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HERALD OF COMMUNICATIONS

(Vestnik Svyazi)

No 11 (272), November 1962

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1963

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No 11 (272)

November 1962

(Twenty Second Year of Publication)

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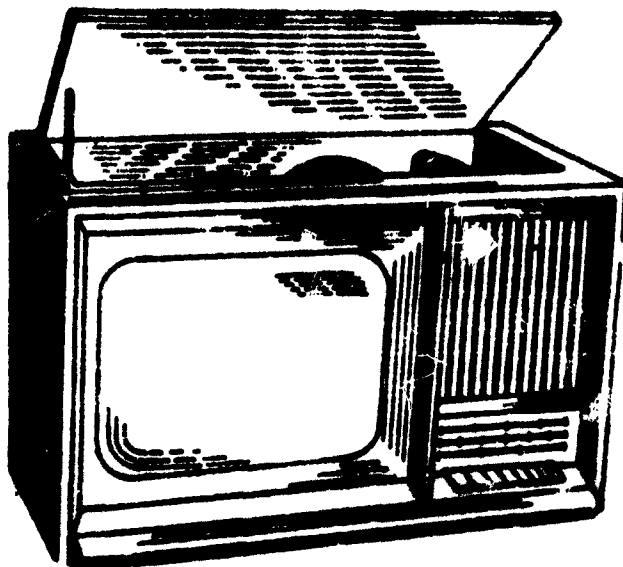
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LATEST COMMUNICATION EQUIPMENT

1) BELARUS' 110



Television, radio and record-player set "Belarus' 110" put out by Belorussian Sovnarkhoz represents a device combining a television receiver employing kinescope 43LK9B with deflection angle of 110°, a radio-broadcasting all-wave receiver with an ultrashort-wave band, and a three-speed ac-dc record player for 78, 45 and 33-1/3 rpm.

The television receiver employs automatic brightness control, automatic amplification control, automatic fine tuning of frequency lines, and stabilization of picture dimensions. The dimension of the image is 360mm x 270mm.

The television-set sensitivity is at least 100 microwatts.

The radio-broadcast receiver has four bands: the long-wave band (2,000 to 723 meters), medium-wave (557 to 187.5 meters, short wave (5.8 to 12.8 MEGC) and ultrashort-wave (65.8 to 73 MEGC).

The sensitivity of the radio-broadcast receiver in the long-wave and medium-wave ranges is at least 200 microwatts, in short-wave ranges -- at least 300 microwatts and

in ultrashort-wave range -- at least 50 microwatts.

The rated output power of the low-frequency amplifier is 1.5 watts.

The range of reproducible frequencies is 100 to 7,000 cycles per second.

The high-fidelity sound is provided by dynamic loudspeakers 1GD1 and 1GD9.

Power supply is effected from a 127-volts or 220-volts supply network.

Power consumed at the rated network voltage amounts to not more than 200 watts when the television receiver is in operation and not more than 75 watts when the radio-broadcast receiver and record player are operating.

Structurally the television, radio and record player set "Belarus'-110" is made in two variants -- the floor type and table type.

2) FACSIMILE APPARATUS FTA-P

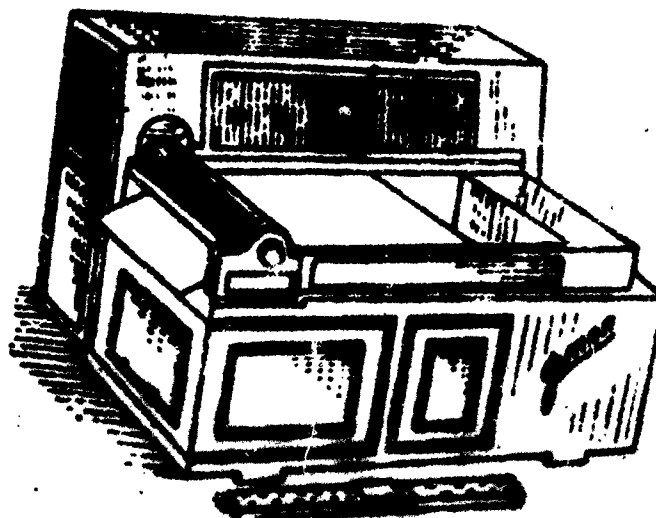
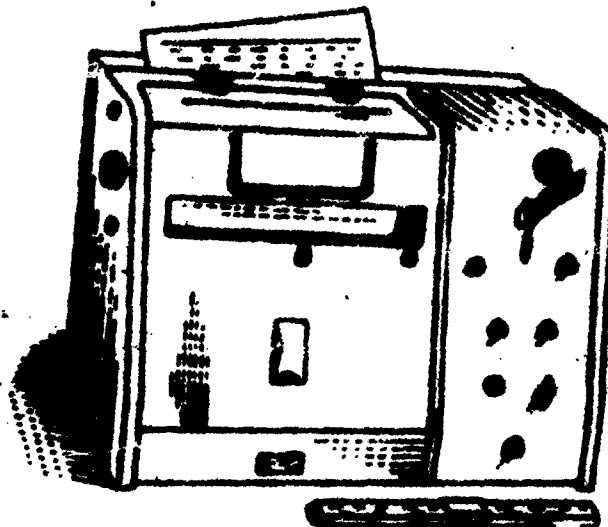
The facsimile apparatus FTA-P is designed for the transmission and reproduction on rolled electrochemical paper 230mm wide of various facsimile materials, facsimile telegrams, design drawings, etc. Transmission of photographs and their reproduction with a limited number of halftones is feasible. The FTA-P apparatus is widely used on the telegraph network of the Ministry of Communications (on sections "city branch office--central telegraph office") and it can also be used in industrial enterprises, establishments and in transportation.

The equipment is made up of the transmitting (Figure 1) and receiving (Figure 2) apparatus.

The control of the receiving apparatus is automatic and that of the transmitting apparatus -- manual.

The width of the transmitted image is 200mm; the length is unlimited. Synchronization system is effected from a common power-supply network or from attachments for independent synchronization. The phasing system is electromechanical.

Apparatus operates over physical high-frequency telephone circuits in the frequency range of 300 to 2,700 cycles per second or 300 to 3,400 cycles per second and over short-wave radio channels by the method of amplitude modulation. The speed of transmitting a document measuring 220mm x 300mm amounts to twelve minutes. The operating speed is 120 lines per minute at the transmission spacing of 0.2mm. The input and output resistance is 600 ohms. Power supply is from a network of alternating current of 127/220 volts and frequency of fifty cycles per second.



Power consumption of the receiving apparatus is 190
watts and that of the transmitting apparatus -- 175 watts.
Dimensions of the receiving apparatus are 465mm x
x 345mm x 345mm and those of the transmitting apparatus --
-- 464mm x 412mm x 308mm.

SCIENTIFIC-TECHNICAL CONFERENCE ON THE
PROSPECTS FOR THE DEVELOPMENT OF
COMMUNICATION-CABLE PRODUCTION

The Third Scientific-Technical Conference on the Prospects for Development of Communication-Cable Production was held in September of this year in the City of Berdyansk at the Azorkabel' Plant.

The conference aroused great interest on the part of engineering and technical community, workers of cable plants and users of cable wares. Taking part in it were delegations from plants and scientific research institutes, also representatives of the Ministry of Communications, of the Ministry of Highways, Railroads and Waterways, of the Academy of Sciences USSR and of other organizations engaged in planning, construction and operation of cable lines and radio and electronic equipment.

The aim of the conference was to define the technical policy in the development of cable equipment and work out plans for future development of communication cables and radio-frequency cables.

Participants in the conference broke up into three sections: long distance communication cables, local communication cables, radio-frequency cables and waveguides.

The following reports heard at the plenary meeting aroused great interest: by Comrade I. S. Ravich (Ministry of Communications USSR) "Prospects of the Development of Communication Facilities of the Country", by Comrade S. S. Ashkenazi (State Planning Commission USSR) "Prospects of the Development of Communication-Cable Production", by Comrade P. A. Frolov (Central Scientific Research Institute of Communications, Ministry of Communications) "Requirements in Regard to the Cables of Long Distance, Local and Intra-Rayon Communication Service", by K. A. Lyubimov (Scientific Research Institute of the Cable Industry) "Technical Policy in the Development of Communication-Cable Production".

The reports revealed the outlook for development of electric communications in the country and formulated the tasks facing the cable industry in regard to creation of new designs of long distance communication cables and in regard to the considerable increase in their output.

It was underscored that these tasks can be accomplished only on the basis of wide-scale adoption of modern synthetic materials and plastics (polyethylene, polystyrene,

polyvinyl chloride, fluoroplastic materials, etc.) in cable production.

Cables with aluminum and plastic sheathings instead of lead ones have to be put into wide use. These questions were discussed in detail in the section on long distance communication cables. This section heard the following reports: "Balanced Cables with Polyethylene-Envelope Insulation"; "Development and Fabrication of Small-Gauge Coaxial Cables"; "Communication Cables with Styroflex Insulation in Aluminum Sheathing"; "Experience in the Fabrication of Long Distance Communication Cables with Aluminum Conductors and Aluminum Sheathing"; "Improvement in the Production of Standard Coaxial Cables".

The section on local-communication cables heard and discussed the following reports: "Development and Testing of Intra-Rayon Communication Cables"; "Some Problems of the Development of City Telephone Cables"; "Cords and Wires with Plastic Insulation".

The section considered that the development of city intra-rayon and local communication cables has to proceed in the direction of wide-scale adoption of plastic-material designs of cables.

The section on radio-frequency cables and waveguides noted the great importance of work conducted on the creation of long-distance-communication waveguide lines for a large number of telephone channels and television broadcasts, and considered it imperative to push this work in all possible ways.

Work on the adoption of surface-wave lines for television as elucidated in reports by comrades A. D. Apenasenko and E. F. Ukstin was also approved.

The conference unanimously adopted an expanded resolution which formulated the basic directions in the development of cable equipment in Soviet Union and which defined the program of action for the near future.

I. I. GRODNEV

ON THE LABOR HONOR OF SOVIET
COMMUNICATION WORKER

N. D. PSURTSEV, Minister of Communications
USSR

SUMMARY -- [A description of the chief goals of the State Plan achieved in the first half of 1962 together with a description of shortcomings in the communication services to the population. Decline in the majority of quality indices is noted. Need for further educational work among communication workers is stressed. Some letters contributed to the Conference by Correspondence are analyzed.]

* * *

Communication Workers! Develop and Perfect Communication Facilities! Improve Service to the Population!

(From the Appeals of the Party Central Committee on the Occasion of the 45th Anniversary of the Great October Socialist Revolution)

Communication workers! Conference by Correspondence which was held by the journal Vestnik Svyazi (Herald of Communications) was devoted to one of the problems most important for us -- the bringing to light of the causes of the origin of complaints concerning the work of communications organizations and development of measures to eliminate these causes. In the light of decisions of the 22nd Party Congress and new Party Program the raising of efficiency and quality of service to the population and national economy is the chief task of communication workers of the country where everything is done in the name of man, for his happiness. We will achieve development and improvement of communication facilities first of all in order to satisfy the needs of Soviet people better and more completely.

Soviet people are successfully realizing the decisions of the 22nd Party Congress. Communication workers

are also making a worthy contribution to this great common cause of the nation. By having developed on a wide scale the socialist competition, by participating actively in the movement for Communist Labor Soviet communication workers fulfilled in the first half year the chief goals of the State Plan with respect to volume of output, with respect to all types of outgoing mail and telephone and telegraph traffic, with respect to revenues and with respect to the raising of labor productivity. The goal on putting in operation production facilities and dwelling areas was also realized. The country gained many new radio-relay and long distance cable lines. Communication workers received more than 17,000 square meters of dwelling area. However, most of the quality indices leave much to be desired and some of them even declined in the first half year in comparison with the corresponding period of last year.

The number of cases of failure to exchange /deliver-pick up/ and dispatch mail proceeding in railroad mail cars, steamships and aircraft has considerably increased. The number of cases of failure to dispatch mail over the routes has grown more than twofold.

Due to relaxation of strictness in selection of workers who are entrusted with the handling of pecuniary valuables and also due to the slackening of financial supervision at the lower level the number of cases of misappropriation of mailed items has increased. A series of quality indices for long distance telephone and telegraph service also deteriorated. The number of uncompleted telephone calls and those completed with a delay of over an hour increased somewhat. The amount of telegrams transmitted and delivered within the prescribed scheduled time limits has decreased. Out-of-service periods of long distance links have grown. At radio-communication and radio-broadcasting enterprises the duration of service interruptions has increased.

Serious shortcomings in the work of communications organizations in providing service to the population are also indicated by the inflow of a considerable number of complaints from the public. In the first half year their number was somewhat larger than in the same period of last year. More than one half of the complaints is the proportion dealing with postal service, 13% deal with long distance telephone service and about 10% -- with telegraph service.

Thus, it is perfectly obvious that as yet we have not reached the turning point in bringing about improve-

ment in the quality of the work of communications organizations. What is the reason for this? As V. M. Bogun (Borisov Communications Office), V. Ye. Zhavoronok (Kiev Post Office), A. D. Gerkulesov (Leningrad Telegraph Office) and a number of other comrades correctly pointed out in their addresses at the Conference by Correspondence the chief reason consists in that violations of operating and technical regulations and instructions by individual workers still occur at many communications enterprises. Of course, among communication people there are comparatively few such undisciplined workers who have a careless attitude toward their official duties. Even in large collectives their number is small but the damage which they bring to our common cause, to the good name of Soviet communication workers is very great.

Many communication workers do not realize to what unforeseeably difficult consequences, to what complications for people using communication services even at first glance an insignificant mistake in the work of a telegrapher, telephone operator, mail sorter or a mail carrier may lead. Therefore, we cannot have a tolerant attitude even toward isolated cases of flaws in our work, we have no right to this.

The chief form of the struggle against flaws and poor workers under our Soviet conditions is educational work -- daily educational work with every communication worker. This work has to be conducted by everybody -- important and minor supervisory personnel of communications enterprises and organizations together with the Party and Trade Union organizations while relying on the support of the public. The power of public action, the example of front-rank communication workers continuously working without flaws who serve the population with care and efficiency in Soviet manner in the full sense of this word, have to be utilized in all possible ways in our drive for raising the quality of work of communications organizations.

But many communication workers permit flaws not due to negligence and carelessness but because they do not know properly the operating and technical rules and instructions and in this case the work will not be helped by any general appeals. Consequently, it is imperative to achieve first of all the goal that every communication worker knows the operating and technical rules and instructions, in any case to the extent necessary for him for the type of work being performed.

Recently the branch-of-communications administrations of the Ministry of Communications USSR carried out

considerable work on the preparation and publication of various operating and technical rules and instructions which take account of the experience of front-rank collectives and workers and of the present-day level of the development of communication, radio-broadcasting and television engineering. Recently "Rules on Technical Operation of Radio-Relay Lines" and "Rules on the Construction and Repairs of Overhead Communication Lines" have been published and sent out to lower-echelon organizations. In the near future communications enterprises are to receive rules on the use of city telephone exchanges, on technical operation of rediffusion stations, on technical operation of radio-communication facilities, postal regulations revised to a considerable degree, and a number of other regulations. It is necessary to organize a thorough study of these and other similar basic documents by the workers of appropriate branches of communications and to make persistent efforts to achieve a strict compliance with them.

At the same time, in order to improve drastically the quality indices of the work of communications organizations in the shortest possible time communication workers have to increase exactingness toward themselves and their colleagues and to make persistently careless workers strictly answerable. Thus, one cannot agree with one point of the interesting and on the whole completely sound article by chief of Kuybyshev Long Distance Telephone Office Ye. M. Tikhonova who wrote in No 8 of the journal Vestnik Svyazi as follows: "Talks are held with telephone operators who regularly permit flaws. This produces good results". In regard to workers who regularly permit flaws and at that in such an important sector as long distance telephone service where we deal directly with tens of thousands of people every day, such measures are completely inadequate. If a telephone operator regularly works with flaws, then she is either simply incapable of doing this work or else does not want to have a conscientious attitude toward the entrusted job. Then in the former case it will be apparently more proper to use her on some other work which she is capable of performing, and in the latter case -- to take measures specified by the Regulations on the Discipline of the Communication Workers of USSR.

It should be stressed again and again that we will be unable to achieve the necessary improvement in the work of communications organizations if supervisory personnel of communications enterprises and first of all of the communications offices and branch offices are not exercising daily personal supervision over the state of operating activities at their enterprises.

In the Ministry of Communications USSR Order No 125 dated 23 February of this year on the tasks of Soviet communication workers for 1962 it is pointed out that it is precisely the chief of communications office or branch office who has to make a personal check directly at work stations at the beginning and end of working day. In the morning, after arriving for work he has to ascertain whether all telegrams received during the evening and night shifts were delivered to the addressees on time, and if he should find undelivered telegrams he has to find out the reasons for this and to take necessary measures. A check should be made whether all mail and money orders received during the preceding day were delivered to the addressees; whether the central Moscow, republic and oblast newspapers were received, processed and dispatched to subordinate communications enterprises on time, or whether they were given out to mail carriers for delivery to the subscribers. A check should be made how the business lobby and work stations for serving the patrons were prepared, whether the necessary postal-documentation blanks, stamps and operating materials are on hand everywhere where it has been prescribed, whether date stamps are in good order, whether the impressions from them correspond to the current date. In an exactly similar manner it is indicated in the Order what the chief of the communications office and branch office has to check at the end of working day. It would seem that basically simple matters have been listed understandable to every supervisor with these matters being within the range of his immediate duties. This had to be done because unfortunately many chiefs of communications offices and branch offices lost the ability to manage the work entrusted to them in concrete manner, to examine thoroughly the state of every production section. But without this it is impossible to set up technical operation in proper manner, to put an end to flaws and inefficiency in our work.

Communist Party demands from us a thoughtful and considerate attitude toward the claims and complaints of working people. And this means first of all that every complaint has to be thoroughly investigated and the demands contained in it satisfied without fail if they are valid. But still this is not enough. The main thing is that causes giving rise to the complaints be brought to light and eliminated. This task is not easy and frequently requires persistent and painstaking work. But only in this manner can an effective struggle be waged for a radical improvement in the work of communications organizations.

Recently a letter came to the Ministry of Communications USSR from a woman writer residing in the House of Creativity near Moscow in Staraya Ruza. She noted with bitterness that lately for some reason letters began to take longer to reach them than in previous years and as a confirmation of this she enclosed several envelopes with clearly marked date stamps. A check-up was set and it was found that the chief reasons for this were either incorrect sorting of letters due to negligence of individual communication workers or incorrect addressing of letters. In recent years the boundaries of the rayon were changed, new communications branch offices were opened. In conformity with this the addressing of letters also had to be changed but the population knows nothing of this and continues to write in the old way. As the result many letters arrive first at the communications enterprises of adjoining rayon and reach the addressees only from there after passing through several hands and making a considerable unnecessary trip. But this could and should have been avoided.

There is one conclusion from the foregoing: it is necessary to find without fail the initial causes giving rise to complaints and to take measures for their elimination.

Communications organizations exist in our country for the people. The State invests enormous resources in the development of communications industry in order to enable us to satisfy better and more completely every day the continuously growing needs of city and rural population. Therefore, supervisor of every communications enterprise and establishment is duty bound to listen keenly in his work to the voice of Soviet people whom we are called upon to serve.

Instructor of Gor'kovskaya Oblast' Party Committee V. N. Kasygin who wrote for the Conference by Correspondence in No 8 Vestnik Svyazi told about an interesting measure carried out on the initiative of oblast organizations -- public inspection of the state of service in providing citizens and organizations with communication facilities with the aim of eliminating existing shortcomings and raising of general efficiency in work of communications organizations. This measure should be recommended to others also, as well as regular reports by the supervisory personnel of communications enterprises to the public. It is not the first year that such reports are practiced in Vileyskiy Rayon of Minskaya Oblast. This provides important help to communication workers in their work.

The articles by A. Ya. Nefedov (Ivanovskaya Oblast

Communications Administration), V. A. Zlotov and N. I. Chilikina (Gor'kiy Long Distance Telephone Office) and by some others raise the question of the necessity to improve the organization of through long distance telephone calls. The Ministry of Communications USSR attaches great importance to this matter and is adopting measures aimed at its regulation. In the near future there will be called a representative conference of long distance telephone service workers specially for discussion of problems connected with through traffic.

In the article by chief of Kiev Post Office V. I. Zhavoronok it was pointed out that not infrequently complaints are received at communications enterprises regarding shortage of picture envelopes and post cards. Measures will be taken with respect to this also. Specifically, the issue of picture post cards is being increased from 400 million during the current year to 600 million in 1963.

A number of serious comments and suggestions on improvement of technical operation at telegraph offices are contained in letters by A. D. Gerkulesov (Leningrad Telegraph Office), K. S. Moskalév (Zelarskiy Rayon Communications Office of Irkutskaya Oblast) and S. G. Badayev (Voronezh Telegraph Office). All these as well as other suggestions and wishes of participants in the Conference by Correspondence including also those contained in letters not published in the Journal will be carefully considered by the appropriate administration of the Ministry of Communications USSR and necessary decisions will be adopted in regard to them.

In the speech at the 22nd Party Congress on the new Party program N. S. Khrushchev said: "In the course of the construction of communism continuous raising of the quality of output becomes a paramount economic and political task. The slogan 'Soviet -- means the best' put forward in pre-Congress days must be the operating principle of every enterprise".

Important discussion begun by the distinguished Ukrainian kolkhoz member Hero of Socialist Labor N. G. Zaglada found enthusiastic and excited response in Soviet people. Questions raised by her concern all builders of communist society, including also communication workers. It is sacred to watch over the interests of a person using the services of communications organizations, to perform one's work duties honestly and conscientiously so as not to blush either before oneself or before people. This we must demand from all communication workers.

For Soviet communication workers called upon to serve daily millions of Soviet citizens -- builders of communism, the struggle for excellent quality of work is a matter of labor honor and valor.

Let us, therefore, work tirelessly and persistently on accomplishing this task faster and on raising the efficiency of the work of communications organizations to the level of the demands made.

COMMUNICATION ENGINEERING

SINGLE-CHANNEL VOICE-FREQUENCY TELEGRAPH APPARATUS EMPLOYING SEMICONDUCTOR DEVICES (OTT-2)

SUMMARY -- The article gives a brief description of new single-channel voice-frequency telegraph apparatus which is to replace the OTT-1 apparatus on intra-oblast and intra-rayon networks when organizing telegraph service by the system of direct connections and subscribers' telegraph.

Single-channel voice-frequency telegraph apparatus with frequency modulation employing semiconductor elements and designated OTT-2 is designed for operation over telephone channels of cable, overhead and radio-relay communication lines.

Basic Characteristics

In operation over a four-wire telephone channel having the bandwidth of transmitted frequencies of not less than 300-2,700 cps the OTT-2 apparatus makes it possible to set up one duplex voice-frequency telegraph channel. A frequency band of from 2,500 to 2,700 cps is separated in order to form a voice-frequency telegraph channel in the spectrum of effectively transmitted band of the telephone channel by means of special separation filters.

Separation filters are connected to the telephone channel by employing four-wire circuit arrangement, on the input of transmission channel at the point having the relative level of -1.5 nepers and on the output of the receiving channel at the point having the relative level of +0.5 nepers.

Apparatus is designed for connection of telegraphs operating on bidirectional currents with separated transmission and reception circuits; for connection of start-stop telegraphs operating on unidirectional current with separated transmission and reception circuits, and for the connection of start-stop telegraphs operating on unidirec-

tional current with nonseparated transmission and reception circuits (ST-simplax).

The inputs of telegraph circuits make it possible to connect the telegraphs both by employing balanced network and unbalanced (wire--ground) network.

Under the conditions of operation on bidirectional current the voltage of +60 volts for the power supply of the transmission circuit is fed from the side of telegraph apparatus and for the reception circuit -- from the side of the channel.

In operation on unidirectional current with separated and nonseparated transmission and reception circuits the power supply is provided from the side of the channel this supply having positive-polarity voltage of 120 volts with current of up to 60 milliamperes.

The apparatus (including also the telegraph circuits) obtains power from alternating-current power-supply network of 127/220 volts and frequency of 50 cps or from direct-current sources having voltage of 24 volts. With power supply from alternating-current power-supply network the power consumption including telegraph circuits does not exceed 27 watts and in the case of direct-current power supply -- 15 watts.

The center frequency of the telegraph channel amounts to 2,610 cps, i.e. it corresponds to the frequency of the 13th channel of TT-12/17 or TT-17P equipment. Frequency deviation is equal to +55 cps; telegraph transmission speed is up to 75 bauds.

Characteristic frequency of 2,555 cps is transmitted when sending positive-polarity telegraph signals into the line, and upper characteristic frequency of 2,665 cps is transmitted when sending negative-polarity telegraph signals.

Rated value of the absolute transmission level on the line output of equipment is equal to -2.5 nepers and that of the reception level on the line input of equipment is equal to -1.0 nepers. Interference level in the telephone channel attributable to the operation of telegraph channel is below -5.0 nepers.

In the case of normal reception level and absence of interference the distortions of telegraph signals of any kind do not exceed 4% at the telegraph transmission speed of 50 bauds and 5% when the telegraph transmission speed is 75 bauds. With a stepless raising of the reception level by one neper or lowering by 2.5 nepers at the same telegraph transmission speeds the distortions of telegraph signals amount to not more than 6% and 8% re-

spectively. A sudden change of reception level by +1 neper or by -1 neper at the telegraph transmission speeds of up to 75 bauds does not cause departures of the magnitude of telegraph-signal distortions by more than +12%.

At the rated reception level and presence of lumped interference in the telegraph channel with level 2 nepers below the signal level the distortions of telegraph signals of any kind do not exceed 7% at 50 bauds and 11% at 75 bauds.

Telegraph-signal distortions attributable to a shift of carrier frequencies in the communication channel by +10 cps or -10 cps do not exceed 11% at the speed of 50 bauds and 16% at speed of 75 bauds.

Upon a change in the voltages of power-supply sources by +10% and -20% in comparison with the rated value the increase in distortions of telegraph signals amounts to not more than 3%.

General Description of Apparatus

The apparatus contains the following basic assemblies: a set of separation filters, transmitter, receiver, supervisory switching and power-supply system. Basic diagram of the transmitting and receiving portions of the apparatus is shown in Figure 1.

The transmitting portion of the apparatus includes the following: transmission separation filters with limiter-amplifier and relay which cuts out the limiter when power-supply voltage disappears; oscillator with amplifier and modulator; a fixed attenuator for 1.3 nepers; line transformers for matching the connecting line with the apparatus; a variable attenuator for 1.5 nepers and fixed attenuator for 1.0 neper.

The receiving portion of the apparatus consists of reception separation filters; amplifier-limiter with a two-cycle direct-current amplifier; a 0.5-neper fixed attenuator; a band filter; a variable attenuator for 1.9 nepers; a line transformer; a line amplifier; a variable attenuator for 1.8 nepers and a 0.5-neper matching attenuator.

