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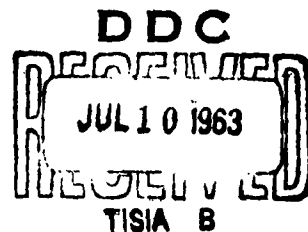
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USSR Industrial Development

SOVIET PRECISION EQUIPMENT

No. 70

408 891



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USSR Industrial Development

SOVIET PRECISION EQUIPMENT

No. 70

This serial publication contains translations of selected articles on precision equipment in the Soviet Union, on the specific subjects indicated in the table of contents. Complete bibliographic information accompanies each article.

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THE FASTEST WAY TO SOLVE THE
PROBLEMS OF DEVELOPING TELEVISION RECEIVER
STANDARDS

[Following is a translation of an article by L. Semenov (Director, Affiliate of the Television Institute), I. Pes'yatskiy (Deputy Director, the Scientific Section), V. Khakharov (Chief, Television Branch), and V. Bugay (Chief Engineer, L'vov Television Plant) in the Russian-language periodical Tekhnika Kino i Televideniya (Motion-Picture and Television Engineering), No. 2, Moscow, February 1963, pp. 1-3.]

A discussion of the problems caused by lack of standardization in the television industry and of possible means to solve them.

Disunity of the forces of scientific and planning organizations, as was noted in N. S. Khrushchev's report at the November Plenum of the Central Committee of the CPSU made carrying out of the policy in a number of branches of the national economy more difficult. It hampered the specialization of industry on a large scale. It was pointed out in particular that the designer-forces which were engaged in the development^{of} radio receivers and television sets were scattered in 17 designing organizations and that 19 plants were engaged in manufacturing television

sets.

In 1962 there were 12 types of television sets in production. Such unjustified diversity hampered the organization of mass-production and made it impossible to reduce the cost and increase the quality of production.

The Plenum of the Central Committee CPSU planned a way to create a single technical policy for all branches of engineering. The questions which appertain directly to television receiver engineering and in particular to the technical policy in this field were examined at many enterprises and institutes connected with television engineering. They were discussed by the Scientific and Technical Council of the Affiliate of the Television Institute with participation by the representatives of the contiguous scientific research organizations and television plants and also at a special extended meeting of the Bureau of the Television Section of the Scientific and Technical Society of Radio Engineering and Electrical Communications imeni A. S. Popov. Many concrete proposals directed toward solution of the problems of television receiver engineering were introduced as a result of the discussion. The workers of the Affiliate of the Television Institute and of the television enterprises have examined the problems of

improvement of quality and exploitation of the reliability of television sets in the article published below.

* * * * *

After the commencement of regular television broadcasts in our country television engineering advanced very rapidly. The television sets which were produced by the industry quickly became technically obsolete and were replaced by new types which had better specifications. The change in type of the television sets was predetermined by their continuous perfection and primarily by an increase in the picture dimensions and the number of programs which could be received.

The replacement of some types of television sets by more modern ones which differed from them in having new circuits, units and construction, was justified during that period when the number of television sets produced in the country could be numbered only in tens of thousands and there were no more than five plants producing them.

But as early as the third year of the seven-year plan the production of television sets in the country had doubled. In 1962 alone over two million television sets were produced. The number of television plants increased as well. Another approach to solution of the

problem of television receiver engineering was necessary.

If the technical requirements made of any class of television set are considered it becomes clear that the parameters do not differ a great deal but the organization of the circuits of the television sets produced and the way they were put together differed. Different constructor bureaus worked on the development of one and the same television set, often in the very same building. This resulted in diversity as well. It is true that in 1959 there would have been a good idea about creating a single type of television set for mass-production based on manufacture with a maximum of mechanization and process-automation. But owing to the fact that the development was assigned to two plants instead of one no single mass-production type of television set was created because each plant went its own way, considering only its own particular interests. As a result two models, differing greatly in construction and design, were created.

Diversity even was reflected in assembled units. An obvious tenet of unification, which brings multiplicity to a minimum, did not deter diversity; and at the present time, for instance, the television channel-selector switch manufactured by the Lithuanian Sovnarkhoz

has four different axis lengths. Therefore the repair organizations now are forced to have all variations of this product in their warehouses.

Considering the unification of basic parts in 1959 and the considerable typification of schematic solutions it will be impossible in future to find justification for diversity in television sets, because this is the basic obstacle in the way of production of more television sets, of increasing their quality and reliability. It is impossible to consider normal a situation where, when three types of manufactured electron-ray tubes (kinescopes) are available, these determining the dimension of the television screens, 12 different types of television were manufactured.

