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FOREWORD

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HERALD OF COMMUNICATIONS

No. 7, 1960

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Seminar on Problems of Regulating the Wages of
Communications Workers

A seminar devoted to problems of regulating the wages of communication workers was recently convened in Moscow by the Ministry of Communications USSR. Associates of the labor and wages departments of union republican ministries of communications and of a number of oblast communication administrations participated.

The seminar participants studied: a new system of position salaries and a new wage scale; the draft of a new skill rating manual; the draft of a new classification of communications enterprises and their structural subdivisions -- the criteria for grouping them in payment of the work of managing and engineering-technical employees.

The seminar participants were acquainted in detail with the draft of the new regulation on awarding premiums to men and women workers of mass occupations, with the draft of the new regulation on solid increases for work of

a travelling nature, and also with problems concerning standardization in the number of engineering-technical personnel at operating communication enterprises.

At the seminar documentation was studied that every enterprise, administration and union republican ministry of communications must prepare for conducting the regulation of the wages of communication workers.

The convened seminar armed the associates of labor and wages departments with the knowledge necessary for practical realization of a large, exceptionally important work, directed toward raising the material well-being of the communication workers.

Reports of Communication Agencies to the People

The reports of communication enterprise managers to the population are an important form of attracting wide masses of the toilers into the improvement of the quality of communication agency operations.

At the initiative of the Pskov oblast administration of communications such reports were made both in the city and in the rural localities - in kolkhozes and sovkhozes of the oblast. The population took a favorable attitude to this and actively participated in discussing the reports about the service by means of communication.

In the Opochetsskiy rayon the heads of 17 communication branches told about their work at sessions of the village soviets. During the discussion, not only were defects of the service pointed out to them, but they were also helped in correcting the shortcomings.

The session of the Lobovski sel'sovet passed a decision on shifting the mail delivery on the Yesenniki-Myakhishovo highway from wagons to automobile; the session of the Krasno-Oktyabrskiy sel'sovet passed a decision to organize mail delivery to the Balakhi communications branch by wheeled transport (previously it was done on foot), and also to open the reception and issue of parcels at the Balakhi communications branch.

These measures have already been put through.

In the Pechorskiy rayon the communications office head, comrade Ustav, told about the activity of the rayon office and enterprises of communication at a meeting of the Karl Marx agricultural artel of the Yushkovskiy sel'sovet at which 200 collective farmers were present. He also made a report to the population of the city and rayon of Pechora. At this meeting in the House of Culture more than 300 persons attended. At the Karl Marx collective farm the population expressed the desire that a radio repair shop be opened in Pechora since the existing workshop

which belongs to the Koontrud artel is unable to cope with timely repair of radio receivers and does not provide good quality repair work. Taking into account this desire, the communications office head raised in the city executive committee the question of setting aside premises in Pechora for opening a radio repair shop; the proposal was approved.

In this same rayon, the Lazarevoy, Rotovo, Sokhino and Noviy Izborak communication office heads gave reports about their work at meetings of collective farmers.

In the Sebezhekiy rayon the heads of a number of communication branches spoke at meetings of the sel'sovet executive committees making reports on how they were improving the communication services to the population. For example, the executive committee of the Tomsenskiy sel'sovet addressed a request to the oblast communications administration that a building be built for the communications branch. The oblast communications administration found it possible to satisfy this request and included the building construction in the 1960 plan.

A.L. Murashkin, senior engineer for control, Pskov Oblast Administration of Communications.

Front cover, Vestnik Svyazi, No 7, 1960

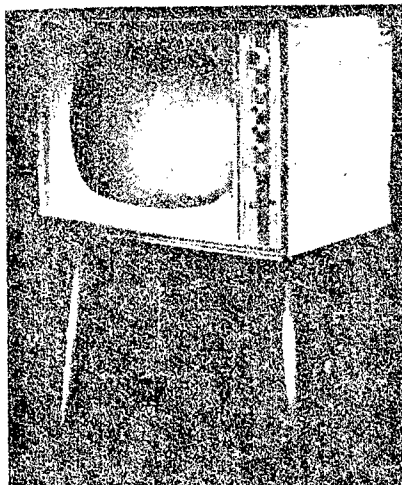
New Devices of Communication Engineering

SALYUT TELEVISION SET - 1

The console model television set, Salyut, is being demonstrated at the exhibition of achievements of the USSR national economy. The latest advances of television reception engineering are incorporated in the set's circuit which contains 17 radio tubes and 14 semiconductor devices.

The set is designed for reception of 12 TV programs in the 49 to 223 Mc range. A rectangular receiving tube with an 110° angle of ray deflection has been installed in the set. The picture size is 475 mm x 360 mm. The low frequency channel output is loaded on two loudspeakers.

The power consumed by the set from an AC network does not exceed 150 watts.