The OTT-2 has unitized construction. Units are connected to the circuit by means of grooved blocks fastened from inside to the front plate of each unit. The feasibility of simple replacement of the units and easy access to their wiring make the apparatus convenient to operate.

Channel equipment is arranged on standard-size

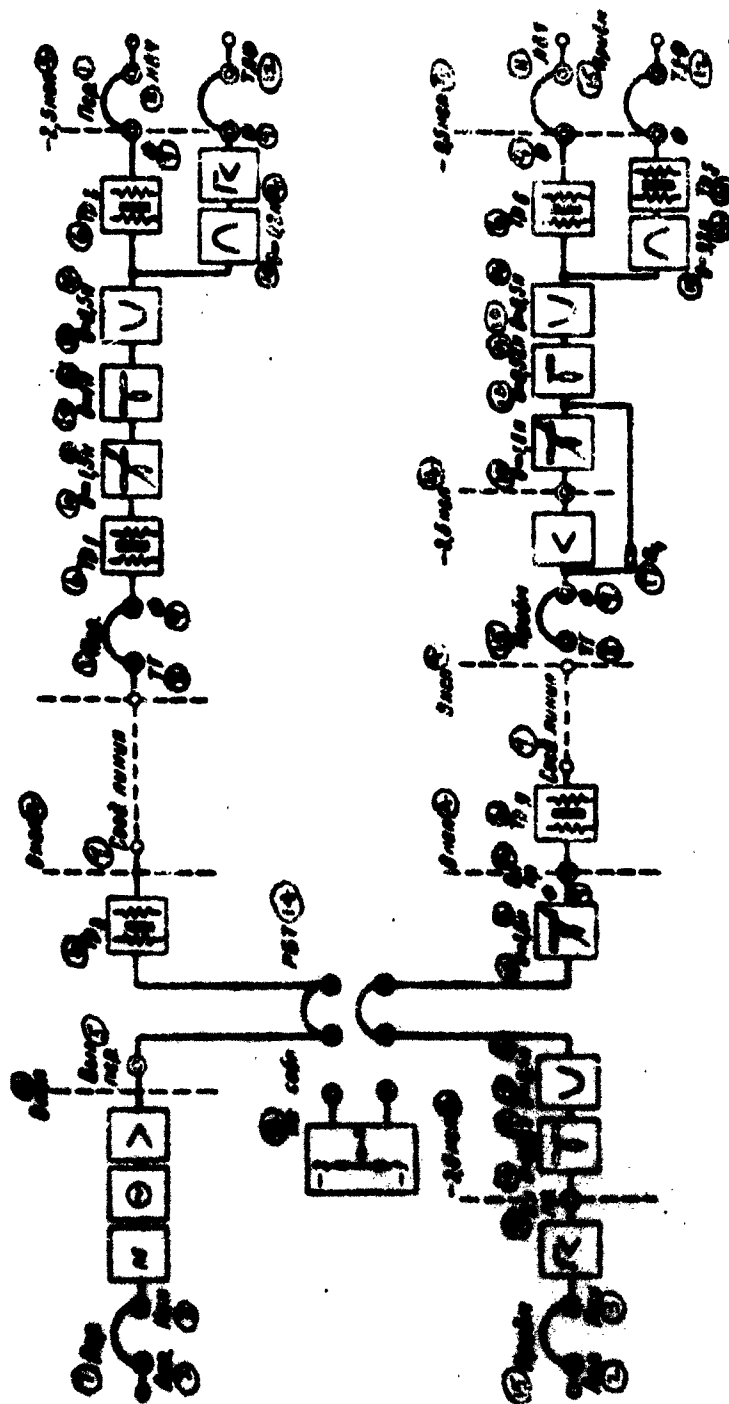


Figure 1
 Key to Figure 1: 1) Transmission; 2) Apparatus; 3) Channel; 4) Nepers;
 5) Transmission; 6) Transformer; 7) Connecting line; 8) Telegraph; 9) Filter
 10) Voltage; 11) High-frequency line; 12) Telephone; 13) Towards oneself;
 14) Operation; 15) Reception; 16) Reception input; 17) Switch.

plates. This makes it possible to place it on racks for voice-frequency telegraph equipment or on racks for high-frequency telephone equipment.

Separation filters are arranged on a plate designed for three sets. The design of this plate also permits its installation on standard racks.

In case of placing the separation filters on high-frequency telephone equipment they are connected with the main OTT-2 apparatus according to four-wire circuit arrangement.

Filters employ inductance coils having high-permeability ferrocart cores and small-size plastic-film capacitors. A number of small-sized semifinished switching items are used in the equipment. The equipment was developed with account taken of the maximum uniformity of its elements with the elements of the new multichannel voice-frequency telegraph equipment TT-17P.

Total weight of OTT-2 apparatus together with spare parts amounts to twenty kilograms.

Separation Filters

Separation of the telephone channel and telegraph channel is achieved by means of two plugs (for transmission and reception) each of which contains the following separation filters: a telegraph filter having passband of 2,500--2,700 cps and telephone filter having passband of 300--2,400 cps and 2,800--3,400 cps.

Band filters similar to those in the TT-17P equipment are used as telegraph filters. Band-elimination filters are used as telephone filters.

Attenuation of filters in the attenuation band was selected to be such that interference level attributable to telegraph channel in the telephone channel at the point having relative zero level does not exceed the value of -5.0 nepers. In doing so the protection of telephone channel necessary from practical standpoint is achieved. Telegraph filters make it possible to obtain a passband of about 150 cps in width at attenuation level of 0.7 neper.

Telegraph transmission filter is intended for the suppression of components of telegraph-transmission spectrum which lie in the region of telephone-channel frequencies of 300--2,400 cps and 2,800--3,400 cps and for suppression of second harmonics of telegraph-transmission spectrum. Telegraph reception filter serves to protect the receiver of the telegraph channel of OTT-2 from the effect of telephone-transmission currents.

Telegraph transmission filter is designed for limiting the telephone-transmission spectrum with the aim that the speech-current components lying in the frequency passband of this filter do not create telegraph-transmission interference and for preventing the leakage of voice-frequency-telegraphy current onto the two-wire output of the high-frequency telephone channel. The telephone reception filter is also intended for the same purpose.

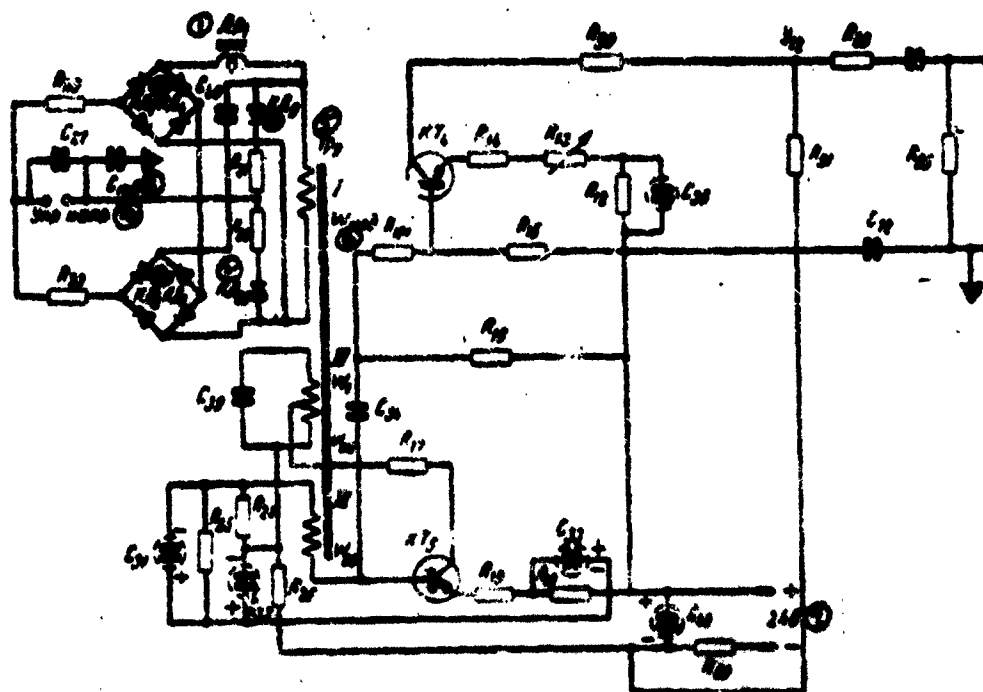


Figure 2

Key to Figure 2

- 1) Dr. shock;
- 2) KD diode;
- 3) Stb stabilizer;
- 4) Direction control;
- 5) Tr transformer;
- 6) W_{mod} ;
- 7) 24 volts.

The distribution-filters unit (in the direction of transmission) is provided with an amplitude limiter of the telephone-channel level. This limiter eliminates the possibility of mutual effect of the telegraph channel and telephone channel which may develop upon overloading the high-frequency telephone equipment due to large peak values of speech currents. If the speech-signal level is below the threshold of effective limitation (-1.2 nepers), the limiter operates as an amplifier with small amplification by compensating the attenuation introduced by filters into the telephone channel. Effective limitation appears with the increase of the speech-signal level.

Channel Transmitter

Circuit arrangement of the channel transmitter in OTT-2 apparatus is shown in Figure 2. The main part of the channel transmitter is oscillator whose circuit is arranged so that its frequency is controlled by the input telegraph signals. Depending on the polarity of these signals additional capacitance or inductance is connected to the oscillation circuit of the oscillator by means of diode bridges (diodes D-204). Owing to this the oscillator frequency decreases or increases in comparison with its center value (2,610 cps).

The change of oscillator frequency from minimum value (2,555 cps) to the maximum (2,665 cps) takes place in the narrow range of variation in the current of input telegraph signals, in the region of its passage through zero value. Therefore, a change in the stable value of this current is not reflected in a wide range on the oscillator frequency. In order to provide frequency stability upon a change in temperature the oscillator circuit is made up of inductance coil having ferrocarr core VChK-22 and mica capacitor of the type 330.

Channel Receiver

Circuit arrangement of the channel receiver of OTT-2 apparatus is shown in Figure 3. Channel receiver consists of a limiter-amplifier, power amplifier with discriminator and of a direct-current two-cycle output amplifier. On the output of direct-current amplifier is connected polarized telegraph relay of the type RPS-11/3 which is put out by domestic industry in place of the RP-4 relay used in the OTT-1 apparatus, and which has better technical characteristics and smaller dimensions in comparison with the RP-4.

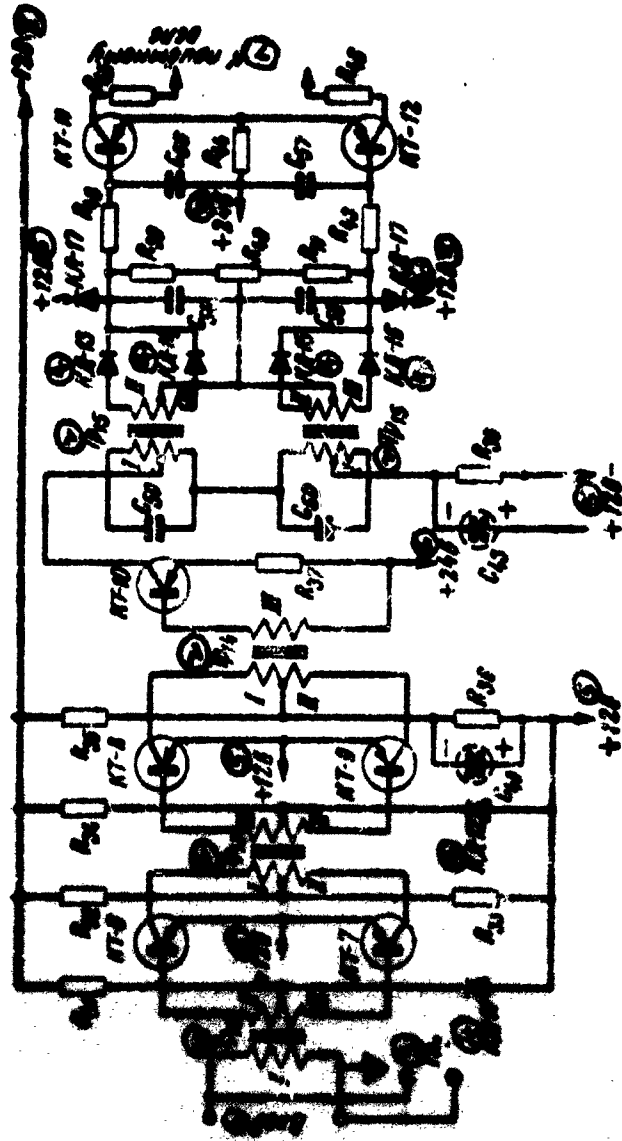


Figure 3

Key to Figure 3: 1) Input; 2) T_r transformer; 3) Gm oscillator; 4) KD diode; 5) +12 volts; 6) +24 volts; 7) To the receiving relay; 8) -12 volts.

Employment of amplifier-limiter makes receiver operation independent of the input level fluctuations in a considerable range. Adjustment of the bias of telegraph signals at the reception is achieved by means of a potentiometer inserted between the amplitude detector and direct-current amplifier.

OTT-2 apparatus demonstrated stable operation on telegraph links and will find wide employment on intra-oblast and intra-rayon networks for setting up direct-connection and subscribers'-telegraph links.

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and

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MECHANO-ELECTRONIC ATS
[AUTOMATIC TELEPHONE SYSTEM]

SUMMARY -- The article tells about mechano-electronic ATS developed at Moscow Electrotechnical Institute of Communications and intended for installation on the city telephone exchange as a hundred-lines sub-office. Basic construction of the sub-office is shown and its technical description is given. The operating principle in the establishment of all types of connections is described.

Switching equipment of an automatic telephone system may be divided into two types: that designed for the speech-channel wires and that designed for control purposes.

Depending on the elements (devices) employed by these two types of equipment the ATS are divided into three types: electromechanical designed on the basis of the use of selectors, connectors and relays, mechano-electronic in which the switching of speech channel is achieved by electromechanical devices and control by electronic elements, and electronic ATS where both types of equipment operate on electronic elements.

ATS of electromechanical type gained widespread use and until recently were the only type of systems which were employed on telephone exchanges. Belonging to them are the ten-step, rotary, relay and crossbar ATS.

The speed of the action of controlling systems employing electromechanical devices (relays) is limited due to the comparatively low operating speed of these devices.

Quicker-acting are electronic elements: semiconductor triodes, diodes and magnetic elements with a rectangular hysteresis loop.

At the present time work is in progress on the creation of ATS of mechano-electronic and electronic type involving the use of these elements.

In the mechano-electronic sub-office developed at the scientific laboratory of the Department of Telephony MEIS [Moscow Electrotechnical Institute of Communications] type LKS 10x2 multiple crossbar connectors of domestic manufacture have been used for switching the speech channel

while all of the remaining controlling and terminal systems employ triodes and diodes. In April 1962 a sub-office of less than full capacity made at the experimental workshops of MEIS was installed for trial operation on Moscow City Telephone Exchange (MGTS) as an extension of rayon ATS 1-3.

Trial operation of the mechano-electronic sub-office is being conducted jointly by associates of MEIS and of the production laboratory of MGTS.

Technical Description of PS-KE-100

Mechano-electronic PS-KE-100 (sub-office, crossbar-electronic for 100 lines) is designed for operation on telephone exchanges as a hundred-lines extension of ten-step ATS (ATS-47 or ATS-54). With a modification of the circuit arrangement of trunk groups the sub-office can also operate as an extension of crossbar ATS. The numbering of the sub-office's subscribers' lines is part of the numbering scheme for the whole city. The link with the base ATS is effected over two-wire connecting lines at the ends of which trunk groups are set up: relay-type at the base ATS and electronic at the sub-office.

The same circuit arrangement of the RSL [connector relay] sets at the base ATS and liaison signals over the connecting lines were adopted as those in the crossbar system of type PS-MKS-100.

Connection between subscribers' lines of the sub-office is effected through base ATS with the engagement of two connecting lines while connection with the long distance office is effected over a three-wire connecting line with the retention of all advantages for long distance calls.

Sub-office PS-KE-100 is intended to provide telephone facilities in dwelling houses and is designed for telephone load of 5.26 erlangs with its subsequent distribution as follows: $U_{out}=2.6$ erlangs, $U_{in}=2.5$ erlangs

$U_{long\ distance\ office}=0.16$ erlangs.

The sub-office is provided with the following: ten outgoing trunk lines to the base ATS, eight incoming trunk lines, two trunk lines for the link with MTS [long distance telephone office], and twenty intermediate lines between section A and C.

Power supply of the sub-office is effected from a specially developed rectifier which provides the following kinds of voltage:

- a) 24 volts (with grounded center point: -12 volts and +12 volts) for supply of all electronic circuits;
- b) 60 volts -- for supply of the electromagnets of MKS /mechano-crossbar system/.

Power supply for transmitters of subscribers' telephones of PS-KE-100 is received from RSL sects of base ATS as are buzzer and ringing signals.

Maximum resistance of the loop of the subscriber's line (without the telephone) on section PS-KE-100 subscriber--base ATS amounts to 1,500 ohms. Besides, the proportion of maximum resistance of the loop of the subscriber's line is not more than 1,000 ohms when insulation resistance is not less than 20 kilohms and the proportion of maximum resistance of the loop of the trunk line between PS-KE-100 and base ATS is not more than 1,500 ohms when insulation resistance is not less than 50 kilohms.

PS-KE-100 does not require continuous attendance. Signals are sent from it to the base ATS regarding the chief types of faults such as loss of power supply in case of a failure on city power-supply network or in the power-supply system, burning-out of fuses on 60-volt, -12-volt and +12-volt power supply sources, blocking of outgoing line, faulty marker of sub-office (marker delay of more than 200 micro-seconds), a break in one of the signal wires.

All of the sub-office equipment is arranged on a one-sided rack measuring 2,100mm x 790mm x 270mm. Rectifier has dimensions of 435mm x 600mm x 270mm.

Basic Diagram and Diagram of Group Formation of the Sub-Office PS-KE-100

In regard to the system of group formation sub-office PS-KE-100 represents the hundreds unit of the subscribers' selection stage (AI) of crossbar ATS. In order to carry a given load and with the type of MKS adopted, four MKS are required with a two-section connection of them.

Two MKS called subscribers' MKS are installed in section A (MKS-1 and MKS-2) and two MKS called line MKS (MKS-3 and MKS-4) are installed in section C. Outgoing trunk lines to base ATS are connected to MKS-3 and to MKS-4 -- incoming trunk lines from base ATS. Subscribers' lines are connected to MKS-1 and MKS-2 bank in transposed manner. Between section A and section C are twenty intermediate lines whose connection provides full access with respect to the outgoing and incoming trunk lines.

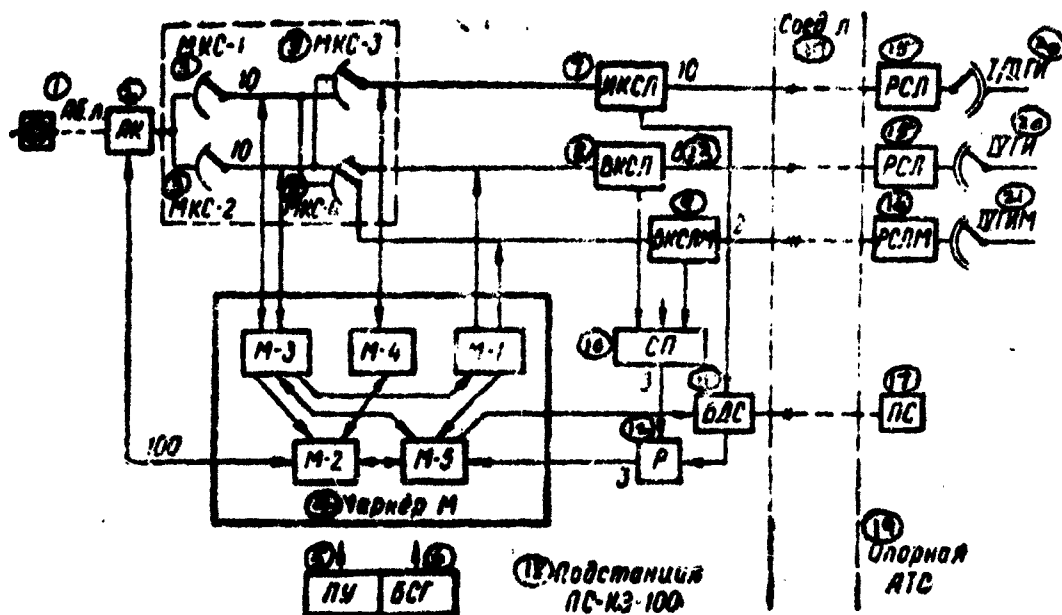


Figure 1

Key to Figure 1

- 1) Ab. 1. [subscribers' lines];
- 2) AK;
- 3) MKS;
- 4) Marker M;
- 5) PU;
- 6) BSG;
- 7) MKSL;
- 8) VKSL;
- 9) VKSLM;
- 10) SP;
- 11) BDS;
- 12) R;
- 13) C;
- 14) Trunk lines;
- 15) RSL;

(Key to Figure 1 continued on next page)

Key to Figure 1 -- continued

- 16) RSLM /Long distance connector relay/;
- 17) PS;
- 18) Sub-office PS-KE-100;
- 19) Base ATS;
- 20) GI I/II /group selectors I/II/;
- 21) GIM IV /long distance group selector IV/.

Four intermediate lines are accessible for each subscriber's line in case of outgoing and incoming connections.

Basic diagram of the sub-office PS-KE-100 is shown in Figure 1. The sub-office equipment consists of two parts: that installed at the sub-office itself and that installed at base ATS.

Equipment installed at the sub-office is made up of the following:

a) crossbar-connectors unit for switching the speech channel within the sub-office, controlling device (marker) -- M; b) subscribers' line equipment -- AK, outgoing trunk line groups for link with MTS /long distance telephone office/ -- VKSLM, registers -- R, circuits for connecting incoming trunk lines to the registers -- SP, remote-signaling unit -- BDS, office generators unit -- BSG, power-supply installation -- PU.

In its turn the sub-office marker has the following units: unit for controlling by signals the interaction between VKSL and RSL at base ATS -- M-1; subscribers identifier M-2; unit for testing and engagement of intermediate lines M-3; unit for testing and engagement of outgoing trunk lines M-4; unit for connecting registers to the marker M-5.

The following are installed at base ATS: outgoing and incoming trunk groups -- RSL, trunk groups for link with MTS, and remote-signaling plate -- PS.

Two-wire trunk lines going out of the sub-office are connected to GI I/II of ten-step base ATS while lines coming to the sub-office are connected to the bank of last (IV) GI.

Three-wire trunk lines for long distance communication are connected to the GIM IV bank.

In addition to the outgoing and incoming connections with lines of GTS /city telephone service/ sub-

scribers, internal connections between PS-KE-100 subscribers can also be effected at the sub-office through base ATS.

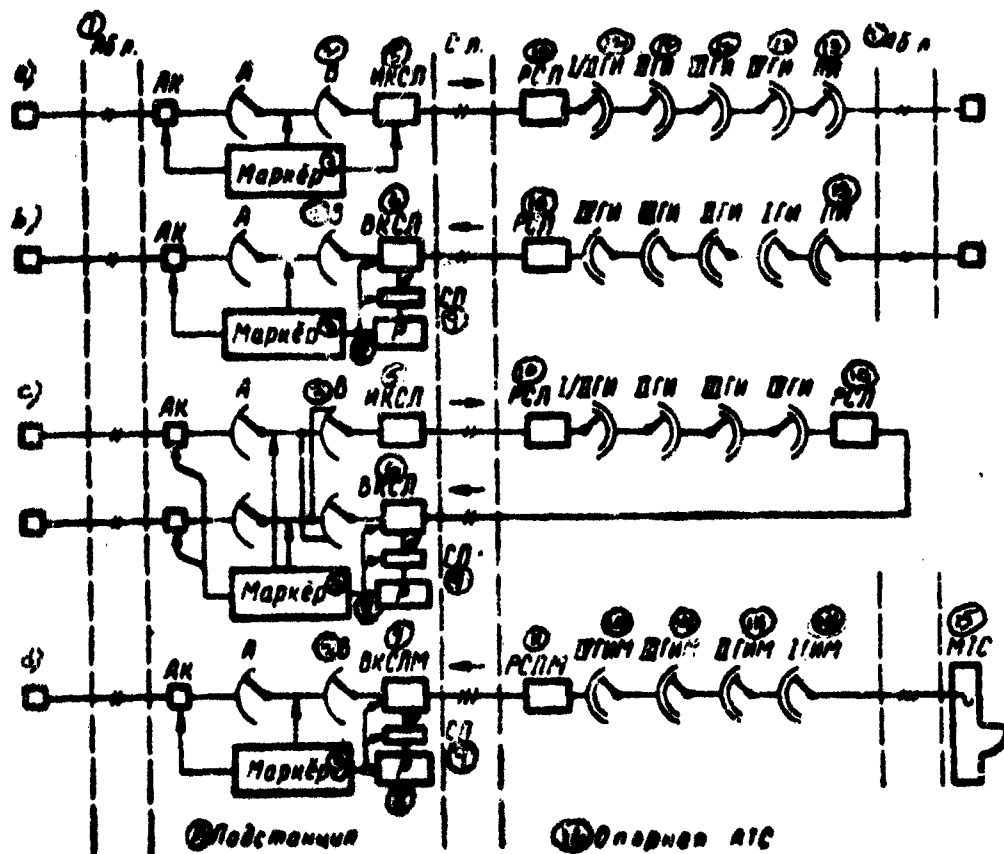


Figure 2

Key to Figure 2

- 1) Ab. 1. [subscribers' lines];
- 2) С;
- 3) Marker;
- 4) Sub-office;
- 5) ИКСЛ;
- 6) ВКСЛ;

(Key to Figure 2 continued on next page)

Key to Figure 2 -- continued

- 7) VKSLM;
- 8) R;
- 9) SP;
- 10) RSL;
- 11) RSLM;
- 12) GI;
- 13) PI /Intermediate selector/;
- 14) CIM;
- 15) MTS;
- 16) Base ATS.

Basic diagrams of the above-mentioned types of telephone connections for a city telephone exchange having six-digit numbering scheme (of MGTIS type) are shown in Figure 2.

The marker at the sub-office can handle only one connection -- incoming or outgoing. Incoming calls have preferential handling, i.e. if two calls came in at the same time -- an incoming call and an outgoing call, then the incoming call will be handled first.

Delay system of operation was adopted for outgoing calls. If at the time of receiving a call from the sub-office subscriber there are no free outgoing trunk lines or there are no free intermediate lines the subscriber waits for their release without engaging the marker.

Refused-call system was adopted for incoming connections, i.e. if there are no free incoming trunk lines to the sub-office or there are no free intermediate lines accessible to the called subscriber's line, then "busy" signal is sent to the calling subscriber.

Establishment of Outgoing
Connection (Figure 2a)

In the case when there are free outgoing lines at the sub-office and the marker is not engaged in the establishment of a connection, the subscribers identifier M-2 performs sequential testing of the state of subscribers' line-equipment sets AK.