It seems expedient to curtail in the near future the number of different television sets to three, to the number of types of kinescope assigned for production. Manufacture of three type models of television sets in different variations of external shape and finish will make it possible:

first of all to increase the number of television sets manufactured by virtue of organization of large scale assembly plants with maximal automatization of the processes of assembly, fitting, adjustment and control, which consider-

ably will improve the quality and reliability of television sets and reduce their cost.

secondly, to organize large scale specialized production of the assemblies and functional units from which the television sets are put together, using for this manufacture highly productive equipment and advanced technology which will guarantee a considerable increase in the productivity of labor. An experiment conducted at one of the plants producing 400,000 television sets per year showed that the work of one line in 5-6 days fulfills the monthly requirement of that plant for printed plates. It is natural therefore that in order to avoid periods of idleness or complex and expensive automatic production lines it is expedient to make on them the same plates for all the other plants making this type of television set. Thus by introduction of printed circuits the expediency of setting up a manufacturing plant for unified functional television plates which will be set up at television assembly plants becomes obvious. This will make it possible to increase the number of television sets produced with the least amount of capital outlay because it will make available space in existing plants;

thirdly to facilitate repair of television sets, a process which must be reduced to simple replacement of the

damaged part.

Disunity in the constructor forces, the lack in the branch of industry manufacturing television sets of a strong scientific research center with a proper experimental installation, it would seem, interfered with the creation of these indisputable and economically-effective measures.

At the present time the development of new unified types of television set is concentrated in one organization, to which 2-3 of the most qualified constructor bureaus of the plants will be subordinated. This organization, a scientific production center, will be the All-Union Scientific Research Institute of Television Receiver Engineering, created on the basis of the Affiliate of the Television Institute. The efforts of the plant specialists must be directed toward improvement of the quality and reliability of television sets being manufactured, creation of a diversity in their external shapes and reduction of the cost of producing them.

The fundamental problems of the complex Scientific Research Center of Television Receiver Engineering will be acceleration of technical progress and improvement of communication between science and industry. In

addition to scientific investigations it is necessary to provide for development of the technology of mass-production of new types of television receivers with provision for maximal automatization and mechanization of industrial processes and the introduction of new technology.

The scientific production center must determine technical policy in the area of development of new technological equipment, to make provision for the testing of it under production conditions, and likewise to work out and make non-standard equipment and special measurement and control apparatus. It also is necessary to study and to generalize specifications for the work of the enterprises, to prepare recommendations for the planning of television manufacture and for projecting new television plants.

The solution of urgent problems directed toward improvement of the quality of television sets and the lowering of their cost is impossible without doing the proper work necessary to improve the quality as well as the reliability of components and electro-vacuum items. Statistical data of the Ministry of Communications concerning guaranteed service show that a half of the cases of failure of television sets may be blamed on the electro-vacuum components. Therefore it is necessary to carry out work

which would make it possible sharply to improve the quality of kinescopes and radio tubes.

At the present time work successfully is going forward to develop new kinescopes which make it possible to increase the dimension of the diagonal of the image to 47 and 59 cm. instead of the presently made 35 and 43 cm. By virtue of such kinescopes it will be possible approximately to double the area of the television screen. The screens of the new kinescopes will be metallized on the inside, i.e. they will be coated with a mirror-reflecting aluminium film. The presence of such a film significantly increases the quality of the image, making it brighter and giving it considerably more contrast. It increases the number of gradations of brilliance as well. These kinescopes will be "flatter" and therefore the television sets will be more compact.

According to the plan of experimental design work in the creation of unified television sets and assembly units for them a unified television set having a kinescope with a ray-reflection angle of 110° and a diagonal screen-dimension of 47 and 59 cm. will be developed in 1963-1964. Image-dimension stabilization, automatic heterodyne frequency-control and remote control must be

provided in the television set. There is a possibility of switching in the receiver unit to sound accompaniment in two languages and in the decimeter band. Such a television set must be developed with a variation of tropic accomplishment.

The Plan also contemplates development of a television model using semi-conductors. The kinescope in it must have a screen diagonal-dimension of 21 cm. The current used will be universal; the power-requirement will be 15 watts from batteries and not more than 25 watts from house-current. The weight will be not more than 10 kgs.; the antenna will be telescoping.

The decisions of the November Plenum of the Central Committee CPSU make it possible to bring about measures directed toward the most rapid solution of the problems of television receiver engineering in a short space of time.

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DIPLOMAS AND MEDALS OF THE EXPOSITION OF ACHIEVEMENTS OF THE
NATIONAL ECONOMY FOR NEW CINE TECHNOLOGY

[Following is a translation of an unsigned article in
the Russian-language periodical Tekhnika Kino
i Televideniya (Motion-Picture and Television
Engineering) No. 2, Moscow, February 1963, pp.
93-94.]

A detailed listing of Soviet organizations
and personnel engaged in various phases of
cinematographic work together with a descrip-
tion of the awards they received and the
development for which the award was made.