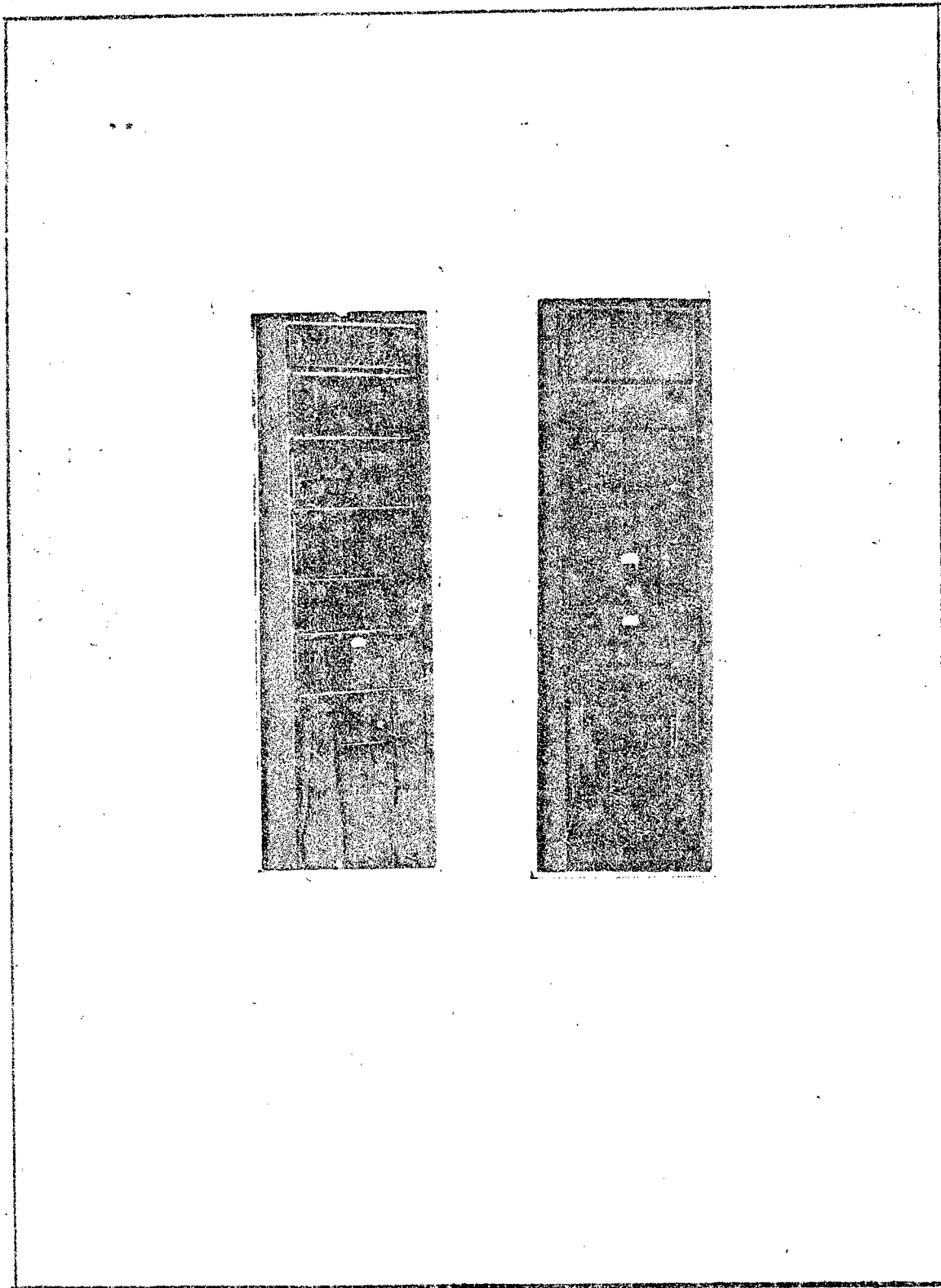


APPARATUS UUP-2 FOR REMOTE CONTROL OF
REPEATER SUBSTATIONS - 2

The UUP-2 apparatus is designed for remote control of two repeater substations equipped with four powerful amplifiers of the TU-5-3 type. The apparatus is developed for operation in urban/^{cable} telephone lines reaching 10 km in length; it permits as well the manual on-and-off switching of powerful amplifying TU-5-3 units directly at the repeater substations.

The apparatus is installed in two cabinets: UPK (left on the photo) and UPI (right on the photo). The first cabinet is placed at the central repeater station of wire broadcasting, the second at the repeater substation.

The development of UUP-2 apparatus was accomplished at the Central Design Bureau of the Ministry of Communication USSR.