If at the time of testing an AK was not in the state of being called (the handset is hung up on subscriber's telephone), then identifier M-2 goes over to the testing of AK which is next in order. If at the time of testing the AK was in the state of being called and there were available intermediate lines for it, then identifier stops at the given subscriber's line and connects it to

the marker while the identifier itself is blocked until the end of the establishment of connection. At the same time the identifier blocks incoming connections.

After the marker has been connected the hunting for and engagement of a free and accessible line begin with the help of unit M-3. Next, engagement of the free outgoing trunk line takes place by means of M-4 unit. After this the marker sends signals for cutting-in of necessary selecting, switching and holding electromagnets of the MKS of sections A and C. This provides connection of subscriber's line with the outgoing line to base ATS and engagement of GI I/II.

As soon as the holding electromagnets of sections A and C are cut in, the marker is released while electromagnets of MKS continue to hold while receiving power supply from the IKSL circuit.

The telephone tone office "response" is sent to the subscriber of the sub-office from RSL set of base ATS. Power supply for the handset in the telephone of the sub-office subscriber is effected from this same set.

When subscriber dials a number the dialing pulses are picked up by pulse relay in RSL and are transmitted to devices of city ATS.

At the end of the call the ringoff from the side of sub-office subscriber is picked up in RSL of base ATS and when GTS subscriber hangs up the handset a ringoff signal is sent in the direction of the sub-office this signal being picked up in IKSL. In this process the cutting-out of holding electromagnets of MKS is achieved and the release of all devices taking part in the connection.

If the city subscriber does not give the ringoff signal the outgoing line is not released, the city subscriber does not receive the telephone tone "busy" and signal for blocking the outgoing line is sent to base ATS from remote-signaling unit BDS. If it is the sub-office subscriber who does not give the ringoff signal, then the line is also not released and the sub-office subscriber received "busy" signal from the RSL of base ATS. Simultaneously, signal for blocking the outgoing line is sent to base ATS. Thus, release of outgoing trunk line takes place with the two-way ringoff.

In the case when the called subscriber's line is busy, the subscriber did not answer or the sub-office subscriber cancelled the call without completing dialing of the number, the outgoing trunk line, ATS devices and devices of the sub-office are released after the calling subscriber has hung up the handset.

Establishment of Incoming Connection (Figure 2b)

In the establishment of incoming connection to a sub-office subscriber the incoming line from the side of GI IV is engaged only in case it is free, in good order and the register accessible to it is available.

After engagement of the incoming line and the register the last two pulse trains of the number of the called subscriber of the sub-office are received and recorded in the register.

After completion of number recording the register sends end-of-dialing signal to unit M-5 of the marker.

If at this time the marker is engaged in the establishment of connection, the calling subscriber waits for its release. If the marker is free, then information regarding the called subscriber's number reaches through unit M-5 the subscribers identifier M-2 whence a signal is sent to subscriber's line equipment of the called subscriber. If subscriber's line is free, then a free and accessible intermediate line is engaged through unit M-3 after which the necessary electromagnets are connected to MKS of sections A and C and establishment of connection with the called subscriber's line takes place. In this process the marker is released.

The circuit for holding MKS electromagnets is provided from VKSL. If the subscriber's line is busy or all intermediate lines accessible to it are engaged then immediately after sending information from register to unit M-2 through unit M-1 and unit M-3 a busy signal is received in the circuit of VKSL this signal being transmitted over the trunk line to RSL of base ATS and then to the calling subscriber.

In this process the marker is released while the incoming line and VKSL are released after the calling subscriber has hung up the handset.

After the end of the call the ringoff from the sub-office subscriber's side is picked up in RSL set of city ATS and after ringoff signal has been received from the calling subscriber a ringoff signal is sent in the direction of the sub-office this signal being picked up in VKSL. The latter cuts out MKS electromagnets and releases sub-office devices taking part in the connection.

The release of the line takes place after a two-way ringoff.

Establishment of Internal Connection
Between Subscribers of LS-KE-100 (Figure 2c)

In the establishment of internal connection the system operates in the same way as in the outgoing and incoming connection involving the engagement of two trunk lines.

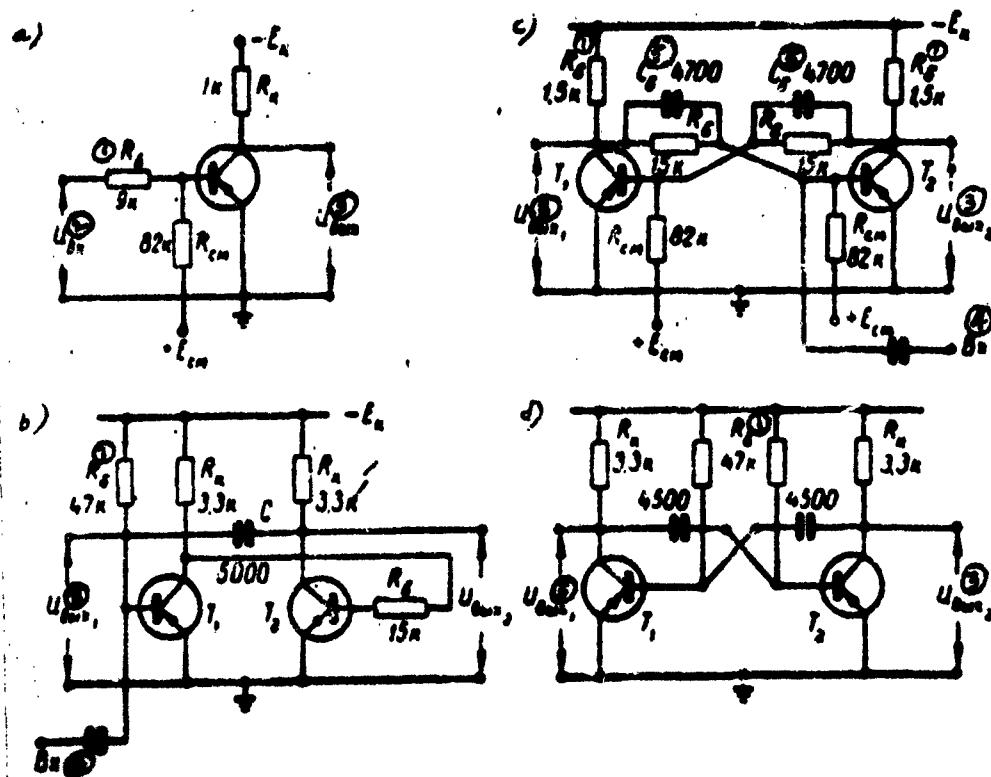


Figure 3

Key to Figure 3

- 1) R_b ;
- 2) U_{vykh} $\overline{U_{incoming}}$;
- 3) U_{vykh} $\overline{U_{outgoing}}$;
- 4) Input;
- 5) C_b .

Establishment of Long Distance Connection (Figure 2d)

Trunk line for connection with MTS is engaged from the side of GML IV of base ATS. In case of the free subscriber's line having access to a free intermediate line the connection is established as ordinary incoming connection.

If however, the line is engaged by a local call then after cutting into it the telephone operator cautions the subscriber about the received long distance call. No provision has been made for a compulsory disconnection of the local call. When the called subscriber is busy with a long distance call or when there are no free intermediate lines for the subscriber's line, the telephone operator at MTS receives "busy" telephone signal.

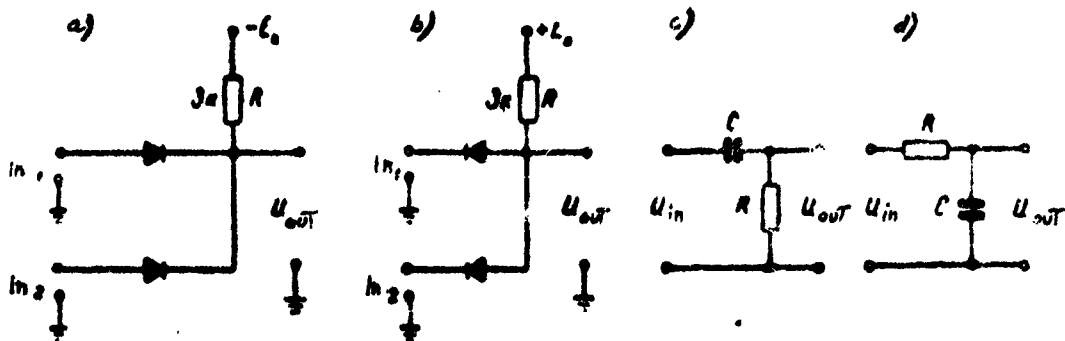


Figure 1

Basic Diagrams of Electronic Devices of the PS-ME-100

Electronic circuits of controlling and terminal devices employ semiconductor triodes and diodes and small-sized resistors and capacitors.

Reversing mode of triode and diode operation is used in the circuit. This mode is characterized by that a component may be in one of two extreme states: either it is completely open or it is completely closed. The change-over from one state to the other may be considered instantaneous for practical purposes. In the open state resistance between electrodes (collector and emitter of the triode and anode and cathode of the diode) amounts only to



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system PS-KE-100

a few ohms while in the closed state it reaches several megohms. This property of the operation of electronic components makes it possible to use them for designing telephone automatic-equipment circuitry.

Elementary and logical diagrams may be constructed on the basis of semiconductor triodes and diodes. With the help of these diagrams it is possible to design complex automatic-equipment circuits such as the circuits of the control and terminal devices of ATS.

The following may be considered as belonging to elementary electronic circuits: electronic switch (inverter, amplifier) (Figure 3a), trigger (Figure 3b), kipp oscillator (Figure 3c), multivibrator (pulse generator) (Figure 3d). There are also three circuits performing logical operations: "AND" (Figure 4a), "OR" (Figure 4b), "NOT" (Figure 3a). Electronic circuits performing logical operations "AND" and "OR" may also be designed with triodes. Differentiating circuit (Figure 4c) and integrating circuit (Figure 4d) are employed as the forming devices. Parameters of the above-mentioned circuits have to be calculated for specific devices. In Figures 3 and 4 are shown the rated values of resistors and capacitors used most frequently in the electronic circuits of the sub-office system PS-KE-100 at the power-supply voltage of electronic circuits of -12 volts and +12 volts.

Employment of quick-acting electronic components in ATS circuits makes it possible to reduce the size of master controlling devices which reduces capital expenditures for equipment while the long service life of electronic components and absence of wearing and regulated parts in them reduces outlays for its operation.

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PPM-AM MODULATION WITH TIME DIVISION OF CHANNELS IN RADIO-RELAY LINES

SUMMARY -- A brief description of the principle of pulse-position modulation in the case of time division of channels is given.

Radio-relay lines play an important role as a means of transmitting telephone and television signals over considerable distances.

As a rule multichannel radio-relay lines are built.

In Figure 1 is shown the block diagram of a radio-relay line.

In order to avoid mutual interference the transmitter and receiver of every station of the line operate on different waves. On the input and output of each channel there is a differential system for the changeover of four-wire system of the radio channel to two-wire system and for conversion of inductive output into audio-frequency output and vice versa. Time division of channels is employed in different systems of multichannel radio-relay lines. This means that definite time for transmission of information is allotted for every channel. For an example we will examine a 24-channel radio-relay line. During time T (Figure 2) 24 high-frequency pulses are emitted with each pulse being assigned to its own channel.

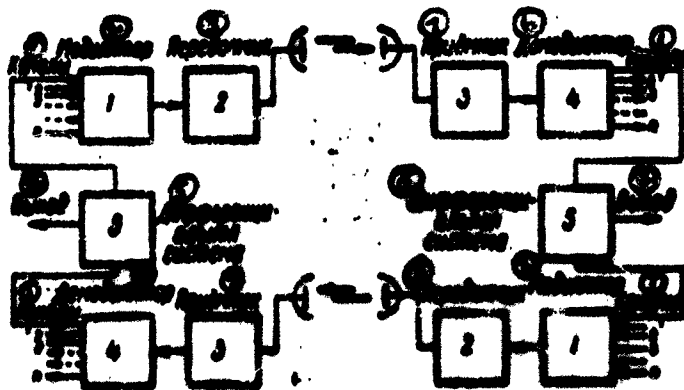


Figure 1 [See next page for key]

Key to Figure 1

- 1) Channels;
- 2) Modulator;
- 3) Transmitter;
- 4) Output;
- 5) Differential system;
- 6) Demodulator;
- 7) Receiver.

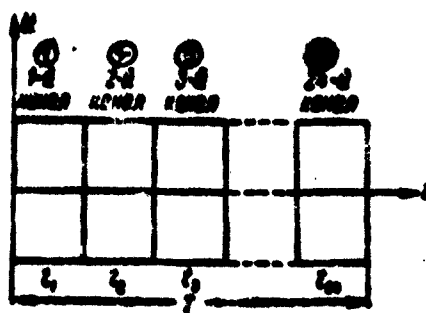


Figure 2

Key to Figure 2

- 1) 1st channel;
- 2) 2nd channel;
- 3) 3rd channel;
- 4) 4th channel;

Pulses of a definite sequence emitted by transmitter are periodically repeated. Thus, time division of channels presupposes the use of pulse-type modulation methods. In this case the signal is transmitted over each channel in the form of short current pulses proceeding at a definite rate. In intervals between pulses of one channel the transmitter emits pulses of other channels with these pulses being shifted somewhat with respect to time. In one form or another every emitted pulse reflects the value of modulating function at the instant of action of this pulse.

Pulse repetition rate in one channel is called cadence frequency and is denoted by F_1 . Cadence frequency is dependent on the maximum modulating frequency. In the transmission of a telephone call the maximum modulating

frequency amounts to 3,000--3,500 cps. In order to avoid distortion of telephone transmission the cadence frequency has to be at least twice as high as the maximum modulating frequency, i.e. $F_1 \geq 2F_{\text{max}}$. Thus for the telephone channel of a radio-relay line $F_1 = 8,000$ cps.

The overall pulse repetition rate $F_0 = F_1 n$ where n is the number of channels.

For a 24-channel radio-relay line pulse repetition rate is equal to 192 kc. The length of time for transmitting the information over each channel

$$T = \frac{1}{F_1 n}.$$

The larger the number of channels n , the shorter the length of time for transmitting the information in each channel. Thus, for a 24-channel line

$$T = \frac{1}{8 \cdot 10^3 \cdot 24} = 5.21 \text{ microseconds.}$$

One of the characteristics of multichannel radio-relay communication is the two-stage quality of the modulation process. In pulsed radio communication the first modulation stage represents modulation of short-duration pulses by direct current corresponding to the modulating signal. The second stage is modulation of the oscillations of a high-frequency oscillator by a train of pulses modulated by audio frequency. Pulse modulation methods differ from one another either by the method of modulating the first stage or by the method of modulating the second stage.

We will examine one of the types of modulation which has the best interference immunity and which has found widest application in practice. This is the pulse-position modulation of the first stage and amplitude modulation of the second stage (PPM--AM). The first stage of modulation takes place in a special device -- modulator.

One of the modulator circuit arrangements is shown in Figure 3.

In this circuit arrangement the phase-modulated pulses are obtained from amplitude-modulated pulses by means of double modulation conversion. Two signals are sent to the input of L-1: pulse signal and audio-frequency signal. Modulating pulses have the same duration and are

located at the same distance from one another. Their repetition rate is equal to cadence frequency. Amplitude modulation of pulses takes place in the first stage in accordance with the principle of audio frequency. Diagrams of voltages in different stages of the modulator are given in Figure 4.

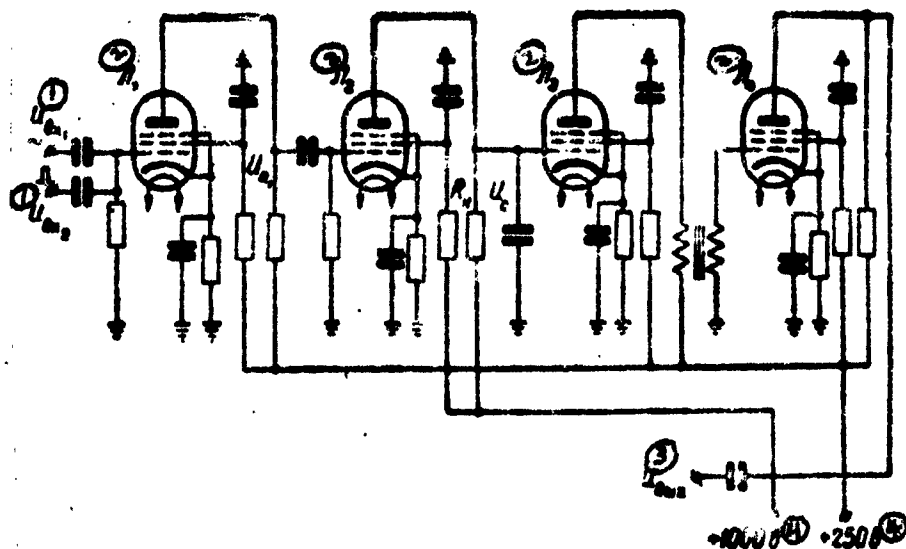


Figure 3

Key to Figure 3

- 1) $U_{vkh} \angle \bar{U}_{in} \angle$;
- 2) $L \angle \bar{U}_{ube} \angle$;
- 3) $U_{vykh} \angle \bar{U}_{out} \angle$;
- 4) $v = \text{volts}$.

In the second stage the amplitude-modulated pulses are converted into width-modulated pulses. Then in the last stages the width-modulated pulses are converted into phase-modulated pulses according to the principle of audio frequency. From the modulator output pulses shown in Figure 4e are sent to super-high-frequency oscillator where the second modulation stage takes place: the pulse-amplitude modulation. Transmitter radiates radio signal only for the duration of the modulating-pulse action.

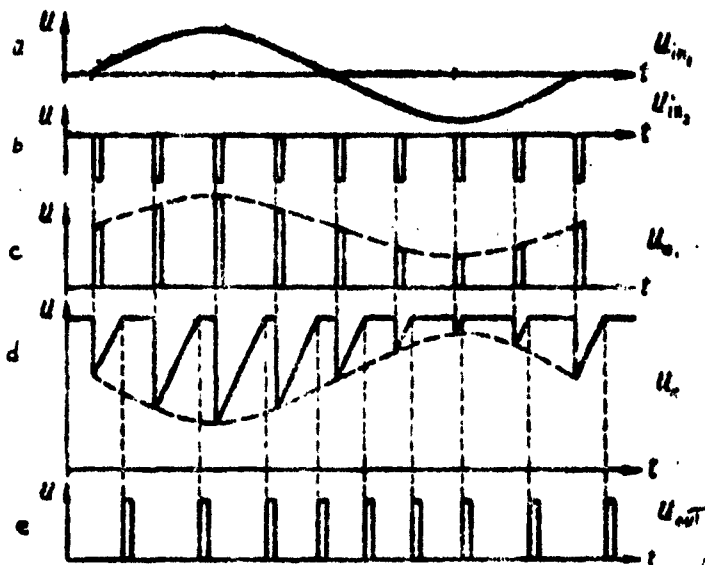


Figure 4

A similar phenomenon takes place in other channels also. Only the modulating pulse of the following channel has to be shifted by time T . The shifting of modulating pulses over the channels is achieved by means of special synchronizing device.

Diagrams of voltages at different points of the transmitter circuit for a 2 π -channel radio-relay line are shown in Figure 5 where "a" is the modulating audio frequency, "b" -- modulating pulses, "c" -- pulses on modulator output and "d" -- radio pulses on transmitter output; t_1 to t_n is information transmission time in the channels. Radio pulse occupies a different position within the time portion allotted for each channel. The magnitude of deviation, i.e. deviation of the radio pulse from the center position depends on the modulating audio-frequency voltage amplitude delivered to modulator. At the time of pause the radio pulse occupies center position in the time region of each channel.

Maximum deviation of radio pulses must not exceed the zone of each time region. Otherwise signal will be penetrating from one channel into another.

In order to raise quality indices of radio-relay lines and increase the signal-to-noise ratio on the receiving side it is desirable to increase deviation when transmitting a radio signal since deviation is proportional to amplitude of audio-frequency signal. But deviation of radio pulse will depend on the width of the time region allotted for transmission of information over each channel and this width depends on the number of channels n . Thus, larger pulse deviation may be obtained in a radio-relay line with a smaller number of channels. This imposes a limitation on increase of the number of channels. Thus, for a 24-channel line the time of transmission of information over each channel $T=5.21$ microseconds. If a certain margin is taken into account, then deviation of pulses will amount to 1.2--1.5 microseconds in each direction from the center position.

The speed of change in the position of radio pulse will depend on the modulating audio frequency.

It becomes clear from the foregoing that duration of the pulse itself has to be as short as possible in order not to decrease deviation. But generation of pulses very short with respect to duration encounters a number of difficulties and considerably complicates the equipment. In practice the duration of radio pulses $T=0.35$ to 0.5 microseconds.

Demodulation of signal takes place on the receiving side, i.e. separation of audio frequency from the composite signal. In order to separate low-frequency voltage from modulated radio pulses it is necessary to carry out two demodulation stages: first to convert radio pulses into direct-current pulses and then to separate from them the modulating voltage. Reverse conversion of signal in comparison with the transmitting side has to take place on the receiving side.

The first stage of radio-signal demodulation takes place in the receiving system. Amplitude detector of the receiver converts radio pulses into direct-current pulses.

The second stage of demodulation is carried out in a special device -- demodulator.

Diagrams of voltages at different points of the receiving system are given in Figure 6. Here "a" are radio pulses on the receiver input, "b" -- pulses on the output of receiver detector, "c" -- audio frequency on the demodulator output.

The first stage of demodulation is an intermediate one and differs little from the process of detecting radio pulses.

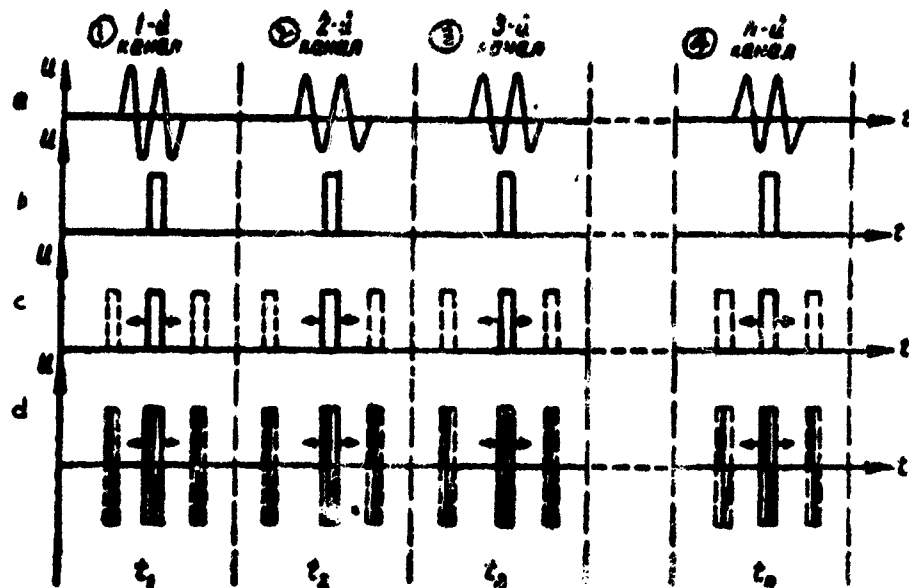


Figure 5

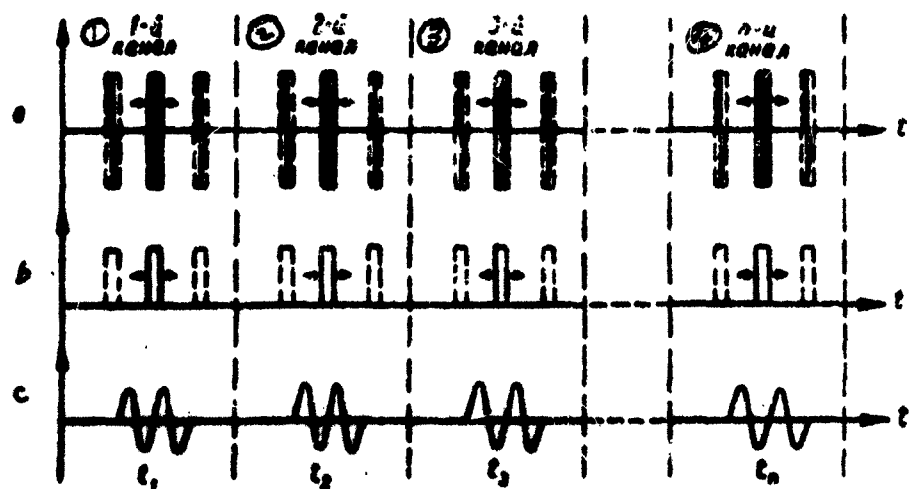


Figure 6

Key to Figures 5 and 6

- 1) 1st channel; 2) 2nd channel; 3) 3rd channel;
4) n-th channel.

We will examine the operation of one of the circuits of the second demodulation stage. Special electron-beam switch in the form of tube shown in Figure 7 is used for demodulation of pulses. Conversion of amplitude-modulated pulses and their simultaneous separation by channels take place in this switching tube. And modulating audio frequency is separated from amplitude-modulated pulses on the load of separated anodes. This switching tube contains an electron gun and focusing and deflecting plates. Voltage is supplied to them which forms a rotating electric field synchronized with the rate of pulse distribution over channels on the transmitting side. In this tube there is one common anode A_2 with n slits cut out on the circumference. Behind each slit are arranged n separated anodes: $a_1, a_2, \dots, a_n$. Each separated anode has a lead-out for picking up the amplitude-modulated pulsed signal.

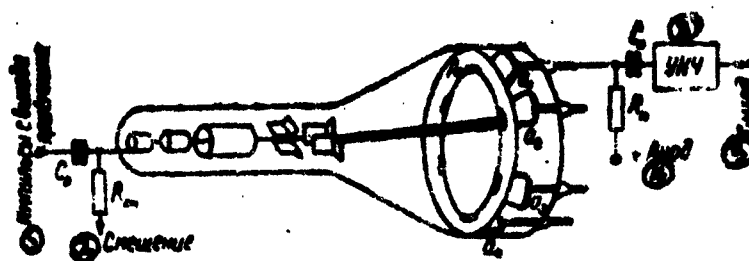


Figure 7

Key to Figure 7

- 1) Pulses from receiver output;
- 2) Bias;
- 3) UNCh [low-frequency amplifier];
- 4) Anode;
- 5) Output.

The width of the slits is selected to be approximately equal to the diameter of electron beam. When signal pulses are absent the tube is cut off by large negative bias. Phase-modulated pulses are sent to the controlling electrode and they trigger the tube for the period of their action. If the pulse is nonmodulated then the

electron beam covers one half of the slit. During the action of modulated pulses the electron beam appears somewhat earlier or later and therefore will cover either more or less than one half of the slit. Because of this the current of the corresponding separated anode will vary depending on when the signal pulse begins to act. Consequently, voltage on the load of this anode will vary according to the principle of audio-frequency modulation.

From the load of each separated anode the signal is sent to the low-frequency amplifier of corresponding channel.