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A thematic exhibition New Technology in
Cinematography was organized in 1961 at the Exposition
of Achievements of the National Economy of the USSR in
the "Cine Optical" Section of the Machine-Building
Pavilion. Here 136 exhibits on the development, manufact-
ure, and introduction into Industry of which a large number
of scientific research and constructor organizations, cine-
mechanical, electrotechnical, optical and chemical plants,
cine studios, cine-copying plants and other enterprises
took part were presented.

The exhibits which were shown were a reflec-
tion of the attainments in the field of development of

new apparatus, equipment, machines, special materials and progressive technological processes for various branches of cinematography. The overwhelming majority of the items shown at the Exhibition already are in production, recommended for manufacture or being used in the production of cine films.

At the end of 1962 from the results of a thematic inspection the Committee of the Council on Exhibition of the Achievements of the National Economy of the USSR awarded the All-Union Scientific Research Cine-photo Institute (VNIKFI) a First Degree Diploma, and a number of workers of the Institute (37 persons) were presented with medals and valuable prizes for development of the Type PSO panoramic motion-picture camera and for their participation in the development of the 70KSK wide-screen motion-picture camera, the 3KSS synchronous motion-picture camera, the 35SK-Sh stationary cine projector, aspheric and interference reflectors, a renovated machine, the VGK-60-45 germanium rectifier, of anamorphic projection fittings, an attachment for additive printing of color film on the UKTs apparatus, the DS-5 color-negative cine film, the VCh super-sensitive black-and-white negative film, the B-1 double positive film, Positive MZ-3, a blank film with

fixer and the Type 6-35 magnetic sound-recording tape.

Candidate of Technical Sciences N. D. Bernshteyn merited the large Gold Medal in particular for his creation of the original design of the P80 panoramic motion-picture camera with interchangeable optics.

A First Degree Diploma was awarded to the Central Design Bureau of the Ministry of Culture USSR and its workers (20 persons) were presented with medals and valuable prizes for the development, preparation and introduction into Industry of a set of the Type OKS motion-picture objectives with focal lengths from 16 to 300 mm. for taking ordinary-frame photographs on 35 mm. cinefilm, of "Lenar"-type objectives with a variable focal-length, Type BAS anamorphous photographic units and Type NAR projection attachments, special electric motors for the P80 and 3KSS motion-picture cameras, and also the 23KT0 apparatus for unsqueezing black-and-white wide-screen films.

The Central Documentary Film Studio (TsSDF) was awarded a First Degree Diploma and a large group of workers (50 persons) were presented with medals and valuable prizes for the creation of films for still-cameras, creation of a series of apparatus for news photography,

for development of the construction and further perfection of the "Konvas-avtomat" newsreel camera, for research and for practical work on the utilization of the DS-5 multi-layer film with internal masking, the VCh super-sensitive black-and-white film, for development of the PKM-12 mobile electric power commutational installation, for carrying out the work of testing, perfecting and utilizing the PSO panoramic motion-picture camera and for a number of other accomplishments.

Large Gold Medals were awarded to constructors V. D. Konstantinov (posthumously) for his creation of the "Konvas-avtomat" motion-picture camera and to P. A. Leontovich for the development of a series of apparatus for underwater photography (detailed information on this series of apparatus was published in No. 4 of this Journal in 1962, pp. 26-33).

A First Degree Diploma was awarded to the Moscow Motion-Picture Camera Design Bureau of the Moscow City Sovnarkhoz and its engineering-technical and constructor personnel (26 persons) were presented with medals and valuable prizes for development: of the 70KSK high-speed, wide-format motion-picture camera and of the 3KSE synchronous motion-picture camera, of the 1XSM

motion-picture camera for animation, the PPU-70 slide-projection assembly, and the small Type 1MKT cameraman hydraulic-operated crane.

The Large Gold Medal was awarded to Chief Project Designer S. I. Nikitin for creation of the Type 3KSS synchronous motion-picture camera (the technical data for this apparatus were publishedⁱⁿ issue 2 of this journal in 1962, page 97).

The Moscow "Kinap" Plant of the Moscow City Sovnarkhoz was awarded a First Degree Diploma and the workers and engineering-technical personnel of the plant (23 persons) were presented with medals and valuable prizes for their participation in the development and utilization in Industry: of motion-picture cameras for panoramic photography, of high-speed, wide-format cameras, for animation, for development and series output of the improved "Rodina" 3KSKh-M motion-picture camera, and for their participation in the development of the Type 3KSS synchronous motion-picture camera.

