of new, progressive technological methods in order to improve the technical quality of TV programs and simultaneously to reduce the costs of their production. The development of the system of electronic rear-projection will be finished. Work is planned on automatic control of special studio lighting with the aid of memory systems, etc.

Equipment and apparatus of many telecasting centers will be reconstructed for adaptation to bi-lingual broadcasts, and for wider use of TV for educational purposes. Respective changes will be incorporated into the typical design of new telecasting centers.

After development of newly perfected equipment for out-of-studio TV report broadcasts on current events the clumsy mobile TV stations (autobuses) will be replaced by light broadcasting equipment : knapsack-type portable transmitters and mobile equipment assembled in "micro-buses".

It is planned to start mass production of video -

magnetophones within the next few years, and to introduce on a large scale the magnetic recording of TV programs in the studios.

In order to provide the needed highly qualified specialists for the TV broadcasting system in 1960- 62 departments for education of these specialists will be opened at the Vsesoyuznyy Institut Kinematografii (All-Union Government Institute of Cinematography), the Leningradskiy Institut Kinoinzhenеров (Leningrad Institute of Cinematography Engineers) and a number of other educational institutes.

The scientifically technical personnel of our radio and cinematographic industry, the Ministry of Communications, and other industry branches, which received the order to develop and produce different types of new TV cameras and equipment are entrusted with great problems in the technical progress of TV in our country .

Achievement of these planned tasks will ensure a successful development of the Soviet television.

S.Kaftanov.

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