In service circuits the radiated radio signal contains synchronization signals for the distribution of pulses over the channels in strict correspondence with their arrangement in the modulator of the transmitting side.

This modulation system has good interference immunity and along with other types of modulation is used widely in service circuits of radio-relay lines when transmitting telephone signals.

L. G. YANIN, Engineer

ON SOME TECHNICAL POSSIBILITIES OF
ORGANIZATION OF STEREOPHONIC BROADCASTING
AND IMPROVEMENT IN THE QUALITY OF SINGLE-
CHANNEL LOW-FREQUENCY BROADCASTING SYSTEMS

SUMMARY -- [A discussion of the problems
of stereophonic broadcasting and of its
prospects of adoption. Mention is made
of current experiments in this field in
USSR.]

In the article published in the journal Vestnik Svyazi [Herald of Communications] No 11, 1959 question was raised concerning the expediency of organizing stereophonic broadcasting with the combined utilization of wire and radio broadcasting channels and recommendations were given how to realize this. For broadcasting of stereophonic programs it was suggested to set up one subchannel (the left one) over the wire-broadcasting network and another subchannel (the right one) through radio-broadcasting transmitters of long, medium and ultrashort waves. It was supposed that almost without any additional outlays (with the exception of expenses for program preparation) this method will enable radio listeners having both wire-broadcast installations and radio receivers to listen to stereophonic broadcasts. Experimental stereophonic broadcasts by this method have been in progress since January 1962. Moscow City Rediffusion Network (left subchannel) and one of the radio-broadcasting stations (right subchannel) are used for this purpose. The first stereophonic broadcasts aroused interest in many Muscovites and received good rating. Fears that incompatibility of stereophony organized by the method suggested with the usual monophonic broadcasting may give rise to unfavorable criticism on the part of radio listeners concerning sharp deterioration in broadcasting quality were not confirmed. Thus, first experiments in stereophonic broadcasting by the method of combined utilization of wire and radio channels produced positive results. This permitted the Ministry of Communications USSR to recommend to the State Radio Broadcasting and Television Committee of the Council of Ministers USSR to extend this experiment to such cities as Leningrad, Kiev and Riga, and to expand somewhat the scale of experimental stereophonic broadcasting in Moscow. However, these recommendations are

being realized by the Committee very slowly.

In the examination of problems of stereophonic broadcasting some believe that only compatible systems based on the ultrashort-wave FM network being created in the country have a right to existence. Conversely, others do not preclude the possibility of partial employment of incompatible systems, especially systems based on the combined utilization of wire and radio broadcasting channels. Still others consider in general that in our country objective conditions have not as yet become ripe to talk about stereophonic broadcasting as broadcasting of the near future. It is difficult to dispute that the promise of compatible stereophonic-broadcasting systems is in the future but one cannot agree with those who in the drive for the best in the future reject the useful which can be used sufficiently widely already at the present time and which has been appraised by our radio listeners on the basis of its merits; one cannot agree with those who regard stereophonic broadcasting as inopportune and impracticable activity. We consider that until the appearance of practical conditions for mass adoption of compatible stereophonic-broadcasting systems it is necessary to utilize more boldly the simplest incompatible systems and first of all the combined radio and wire systems. At the present time attempts are made in a number of cities to introduce multi-program wire broadcasting. In national republics this type of broadcasting may gain employment. In cities where population speaks in one language and where there is already a large number of radio and television receivers the demand for multi-program wire broadcasting will apparently be smaller. However, the multi-program wire broadcasting holds potential possibilities of stereophony with these possibilities making wire broadcasting a universal means of broadcasting. Indeed, in multiplexing wire-broadcast networks with two additional channels foundation for stereophonic possibilities is in essence laid into the system. They may be realized by several methods. For example, when using a low-frequency channel and one high-frequency channel for stereophony it is sufficient to have only one additional loudspeaker in order to be able to listen to stereophonic broadcasts. In this process a second high-frequency channel can duplicate the same program in monophonic version and those radio listeners who do not have a second loudspeaker at their disposal can receive the usual program with complete preservation of its quality. If radio listeners have a single-program wire-broadcast installation with a loudspeaker without the multi-program

attachment and if they also have a radio receiver with the simplest attachment for its connection to the multiplexed network, then the radio listener will also be able to listen to stereophonic broadcasts. With the multiplexing of telephone networks in the future for multi-program wire broadcasting the possibilities of utilizing these networks for stereophonic broadcasting will increase still more since on these networks the number of multiplexing channels can be increased in practice to five.

It follows from the foregoing that it is necessary to devote a great deal of attention to problems of stereophonic broadcasting already at the present time and to carry on work in this field on a wide front taking into consideration in doing so that both compatible and incompatible systems may find employment at different stages. As regards work which is in progress in our country in the field of multi-program wire broadcasting, it should be subordinated in all possible ways to the task of creating complete stereophonic systems since stereophony and multi-programming suitable for such systems are in practice inseparable. In experiments being conducted in Moscow on stereophonic broadcasting by means of combined utilization of wire and radio channels attention is drawn by the fact that sound quality of stereophonic broadcasts materially improves even when using a loudspeaker of low quality class (not higher than 3rd). In practice the volume sound compensates to a considerable degree those deficiencies in the sounding which are caused by the low quality of subscriber's loudspeaker.

We examined above some problems of two-channel stereophony as a means of improving the quality of broadcasting. However, one should not forget that considerable possibilities for improvement of quality also exist in single-channel low-frequency systems. With the help of single-channel low-frequency broadcasting system it is naturally impossible to reproduce at the receiving end the transmitted sound material with a strict preservation of space relationships. However, this system reproduces to one degree or another the acoustical components which reach microphone due to reflections and which give a notion to some extent concerning space relationships. Such a notion may also become formed due to secondary reflections in the premises where the broadcast is heard. Under certain conditions these acoustical processes are received subjectively by radio listeners as sound with space relationships approaching the original. Conditions indicated

above are determined chiefly by loudspeakers, by frequency spectrum reproduced by them and by the spatial position of the listener in relation to the loudspeakers. For example, with the help of two loudspeakers placed in proper manner and one of which reproduces high frequencies and the other low frequencies (division of the spectrum by filter has to be done approximately at the frequency of 800 to 1,000 cps) one can successfully obtain sufficiently good results and achieve the sounding with a certain approximation of the original from the standpoint of preserving space relationships. Approximately the same effect can also be obtained with the help of a specially designed loudspeaker (without filters) which has a resonator and a reflector in the form of a segment of ellipsoid (loudspeaker of the French firm Elinson). The idea of the arrangement of such unit is reduced in essence to the following. Loudspeaker is placed on the lateral side of the resonator, a reflecting screen in the form of a segment of ellipsoid is fixed in front of it. In doing so the loudspeaker itself is in one of the focuses of the reflector and its axis reaches the screen at the point of intersection with a shorter axis of symmetry of the ellipsoid. With such location of the loudspeaker and screen in relation to each other the high-frequency components of the transmission spectrum are focused in the focus of reflector which is in the upper portion of the screen. Thus, subjective reception of the sound source depends on frequency. The position of the sound source moves as it were from the upper portion of the reflecting screen for higher frequencies to the aperture of the resonator for lower frequencies. Possibilities of improvements in sound quality in single-channel low-frequency broadcasting systems are not limited to the two methods indicated.

However, unfortunately these problems have not as yet found their solution, especially in the application to single-program wire-broadcasting systems used on a mass scale in our country. This cannot be considered normal, the more so because the quality potentialities of many of these systems are sufficiently great but low-class-quality loudspeakers used in them do not permit complete realization of these potentialities.

Familiarization with the work carried on abroad in the field of improvement in the sound quality of broadcasts in single-channel low-frequency systems indicates that a great deal can be done in our country also. Specifically, it is very important to organize faster the mass

production of second-class-quality loudspeakers by the industry and also to expand the scale of investigations in the field of creation of new types of loudspeakers.

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Rediffusion Network/

ORGANIZATION AND OPERATION
OF
COMMUNICATION FACILITIES

HANDLING OF ULTRASHORT-WAVE FM RADIO
BROADCASTING STATIONS BY REMOTE CONTROL

SUMMARY -- Description of difficulties encountered in handling ultrashort-wave radio stations by remote control and also a description of the chief defects of the transmitters. Lack of measuring instruments is stressed.

In Soviet Union radio broadcasting on ultrashort waves began to develop comparatively recently. Nevertheless, in the last two years it gained widespread use and earned high rating of radio listeners.

Contributing to rapid expansion of the ultrashort-wave FM broadcasting network was first of all the still more rapid construction of television centers and television relay stations and also the mastering of production of automated unattended ultrashort-wave FM radio stations by the industry.

The radio station mentioned is a two-program station and represents a set of four frequency-modulated transmitters operating on fixed frequencies in the range of 66 to 73 MEGC. The power of one transmitter is about two kilowatts.

The radio station is completely automated and is designed for operation without attending personnel. Control of equipment can be effected remotely from a point located at the distance of ten kilometers from the radio station over four pairs of wires of a cable or overhead communication line.

Two transmitters whose power is combined through a bridge circuit are operating for each program.

One hundred-percent provision for emergencies assures high operating stability of equipment and makes it possible to function without service interruptions.

Electroacoustical indices of the ultrashort-wave FM radio stations are sufficiently high. Thus, frequency characteristic of transmitters in the frequency band of 50--15,000 cps does not exceed ± 1.5 db, coefficient of

nonlinear distortions of each transmitter is not more than 2% in the frequency band of 100--15,000 cps and in the band of 50-100 cps not more than 2.5%.

In the organization of the network of ultrashort-wave FM radio broadcasting stations the feasibility of providing them with two high-quality programs was considered first of all.

Ultrashort-wave FM radio stations began to be set up in cities traversed by cable or overhead main lines having wide-band channels for transmission of broadcasting programs. At the present time radio-relay lines will also be used for this purpose.

The second factor determining the locations for setting up ultrashort-wave FM radio stations is the necessity of doing local radio broadcasting through these stations.

The fact is that some oblast centers, specifically those in RSFSR /Russian Soviet Federated Socialist Republic/ have no medium-wave and long-wave radio stations of their own, and they do local broadcasting through stations of adjoining oblasts. In doing so the audibility and quality of such broadcasting do not satisfy by far the radio listeners due to long distance to the radio station and absence of wide-band channels for program transmission.

In some oblasts and autonomous republics having a small territory the organization of local radio broadcasting through ultrashort-wave FM radio stations solves almost completely the problem of providing the population with high-quality broadcasting since the radius of operation of stations when television tower is 180 meters high reaches 130 kilometers and more.

Unquestionably, in those oblast centers where there are no wide-band communication channels for broadcasting of the first and second Union-wide programs the ultrashort-wave FM transmitters operate during a limited period of time: only for transmission of local broadcasting and the seven-hour program specially created by Radio Committee for ultrashort-wave radio stations. It is necessary to reconcile oneself temporarily with this deficiency taking into consideration that the further development of cable and radio-relay main lines will make it possible to eliminate it quickly.

Transmission of programs to ultrashort-wave FM radio stations can also be achieved by using the method of relaying with the help of special radio-receiving equipment. Maximum distance permitted between the main

station (the source of the program) and relaying station is equal to 120 kilometers.

The problem of organizing a system for remote control by ultrashort-wave FM transmitters and supervision over their functioning is being solved in different ways, depending on local conditions. Most correct technologically is the arrangement of control and monitoring racks in the premises of radio broadcasting equipment rooms (RVA). But in some cases it is necessary to disturb this most widely used arrangement for technological control of stations and install racks in the equipment rooms of city rediffusion stations or directly at the television center. Control of transmitters from RVA becomes inexpedient if it entails an increase in the staff of the broadcasting equipment room which before installation of ultrashort-wave radio station had a small volume of work on the organization of only local broadcasting. In this case transfer of control and monitoring functions to rediffusion station is completely warranted and is acceptable both with respect to the type operation and the period of operation. If however, 24-hour duty is practiced at the television center or RTS rediffusion station which is necessary for example for handling equipment of radio-relay lines, then the racks for control by ultrashort-wave FM transmitters should be installed directly in the television equipment room.

Organization of operation of ultrashort-wave transmitters under the conditions of unattended operation represents considerable difficulty. In spite of the fact that transmitters are automated and designed precisely for such conditions, the operating workers look as a rule for all opportunities in order to provide continuous supervision over the condition of equipment.

Unfortunately there are grounds for this since some circuitry and design defects of transmitters lead to long interruptions in station operation. Thus, in changing from one transmitter operating under overstrain to two transmitters operating under conditions of power combination a short circuit occurs as the result of the contactor KVF-1 sticking upon cutting in contactor KVN-1 and at best the wires running from transformer Tr-2 to these contactors burn out.

At the present time a circuit arrangement for cutting in contactors is being put into use in transmitters which makes it possible to prevent the occurrence mentioned. For this purpose power supply of contactors KVN and KVF is effected through additions break contacts and

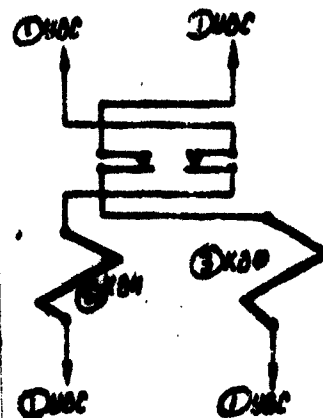


Figure 1

Key to Figure 1

- 1) UBS;
- 2) KVN;
- 3) KVF.

the cutting-in of one of the contactors takes place only when the second one is cut out (Figure 1).

Also belonging to drawbacks is the absence of any protection of equipment from punctures inside the antenna feeder. This may lead to failure of feeder on a large section which is exactly what happened at one of the ultrashort-wave FM radio stations. In spite of the puncture which developed in the feeder the transmitter continued to function. This caused punctures and the burning-out of the feeder at many other places.

Operation of ultrashort-wave FM transmitters without permanent attending personnel is also complicated by intense heating of the transformers of ferro-resonance stabiliser, by absence of air contacts in the cooling system and by other causes.

After accumulating certain experience in the operation of ultrashort-wave FM transmitters technical personnel contributes many different suggestions which improve the quality of equipment performance and increase its reliability. But up to now very little has been done on the

generalization of this experience. Owing to this, problems are being solved at enterprises which have already been solved and equipment functions with defects which were eliminated elsewhere long time ago.

One of the substantial deficiencies in handling the ultrashort-wave FM radio stations is lack of a set of instruments for measuring quality indices of the transmitters. Thus, the aggregate power of a radio station can be measured only where water-cooled antenna equivalent is available. But at enterprises where air cooling is used there are no such equivalents and in essence measurement of aggregate power is not done.

Due to the fact that industry does not produce high-quality deviation meters the coefficient of non-linear distortions and the noises of transmitters are not measured. A check-up of these parameters is done only in the period of equipment tuning and turning it over for operation.

The need for production of equipment for measuring quality indices of ultrashort-wave FM transmitters was noted in recommendations of the Conference of Radio-Broadcasting and Television Workers on Exchange of Work Experience in 1956 and 1960. However, up to now this problem has not received proper solution.

Up to the present time scientific-research and design organizations have not developed directional-radiation antennas for ultrashort-wave FM radio stations. In many cases employment of these antennas would make it possible to expand considerably the area of good reception in the required direction and would prevent inefficient radiation of energy.

The duty of operating workers is to learn new equipment quickly and thoroughly, to bring to light its special characteristics and drawbacks with the aim of their prompt elimination, and to provide high-quality and uninterrupted functioning of it.

V. N. BEL'SKIY, Engineer

MECHANIZATION OF THE PROCESSING AND
DISPATCH OF NEWSPAPERS AT LENINGRAD
POST OFFICE

SUMMARY -- Description of production-
line methods used in the mechanization
of the processing and dispatch of news-
papers at Leningrad Post Office.

Processing and dispatch of printed matter is one of the most labor consuming operations in postal-service system. Department No 9 is engaged in the dispatch of printed matter at Leningrad Post Office. One of its sections is located at the Printing Office imeni Volodarskiy. Here all newspapers printed at the Printing Office are processed and dispatched: Leningradskaya pravda [Leningrad Truth], Izvestiya [News], Smena [Shift], Trud [Labor], Leninskiye iskry [Lenin's Sparks], S. vetskiv sport [Soviet Sport] and other newspapers. Eight hundred thousand copies of newspapers pass through the section in a 24-hour period.

Until October of last year the section for dispatch of newspapers was accommodated on a very small area (96 square meters) and therefore it did not appear feasible to mechanize production processes. By way of mechanization facilities there was only one conveyor over which bundles of newspapers were delivered from the rotary-press section of the Printing Office but even in this operation there was a considerable saving of manual labor since bundles were carried to work stations over a distance of from one to five meters and were put up in stacks of 2--3 meters in height.

Due to enlargement of the production area of the Printing Office a room having an area of 250 square meters was allotted for the newspaper dispatch section. But as calculation showed it also is inadequate with respect to size and inconvenient for overall mechanization since it has acute-angled shape.

The following task was set for the laboratory of the Post Office: to do the maximum possible for mechanization of labor under existing conditions. And laboratory workers worked out a plan providing for construction of three production lines with the object of reducing manual labor to minimum.



Figure 1



Figure 2

The following are arranged in one section in conformity with the plan: 13 conveyors of different types, two bundle-tying and two sack-tying machines, a device for placing bundles into sacks, pull-out storage devices at the sorters' work stations, ring-type storage system and a storage device with hinged platforms.

Owing to the fact that rotary presses have high efficiency (up to 600,000 newspapers per hour are printed) and dispatch workers are unable to process newspapers after their delivery from the presses the necessity arises for stacking up the bundles. Storage devices are necessary for this purpose.

A system of conveyers is used as the storage device this system consisting of the main conveyer over which newspaper bundles arrive from the rotary-press section of the Printing Office, and of three special conveyers raised with the aim of area economy to the height of 2.1 meters. Forty to fifty newspaper bundles can be stored on this system arranged in a circle.

But an additional conveyer storage system shown in Figure 1 was installed since the capacity of the ring-type storage device is inadequate. This is a fixed conveyer of 0.8 meter in height to the side of which are fastened ten hinged platforms made of 12-millimeter plywood. The storing of bundles on this conveyer takes place in the following manner. Bundles reach it over an inclined chute from the ring-type conveyer located above. When the bundle reaches the end of the conveyer the worker lets down the hinged platform and places on it the incoming bundles. After filling up the first platform he fills up by turn the following ones. The placement of bundles on the hinged platforms does not amount to a great deal of labor since it is necessary to raise them only 4--5 centimeters from the conveyer belt. Eight to twelve bundles are placed on each platform. Altogether 80--120 bundles can be stored over the entire length of the conveyer.

The dispatch of bundles from the storage system is accomplished in reverse order: worker picks up bundles first from the platform which was the last one to be loaded; then he removes bundles from the platform next in turn, etc. Bundles from the conveyer storage system reach the conveyer having a pull-out section and from here they reach the first production line for further processing or for the dispatch of standard bundles to be loaded in motor vehicles.

Development of pull-out storage carts (Figure 2) was a completely new solution of the problem of the most advantageous utilization of the production area of the section. When not in use the storage carts are placed under the production line from both of its sides without occupying additional area.

When sorters begin to work they move out roller-equipped storage devices and place on them bundles which

arrive over the conveyers of production lines. Storage carts ease considerably the sorters' work: since sorters do not have to put them on the floor.



Figure 3

The problem of putting bundles into the sack on production line was solved by means of developing a special device (Figure 3). Serving as the body of the device is the corner-steel framework on which are fastened the lifting platform and sloping platform and a valve for opening the sack. The putting of bundles into the sack is done in the following manner. Paper sack is placed on the sloping platform and fastened on it by means of plate-like springs. Bundles arriving from the production-line conveyor or from the bundle-tying machine are placed on the lifting platform which after the depression of a pedal rises by means of a lever system and assumes an inclined position. Owing to this the bundle placed on it slides and depresses the valve which opens the sack. In this process the bundle slides over the inclined platform into the sack, pulls it off the springs by its weight and reaches the sloping conveyor for further processing.



Figure 4

Until now the placement of bundles into the sack was a labor consuming operation which did not permit production-line processing of printed matter. Employment of the system described considerably eased labor, raised its productivity and made it possible to set up production-line processing of newspapers.

Collective of the production laboratory also created the design of a hinged section of the production-line conveyer. The section represents a small conveyer which is put in motion from the production-line conveyer by means of chain transmission. In idle condition it is raised forming a passage between the main conveyer over which printed matter is delivered from the rotary-press section, and the production-line conveyer. During operation the hinged section is lowered onto the main conveyer from which newspaper bundles reach this section and then the production line.

Hinged sections have three purposes: they form a passage between the main conveyer and production-line conveyers; they make it possible to move bundles in re-

verse order; they make it possible to manipulate all production lines by connecting them with one another.



Figure 5

Installation of equipment in accordance with the plan worked out by the laboratory was done by the Post Office workshop. This work was done well and within shortened periods of time.

It should be noted that mechanics approached the installation with creative attitude. They contributed a number of suggestions on refinement of systems specified by the plan. Suggestions by mechanics I. F. Kuksinskiy, M. A. Surov and V. I. Martynov were most valuable.

The extent to which the labor of printed-matter dispatch workers was eased is evident from the brief description of printed-matter processing cited below. On the first production line (Figure 4) newspapers to city branch communications offices are processed and dispatched. Here only the sorting and storing on pull-out storage devices are done manually. The movement and tying of bundles are mechanized. The second production line

(Figure 5) serves for dispatching printed matter to newspaper centers of an oblast and republics. In addition to the bundle-tying machine a sack-sewing machine and a system for placing bundles into sacks are used on this production line. The third production line is a standby line and is used as needed for processing printed matter being sent for sale at retail.

From the production line the processed printed matter reaches over the conveyers the vertical spiral chutes whence it reaches motor vehicles for dispatch to city communications branch offices and railroad terminals.

Owing to mechanization of printed-matter processing operations labor productivity in the section was raised by 26%, savings in labor expenditures were achieved to the extent of 36.1 man-hours in a 24-hour period and also savings in monetary resources amounting to 1,094 rubles in one year. Labor has been considerably eased and means have been created for dispatching the ever growing number of newspaper copies being printed.

A. K. RODIONOV, Chief Engineer, Leningrad Post Office,

I. M. LOKSHIN, Engineer, Production and Technical Laboratory

**CONSOLIDATION OF WIRE-BROADCASTING
FACILITIES IN STANISLAVSKAYA OBLAST**

SUMMARY -- [A description of advantages gained by the shutdown of low-power kolkhoz-type rediffusion stations and connection of their networks to the higher-power rediffusion stations of the Ministry of Communications.]

The question of the consolidation of wire-broadcasting facilities in Stanislavskaya Oblast (Ukrainian SSR) arose in 1953 in connection with the poor performance of rediffusion stations belonging to kolkhozes. By that time Stanislavskaya Oblast numbered about fifty kolkhoz-type rediffusion stations operating with long service interruptions.

Large turnover of technical personnel was observed at kolkhoz-type rediffusion stations. This led to frequent breakdowns of equipment and to poor quality of broadcasts. Measures for improvement in the functioning of kolkhoz-type rediffusion stations had been adopted by Ministry of Communications' organizations but these measures did not produce lasting effect.

Such situation at kolkhoz-type rediffusion stations compelled the adoption of a decision that new rediffusion stations were not to be built at kolkhozes and that wherever possible poorly functioning kolkhoz-type rediffusion stations were to be shut down and their networks were to be connected to the nearest rediffusion stations of the Ministry of Communications or in separate cases to the more dependably operating kolkhoz-type rediffusion stations.

This technical policy has been carried out undeviatingly by Stanislavskaya Rediffusion Network Administration up to the present time with full support of the Oblast Communications Administration. As the result of this 48 kolkhoz-type rediffusion stations with aggregate power of 9,020 watts which had 20,500 radio points, loudspeakers connected to local wire-broadcast network were shut down in Stanislavskaya Oblast in the period from 1953 to 1961 inclusive.

Feeder lines, chiefly overhead ones, were built in order to connect the distribution networks of the shut-down kolkhoz-type rediffusion stations to the rediffusion

stations of the Ministry of Communications. Figures on these feeders are cited in Table 1.

Table 1

① Тип фидера	⑥ Напряже- ние, в	⑦ Количество фидеров	⑧ Общая протяжен- ность, км
Воздушный ②	960	17	185
"	360	2	11
"	240	13	85
Кабельный ③	120	2	16
Воздушный совместно с ВРС ④	240	9	57
⑤ Итого		46	324

Key to Table 1

- 1) Type of feeder;
- 2) Overhead;
- 3) Cable;
- 4) Overhead jointly with the VRS
[intra-rayon communication service];
- 5) Total;
- 6) Voltage, volts;
- 7) Number of feeders;
- 8) Total length, kilometers.

Total cost of the work on feeder construction amounted to 82,370 rubles. Out of them kolkhozes spend 63,160 rubles (77% of all outlays) while the remaining 19,210 rubles were taken from the local budget. As a rule the resources of local budget were spent in those cases when kolkhoz-type rediffusion stations were out of service and there were no available resources at the kolkhozes.

During the current year all kolkhoz-type redif-
fusion stations will be shut down and kolkhozes of our
Cblast will be completely released from the care of redif-
fusion stations. Already at the present time there are no



Equipment room of the rediffusion station in Stanislaw

kolkhoz-type rediffusion stations in 23 out of 26 rayons of the Oblast.

As a rule distribution networks of kolkhoz-type rediffusion stations would undergo repairs before being switched over to the rediffusion stations of the Ministry of Communications. Upon the shutdown of some kolkhoz-type rediffusion stations the repeater equipment was left in place. In doing so provision was made for switching the distribution network usually fed from rayon rediffusion stations to the feeding from the repeater of former kolkhoz-type rediffusion stations.

By way of consolidating wire-broadcasting facilities the shutdown of some rediffusion stations of the Ministry of Communications was started, especially of those not provided with continuous electric energy. By the present time seven rediffusion stations of the Ministry of Communications with the total power of 3,800 watts have been closed down.

Construction of main-line feeders which was carried on with the aim of shutting down some rediffusion stations of the Ministry of Communications was accomplished by means of a loan obtained by rayon communications offices from local offices of the State Bank.

Local offices of the State Bank have the right to grant loans to the extent of 20,000 rubles to all self-supporting enterprises including the Ministry of Communications' enterprises for activities connected with employment of new equipment and raising of labor productivity in those cases when adoption of these measures produces savings to the amount assuring repayment of the loan within a period of not more than two years.

First attempts of rayon communications offices to obtain a loan were unsuccessful but later on with the help of the Ministry of Communications of Ukraine and of the Budget Administration of the Ministry of Communications USSR the problem was successfully solved and now loans are being extended to rayon offices.

In order to secure loans at the State Bank petitions are submitted with attached financial calculations of annual savings obtained as the result of a given measure. Specifically, upon shutdown of rediffusion stations savings are effected due to the reduction of attending personnel, of electric power consumption, of outlays for maintenance and repairs of equipment, etc.