A Second Degree Diploma was awarded to the "Mosfil'm" Cine Studio and a group of workers at the Studio (27 persons) were presented with medals and valuable prizes for development of the Type 23KTO apparatus for

unsqueezing the originals for wide-screen films, for development and utilization of a new technology in preparation of super-size photo-enlargements and of new materials for cine decorations, development and manufacture of a series of cine rouges, for participation in completion of the 70KSK high-speed motion-picture camera, the 3KSS synchronous motion-picture camera, the 1MKT small cameraman crane for hydraulic operation, the 350ZMS-1 sound-mounting table, of a series of Type OKS motion-picture objectives, of the Type BAS and NAS anamorphous photographic objectives and settings, Type Z infra-film for the "roaming mask" and MZ-3 cine film.

The "Lenfil'm" Cine Studio was awarded a Second Degree Diploma and the workers at the Studio (19 persons) were presented with medals and valuable prizes for the development and preparation of a system for remote control which permits control of the motion-picture camera at a considerable distance, starting and stopping it, and focusing the objective, for development and preparation of a gage for the measurement of rouge-color, for development and preparation of a housing shield-system for decoration frames, development and introduction of new materials in decoration practice, participation in the development of

the DS-5 color-negative film and a number of other attachments.

The Plant which manufactured the "Sibir'-2" stationary cine projector was awarded a Second Degree Diploma for its participation in the development and series output of this apparatus and five of the workers of the Plant received medals and valuable gifts.

The Riga Cine Mechanical Plant was awarded a Third Degree Diploma and four of the workers of the Plant were presented with medals and valuable prizes for development and output of the Type DFM-16/35 small two-sided film-restoration machine.

In addition to this the workers of a number of enterprises and organizations were awarded medals and valuable prizes:

a) of the Leningrad "Kinap" Plant (19 persons) for completion and output of Type GMB motion-picture objectives, of motion-picture objectives with variable focal-length, of Type BAS and MAP anamorphic photographic units and projection settings;

b) of the Kiev Cine Studio imeni A. P. Dovzhenko (4 persons) for development and preparation of the three-wheeled cameraman dolly with portable cameraman hand

crane and creation of a television video-device for the "Drushba" synchronous motion-picture camera;

c) of the Leningrad Institute of Cine-Engineers (LIKI) (3 persons) for the development of mirror aspherical and interference-reflectors from 315 to 600 mm. in diameter;

d) of the Moscow Large-Scale Color Film-Printing Plant for participation in the development and manufacture of an attachment for additive printing of color film on the USTs cine-copying apparatus;

e) of the Moscow Electric Lamp Plant for the development and production of a 1 Kv. xenon gas-discharge lamp for 35SKPSh cine projectors;

f) of the Color Film-Processing Laboratory for development of a method for obtaining a blank film fixer-layer and development of conditions for coating a blank film-layer with fixer;

g) of the Moscow Cine Copying-Plant for participation in working out the technology of development of the B-1 double positive cine film and for introducing it into Industry;

h) of the Leningrad Cine Studio for Popular Scientific Films for participation in completing the operational tests of the 1KSM photographic apparatus and the MF-12

animator on time.

The Diplomas and other Exposition of Achievements of the National Economy Awards were distributed in November.

V. Ye. Baskakov, Deputy Minister of Culture USSR, presented the medals to the workers of the "Mosfil'm" Cine Studio and to the Central Documentary Film Studio.

I. I. Tsvetkov, Deputy Minister of Culture USSR, presented the medals to the workers of NIKFI.

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THE TYPE 35BAS10-1 ANAMORPHIC MOTION-PICTURE UNIT

[Following is a translation of an unsigned article in the Russian-language periodical Tekhnika Kino i Televideniya (Motion-Picture and Television Engineering) No. 2, Moscow, February 1963, inside back cover.]

Detailed specifications of the subject unit are given.

The Central Design Bureau of the Ministry of Culture USSR built and completed the 35BAS10-1 Photographic Unit with a focal length of 35 mm. from calculations by the Leningrad Institute of Cine Engineers (LIKI).

The anamorphous unit is an optical system composed of a motion-picture objective and an anamorphous attachment, mounted in one holder.

The experimental models of the anamorphous unit passed the laboratory tests at NIKFI and production tests at the "Mosfil'm" and "Lenfil'm" Cine Studios.

The 35BAS10-1 has the following technical specifications:

Full relative opening.	1:2.5
Effective relative opening	1:3
Light passage, field-center.	71.6%
Coefficient of light-diffusion.	3.1%
Illumination at field edge35%
Coefficient of anamorphization.0.5
Photographic resolving-power	
Center.	66 lines/mm.
Edge	23 lines/mm.
Rear opening, apex	21.4 mm.
Limit of diaphragmation	1:16
Dimensions:	
Length	121 mm.
Height	95 mm.
Width	115 mm.
Weight	1.36 kg.

The new wide-angle anamorphic unit increases the creative opportunities for operators in taking wide-screen films with an anamorphized image on 35 mm. cine film.

The 35BAS10-1 anamorphic unit is recommended for series production at the Leningrad "Kinap" Plant.

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