Connection of kolkhoz distribution networks to rediffusions stations of the Ministry of Communications has incomparably raised the quality and stability of their operation. Duration of broadcasting at former kolkhoz-

type rediffusion stations was considerably increased because they were connected to rediffusion stations operating 14--18 hours a day.

The shutdown of kolkhoz-type rediffusion stations produced considerable savings of resources for the kolkhozes. Calculations indicate that 300 man-years were saved as the result of shutting down 46 kolkhoz-type rediffusion stations in which the station duty personnel was released. And since the average wages of the person on duty are equal to fifty rubles a month, the savings amount to 180,000 rubles. These savings exceed by 2.2 times all outlays for the construction of feeder lines.

Considerable portion of the territory of Stanislavskaya Oblast is situated in the foothills of Carpatian Mountains; a number of populated localities are in the mountains. In these populated localities many residential houses are scattered on mountain slopes, far from one another. Houses are placed without order and in many cases the passage from one house to another is difficult. Therefore, in mountain populated localities the possibilities of employing wire radiofication are very limited and sometimes it is completely inexpedient to carry it out.

By the end of 1961 the coverage by wire-broadcasting network of all populated localities which were to be provided with wire radiofication facilities in conformity with the overall plan for Oblast radiofication was completed. Out of 816 populated localities existing in the Oblast the wire-broadcasting network covered 774 populated localities or 95%. Only populated localities situated in mountains and small populated localities of the khutor separated farm type for which no provision for wire radiofication was made in the Oblast radiofication plan remained without radiofication facilities.

At the present time there are 46 rediffusion stations in the Oblast. Out of them 42 are rediffusion stations of the Ministry of Communications with aggregate power of 115,550 watts while four rediffusions with the aggregate power of 1,700 watts belong to kolkhozes.

Distribution of rediffusion stations according to power is shown in Table 2.

Three systems of type RDP-10 and RDPK-30 with eight receivers installed in small distant populated localities of mountain regions are in operation at rediffusion stations of the Ministry of Communications.

On an average 4,300 radio points loudspeakers connected to local wire-broadcast network are connected

*from 1953 to 1961

to one rediffusion station and 1,250 radio points to a kolkhoz-type rediffusion station.

Table 2

① Мощность, вт	② Количество радиопунктов		
	③ всего	④ радиопункты министерства связи	⑤ колхозные
15/00	1	17	—
5000	15	15	—
1000	6	6	—
1200—1000	10	10	—
200—1000	3	3	2
100	6	4	2
⑥ Меньше 100	3	3	—
Итого	48	42	4

⑦ *) Радиопункт областного центра.

Key to Table 2

- 1) Power, watts;
- 2) Less than 100;
- 3) Number of rediffusion stations;
- 4) Total;
- 5) Rediffusion stations of the Ministry of Communications;
- 6) Kolkhoz-type;
- 7) Rediffusion station of the Oblast center.

As a rule the equipment of Ministry of Communications' rediffusion stations including rediffusion stations having power of 5,000 watts is installed in the offices of the Ministry of Communications in the same premises with other electrocommunication equipment (switchboards, telegraphs, etc.) and is handled together with this equipment by workers on duty (telegraphers, telephone operator, technician).

Consolidated rediffusion stations created in our Oblast require an especially thorough and continuous supervision over the quality of radio reception since every deterioration in transmission quality at the rediffusion station affects simultaneously five to ten thousand radio points. But combined handling makes it impossible for the personnel to watch continuously over the quality of the broadcast.

Under our conditions the necessity of continuous supervision over radio reception is also caused by the poor quality of "ether" ~~/air/~~ radio reception in some rayons and also by interference from other radio stations.

Under such conditions a centralized broadcast of the program from the Oblast center to rayons of the Oblast is quite indispensable. Beginning with 1956 equipment of type RDP-51 has been used in our Oblast for centralized program broadcasting. However, this equipment cannot provide a sufficiently high quality of broadcasting, it does not cover all rayon centers and at the present time it has become standby equipment for the case of poor radio reception (severe thunder storms and other interference).

DRTS ~~/Rediffusion Network Administration/~~ is counting on receiving and using equipment of type SVO-1 for centralized program broadcasting. Further consolidation of wire-broadcasting facilities in Stanislavskaya Oblast causes the necessity of using main-line feeders made of bimetallic wires with voltage of 960 volts or made of steel wires with voltage of more than 960 volts.

In 1961 two main-line coil-loaded feeders made of steel wires of 4 millimeters in diameter with voltage of 3,000 volts were put into trial operation in our Oblast with the permission of Ukrainian SSR Ministry of Communications. Distribution network with 2,200 radio points is fed through one of these feeders of 16 kilometers in length. The second feeder has a length of eight kilometers and feeding to the distribution network with 3,500 radio points is effected over it. Specially made transformers of 2.5-kilowatt power with oil cooling are used on these feeders.

Creation of territorial kolkhoz-sovkhoz administrations causes the necessity of organizing the broadcasting from the place of the location of administration through all rediffusion stations situated in its area. With the availability of a considerable number of rediffusion stations (kolkhoz-type and those of the Ministry of Communications) in every rayon organization of such

broadcasting is associated with considerable difficulties and financial outlays. On the other hand under conditions of the consolidated radiofication plant organization of broadcasting is materially simplified and made cheaper.

Experience in radiofication of Stanislavskaya Oblast showed that consolidation of wire-broadcasting facilities is a progressive measure which makes it possible to improve the quality of broadcasting, to raise dependability of equipment operation, to increase the period of broadcasting on networks formerly connected to kolkhoz-type rediffusion stations, and to organize local rayon broadcasting with coverage of all populated localities. Kolkhozes are completely released from care of the regular operation of rediffusion stations. In addition, consolidation of wire-broadcasting facilities makes it possible to provide steady power supply for rediffusion stations by means of installing power plant-generators with their standby equipment after incurring relatively small outlays. It also makes it possible to use with the smallest expenditures possible the centralized program broadcasting over the wire from Oblast center to all rediffusion stations and to reduce considerably the outlays for operation of station equipment of rediffusion stations.

I. M. BRODNIK, Chief Engineer, Stanislav DRTS



Transmitters of Rediffusion Station
in Rogatin, Stanislavskaya Oblast

PRESENT-DAY LEVEL OF COMMUNICATIONS
MAKES IT POSSIBLE TO SERVE THE
POPULATION WELL

SUMMARY -- /A description of communication facilities in Izmail in Odesskaya Oblast./

Izmail Communications Office is one of the largest ones in Odesskaya Oblast. Communication workers are serving a population of more than 110,000 residing in rural areas and in the rayon center.

When speaking at the conference of the workers of production administrations of the Center of Russian Federation on 27 June 1962 Comrade N. S. Khrushchev said that the present-day level of communications meets the needs of consolidated rayons. This description of the level of development of communication facilities may be fully applied to Izmail'skiy Rayon where the Territorial Production Kolkhoz-Sovkhoz Administration is located.

In addition to Izmail'skiy Rayon the area of Territorial Production Administration is made up of Bolgradskiy and Reninskiy rayons with which the Administration obtained direct 24-hour telephone link in the very first days of its operation. Calls to the desired subscribers of the Oblast center, kolkhozes and sovkhozes are put through for the chief of Production Administration and party organizer of the Party Oblast Committee on a top-priority basis.

All village Soviets, kolkhozes and sovkhozes had been provided with telephone facilities even before the creation of Territorial Administration in Izmail'skiy Rayon. They have a direct link with Izmail. Territorial Administration uses this link for effective guidance and rural toilers use it to satisfy their production and cultural and everyday needs. However, the existing telephone service needs improvement, and especially improvement in audibility.

Izmail communication workers are giving a great deal of attention to the technical level of communications industry of the Rayon. First of all they set for themselves the aim to improve overall condition of GTS /city telephone service/ and VRS /intra-rayon communication service/ radiofication lines in order to prevent failures.

The rigidity of the poles was achieved by strengthening the lines with reinforced-concrete supports. In the beginning local fabrication of supports was set up and when they began to be made at the yard in Odessa the supports began to be brought from there.

Photo available

Business lobby of the Izmail Communications Office

On the GTS network all subscribers' stations have been put in proper technical order. Seven kilometers of underground telephone conduits were constructed at the expense of funds contributed by others. As the result of this, overhead telephone lines were eliminated, the number of failures on GTS [city telephone exchange] was sharply reduced and the volume of labor-consuming work performed by linemen on maintenance and repairs of the lines decreased. Definite operating sections of GTS and radiofication lines were assigned to linemen. Workers who maintain their sections in excellent manner are given incentive. All this has led to the circumstance that for already a long period there have been no office or line failures at Izmail Communications Office.

The good condition of the radiofication and GTS outside plant for a number of years made it possible to overfulfill plans for the increase in the number of radio points [loudspeakers connected to local wire-broadcast network] and in the number of telephone-exchange subscribers. Complete reconditioning of station equipment of the rediffusion station has been planned for the near future along with its transfer to other premises. This will make it possible to combine the handling of the rediffusion station and telephone office. As the result of this the rediffusion station will be put on an 18-hours-a-day broadcasting program.

Cable network was expanded in Izmail simultaneously with the putting of new ATS [dial office] in operation.

Owing to installation of new long distance switchboards at Izmail MTS [long distance telephone office] the audibility of telephone conversations was considerably improved and channel-utilization factor was raised. Also a 12-channel system was installed in Izmail on the links with Oblast MTS. This made it possible to reduce sharply the number of calls with a delay of over one hour. With the development of the economy of the City the needs for long distance calls are continuously growing and necessity

has already become ripe to open new channels. This will be carried out in the near future.

Supersonic and voice-frequency telegraph equipment has been installed at Izmail Communications Office with the aim of expanding telegraph-service facilities and improving the dependability of their operation. This made it possible to set up new channels over which telegraph service is provided for Izmail not only to the Oblast center but also to a number of adjoining rayons of the Oblast. All telegraphs in the Communications Office were changed to Code No 2.

There is also in Izmail an automatic subscribers' telegraph office by means of which a number of organizations and establishments obtain direct telegraph service to their correspondents.

Automation facilities are being put into use on an ever wider scale on the VRS [intra-rayon communication service] lines of Izmail'skiy Rayon also. Two ATS VRS [dial offices of the intra-rayon communication service] and five UPTS [semiautomatic offices] have been set up in the largest rural populated localities of the Rayon. Before the end of the current year the number of ATS VRS offices will increase to 21. In 1963 communication workers intend to automate all telephone-service sub-offices in the rayon.

Izmail LTU [line-maintenance center] (headed by A. M. Grishchenko) carried out considerable work on the rebuilding of outside and office plant. During 1961 and the elapsed months of 1962 two hundred and three kilometers of lines were reconditioned and built anew and 700 kilometers of worn-out wires were replaced. More than 620 reinforced-concrete supports were set up to strengthen the poles; more than 5,500 nonstandard poles were replaced.

Intercommunication facilities were set up in fifteen kolkhozes and seven sovkhoses by forces of LTU [line-maintenance center] workers.

Direct telephone link with Izmail'skiy Rayon was set up for the adjoining territorial agricultural administrations.

Photo available

A group of front-rank mail carriers of the communications office. Left to right: V. I. BARANOVA, V. S. KRAVTSUNENKO, P. G. FILIBOYCHENKO, K. M. GRIGORENKO, N. G. GAVLITSKAYA and Ye. N. MATASHUK.

Technical equipment of LTU has grown. Two tractors have been acquired, also three two-axle trailers with bodies, a BKOM /drilling and hoisting/ machine was obtained. All linemen and line workers have been provided with bicycles. Out of the funds of the enterprise seven motorcycles were purchased which were furnished to rayon electricians. During the last two years eight houses were built for communication sections.

A large number of radio lines belonging to kol-khozes underwent major repairs at the expense of kolkhos resources. This improved considerably the sound quality of radio points.

Communication workers of Izmail have been expanding the network of communications enterprises year after year. During last year three communications branch offices were opened: one city branch office and two rural ones. At the present time there is a communications branch office in every rural populated locality. Owing to the great help of local Party and Soviet organizations all twenty communications branch offices of the Rayon are housed in good premises a portion of which has been built at the expense of funds contributed by others. Conditions necessary for efficient service to the population have been created at communications branch offices. Patrons are able to obtain all types of communication services including extra services (packaging of parcels, addressing, etc.). All communications branch offices in the rayon put through the long distance telephone calls and receive and transmit telegrams.

The following business hours have been fixed for communications enterprises in rural areas for the convenience of the public: they are open in early morning hours and in the evening until 7 p.m. which is especially necessary in the period of farm work.

The newly created inter-rayon newspaper Pridunay-skaya zarya /Dawn near Danube/ is delivered to subscribers on the day of publication. This newspaper is printed in Izmail and comes out four times a week with the printing of ten thousand copies. The newspaper reaches the communications office from the printing office before seven o'clock and is dispatched without delay to Bolgradskiy and Reninskiy rayons.

Communication workers of Izmail also display concern for the on-time delivery of central /Moscow/, republic and oblast printed matter and all types of mail. Printed matter and mail within Izmail'skiy Rayon are transported by motor vehicles which make runs over two circular routes. The prescribed time limits for trans-

port movement specify delivery of printed matter and letter mail to all communications branch offices and population on the day when they arrive at the communications office.

Saturation with printed matter in the Rayon has been increasing year after year. While in 1959 saturation with printed matter per 1,000 persons amounted to 284 copies, in 1962 it reached 472 copies.

Organization and self-discipline of kolkhoz mail carriers, the understanding of their role are felt. By the time of the arrival of the motor vehicle with the mail all kolkhoz and departmental mail carriers are at their stations and are getting ready for departure to delivery districts. They observe strictly the prescribed time limits which specify delivery of telegrams, letter mail, printed matter and money orders on the day of their arrival at the communications branch office. Urgent telegrams are delivered to addressees by chiefs of the branch office or by other workers.

One can buy stamps and literature from kolkhoz mail carriers. They deliver parcels to residences on bicycles and take part in the collection of subscription fee for radio listening; they also accept subscriptions for newspapers and magazines. In summer the kolkhoz mail carriers deliver mail and printed matter directly at the field camps.

Supervisory personnel of the communications office saw to it that kolkhoz mail carriers had bicycles, uniform clothing and that they would regularly receive special footwear.

Most of kolkhoz mail carriers (and there are 48 of them in rural areas) have secondary education.

[Photo available]

Front-rank telegraph workers of Izmail communications office (left to right): telegrapher T. P. KONOVALOVA, shift supervisor K. Ya. ZHUKOVA and telegrapher T. P. KUZNETSOVA

In the center of the Rayon, Izmail, mail is delivered twice a day. Patrons' boxes have been installed in new houses, and in mail carriers' delivery districts -- base stations [relay boxes] to which printed mail and printed matter are brought in motorollers. Motorollers

are also used for home delivery of parcels and collection of letters from forty eight mail boxes of Izmail. There are fifty six such boxes in rural areas. A motoroller is also available at rural Suvorov communications branch office.

A number of production processes have been mechanized at the communications office. Stamping machine is used with success and also movable conveyers for carrying parcels from the motor vehicle into the storage room.

Chiefs of communications branch offices of the Rayon regularly render an account to the population and village Soviets. Supervisory workers of the communications office are present at the meetings of kolkhoz members or sovkhoz workers where chiefs of communications branch offices give their reports. This makes it possible to adopt effective measures in response to criticism.

One-day conference of chiefs of all communications branch offices of the Rayon is held once in a quarter. At this conference the operating activities of each enterprise are analyzed, also quality of performance, results of the fulfillment of planned goals and completely specific tasks are set for chiefs of communications branch offices. Prior to the conference the supervisory workers of communications offices check the work of communications branch offices.

A great deal of help in development of communication facilities of Izmail'skiy Rayon is extended by Soviet and Party organizations. Supervisory personnel of the Office are making persistent attempts to draw in additional resources from the local budget for construction of new communications installations.

Thus, the recently installed new ATS [automatic telephone system] of 1,200-lines capacity was constructed exclusively at the expense of funds allotted by Izmail City Executive Committee and by enterprises of the City. City Executive Committee also paid in full for the cost of TG cables of various capacities in the quantity of 10 kilometers using 50 pairs as the calculation basis. These cables were purchased for expansion of GTS [city telephone service] network.

Rayon Executive Committee appropriated funds for the purchase of ATS of 100-lines capacity for the large rural populated locality Suvorovo. At the end of the year the system will be put in operation.

Employment of additional local resources made it possible to purchase a television relay system of 100-watt power. Izmail'skiy Rayon situated outside the area of good reception was enabled to receive telecasts from

Kishiniv and sometimes the broadcasts of Odessa Television Center can be received with good quality.

Four TsB [common battery] switchboards of type M-49 for 24 channels were purchased for the long distance telephone office out of the budget of City Executive Committee.

Five buildings with total value of 159,000 rubles were transferred to the authority of the communications office. New premises for communications branch offices are being built at the expense of local resources.

Collective of Izmail communication worker headed by experienced supervisory personnel (chief of the office is I. G. Liskiy; his deputies are I. Ye. Grishchenko and M. Ye. Zhurbenko) successfully fulfilled socialist pledges for 1962. Here are chief results of activities for nine months of the year. Communications office fulfilled financial plan to the extent of 101.1%, the plan on output volume -- to the extent of 100%. Cost of the output was reduced by 0.9%. Labor productivity has increased. Output per one worker amounts to 100.3%.

Plan on the net increase in the number of radio points has been 176.4% fulfilled; the plan on net increase in the number of GTS subscribers -- 100% fulfilled.

Communication workers of Izmail'skiy Rayon also made many efforts toward improvement in quality indices of work. There are no complaints regarding communication workers' performance. This is an indication that they really serve the population efficiently and courteously. It is not by accident that the collective won more than once the Challenge Red Banner of the Oblast Communications Administration and Trade-Union Colast Committee. Contributing to regular fulfillment of planned goals and improvement in quality indices was socialist competition which is widely developed in the communications office departments and branches.

Collective of the communications office and collective of LTU are striving to receive honored title "Communist-Labor Enterprise". All production sections of the communications office and all communications branch offices are taking part in the competition for Communist Labor. Monthly and quarterly results of work are discussed in detail at regularly held meetings of professional groups and activities are planned for the forthcoming period. For the results of work for the quarter the section which won first place is awarded Challenge Red Banner and section which won second place is awarded Challenge Pennant. Two challenge pennants have been instituted for communications branch offices -- for first place and second place.

The names of best production workers are entered in the Honor Book of the communications office upon the decision of a general meeting. By leafing it over one may become acquainted with eighteen best communication workers. Photographs of twenty nine front-rank workers may be seen on the Honor Board of the communications office. On the Oblast Honor Board may be seen photographs of two communication workers of the office and on the City Honor Board -- also the photographs of two of them.

Seven workers of the communications office have been awarded the badge "Excellent Participant in Socialist Competition of Ukrainian SSR". These are mail carriers' brigade leader Communist-Labor shock worker K. M. Grigorenko, GTS telephone operator Communist-Labor shock worker Ye. K. Storozhenko, kiosk attendant Ye. K. Mel'nichenko, GTS lineman N. N. Dolzhenko, and others.

Pershetravnevnskoye rural communications branch office (A. I. Unguryan, chief of the branch office; A. I. Zotov trade-union organizer) stands out because of the quality of its work and regular overfulfillment of planned goals. The collective of this branch office has kept the Challenge Pennant for several quarters in a row.

Local committee discusses at its meetings the work of individual communication workers who perform their duties poorly, who do not comply with operating instructions and permit flaws in the work. The subject of the discussion by local committee and sometimes by the general meeting is the conduct of one or another worker disgracing the good name of the collective communication workers. Telephone operator of the long distance telephone office M. S. Kalinichenko and kiosk attendant M. A. Zmenchilova were severely censured for rude treatment of patrons and the cleaning woman of the 1st communications branch office of Izmail Comrade Ivanova -- for improper upbringing of children and ill-befitting behavior in the family.

Contributing considerably to the successes achieved by Izmail communication workers were the personnel training which is well-organized here and regular upgrading of the qualifications of the workers. Technicians are trained at the office from among young people by its own personnel. All technical personnel is studying at the home-study technical school or in the senior classes of the evening school. Technical training is regularly conducted with technicians and linemen: under guidance of deputy chief of the office I. Ye. Grishchenko and senior technicians they study new equipment and apparatus, technical-operation rules, they master more improved maintenance methods.

Many communication workers are studying by correspondence at Odessa Technical School of Communications and at the evening school. Most of the chiefs of communications branch offices had studied at VKZO /All-Union Home-Study Education Combine/. This year chief of Suvorovo communications branch office V. M. Kuryatnik and chief of the 5th communications branch office of Izmail complete Odessa Home-Study Technical School of Communications.



Installation of new Izmail ATS

Party organization and trade-union local committee of the communications office and LTU proceed in their practical activities on the basis that the high level of service to the population can be achieved only on the condition of extensively organized educational work with people. After the 22nd Party Congress the Party raised still more the requirements in regard to every communist in his area of work and intensified the education of all communication workers.

Deputy chief of the communications office communist M. Ye. Zhurbenko is doing good work in organization of postal service. Party bureau member G. F. Lebedev (chair-

man of the local committee) carried out within a short period a number of organizational and technical measures which contributed to the raising of radio-broadcasting quality. Communists V. P. Bobylkina and V. S. Sidel'nikova organized well the operation of telegraph office and of the long distance and city telephone office.

Problems of the production activities of the entire collective and of separate sections are regularly discussed at Party meetings along with the problems of intra-Party life. Party supervision commission which has been created watches over adoption and utilization of new equipment and actively assists the collective in this important work. With the help of the Party supervision commission the state of accident prevention has been considerably improved.

The level of communication facilities which has been achieved in Ismail'skiy Rayon and their continuing development make it possible to bring good service to rural toilers. But it would be incorrect to consider that there are no shortcomings in the work of Ismail communication workers, that everything is going smoothly. A great deal more has to be done in order to satisfy more completely the needs of Territorial Production Administration and rural population for communication facilities. Directing personnel of the Territorial Administration expressed the desire that telephone service be provided on top-priority basis to all specialists of the Administration; that mechanizers be enabled to communicate with the Sel'khoztehnika /Agricultural Equipment/ department. It is imperative to improve in all possible ways the audibility on VRS telephone circuits since in a number of cases it is unsatisfactory. There is no doubt that these and other tasks pertaining to further development and improvement of communication facilities, the raising of quality and efficiency in providing service to rural toilers will be accomplished by the collective of Ismail communication workers.

S. G. VOLKOV and L. Ya. YAKOVLEV

GRIEVANCES OF TELEVISION-SET OWNERS

SUMMARY -- A description of reasons for poor service to television-set owners in the City of Kalinin and of complaints resulting from them.

Soviet people use television on a wide scale. How rapidly the television network of our country is growing is evident from the example of the City of Kalinin. Here the number of television receivers increased to 58,000 in the last six years. Last year alone the population of the Oblast purchased more than eight thousand television sets.

A great deal is being done in our country also for improvement in the quality of television receivers. However, up to the present time some plants deliver to stores poor products. Such are television sets "Yenisei-2", "Neman", "Verkhovina", "Volkhov", and some others.

Here is what T. M. Vavayeva writes from Vyshniy Upper Volochëk.

"I purchased in Leningrad television receiver 'Verkhovina' No 237413 for 250 rubles. It is already more than four months since I bought it and so far I have not really watched a broadcast on a single occasion. When the television set was brought home and the television-repair-shop expert installed it the set worked only for five minutes. Next day the expert was summoned again. He corrected the defect but the television receiver operated only one hour. In the course of four months the television set had to be taken to the repair shop and back many times".

Comrade Vavayeva is appealing to the plant director with an earnest request as to what is to be done next with the television set.

Ye. N. Zinchenko living at Kuzhenkino station on Kalininskaya railroad writes to the television bureau Moscow Zh-127 as follows.

"On 26 November 1961 I purchased television receiver 'Temp-6' at a television store in Moscow. Television set had been connected on 30 November and on 7 December 1961 it already went out of order. On 9 December the set was de-

livered for repairs to Vyshniy Volochsk workshop. They said there that the deflecting system failed in the television receiver and did not promise to repair it since they have no spare systems. In the television repair shop there are about ten sets with the same defect as mine. I consider that the television receiver has not been checked properly by OTK /technical inspection department/ and does not meet specifications. I request the return of money or to replace it with another television set".

Similar complaints of television-set owners are not isolated. It should be added to this that directing personnel of some plants have a perfunctory attitude toward complaints; they write for form only alleging poor-quality repair work of the repair shops.

There are quite a few television receivers arriving at a store which prove to be faulty even before being sold. In November of last year 120 television sets "Yenisey-2" arrived at electronic-goods store No 49 of Kalinin City Administration of Department Stores for Industrial Products. Out of them fifty four were faulty. By this time more than 150 faulty television sets "Yenisey-2" accumulated at the store. Out of forty five television receivers "Kontsert" which were received at the same store in November twenty one sets turned out to be faulty, and out of 18 television receivers "Verkhovina" -- 16. The situation is the same with television sets "Neva" and "Volkhov".

Plants explain extensive flaws in television receivers put on the market by negligence in transportation. Actually this is far from being so. Our television repair shop repairs hundreds of television sets before they are put up for sale but only a few of them have mechanical faults caused by transportation whereas the most typical faults are: use of poor-quality parts, improper wiring, the making and breaking of contacts in wiring circuits, etc.

In June of last year ninety six television receivers "Yenisey-2" were received at the same store No 49. Out of them one half turned out to be faulty. The television repair shop drew up a report jointly with the store and sent it to the plant. Poor line and frame synchronization was found in these television sets, also poor filter discrimination, toneless sound, unthought-out construction which makes operation of the set difficult.

An engineer summoned from the plant satisfied him-

self regarding the validity of complaints but so far the quality of television receivers has not improved.

Analysis shows that television sets of many different makes frequently fail in the very first five days of their operation. In the course of the six-months' guaranteed period quite a few television receivers go out of order ten to 15 times. The owners of such television sets appeal to the manufacturing plants with complaints and requests to replace defective television receivers with serviceable ones.

Defects of television sets received for sale were legalized as it were by Order No 333 of the Minister of Commerce. By this order and explanation to it conditions are defined under which it is actually impossible to replace a poor-quality television set. It is known that 90% of all faults in television receivers occur due to poor quality of vacuum articles, resistors and capacitors. However, according to Order No 333 elimination of these faults is not considered to be repairs and such a television set cannot be exchanged even if it went out of order not twice but ten and more times.

The extent to which plants are deaf to consumers' grievances is evident from the following example. We wrote a letter to the plant manufacturing television receiver "Neman" with a request to send an engineer so that he would advise wireless mechanics servicing these television sets. Directing personnel of the plant did not find time even to answer this letter. In the meantime these television sets work poorly. High voltage from the horizontal-transformer tube and capacitors drains onto the body. This creates interference for the picture. "Neman" has inadequate contrast range, frames are not steady, picture focusing is poor and there are other defects.

Television repair shops are inadequately supplied with electronic components, technical information, manufacturing specifications and samples of latest types of equipment. When putting out new-make television receivers the plants have to give to the television repair shops samples of equipment, circuit diagrams and technical descriptions. But they do not do this. Therefore, wireless mechanics have to learn new-make television sets "blindly". Not infrequently a technician goes to repair television receivers which he actually sees for the first time. What quality of repair work can one speak about under such con-

ditions? Our television repair shop is mastering "blindly" the repairs of television receivers "Temp-6", "Volkhov", "Voronezh", "Neva", television-radio-phonograph combinations "Kontsert", etc.

When manufacturing new types of television sets the plants do not see to the output of electronic components necessary for their repairs, the kinescopes, electron tubes, horizontal transformers, deflecting systems, etc. Owing to lack of spare parts at the television repair shop No 1 of the City of Kalinin six television sets "Temp-6" put on guaranteed servicing in August--September of last year were not repaired for two and a half months.

Supply of kinescopes, electron tubes and general-use parts is organized unsatisfactorily.

Last year there was need for electron tubes 6Ts10P, 6P13C, 1Ts11P. At the present time these tubes have appeared but on the other hand the supply of electron tubes 6N14P, 6P14, 6N1P, 6P15, 6P18, etc. has become worse. The quality of some electron tubes is low.

The television repair shop performs work on replacement of poor-quality electron tubes without charge. The question is on what basis are plants supplying defective articles released from the reimbursement of losses? Due to the sole fact that it was necessary to replace defective tubes our repair shop did about 800 repeat repair jobs to the total amount of 1,100 rubles. Work on replacement of defective tubes took from the enterprise four working days. This caused a disruption of the scheduled time limits for repair work and had an adverse effect on the service to the population.

The number of defective kinescopes delivered to television repair shops also remains considerable. Sometimes we are obliged to invite plant representatives to our shop so that they would be able to satisfy themselves regarding the poor quality of their output, specifically kinescope 35LK2B. Deputy chief of the section and technician of the plant OTK were obliged to admit the low quality of kinescopes. Out of thirty three new kinescopes eight proved to be defective, including two having vacuum loss, in three there was no raster, two had emission loss and one had a ring crack.

Television repair shops are striving to improve service to the population. The organization of repair work at the homes of television-set owners is also aimed at this.

Nevertheless, plants which manufacture electronic equipment do not want to pay the television repair shops for the cost of calling a wireless mechanic to residences. If repair work is done in accordance with the guarantee, then it turns out that it should be done only at stationary work-shops although this is inconvenient for the population.

The refusal of the plants to replace electron tubes which had not worked for a guaranteed period seems strange. In the instructions it is written that during the period of the guarantee electron tubes are replaced free of charge while in the contract for guaranteed servicing it is pointed out that electron tubes are replaced only at the expense of television-set owners. This contradiction serves as the reason for many misunderstandings.

A great deal of chagrin is caused to owners of television receivers by their poor servicing on the part of the television repair shop. Of course, here much depends on the repair-shop workers themselves. But the basis of a large number of complaints is unsatisfactory supply of the repair shop with spare parts.

In order to obtain parts allotted on the basis of stocks it is necessary to send to the Television Trust and supplying plants a large number of telegrams and letters. Motor transport and "expeditors" are sent hundreds of kilometers away. For example, last year Kalinin television repair shop No 1 sent a motor vehicle to Moscow eight times in connection with this and several times each to other cities.

The staffs of television repair shops are determined without reasoning. Usually the load from September through May is one and a half to two times larger than in summer months. Nevertheless the size of the staff is fixed on the basis of average figures for the year. There are not enough people in autumn and winter and scheduled time limits for repair work are disrupted.

Television repair shops themselves have to deliver the guaranteed television sets and kinescopes to the workshop and return them from there to the owners. But what is to be done if the repair shop has no transportation facilities of its own? This not infrequently leads to misunderstandings. Without their own mobile workshops and motor transport it is also difficult for the television repair shops to improve service to television-set owners

in rural areas. Rural toilers wait for a wireless mechanic for weeks or else carry television receivers for repairs over many tens of kilometers.

A. M. PODOL'SKIY, Manager, Television Repair Shop
No 1, City of Kalinin

**FROM THE EXPERIENCE OF LAYING CABLE
HAVING PLASTIC SHEATHINGS**

When underground cables with plastic sheathings were being laid in our Oblast the quality of work performed depended to a considerable degree on how rapidly the method of low-temperature splicing of sheathings was adopted.

In order to employ this method on a wide scale it was necessary to train in it in a short time a sufficient number of cable fitters and provide them with polyisobutylene material, plasticizers, polyethylene film and polyvinyl chloride tape. At four seminars held in 1961-1962 at Kalininskaya Oblast Radio Network Administration and at the Construction and Installation Administration for Radiofication eighty cable fitters were taught the method of low-temperature splicing. During the training period every cable fitter actually made five to ten sheathing splices of different types of cables.

Initial period of the adoption of the method of low-temperature splicing of cable sheathings was made difficult owing to the complexity of the delivery to communications offices of polyisobutylene material the distribution of which in small portions is almost impossible. It is easiest of all to send polyvinyl chloride tape and polyethylene film in large rolls. But as practice confirms, under field conditions the preparation of small cuts of tape of required sizes is not always done successfully.

These difficulties were overcome when kits for splicing plastic sheathings began to be made directly at and sent to communications offices from the DRTS /Radiofusion Network Administration/.

The kit is made up of the following materials: 1) 50 milliliters of diluted polyisobutylene glue ready for use and 25 milliliters of plasticizer mixture (mixture "PKh-12") in small bottles with ground glass stoppers; 2) 50 cuts of polyvinyl chloride tape 65 centimeters long, 0.2 millimeters thick and 15 millimeters wide; 3) 50 cuts of polyethylene film 40 centimeters long, 0.2 millimeters thick and 10 millimeters wide.

In the small boxes with the kits are enclosed leaflets which give basic instructions for splicing plastic sheathings and which show the contents of the kit.

The use of kits makes it possible to considerably increase labor productivity and improve the quality of work when fitting cables having plastic sheathings. Therefore, it is expedient to make such kits at all communications administrations where cable laying is done.

I. P. TSVETKOV, Engineer, Kalininskaya Oblast DRTS

COMMUNICATION WORKERS -- TO RURAL AREAS

FURNISHING TERRITORIAL ADMINISTRATIONS WITH FACILITIES FOR COMMUNICATION WITH KOLKHOZES AND SOVKHOZES

SUMMARY -- A description of measures carried out and contemplated to provide and improve all types of communication services to territorial production administrations, kolkhozes and sovkhozes. Statistical data are cited.

Nineteen territorial kolkhoz-sovkhoz administrations were created in Azerbaydzhan. They manage 984 kolkhozes and 118 sovkhozes of the Republic. In addition, Ministry of the Production and Procurement of Agricultural Products was organized in Nakhichevanskaya ASSR and in the Nagorno-Karabakhskaya Autonomous Region -- Regional Administration for the Production and Procurement of Agricultural Products.

By the time of the organization of kolkhoz-sovkhoz administrations not all rayon centers had direct telephone link with localities in which the administrations were located. There was no direct link on the routes Nukha--Kutkashen, Sal'yany--Astrakhan-Bazar, Lenkoran'--Yardymly, Kirovabad--Shamyanovsk.

After the March Plenum of the Party Central Committee communication workers of Azerbaydzhan took up with enthusiasm the work aimed at furnishing territorial administrations with facilities for communication with kolkhozes and sovkhozes under their jurisdiction. In the first half of 1962 thirty long distance telephone channels with total length of 5,169 channel-meters were turned over for operation. This made it possible to provide 24-hour service to all rayons handled by territorial administrations. The number of channels between rayon centers gravitating toward one another (with respect to traffic) increased. In a short period 300 city and 27 direct long distance telephones were installed in kolkhoz-sovkhoz administrations.

With the exception of four newly organized sovkhozes all kolkhozes, village Soviets and sovkhozes in the

Republic were provided with telephone facilities. In the six months of 1962 alone sixteen ATS VRS /dial offices of the intra-rayon communication service/ with total capacity of 660 lines were set up in villages whereas in the same period of last year four ATS VRS with total capacity of 200 lines were installed.

During the current year communication workers installed 534 telephones in rural areas of the Republic. More than 130 kilometers of lines involving suspension of 1,000 kilometers of telephone circuits were built for this purpose.

In the course of six months sixty one rural communications branch offices were provided with telephone facilities.

In order to set up uninterrupted high-quality telephone and telegraph communication service for territorial administrations, electrocommunication workers, especially workers of line-maintenance centers, were mobilized for the rebuilding of outside plants, for bringing them to technical standards. As the result the plan on capital repairs for six months of 1962 was overfulfilled by 27.5% with respect to long distance telephone and telegraph service and in the case of intra-rayon communication service by 65%.

Agricultural machines and mechanisms operating in the fields may cause accidental damage to communication lines. Therefore, one or two repairmen with motorcycles were assigned to each territorial administration for the quickest possible correction of faults.

Communication schemes have been worked out at all line-maintenance centers these schemes providing for the opening of alternate links in case of the failure of main links running from rayon centers.

Extensive work on the automation of telegraph and telephone service is in progress in cities and rayon centers where territorial administrations are located. In doing so it is borne in mind that in the future these cities and rayon centers will be large junction centers of the Republic. Thus, during the current year an ATS /dial office system/ of 800-lines capacity was installed in the City of Agadam, in the City of Barda -- an ATS of 500-lines capacity. Construction of an ATS in the City of Nukha is being completed.

Competition for Communist Labor which developed

among communication workers of the Republic helps very much to raise efficiency in providing the population with the services of communication facilities and to improve the quality of work. Three thousand fifteen persons are competing for the title Communist-Labor Brigade and Communist-Labor Shock Worker; sixty communications enterprises are competing for the title Communist-Labor Enterprise. The honored titles have already been awarded to eleven communications enterprises, 100 brigades and 481 workers. Communication workers of the Republic are competing with the communication workers of Georgian and Armenian SSR.

There are serious difficulties in the work of providing kolkhoz-sovkhoz administrations with efficient communication service. The number of channels between kolkhoz-sovkhoz administrations and rayon centers, kolkhozes and sovkhozes within their areas is extremely insufficient. Shortage is especially experienced in regard to trunk lines from rayon centers to VRS sub-offices in rural areas where not more than one or two circuits are utilized as trunk lines. Many kolkhozes have a link over the subscriber's circuit to which more than two telephones are connected.

Communication workers of the Republic are faced with big tasks on the further furnishing of territorial administrations with communication facilities during 1962-1963.

The plan provides for the suspension of nonferrous circuits to the extent of 1,300--1,500 kilometers-wires with their subsequent multiplexing by means of V-3 and V-12-2 multichannel equipment. The plan also provides for the suspension of 2,000 kilometers of steel circuits having diameter of 3--4 millimeters with their subsequent multiplexing by means of three-channel equipment. Approximately 208 kilometers of cable MMSB 7x4x1.2 will be laid. Before the end of 1962 alone it is planned to install twenty ATS VRS with the total capacity of 1,400 lines.

Installation of telephone facilities at all communications branch offices will be completed during the current year.

A provision was made to suspend during 1962 more than 1,000 kilometers of wires in order to increase the number of connecting circuits and to unload the subscribers' circuits of the kolkhozes and sovkhozes.

In 1963 extensive work will be done on the rebuilding of outside plants of long distance telephone and tele-

graph communication service and VRS to the extent of more than 2,000 kilometers of lines. This will improve the liaison of territorial administrations, kolkhozes and sovkhoses.



Telephone operator on duty
Kh. B. KERIMOVA provides
communication service to the
sovkhos Azerbaydzhan of
Kirovabadskiy Rayon

During the current year a number of technical measures will be carried out. This will make it possible to obtain sixty telephone channels and provide territorial administrations with them.

Considerable work has been done on radiofication and the increase of the power of kolkhoz-type rediffusion stations of the Republic. In many localities powerful inter-kolkhoz rediffusion stations have been built and turned over for operation.

Out of 984 kolkhozes 733 have their own rediffusion stations or else they receive broadcasts from the Ministry of Communications' rediffusion stations. In the homes of kolkhoz members are installed 142,077 radio points/loud-speakers connected to local wire-broadcast network. Twenty five more kolkhozes of the Republic will be provided with radiofication facilities before the end of the current year.

Radio shops fitted out with the latest equipment make regular trips to kolkhozes and sovkhoses to extend assistance in repairs of kolkhoz-type and inter-kolkhoz rediffusion stations.



A. A. ALLAKHYAROV technician of the rediffusion station located in the Settlement of Sabira in Kirovabadskiy Rayon, carrying on a broadcast for kolkhoz members.

Many kolkhozes have at the rediffusion stations their own studios which prepare broadcasts for kolkhoz members and which broadcast daily summaries on the progress of agricultural work.

The SVR-ADU equipment will be of big help to the territorial production administrations in an effective guidance of kolkhozes and sovkhoses. This equipment will enable administrations to inform rural toilers at any minute of the most important agricultural tasks over the wires through the rediffusion stations.

After we receive this equipment we will install it at the kolkhozes and sovkhoses of the Republic.

Before 1965 all kolkhozes and sovkhoses of the Republic will be completely provided with radiofication facilities.

Postal service facilities of Azerbaydzhani SSR have considerably grown; services have been brought closer to the population, especially in rural areas. Communications branch offices have been opened in all newly organized sovkhoses. While as of 1 January 1960 there were 461 enterprises in rural areas, as of 1 January 1962 there were 541 enterprises and 124 nonregular agencies. In the first half year of 1962 thirty three new communications branch offices were opened and thirty more will be opened before the end of the year.

The network of mail boxes also increased considerably. While as of 1 January 1960 two hundred and three populated localities with twenty and more households had no mail boxes, as of 1 January 1961 only thirteen such populated localities remained.

In 1959 1,870 kilometers of intra-rayon routes were served by motor transport and in 1962 -- 3,127 kilometers.

The passage of Republic and rayon printed matter was speeded up somewhat.

At the present time inter-rayon newspapers are published at all territorial administrations. With the aim of their prompt delivery to subscribers the scheme of intra-Republic postal service was revised.

Sixteen inter-rayon centers were set up and twenty new inter-rayon routes with the total length of 1,156 kilometers. Printed-matter dispatch service has been organized at every inter-rayon center.

Sovkhoz mail carriers have been completely replaced. Central farmsteads of 133 sovkhoses are served by mail carriers of communications enterprises.

More than 120 kolkhoz mail carriers were released in six rayons of the Republic and before the end of the year they will be released in two more rayons.

The Council of Ministers Azerbaydzhani SSR allotted to the Republic's Ministry of Communications for special purpose 45 motor vehicles GAZ-51 to transport newspapers over intra-rayon routes. This makes it possible to release up to 60% of kolkhoz animal-drawn transport and deliver inter-rayon newspapers to the subscribers on the day of publication and Republic newspapers on the day of the arrival of printed matter in rayon centers.

But replacement of kolkhoz mail carriers with departmental mail carriers is proceeding extremely slowly.

Seven-Year Plan according to which it was planned to replace kolkhoz mail carriers completely is not being fulfilled since during 1959-1961 the State Planning Commission of the Republic did not allot staff personnel.

For a complete replacement of kolkhoz mail carriers it is necessary that during the remaining three years the plan on labor specify for this purpose an allotment of 300--350 staff employees with the corresponding wage fund.

Rural areas of the Republic number 4,000 populated localities. But out of them 688 do not as yet have communications enterprises and are located at the distance of over five kilometers from the nearest communications enterprise. To serve these populated localities it is necessary to organize mobile communications branch offices. For this purpose it is necessary to have as a minimum sixty additional motor vehicles with carrying capacity of 0.8 ton and with improved ability to travel over rough terrain. Organization of mobile communications branch offices would at the same time make it possible to solve the problem of bringing newspapers and letters to base stations /relay boxes/ and to patrons' boxes for rural mail carriers.

For already a number of years we have been unable to organize mobile communications branch offices due to the extremely insignificant allotment of motor transportation funds. The Ministry of Communications USSR has to achieve the goal that motor vehicles UAZ-451 be allotted for special purpose for mobile communications branch offices. This will also assure delivery of inter-rayon printed matter on the day of publication.

Being aware of the great importance of the reorganization of agricultural management communication workers of the Republic will take all measures toward the satisfaction of the need of territorial administrations, kolkhozes and sovkhoses for communication facilities.

T. K. GUSEYNOV, Ministry of Communications,
Azerbaijani SSR

**COMMUNICATION WORKERS OF ZYRYANOVSK -- TO
THE TERRITORIAL ADMINISTRATION**

Located in Zyryanovskiy Rayon of East Kazakhstanskaya Oblast is one of four territorial production administrations of this oblast. The service area of this Administration includes Bol'shenarymskiy, Katon-Karagayskiy and Samarskiy rayons.

Premises provided to the Production Administration by Zyryanovsk City Council of Workers' Deputies are located at a long distance from city telephone office and GTS [city telephone office] had to work a great deal in order to provide telephone service to the Administration. By making use of local resources, cable was found and twenty telephones were installed in the premises of the Administration, six in editorial offices of the newspaper Zarya Vostoka [Dawn of the East] and also telephones at apartments of the Administration chief, his deputy, of the Party organizer and other workers of the Administration.

Zyryanovsk has four channels for communication with Oblast center Ust'-Kamenogorsk. Semiautomatic equipment was installed in order to speed up completion of long distance calls. After dialing directly the number of the required subscriber Zyryanovsk telephone operator effects connection without participation of Oblast MTS [long distance telephone office]. This speeds up service. With the Samarskiy, Katon-Karagayskiy and Bol'shenarymskiy rayons Zyryanovsk has communication service in accordance with a special schedule -- two to four hours a day which completely satisfies the needs of the Territorial Administration workers.

Zyryanovsk communication workers did all this work exclusively at the expense of internal resources. Technician-cable man F. M. Gur'yanov, MTS technician E. S. Tayurskiy and other comrades worked conscientiously.

This year a great deal of attention is being devoted to providing sovkhozes with telephone facilities and to modernization of rural telephone service. In the third quarter good dependable communication service was obtained by Sredigornenskiy and Pervorossiyskiy sovkhozes and by the Turgusunskoye division of the sovkhoz.

In 1963 there is planned a further development of

telephone service from the Territorial Administration to rayons and sovkhoses. At the beginning of 1963 we are going to install in Zyryanovsk a 12-channel system for communication with the Oblast center and then the Territorial Administration will have a link to every rayon over a separate channel.

A great deal has been done by the workers of Soyuzpechat! /Central Administration for Printed-Matter Distribution/ P. M. Zazdravnykh and N. I. Panteleyeva for distribution of the new inter-rayon newspaper Zarya Vostoka /Dawn of the East/ which has 13,000 subscribers. At the present time printed matter is delivered to the rayons by means of modern transportation facilities.

The collective of communications office is imbued with the desire to take all measures in its power for further improvement in providing the Production Administration and agricultural toilers with the services of communication facilities.

N. G. SIMAKOV, Chief, Zyryanovsk Communications
Office, East Kazakhstanskaya Oblast

LINEMEN NEED MECHANIZATION FACILITIES

SUMMARY -- A description of equipment shortages hampering work of the Rediffusion Network Administration in Gor'kovskaya Oblast.

Continuous growth of labor productivity is unthinkable without extensive mechanization of labor consuming jobs. Now then, how are mechanization facilities being adopted on line jobs?

In ten years the extent of rediffusion network lines in Gor'kovskaya Oblast has grown by three and a half times with a very insignificant increase in the staff of line workers. Many rayon communications offices have from 500 to 800 kilometers of rediffusion lines. However, the Ministry of Communications does not give proper attention to providing linemen with technical facilities.

Here are a few examples. Fault-finder suggested by Novikov has been used in the City of Gor'kiy itself since 1938. In 1940 the Ministry of Communications approved this device; a special brochure was published about it. The use of Novikov's finder permits a quicker location of a fault on overhead rediffusion networks without mentioning the fact that in case of two or three short circuits on one and the same line it is almost impossible to correct the fault without Novikov's finder. And yet this finder is hardly used in outlying districts because a pole about five meters long is necessary for it. One cannot use transportation facilities with such a "finder" -- one can travel only on foot. The pole has to be light, folding, easy to carry and use. On the other hand it is not so simple to make it by oneself. Therefore, it is necessary to set up batch production of the folding pole, possibly of the telescopic type, with movable contacts. Universal use of Novikov's finder will return the outlays and will make it possible to improve service to the population.

In 1951 line technician of Gor'kiy DMS Rediffusion Network Administration V. N. Lunin used for the first time an electric hand drill for drilling openings

in the walls when installing radio points /loudspeakers connected to local wire-broadcast network/ in new houses. As the result of this, labor productivity increased by several times with a considerably smaller expenditure of effort. A year later Lunin used an electric drill for drilling openings in attic construction beams when installing conduits and the result was the same.

In 1952, six months before publication in TEKhSO /Technical Council/ card index V. N. Lunin used for the first time a spiral drill with tungsten-alloy tip for drilling brick and reinforced-concrete walls and coverings and upset once more the output norms existing at that time. It was not through his fault that priority to the claim for the suggestion was not kept by Comrade Lunin.

Everything described is known to communication workers and has been published in the TEKhSO card index but strictly speaking has not been adopted in actual practice, at least in Gor'kovskaya Oblast. In the last ten years electric hand drills have been hardly coming in by way of centralized supply while not a single drill with tungsten-alloy tip has been received. We make locally with difficulty the drills with tungsten-alloy tips but it is extremely difficult to purchase electric drills locally. In our Oblast they are available only at the DRTS of the City of Gor'kiy and at the independent rediffusion station of the City of Dzerzhinsk but even then their quantity does not satisfy the needs. Ministry of Communications should provide communication workers with electric and tungsten-alloy drills.

There are many underground lines in Gor'kovskaya Oblast but we have only two fault detectors of the type IPL K-1. These detectors are portable, convenient to use but they are not available. We tinker, somehow find a way out of the situation by modifying audio devices of type Zvuk /Sound/ and Kristall /Crystal/ but there are not enough of them on sale and it frequently happens that they cannot be used -- there is no power supply.

Speaking about underground lines one cannot help mentioning that up to the present time no method of cable splicing has been developed which would be sufficiently convenient and simple for work under field conditions and also be technically reliable. Methods which have been developed are still complicated and chemicals are not provided for them.

A few words on cable laying. There are substantial defects in the design of cable layers which we use. At times the cable layer is towed by three tractors, up to three kilometers of cable are wound on the drum and when less than one half of the cable remains the drum rotates excessively rapidly while at the beginning of laying it turns with difficulty and therefore the cable conductors may break which is exactly what frequently happens.

Supply with voltage indicators is accomplished extremely poorly but after industrial current has been furnished to Gor'kovskaya Oblast the need for them greatly increased. Situation is no better in the case of line tools; this applies especially to tools with insulated handles.

Centralized supply satisfies the need for tools only to a very small degree while tools which we obtain locally are of poor quality.

Serious attention has to be given to the supplying of line workers with light-duty transportation means, best of all with motorized bicycles while we are unable to provide even ordinary bicycles to all line workers.

It is imperative to take measures for technical equipment of line jobs. This will make it possible to improve service to the population and raise quality indices.

A. A. KAMSKIV, Engineer for Radiofication-Lines
Operation, Gor'kiy DRTS

IN HONOR OF THE 45TH ANNIVERSARY OF THE
GREAT OCTOBER REVOLUTION

SUMMARY -- /Brief descriptions of special achievements by some communications enterprises on the occasion of 45th anniversary of October 1917 revolution./

* * *

Competition as a befitting welcome of 45th Anniversary of the Great October Revolution created extensive development at the communications enterprises of the country. Soviet communication workers welcomed this momentous date with new labor achievements. Many collectives found and used resources for ahead-of-schedule fulfillment of planned goals, for raising labor productivity and for further improvement of service to the population.

* * *

Collective of Moscow General Post Office striving for the title "Communist-Labor Enterprise" celebrated the great holiday by ahead-of-schedule fulfillment of the ten-months' plan on revenues, mechanization of production processes in twelve communications branch offices of the Capital, by putting in operation the sixth in succession letter sorting machine in the 1st section of the Post Office, by installing in the City additional patrons' boxes for 3,000 apartments. Adoption of advanced work methods of the Communist-Labor brigades and shock workers, mechanization and better production organization made it possible to overfulfill the plan on labor productivity by 2.5%.

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Collective of Minsk Central Telegraph Office prepared gifts of labor on the occasion of the holiday of the Great October. By 17 October -- anniversary of the 22nd Party Congress -- workers of the Telegraph Office gave to the State fifty thousand rubles over and above the plan. They processed well the congratulatory telegrams on the eve of 7 November, overfulfilled the ten-months' plan on volume of output by 3%, for ten months they reduced the cost of one unit of output by 2% more than specified by the plan.

Owing to further improvement and wide use of the method of simultaneous handling of reception and transmission by one telegrapher the collective of the Telegraph Office overfulfilled the plan on labor productivity by 4%. By refining automation and mechanization of facilities workers of the Telegraph Office increased speed of the passage of telegrams. By 7 November improvement workers contributed more than 136 suggestions. Installation, tuning and preparation for operation of three equipment systems TT-12/17 were completed by 7 November by the forces of engineering and technical personnel.

* * *

Good news about labor achievements is also coming from many other communications enterprises of the country.

When the letter of Ukrainian kolkhoz member Hero of Socialist Labor Nadezhda Grigor'yevna Zaglada entitled "Value the Honor of Grain Grower" appeared on newspaper pages mail carrier Raisa Kuz'minichna Maksimova was one of the first at the 2nd communications branch office of the City of Tambov to respond to it. She called upon her colleagues to hold high the honor of the Soviet communication worker, to perform conscientiously their duty to serve the population. The appeal by Comrade Maksimova found enthusiastic response in the collective of the branch office. While competing for a befitting welcome of 45th Anniversary of the Great October Socialist Revolution communication workers fulfilled the nine-months' plan to the extent of 106%. The ten-months' plan on revenues was fulfilled ahead of schedule, performance quality and service to the population have been improved. Mail

carriers N. L. Petrova, L. S. Sharabrina, M. I. Kolkhova, V. T. Maksyutova and others are in the lead.

* * *

Collective of Kiev Television Center participating in the competition for the title "Communist-Labor Enterprise" fulfilled the ten-months' plan on output volume to the extent of 102%. For ten months it overfulfilled the plan on raising labor productivity by 4% and reduced the cost of one broadcast hour by 8% more than specified by the plan.

In order to improve the quality of television broadcasting operating workers did the following by 1 November over and above the plan and by means of internal resources: they carried out installation of units and put in operation special-effects equipment in mobile television station PTS-3; they worked out circuit arrangement and put in use new line amplifiers with improved quality indicators in the equipment room "A"; they assembled and put in operation a new input modulator cell of the video transmitter of the first program; they installed and put in operation service-communication radio stations in autobuses and receiving equipment room, also UBS automatic equipment of frequency-modulated exciters and in the filament circuits of sound transmitter in the upper room of the first program.

By 1 November workers of the Television Center worked out on a public basis the technical plan for rebuilding the telecinema-projection equipment room "A".

* * *

Collective of Gomel' Television Center successfully fulfilled its pre-October socialist pledges. For ten months the revenues plan was overfulfilled: 4,900 rubles was given to the State over and above the plan.

Owing to the adoption of advanced methods of work and to the rise in utilization of equipment labor productivity exceeded by 5% the level specified by the ten-months' plan.

The pledge made earlier to contribute sixty improvement suggestions during 1962 was fulfilled by the date of 45th Anniversary of the Great October.

The fitting-out of central control room at the Television Center was completed.

* * *

Collectives of all sections of Sverdlovsk Long Distance Telephone Office took part in the competition in honor of 45th Anniversary of the Great October. They fulfilled their pledges.

Workers of the line-equipment section, of the semi-automatic-equipment section and of the laboratory installed and tuned 12-channel system on the section Sverdlovsk--Pervoural'sk; they carried out preparatory work connected with installation of apparatus for the link Moscow--Sverdlovsk over radio-relay trunk; they put in operation several sets of incoming and outgoing semiautomatic equipment. Workers of the office began to provide better service to the patrons.

* * *

After working enthusiastically in pre-holiday period Magnitogorsk communication workers successfully fulfilled the September and October revenues plans. They completed before 1 October capital repairs of outside plants planned for the year, also operating repairs of telephone cables. They performed major repairs on two distribution heads and opened a new public call office.

Engineering and technical workers of the City Communications Office kept their word: they assembled a television relay system with their own efforts and put it in operation.

* * *

In honor of the momentous date collective of the semiautomatic-equipment section K-3 at Kiev MTS [long distance telephone office] cut in and broke in six matching SX [channel bay] sets for intra-oblast single-frequency semiautomatic equipment. This makes it possible to utilize six additional intra-oblast communication channels in both directions. Work was done by engineer V. I. Kisil'ev, technicians B. M. Kinyak and L. V. Volkovaya and by electrician O. G. Samoilurova.

Workers of rack room K-1 did the wiring of non-standard sets and switchboards. Workers of the line-equipment room K-1 installed and turned over for operation K-24 equipment. The newly opened 24-channel system to Zhitomir operates with an improved normal-functioning factor.

COMMUNICATION WORKERS IN THE DAYS OF OCTOBER

SUMMARY -- Personal reminiscences by a participant in October Revolution of 1917.

The longer the time separating us from victory day of October Revolution the greater is the interest with which working people of Soviet Union and all socialist countries, and millions of our friends in capitalist states turn their eyes to this historically great revolutionary upheaval.

Communication workers took active part in the struggle for victory of the socialist revolution together with the entire proletariat and working peasantry.

Participants in the Great October Revolution remember that amidst communication workers at that time there were members of the Bolshevik party and a considerable number of Bolshevik sympathizers. Broad sections of communication workers held hopes of finding a way out of their centuries-old oppression. All this is exactly what explains the fact that such a difficult task as seizure of communication facilities and resumption of normal operation of communications enterprises was accomplished comparatively quickly.

Petrograd [now Leningrad] General Post Office passed into the hands of Soviet Government completely peacefully. In the morning of 25 October (7 November) 1917 the initiative group of the Post Office communication workers created already the day before took the administration of the enterprise into its hands after posting its sentries -- armed communication workers -- in the entire building. And during the night of 26 October the initiative group formed the Post Office revolutionary committee whose membership was made up of communists K. Ya. Kadlubovskiy and I. S. Germanov and nonparty employees Yegorov and Kutaf'yev. On the same day the revolutionary committee worked out its appeal "To All Postal and Telegraph Employees" after calling upon all communication workers for revolutionary self-control and continuation of work in the name of Revolution.

The fight for the Central Telegraph and Telephone Office of Petrograd turned out to be difficult in the beginning.

On 24 October (6 November), before the storming of the Winter Palace, the rebellious soldiers of Keksgol'mskiy Regiment led by its commissar Bolshevik telegrapher A. M. Lyubovich occupied the Telegraph Office. This event is described in detail in Lyubovich's memoirs. "At the gates of Smol'nyy", he writes, "I encountered a reinforced guard... After passing upstairs I met Comrade Dzerzhinskiy who immediately gave me commissar's credentials for the Telegraph Office and ordered verbally to occupy it". (Pochtovo-Telegrafnyy zhurnal /Postal and Telegraph Journal/, September--December, 1918, page 35.). Next Lyubovich tells how when occupying the Telegraph Office he placed sentry posts made up of Keksgol'mskiy Regiment soldiers inside and outside of the Telegraph Office building. Next day on orders of the Provisional Government a White-Guard detachment of cadets with an armored car approached the Telegraph Office. Their path was blocked by two barricades built during the night and by heavy machine-gun fire of Keksgol'mskiy Regiment soldiers and Kronstadt sailors who arrived in time to help. After a brief exchange of fire the cadets fled and did not appear again. Thus, according to the testimony of commissar Lyubovich, the Revolutionary Government seized the Telegraph Office.

The fight for the seizure of the Central Telephone Office was even sharper. On 25 October revolutionary troops occupied the Telephone Office. But in the evening of the same day a strong detachment of cadets approached it. In the battle which developed victory proved to be on the side of revolutionary soldiers and sailors. In this process the newly appointed commissar of the Telephone Office K. Ya. Kadubovskiy acted boldly and resolutely. He was able to resume quickly the normal functioning of the telephone network after overcoming resistance of the old administration and interference of the representatives of City Duma /Council/ to which the telephone network of Petrograd belonged.

In the very first days after the seizure of communication facilities gatherings and meetings were held everywhere at communications enterprises and establishments. At these gatherings and meetings commissars of military revolutionary committees, representatives of the

city committee of Bolshevik party and communication workers in sympathy with Bolsheviks revealed the intrigues of counter revolution, explained to masses of communication workers the problems of Soviet Government, made appeals for a ruthless fight against political intrigues of the reactionaries and against sabotage which disorganized the operation of communication facilities. Thus, commissar A. M. Lyubovich spoke at a large meeting at Petrograd Telegraph Office as early as the morning of 25 October (7 November). His speech was repeatedly interrupted by shouts "usurpers", "oppressors" but nevertheless it also produced the applause of a portion of the meeting and was heard to the end. "I realized", Lyubovich wrote in memoirs, "that even with such hostility there are those who are in sympathy with us and I was not mistaken. After the meeting separate operators of Baudot telegraphs were coming from time to time to our table and were delivering very important telegrams..."

And a Party group of Bolsheviks made up of telegraphers and Telegraph Office messengers was carrying on the work at Communications Club on Pochtovaya Street (in the former apartment of the chief of Main Postal and Telegraph Administration -- tsarist satrap Pokhrvistnev). Senior telegrapher Kotikova formed a Party group of Bolsheviks from among telegraphers of the apparatus room of the Central Telegraph Office. Widespread ideological and political work contributed to the shift of the masses to the side of Soviet Government and resumption of operation of the Telegraph Office.

Ideological and political work of Bolshevik communication workers was equally successful at the General Post Office and Central Telephone Office of Petrograd as former commissar of the Telephone Office K. Ya. Kadlubovskiy tells in his memoirs published in Pochtovo-Telegrafnyy zhurnal, Postal and Telegraph Journal, Nos 9-12, 1918, (unofficial portion), page 37.

Thus, through the efforts of first of all rank and file communication workers themselves the operation of communications enterprises in Petrograd was resumed.

At this time the social-revolutionary-monarchist Central Committee of Trade headed by the well known adventurer social revolutionary King adopted a decision to give up cooperation with the People's Commissar for Posts and Telegraphs and put forward an ultimatum that commissars of

the military revolutionary committees be immediately removed from communications enterprises while threatening to organize a strike of postal and telegraph employees in case of noncompliance with this demand.

And when at their special enlarged meeting on 2 (15) November 1917 these traitors did not receive the support of representatives of large communications enterprises of Petrograd who appeared at the meeting and the Post Office workers even boycotted the meeting, it became obvious to everybody that the Central Committee of Trade Union broke away from the masses of communication workers.

It was only at the Ministry of Posts and Telegraphs, this headquarters of "high-rank diehards of tsarism", that the resolution concerning nonrecognition of the government of the Council of People's Commissars and discontinuance of work was adopted by the majority vote of 340 against five.

By the resolute actions of people's commissar N. P. Avilov (Glebov) with the energetic support of revolutionarily minded rank and file communication workers of Petrograd the machinery of the Ministry renamed People's Commissariat for Posts and Telegraphs was organized anew in the course of one month. In December of 1917 a cell of communists and their sympathizers was formed at the Commissariat from among new workers and a few former employees. This cell developed ideological and political and organizational work and participated actively in the reorganization of communications organizations in the country.

At large communications centers a sharp fight was taking place against the reactionary top level of hostilely minded functionaries.

One of the examples of this fight of revolutionary communication workers against the forces of reaction was armed action of communication workers in Khar'kov who fought for Soviet Government.

An okrug (Administrative unit) revolutionary committee for communications named "The Council of 15" one of whose member was also the writer of these lines, was formed even before October Revolution in Khar'kov on the initiative of the Party group of Bolshevik communication workers under direction of line mechanic I. S. Koshevnikov. On the night of 3 (16) December 1917, after thorough preparation in which prominent figure of RSDRP (b) Russian

Social-Democratic Workers' Party (Bolsheviks) Artëm (Sergeyev) and other representatives of Khar'kov City Committee of bolshevik party took part, the "Council of 15" having at its disposal the armed detachment formed by it, occupied the Central Telegraph Office and placed under house arrest the okrug chief tsarist satrap Likhtanskiy and prominent functionaries known for their reactionary leanings. And on 8 (21) December in accordance with the decision of military-revolutionary committee of Khar'kov Soviet of Workers' and Soldiers' Deputies the "Council of 15" was given administrative power over the okrug and in the course of several days it removed from work at the largest Khar'kov communications enterprises the old administrators and in coordination with the military-revolutionary committee appointed commissars for all Khar'kov communications enterprises.

Throughout the country communication workers who took a stand on the side of the revolution fought against the counter-revolutionary bureaucratic top level and the traitorous social-democratic-menshevik leadership of the Trade Union who were attempting to carry out sabotage and disrupt the operation of communications enterprises and establishments. Thus, by frustrating all infamous attempts of anti-Soviet elements communication workers were performing their proletarian duty making a contribution to the great cause of victory of socialist revolution.

In the course of October Revolution Lenin's definition of the class nature of the masses of postal and telegraph workers as one of the vanguards of the proletarian was confirmed. Rapid growth of proletarian consciousness in the mass of communication workers in the process of revolution and simply the class instinct, accomplished the result that by using the support of the absolute majority of communication workers the revolutionary forces frustrated the plans for carrying out sabotage and All-Russian anti-Soviet strikes these plans had been cleverly conceived and cunningly prepared by the social-democratic-menshevik traitors from the Trade Union Central Committee in close contact with the old tsarist administration. United ideologically and organizationally by Communist Party groups of revolutionary communication workers which did not have either press organs of their own or premises and other material means proved to be politically stronger than the old staff of the administration and social-democratic-menshevik

leadership of the trade union organization of communication facilities.

In February of 1918 the All-Russian Conference of Revolutionary Communication workers was held in Petrograd. The Conference stood on the platform "All Power to the Soviets" and initiated Soviet revamping of trade union organization of communication workers in the country.

Soon after this conference communication workers created under Communist Party leadership the Revolutionary Proletarian Trade Union which actively assisted Soviet Government organizations in the building of new, Soviet administration of communications enterprises and in the cultivation of new, socialist labor discipline.

In the years of civil war the newly created Soviet administration and trade union of communication workers trained and mobilized into communications troops more than 9,900 skilled workers in different communications specialties. At the very beginning of the war eleven members of the revolutionary membership of Trade Union Central Committee voluntarily went to the front and joined communications troops. Many from among the revolutionary communication workers became outstanding organizers and commanders of communications troops of the Red Army.

The glorious revolutionary struggle of communication workers in 1917-1918 under the slogan "All Power to the Soviets" is one of the inspiration sources for socialist communication-service workers who participate with great enthusiasm in the nation-wide struggle of Soviet people for realization of the new Party Program adopted by the 22nd Congress of our Leninist Party -- the great program of the construction of communist society in our country.

N. S. ZABAVNIKOV, Participant in October Revolution,
Special-Pension Recipient, Party
Member since 1917

AN OUTSTANDING ORGANIZER OF
SOCIALIST COMMUNICATIONS

(On the 75th Anniversary of V. N. Podbel'skiy)

In November of this year it will be seventy five years since the day of birth of Vadim Nikolayevich Podbel'skiy -- an outstanding figure in Soviet Government, talented organizer of socialist communications, comrade-in-arms of Vladimir Il'ich Lenin.

Vadim Nikolayevich was barely thirty two years old when an absurd accident-- blood poisoning resulting from a scratch suffered at one of subbotniks /labor donated to the State on days off or overtime/ of which he was a loyal organizer and participant, cut short his life. This happened on 25 February 1920.

Newspaper Pravda wrote at that time about the death of V. N. Podbel'skiy as follows: "This is an enormous loss for Russian proletariat, for the entire Soviet Republic". "He was simultaneously a revolutionary fighter and outstanding builder of Soviet life", newspaper Izvestiya wrote on the day of his funeral. And if one is to review the life of this outstanding Bolshevik-Leninist we will see how true this definition is.

Vadim Nikolayevich Podbel'skiy was born on 13 (26) November 1887 in the Bagarazskiy Ulus /Tatar administrative unit/ of Yakutiya /now Yakut ASSR/ where his father -- member of the Narodnaya Volya /People's Freedom/ Papiy Pavlovich Podbel'skiy -- was in exile and his mother Yekaterina Petrovna Sarandovich, an active participant in People's Freedom movement, was serving a term of hard labor. In March of 1889 when the boy was one and a half years old Papiy Podbel'skiy was killed by gendarmes during a quarrel with political exiles.

In 1900, after wanderings over the cities of Siberia the Podbel'skiy family finally settled in Tambov. In the fifth year of gymnasium /pre-Revolution secondary school/ Vadim Podbel'skiy takes the road of the revolution. As the leader of student movement he is elected to the student-youth congress which was held illegally in Moscow in 1904. After the congress he leaves for Saratov for revolutionary propaganda among students.

In 1905 Vadim Podbel'skiy joins the Bolshevik party and soon becomes one of the most prominent members of Tambov party organization. For participation in the organization of workers' and students' demonstrations and protests he is expelled from the gymnasium. Hiding from the persecution of police authorities he is forced to emigrate abroad and lives for a year in the City of Menton in the south of France. At the end of 1907 he returned secretly to Russia but was soon discovered by the police and was banished for three years to Vologodskaya Guberniya [former administrative unit in Russia].

After returning at the end of 1911 to Tambov from the exile V. N. Podbel'skiy restores the depleted ranks of party organization and publishes progressive newspaper Tambovskiy otklik [Tambov Comments]. Persecuted by police he is forced to leave in 1915 for Moscow where he is also under vigilant surveillance. In Moscow he works in Zemskiy Soyuz [a union of local rural self-governing districts in pre-Revolutionary Russia], and later in the editorial offices of Russkoye slovo [Russian Word]. Here in Moscow he becomes one of the leaders of Moscow party organizations and carries on extensive propaganda work. He is elected to Moscow committee of the party, to the party committee of the city rayon, and as a member of Moscow City Duma [Council].

After February revolution V. N. Podbel'skiy organizes together with other comrades a newspaper of Moscow Bolsheviks Sotsial-demokrat [Social Democrat]. As a delegate of Moscow Bolshevik organization he participates actively in the work of the 6th Party Congress which mapped out the detailed program of accomplishing proletarian revolution. In the days of preparation and carrying-out of October armed uprising in Moscow V. N. Podbel'skiy becomes member of the party "pyatërka" [group of five persons] for leading the uprising and on 31 October 1917 he is appointed commissar of Moscow communications establishments. After the Government moved to Moscow in April of 1918 he was appointed People's Commissar for Postal and Telegraph Offices of the republic. He remained at this post to the end of his short and heroic life.

Vadim Nikolayevich Podbel'skiy worked for only a little more than two years as head of the Postal and Telegraph Department but his contribution to the organization of socialist communications is truly inestimable.

"The slogan of our construction", the people's commissar wrote in one of his articles in April of 1918, "has to be the basic rule: the most refined in technical respect postal, telegraph and telephone facilities for service to the broadest masses of working people on terms within their easiest possible reach".

Bolshevist people's commissar set this goal before postal and telegraph workers and he himself labored for its realization without sparing any efforts.

V. N. Podbel'skiy demanded from workers always and in everything undeviating performance of their official duties, high level of discipline and initiative. He encouraged every display of useful initiative and set it as an example for all workers of the department.

Numerous archive materials and testimonials of those who knew this remarkable man speak about his titanic capacity for work, profound erudition, bolshevist adherence to principles, strict exactingness toward himself and workers, ruthlessness toward enemies and kindness toward comrades.

Organization of joint administration, centralization of postal and telegraph and radio-engineering work in the country, creation of Nizhniy Novgorod Radio Laboratory, organization of specialized communications troops in the young Red Army, setting up communications at the civil-war fronts, addition of the functions of printed-matter distribution to communications organizations -- these and many other most important problems of communications work were solved under his guidance and with his inspired participation.

V. N. Podbel'skiy was concerned every day not only with technical equipment of communication facilities, not only with the expansion of equipment production but he also contributed in every way to the development of scientific thought in the field of communications. Thus, in November of 1918 the Collegium of People's Commissariat for Posts and Telegraphs allotted on his initiative a large sum of money for the publication of works of a "young", as stated in the decision of the Collegium, "but much-promising professor of the Electrotechnical Institute V. I. Kovalenkov famous for his outstanding works in the field of investigation of telegraph-current propagation...". In December of 1918 the Collegium adopted a resolution to familiarize itself with organization of educational work at Electro-

technical Institute and submit its considerations concerning democratization of the Institute and also to bring its representative into the membership of the Institute's council.

Podbel'skiy had no thought of working in the quiet of his study. He was known and loved by communication workers not only of Moscow but also of Petrograd, Tambov, Yaroslavl', Nizhniy Novgorod, Kazan' and of many other cities of the country where he visited. It was not without reason that one of the workers of SNK /Council of People's Commissars/ wrote V. I. Lenin that Podbel'skiy was perhaps the only one of people's commissars who in the first year and a half of the existence of Soviet Government travelled over the entire country.

Before being published every one of the drafts of the decrees of the Government in the field of communications was subjected to a thorough discussion at the Collegium of People's Commissariat for Posts and Telegraphs. Collegium considered the most vital and urgent problems: such as the state of mail transport by railroads, creation of telegraphers' and telephone operators' classes, introduction of workers' supervision, the state of printed-matter dispatch procedure in the introduction of principles of joint administration, installation of new radio stations, and hundreds of other problems. The most important problems in the field of postal and telegraph facilities were also touched upon in the operational circular telegrams.

V. N. Podbel'skiy conducted all of his work under the guidance of the Party Central Committee. He always used the advice and instructions of Vladimir Il'ich Lenin. Showing great confidence in V. N. Podbel'skiy, V. I. Lenin entrusted to him the most important tasks, especially on setting up military communications at the civil-war fronts.

In his activities the people's commissar was guided by Party and trade-union organizations of communications enterprises and helped in strengthening them.

As the result of all measures adopted for the struggle against devastation and sabotage the People's Commissariat for Posts and Telegraphs achieved at the end of the first year of its activities important and big successes in organization and development of communications in the country. During the first half of 1918 along 500 versts /one verst=1,500 feet/ of lines for telegraph service were constructed and 57 telegraph offices were opened; telegraph

line Petropavlovsk--Tagil--Kozyrevka was taken over for operation, 133 radio stations were set up in different localities of the country. And as of the end of the year 4,200 more versts of telegraph lines were under construction.

The growth in telegraph traffic may also be seen from the report submitted by the People's Commissariat for Posts and Telegraphs to the Sovnarkom /Council of People's Commissars/. While in 1918 telegraph traffic was 166,000 words less than in 1917, in 1919 this difference already amounted only to 12,000 words.

The service of V. N. Podbel'skiy in organization of radio communication in the country is great. On V. I. Lenin's instruction he worked out the decree on Nizhniy Novgorod Radio Laboratory, the decree on centralization of radio-engineering work, he constantly was concerned with the expansion of investigations in the field of radio.

Soviet Government was allotting tremendous resources for development of socialist communications. Suffice it to say that the estimate of revenues and expenditures of the People's Commissariat for Posts and Telegraphs for 1918 amounted to about 57 1/2 million rubles.

By liquidating sabotage and restoring the devastated communications plant the People's Commissariat for Posts and Telegraphs was enabled to place all communication facilities at the service of the cause of crushing interventionists and White Guards.

In four and a half decades the people's socialist communications made an immense jump in Soviet Union.

The work of development of communications in our country, the work to which V. N. Podbel'skiy gave his life, for which he lived and fought is growing and expanding. Soviet communication workers will never forget the name of their Bolshevik people's commissar, a true Leninist Vadim Nikolayevich Podbel'skiy.

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FOR THE UNITY OF WORKERS' ACTION

INAUGURATION OF FRIENDSHIP, PROSPERITY
AND ABUNDANCE

SUMMARY -- /An account of the visit of
the delegation of the Union of Postal
Workers of Ceylon to Soviet Union./

* * *

Delegation of the Union of
Postal Workers of Ceylon
Visits Soviet Communication
Workers

Recently upon the invitation of the Central Committee of the Trade Union of Communication Workers and of Motor Transport and Highways workers a delegation of the Union of Postal Workers of Ceylon visited Soviet Union. Among the members of the delegation were president of the Union of Postal Workers and secretary general of the Federation of Public Service Workers of Ceylon Wilfred Pereira, vice-president of the Union of Postal Workers Edington DeSilva and Trade-Union activist Edie Ravira.

The delegation of Ceylon communication workers was in USSR for about two weeks. During this time they visited Moscow, Kiev and Tashkent where they saw the sights of these cities and became acquainted with the work of communications enterprises and trade-union organizations and also with the life and everyday activities of Soviet people.

The delegation was received twice at the Central Committee of the Trade Union of Communication Workers and of Motor Transport and Highways Workers. By talking with members of the Presidium of Central Committee visitors became acquainted with the organizational structure of Soviet trade-union organizations and the nature of their activities. The delegation conveyed a suggestion to the Central Committee of the Trade Union to send a return delegation of Soviet communication workers to Ceylon.

All meetings and talks proceeded in an atmosphere of

cordiality and contributed to an improvement in mutual understanding and strengthening of friendly contacts between working people of Soviet Union and Ceylon.

Below is published the article by the leader of Ceylon delegation of communication workers in which he shares his impressions on the stay in Soviet Union.

* * *

Two of my colleagues and I came to your great country upon the kind invitation of the Trade Union of Communication Workers and of Motor Transport and Highways Workers in order to become acquainted personally with the organization of Soviet trade unions, with working conditions and life in Soviet Union and, finally, to acquire friends with the aim of drawing together the working people of our countries. From the moment when our delegation stepped on the ground of the first socialist State in the world we were literally struck by unrivalled kindness, hospitality and displays of friendship. And we realized the paramount importance of strengthening the contacts between the peoples of our two countries in order to forge everlasting friendship between our peoples.

An old Ceylon proverb says: "The foot of a traveller is worth a thousand feet". Our trip in USSR convinces us how true this proverb is. What we saw here differs like heaven from earth from the image of your country as painted by reactionary writers and journalists.

Along with great achievements which are obvious to all, an indelible impression was made on our hearts by the touching signs of attention on the part of children, workers, peasants, passers-by in the street.

I remember a wonderful scene which I observed at Tashkent airport where we were waiting for the airplane to Moscow on Sunday 12 August. It was one o'clock in the afternoon. I wanted to sleep a little after the tiring flight from Delhi to Tashkent. But after hardly closing my eyes I was awakened by what seemed to me Babylonian clamor. It was being announced over the radio that Soviet cosmonaut No 4 Lieutenant Colonel Pavel Popovich joined his colleague-in-space and was now flying around the Earth as a member of the first space collective. At the airport there was general rejoicing. This was contagious. A crowd of foreigners joined Russians in their joy for the great, fan

tastic achievement which without doubt established the superiority of Soviet Union in the field of engineering. This scene demonstrated visually that people of the entire world are able to rejoice at one and the same event, to have the same aspirations regardless of nationality, race and political convictions.

In Moscow and Kiev even seemingly insignificant events left indelible impression in our hearts, convinced us that Soviet people passionately desire peace and friendship. In the streets people who did not speak our language greeted us, shook our hands and sometimes made gifts of bouquets of flowers. Flowers wither but the aroma of friendship remains!

Our joy exceeded all limits when we were at the Young Pioneer camp of communication workers' children near Kiev. We saw that youthful people of your country are confidently following the road of peace and friendship laid by their parents. It is impossible to describe here everything that we saw at the Young Pioneer camp. We attended amateur-art-activities program during which children performed songs and dances of various countries. Is it possible to express in ordinary words their loyalty to the cause of international cooperation, peace and friendship? Touched by children's performances we asked one little girl about ten years old: "Tell us little daughter what would you like to receive from us from our country?". And we heard a wonderful answer: "We want your friendship." Bravo! Greetings to you, Soviet youth! Our friendship is yours!

Going over to the field of professional activities I must admit that you do not have what we have -- unemployment, strikes, conflicts between the management of enterprises and workers. While unemployment is one of our chief problems, we observed in USSR an altogether different picture: "a job is looking" for a worker.

On Ceylon the laws, rules and regulations worked out by former colonial bosses continue to remain in effect to one degree or another. Worker, peasant, trade-union leader are regarded up to the present time as an unpleasant necessity which has to be tolerated. A continuous conflict exists between workers and employers. In your country a worker has the right to a job and in return for this he assumes great responsibility. Management of enterprises and workers act together because the entire Soviet nation has a single aim. This is one of the chief factors in

high labor productivity and progress in Soviet Union. On the other hand, in our country labor and progress are held back due to conflicts between management of enterprises and workers and in the final analysis also due to strikes. I was glad to learn that although there are insignificantly few labor conflicts between workers and administration at enterprises of your country, nevertheless machinery has been worked out for the settlement of the rare conflicts which do arise.

Another important reason for high labor productivity in Soviet Union is the fact that all workers enjoy political rights without discrimination and, therefore, they have assumed a purposeful and leading role in the development of the country. Awarding of challenge banners and commendation certificates in the collective competition between different brigades maintains labor productivity at the highest level. Workers showed us with legitimate pride the commendation certificates received by them. When I visited the long distance telephone office of Kiev I was informed that workers of the office were gathering together for a meeting in honor of the wonderful achievement of Soviet cosmonauts. But what I liked best of all was their decision to work better to mark this achievement.

Workers in the land of Soviets are in a privileged position in comparison with the workers of any other country of the world. They are working in an atmosphere free from conflicts using the very latest achievements of engineering under the conditions of labor protection and enjoying all benefits which Soviet Government provides. It was our great fortune to see and learn here what we would like to see so much in our own country.

Unfortunately it is impossible to touch upon all aspects of your trade union movement and life in USSR in a short article.

My article could not be considered complete if it did not contain at least a few words about the magnificent spectacle of which I was a fortunate witness on Saturday 18 August on Red Square. I say "fortunate" because foreigners were the only privileged group at this ceremony. I am not attempting to describe the grand ceremony -- this would have to make up the contents of entire article. I will only point out what struck me most of all: the leit-motif of the rejoicing on the occasion of unprecedented achievement which demonstrated the superiority of Soviet Union in the field of engineering and science, was peace

and friendship. We saw this clearly by looking at the joyous crowds of marchers and by listening to the speeches by Comrade N. S. Khrushchev and both cosmonauts who stressed that it is imperative to devote youth and science to peaceful purposes.

Secondly I was greatly impressed by the discipline with which the tremendous mass of people was passing in front of the reviewing stands. I was also struck by the large number of women, children and aged people who were taking part in this celebration. And, finally, it is simply wonderful how quickly life returned to normal routine after the end of the demonstration. As soon as the last marcher left, squads of workers took away the barriers, washed out the square and swept away the trash. Life began to flow as usual.

In conclusion I would like to thank the Trade Union of Communication Workers and of Motor Transport and Highways Workers and its leaders for the warmth with which they received us. We are taking with us to our country the valuable capital of good will, friendship and knowledge for which our trade-union movement should be grateful.

Long live Soviet workers!
Long live the solidarity of trade unions!
Long live Soviet Union!
Long live peace and friendship!

WILFRED PEREIRA, President, Postal Workers' Union,
Secretary General, Federation of
Public Service Workers of Ceylon

ADVICE

DECISIONS OF HIGHER JUDICIAL BODIES ON CASES PERTAINING TO IMPROPER DISMISSAL FROM WORK

Presidium of Supreme Soviet USSR established (by the decision dated 27 January 1959) that labor dispute of persons dismissed from work on the initiative of administration with the consent of factory, plant or local committee of trade union is subject to consideration directly in People's Court without appeal to the Commission on Labor Disputes and to the factory, plant and local committee.

On the basis of this decision set forth in the Order of Ministry of Communications dated 2 February 1959 No 72 and in conformity with the established procedure of considering judicial matters the worker may appeal to higher-level judicial bodies and petition for a reconsideration of decision pertaining to his case by following the appeal procedure or supervisory procedure.

As the result of examination during 1960-1961 of a number of cases concerning improper dismissal from work the Supreme Court RSFSR and Supreme Court USSR announced definitions and decisions having the significance of principle and the guiding nature involved especially for chiefs of enterprises, establishments and organizations, for lawyers and for workers dealing with personnel and labor.

We are citing separate definitions and decisions selected in sequential order and corresponding to the articles of RSFSR Labor Code dealing with reasons for the dismissal of workers.

On Cases of Dismissal of
Workers Not Compensated With
Transfer To Other Work
(Articles 36--37 of the
RSFSR Labor Code)

Judicial Collegium on Civil Cases of the Supreme Court RSFSR found improper the decision of People's Court which refused reinstatement to the job of an unskilled

worker transferred to another section and dismissed for failure to report for work as being absenteeism without good reason. Supreme Court RSFSR found that in this case the transfer sharply changed working conditions of the unskilled worker both in regard to wages and with respect to the nature of work. Therefore, administration should have obtained her consent for the transfer.

In another case the Supreme Court RSFSR reinstated on the job an inspector of a disabled persons' home who had been transferred by way of disciplinary punishment to a job of common laborer and dismissed for refusal to report for new work. Supreme Court RSFSR found that transfer to lower-grade position or lower-pay work by way of disciplinary punishment does not release administration from compliance with the requirement of Article 36 of the Labor Code RSFSR which establishes that worker may be transferred only to a job relating to the same type of activity for which he had been hired.

On Cases of Dismissal of
Workers in Accordance with
Their Own Desire (Article 46,
Labor Code RSFSR)

In the examination of cases in which worker disputes the fact of "own desire" which served as the reason for his dismissal Supreme Court RSFSR found that the determining circumstance is the correspondence of the application submitted by worker with the actual desire to be dismissed. Therefore, if during two weeks the worker who had given notice to the administration about leaving, cancels his application the administration has no right to dismiss him.

If upon the expiration of a two-week period after the submission of application worker has not been dismissed, continues to work and does not insist on dismissal, then his application loses force. In this case dismissal can be effected only in the absence of objections on the part of the worker.

On Cases of Dismissal of
Workers Due to Reduction in
Staffs (Section "a", Article 47,
Labor Code RSFSR)

Supreme Court RSFSR considers that in cases connected

with reduction in staffs the courts have to discuss in all cases the question of qualifications of the worker being dismissed in addition to circumstances directly stated in the law (existence of two and more dependents, absence in the family of persons having earnings of their own, officers hired after demobilization from the army). However, appointment of experts to check his qualifications is considered inadmissible. Data on worker's production indices should be used, also information on completion of special education, knowledge, experience, references of the head of the enterprise and public organization should be taken into account.

On Cases of Dismissal of Workers
on the Basis of Section "c",
Article 47, Labor Code RSFSR, i.e.
Due to Unfitness and Also in case
of Loss of Trust in Worker Handling
Cash and Merchandise Valuables

In considering the case dealing with dismissal of an engineer of an enterprise in connection with loss of trust the Plenum of Supreme Court USSR found improper the decision of local judicial bodies which refused his reinstatement on the job. The Plenum of the Court found that the engineer had been dismissed without the consent of the head of trade union committee and stressed in its decree that dismissal in connection with loss of trust can be effected only in regard to workers handling cash and merchandise valuables. However, an engineer has nothing to do with the handling of cash and merchandise valuables. The plenum decreed to reinstate the engineer in former position and to recover in his favor wages for twenty days of forced absence from work.

In another case when the worker had been dismissed due to unfitness for work in spite of the fact that local committee of the trade union refused to sanction his dismissal the Supreme Court RSFSR found improper the decision of the Presidium of Moscow City Court which set aside the decision of People's Court on the reinstatement of the worker on the job pointing out that a gross violation of law existed in this case -- Section 10 of the Statute on the Rights of Factory, Plant and Local Committees.

On Cases of Dismissal of
Workers for Systematic
Nonperformance of Labor
Duties Without Valid Reasons
(Section "d", Article 47, Labor Code RSFSR)

In considering such cases Supreme Court RSFSR found that the basis for dismissal in accordance with Section "d" of Article 47 of the Labor Code must be only specific cases of labor-discipline violation and not the general characteristic of a worker's conduct. Worker cannot be dismissed for previously committed violations for which penalties had already been imposed on him inasmuch as according to the Internal Labor Regulations only one penalty may be imposed for each violation.

Supreme Court RSFSR also explained that dismissal on the basis of Section "d", Article 47 of the Labor Code may take place only in case when nonperformance of duties imposed on worker in accordance with labor agreement or in accordance with Internal Labor Regulations has assumed a systematic character and measures of public and disciplinary action employed in regard to him did not lead to proper results in view of which further retention of worker on the job is in contradiction with the production interests.

Measures employed by Comrades' Court have to be taken into consideration in the establishment of systematic character of labor-discipline violation along with the disciplinary penalties imposed by administration. Discussion of nonperformance by worker of his duties at the general meeting or meeting of the trade union committee, criticism in wall newspapers, etc. cannot serve as the basis of later dismissal in accordance with Section "d", Article 47 of the Labor Code.

On Cases of Dismissal of
Workers Due to Nonappearance on
the Job for More than Two Months
on Account of Temporary Disability
(Section "g", Article 47 of the Labor Code)

Supreme Court RSFSR stressed in one of its decrees the necessity of especially limited application of Section "g", Article 47 of the Labor Code having pointed out that dismissal of the given worker on this basis was not caused

by necessity inasmuch as his position was not replaced.

In another case Supreme Court RSFSR stressed that administration may use its right to dismiss a worker on the basis of Section "g", Article 47 of the Labor Code if upon the expiration of two months the worker's ability to work has not been restored.

But there are no grounds for dismissal if he already recovered and began to perform his duties.

On the Case of Worker's
Dismissal in Connection
with Retirement on Pension

In considering by way of supervision the case of dismissal of a worker discharged upon returning from regular leave of absence for the reason of retirement on pension although the worker had not submitted an application to this effect the Judicial Collegium for Civil Cases of the Supreme Court RSFSR pointed in its decree that according to labor laws now in effect administration could dismiss the worker for the reason mentioned only when he gave his consent to this. Therefore the refusal of judicial bodies in the worker's action for reinstatement on the job was found to be in error. The dismissed worker was reinstated on the old job with the payment of wages for twenty days of involuntary absence from work.

In conclusion it will not be superfluous to bring to notice the letter of instructions by Ministry of Communications USSR dated 16 June 1962 No 4424 which points out that when there are decisions of judicial bodies in cases of improper dismissal from work the Ministry of Communications USSR cannot examine on their merits the workers' complaints received by it regarding improper dismissal.

V. Ye. SINYUKHIN, Engineer, Division of Labor and
Wages, Ministry of Communica-
tions USSR

HONORED PRESIDENT'S PRIZE AWARDED TO THE
EXHIBIT OF USSR POSTAGE STAMPS

World exhibition of postage stamps "Prague 1962" was held during August--September of this year in Prague, one of the most beautiful cities of the world. More than seventy postal administrations and about 1,400 philatelists of eighty six countries took part in it.

This exhibition which was held under the patronage of the president of Czechoslovakian Socialist Republic Antonin Novotny was not only a most interesting philatelic event but also a considerable contribution to the cause of strengthening peace. The motto of the exhibition "For friendship between peoples, for strengthening peace in the entire world" aptly chosen by its organizers -- our Czechoslovakian friends -- dominated at the exhibition.

[Photo available]

President of Czechoslovakian
Socialist Republic ANTONIN
NOVOTNY viewing the exhibition
of USSR postage stamps.

Postage stamps of all countries of the world have already outgrown their purpose as tokens of payment of postal fees and are called by right the visiting cards of countries. The noble enthusiasm for stamp collecting helps to create mutual understanding among different peoples and contributes to the strengthening of peace.

Soviet Union was represented at the exhibition "Prague 1962" by many diverse collections of Soviet philatelists and by a large exhibit of Soviet postage stamps prepared by the Ministry of Communications USSR. This exhibit was the official national exhibit of USSR. It included about 2,600 postage stamps classified according to thematic sections. The stamps -- miniature pictures -- told about revolutionary activities of great proletarian leaders Marx, Engels, Lenin and about the triumph of Marxist-Leninist ideas, about the inspiring role of CPSU in the victories of Soviet people, about the con-

structive creative work of Soviet people -- builders of communism establishing on earth Peace, Labor, Freedom, Equality, Fraternity and Happiness of all peoples. The stamps reflect unprecedented achievements in the conquest of space these achievements being the triumph of labor and reason; they also reflect the national culture of Soviet people, the natural resources of our Fatherland.

In one of the sections of our exhibit entitled "Mankind is Proud of Them" were shown stamps with the portraits of the best representatives of mankind who made great contribution to the treasury of world culture.

In addition to stamps, impressions of special-cancellation stamps and also exhibits on the history of Russian postal service were shown at the exhibition.

At the starting point of the exhibition was placed the National Emblem of USSR made up of postage stamps skillfully matched according to color.

International panel of judges of the World Exhibition of Stamps "Prague 1962" awarded the exhibit of the Ministry of Communications USSR first prize in the class of official exhibits -- honored prize of the president of the Republic Antonin Novotnyy.

L. Ya. DOBYCHINA, Deputy Chief, Main Post Office
Administration, Ministry of
Communications USSR

POLISH EXHIBITION OF ELECTRONIC MEASURING EQUIPMENT

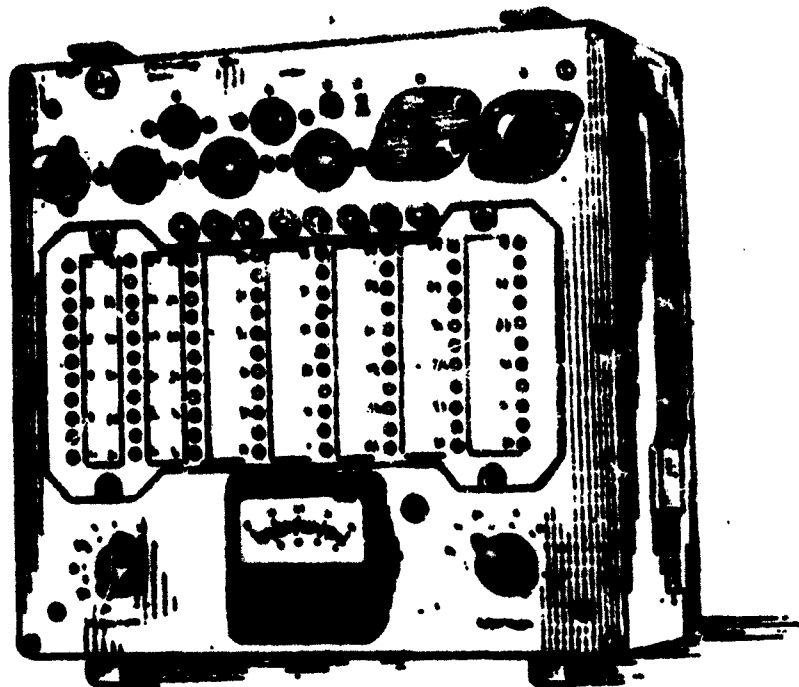
In autumn of the current year Polish Foreign Trade Society Electrim organized in Moscow on the grounds of Central Park of Culture and Rest imeni Gor'kiy an exhibition of monitoring and measuring equipment. Visitors to the exhibition were able to become acquainted with an extensive assortment of products of Polish electronic industry exported to many countries of eastern and western Europe, Asia, Africa and America. Among these products were various devices for automation and telemechanics, a large group of voltage stabilizers made for different load capacities, various oscillators, electron-beam oscillographs of many types, apparatus for measuring the parameters of semiconductor devices, analyzers, all kinds of transformers and autotransformers, distribution heads, automatic switches, miniature contactors, etc.

In addition to electronics and instrument making nucleonics was also represented at the exhibition -- devices for investigations in the field of nuclear physics, radiometric and dosimetric electronic equipment, detectors of ionizing radiation, also industrial systems (flaw detectors, level gauges, thickness gauges, etc.)

Communication workers who visited the exhibition displayed great interest in such exhibits as universal electron-tube testers designed for testing the tubes and recording their characteristics and for testing devices intended to determine telephone side tone by means of artificial ear, in the calling device (an attachment) of printing telegraph, in insulation testers for punctures, testing cabinet which makes it possible to measure the resistance of telephone lines, to determine the magnitude of direct and alternating voltage and to test the dial.

Visitors' attention was drawn by a floor-type television receiver demonstrated at the exhibition. This receiver had a large (53 cm) screen and a system for monitoring the quality of television broadcasts.

Products displayed by Polish electrotechnical industry were distinguished in most cases by the fineness of construction and finish fully meeting the present-day requirements in regard to the esthetics of fabrication.



Universal electron-tube tester

The exhibition contributed to the further strengthening and expansion of trade contacts between foreign trade combines of Polish People's Republic and Soviet Union.

AT THE PRODUCTION LABORATORIES

AUTORESPONDER

SUMMARY -- [A description of new autore-sponder which makes it possible to check the proper relaying of pulses and the setting of cord-pair devices and also to check the condition of speech channel.]

Production laboratory of Moscow City Telephone Exchange developed apparatus Avtootvetchik [Autore-sponder] designed for testing RSL-KI, RSL-KT [connector relay sets] and other devices. Autore-sponder makes it possible to determine the correctness of pulse relaying and the setting of cord-pair devices and also to check the condition of speech channel.

The apparatus is mounted on LI [connector] plate. It is installed at the available call position of the LI rack. Autore-sponder jacks are connected with the test-number jack of the LI rack by means of connecting cord.

Circuit Operation (Figure 1)

Upon the arrival of call from LI a circuit of current for the operation of relay is created in the apparatus as follows: minus, alternating generator, relay A LI, Gn. a, C₅₂₋₅₁, R₂₋₅₀₀, C₂, d₃₂₋₃₁, A-500, Gn. c, plus from LI circuit.

When operating, relay A sends by contact a₁₂₋₁₃ the battery plus for charging capacitor C of 100-microfarads capacitance over the following circuit: plus, a₁₃₋₁₂, C-100, R₁₋₅₀₀, minus.

After the ringing has stopped relay A releases the armature and capacitor is discharged onto the winding of relay B as follows: plus from the plate of capacitor C-100, a₁₂₋₁₁, C₁₂₋₁₁, R₄₋₁₀₀₀, B-500, minus.

When operating, relay B is blocked by means of contact b₁₁₋₁₂ to the other winding simultaneously creating a circuit for changing the cord devices into speech position

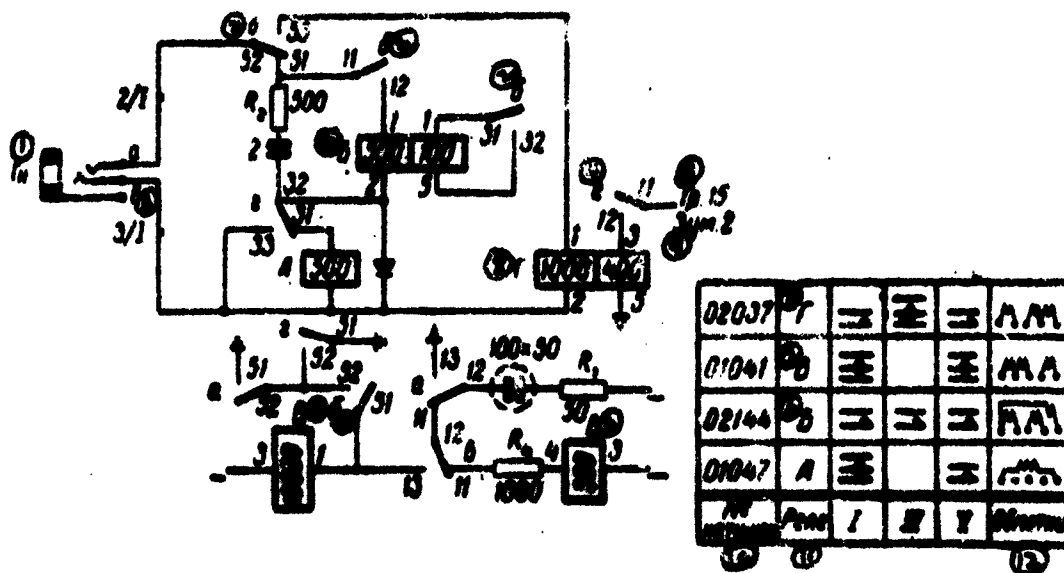


Figure 1

Key to Figure 1

- 1) On Jack;
- 2) b;
- 3) c;
- 4) d;
- 5) Gr;
- 6) B;
- 7) C;
- 8) D;
- 9) Sum. Buzzer;
- 10) Coil number;
- 11) Relay;
- 12) Windings.

as follows: minus, y-40, nc51-52, c11-12, A-500, n11-12, Gn. a, c52-51, b18-12, B-500, d32-31, A-500, Gn. c, n14-13, ca53-54, plus.

Relay A operates and creates by means of contact a51-52 the circuit of current for the operation of relay C as follows: plus, a51-52, b52-51, C-10,000, minus, and by means of contact a12-13 -- the charge of the capacitor C-100.

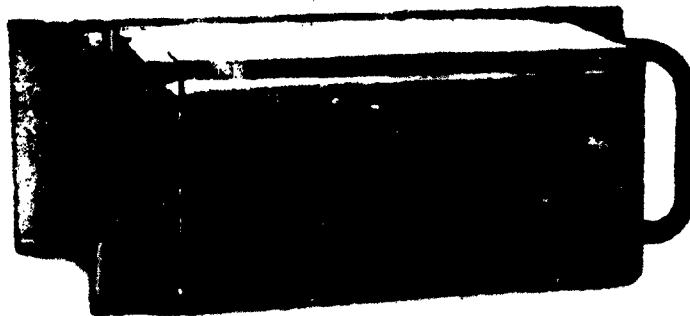


Figure 2

When operating, relay C switches by means of contact c52-53 the loop of the cord pair to the winding of relay D which pulls up the armature. Contact c52-51 breaks the circuit of relays A and B which release the armatures the relay B doing this with a delay since the winding of B-100 is shorted. This provides the holding of relay C.

After the dropout of relay B, relay C is blocked obtaining current from the plate of charged capacitor C-100 over the following circuit: minus, C-10,000, c13-12, a11-12, C-100, plus.

Relay C holds the armature in pulled-up position until the current of capacitor discharge reaches the magnitude of current for releasing relay C.



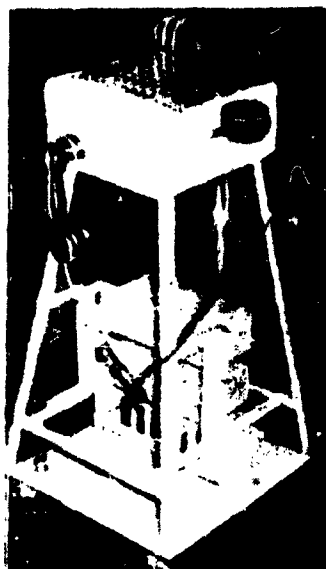
Figure 3

Contacts d_{11-12} send buzzer signal to the winding of relay D-400 as follows: Zum 2°, gr. 15, d_{11-12} , D-400, plus.

Voice-frequency current reaches the 400-ohm winding of relay D, is induced into the second winding of relay D-1000 and over wires a and b enters the line making it possible to test the speech channel. After the release of relays C and D the sending of voice-frequency current stops and LI circuit changes into the state of a permanent from the side of the subscriber who made the call. The exterior appearance of autoresponder is shown in Figures 2 and 3.

CREATIVES OF LABORATORY WORKERS
AND INVENTORS

1) MOBILE PULSER



A mobile pulser whose exterior appearance is shown in the photograph has been developed at the production laboratory of Moscow City Telephone Exchange. This pulser has pushbutton-type key sender and a relay circuit. It can be connected by means of a three-wire cord with the transfer jacks of equipment being checked.

The flap of the handset is depressed in order to start the pulser. The starting of the pulser may be achieved by sending a short-duration starting pulse and also by sending the direct positive of the battery. Many Moscow A23 /dial offices/ are using these mobile pulsers made in the workshops of Moscow City Telephone Exchange Administration.

2) DEVICE FOR TESTING THE INTERLOCKS

When testing interlocks installed on the city telephone exchanges for coupled connection of telephones the repairman while correcting faults in the interlock or adjusting it has to use repeatedly the telephones installed in subscribers' apartments. This is associated with certain inconveniences and in order to avoid them a portable device equivalent to two telephones has been suggested at Dushanbinskaya city automatic telephone office.

The device may be mounted in the shell from interlock UB-5. No short-supply materials are required for its assembly.

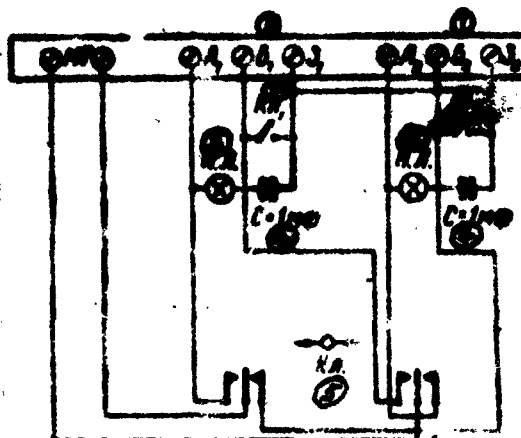


Figure 1

Key to Figure 1

- 1) B;
- 2) Kn;
- 3) H. L. [neon lamp];
- 4) C=1 microfarad;
- 5) K1 [key].

The device consists of the following: a key for switching, two pushbuttons for closing the contacts, two neon lamps and two capacitors of 1-microfarad capacitance.

The circuit diagram of the device is shown in Figure 1 and exterior appearance in Figure 2. The device operates if both telephones are connected to the interlock without "ground" (pushbuttons Kn_1 and Kn_2 are depressed) or with "ground" (pushbuttons Kn_1 and Kn_2 are not depressed) or if one (either) telephone is grounded and the other is not (then the pushbutton of that telephone which is not grounded is depressed).

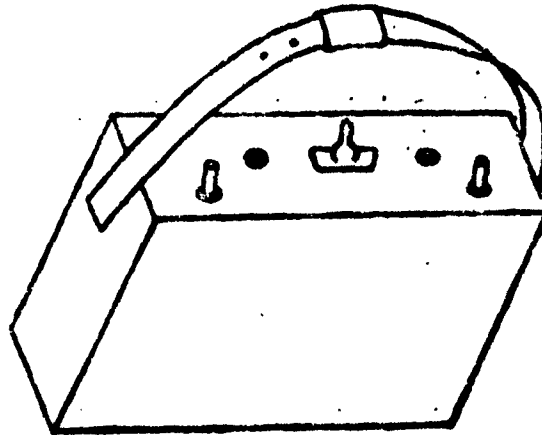


Figure 2

While correcting the fault in the interlock the repairman cuts out the connections from telephones and connects the device while to MTS [long distance telephone office] terminals he connects a receiver with a finger plate. By turning the key in one direction or another he receives a buzzer signal and can test the interlock by calling the repair service.

The call is received from the office (repair service) on lamp MN-03 the ignition voltage of which is below the signal voltage. A capacitor is series-connected to it in order that at the instant of lighting the lamp at the office the circuit would not be set in the position corresponding to the subscriber's answer.

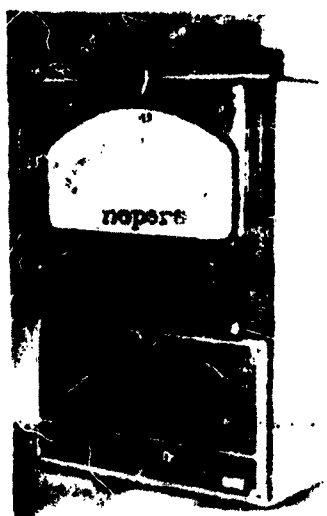
In dialing one of the numbers of coupled installation from the repair service, one of the neon lamps is

burning. If repairman has to answer he depresses the key in the direction from which the call is coming.

By using this device a GATS (city automatic telephone office) repairman can determine the nature of the fault considerably faster without disturbing the subscribers.

N. A. REDCHENKOV, Acting Engineer, Production Laboratory, Lushanbinskaya GATS

3) MEASURING INSTRUMENTS nepers



Input

Figure 1



BU-150 MS LSSR
(level indicator)

Figure 2

Production laboratory of Riga Telephone and Telegraph Communications Office developed a number of measuring instruments for operating needs.

Among these instruments is level indicator from 2 to 150 kc (Figure 1) with the measurement range of up to -7 nepers. It has a low-resistance and a high-resistance input and a transistorized oscillator-nepermeter (Figure 2). This oscillator receiving power supply from pocket-flashlight battery makes it possible to make measurement within the limits of from +2 to -2 nepers in the range of up to 150 kc. Oscillator frequency is 800 cps.

1561

END

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