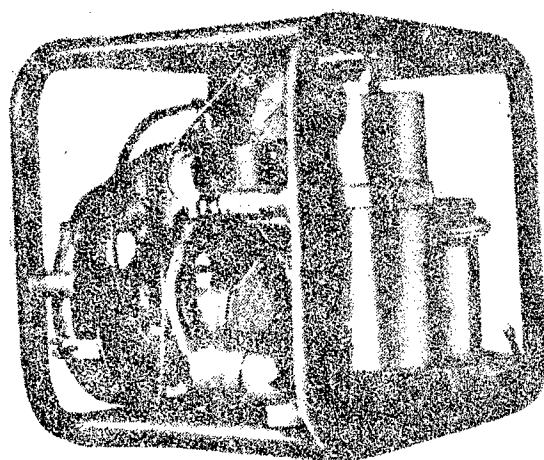


FIELD COMPRESSOR DRYING UNIT - 3

The field compressor drying unit developed by the Kiev branch of the Central Communications Scientific Research Institute is a portable outfit weighing 27 kg designed for pumping air dried to 0.03 g/m^3 into communication cable lines during installation, emergency and testing jobs.

The unit consists of the following elements: D-4 model internal combustion engine (the gasoline supply in the tank is sufficient for 6 to 7 hours work); membrane type compressor; spare drying chamber filled with silica gel; humidity indicator; receiver that smoothes out the air pressure pulsations; manometer with a system of stopcocks that make it possible to regulate the pressure of the air pumped into the cable within the limits of 0 to 2 atm.

The dimensions of the unit are 520 mm x 330 mm x 410 mm. It is convenient for transfer by any transport (including bicycle) and simple in operation. The unit has successfully passed line tests and has been recommended for application.



To the July Plenum of the CC CPSU

FOR FURTHER TECHNICAL PROGRESS IN
THE COMMUNICATIONS SYSTEM

Proceeding from decisions of the 21st Congress of the CPSU, the June Plenum of the CPSU CC in 1959 obligated the party, soviet and economic organizations to promote more widely in all branches of the national economy work in speeding up the rates of technical progress without which the material-technical basis of communist society cannot be created.

In the light of the decisions of the June Plenum of the CPSU CC, the collegium of the Ministry of Communications USSR in July of 1959 worked out measures for the further automation and mechanization of production processes and the application of advanced technology which will make it possible to raise considerably the effectiveness of capital investments, to lower the consumption of non-ferrous metals and the expenditures of electric power in supplying equipment, to reduce production spaces, raise labor productivity and improve the quality of service to the population.

The work of all communication enterprises - the

scientific research and design institutes, the oblast administrations and the republican ministries - was subordinated to the realization of these measures.

During the year which has elapsed since the June Plenum of the CPSU CC, many important jobs have been completed by the ministry of communications enterprises. The television channels in the Moscow-Kharkov and Moscow-Voronezh radio relay lines have been put into operation. At the beginning of the current year test operation was begun on the Moscow-Kiev mainline coaxial cable designed for the transmission of television and telephone conversations.

With the opening of operations on the indicated radio relay and cable lines, the possibilities have been greatly widened for the reception of the Moscow television center's TV programs. To the oblasts whose population can not only hear but also see broadcasts from Moscow have now been added Kievskaya, Kharkovskaya, Dnepropetrovskaya, Voronezhskaya, Kurakaya, Orlovskaya and Belgorodskaya oblasts.

About 26 millions viewers now have an opportunity to look at programs of the Moscow television center, which are being relayed by 22 oblast and republican centers.

The opening of the Moscow-Kiev mainline cable for operation also made it possible for residents of Moscow and Moskovskaya Oblast to receive broadcasts of the Kiev

television center.

At the present time 86 television stations and more than 150 low power relay stations are in operation. This television transmitting network embraces with TV broadcasting a territory with a population of more than 75 million persons. An experimental color television station, construction of which was completed in 1959, has been put into operation in Moscow.

Constructed and put into operation have been mainline cables, multiplexed ^{with} 24-channel and 60-channel systems and equipped with non-attended repeater stations, the specific weight of which has risen to 63 %. New urban and rural automatic telephone offices have been opened. In the long distance telephone network, the installation of equipment for making connections by semi-automatic method has been expanded. Work has been done in automation of telegraph services. The specific weight of the automatic telephone office has risen to 56 %. The number of channels equipped with devices for semiautomatic inter-urban telephone service has reached 9 %.

The Moscow-Leningrad automatic telephone service has been put into operation. The service makes it possible for subscribers in Moscow whose telephones are connected in the B-9 and B-6 automatic offices to put a call through ~~to any subscribers in Leningrad without the assistance~~

of a telephone operator by means of dialing a definite number on their own set.

In the general use network at present about 50 % of all telegraph correspondence is being carried out by automatic means. A system of direct connections has been installed in the Belorussian SSR and in the Baltic republics, the system employed in the Estonian SSR being one of automatic commutation.

The installation of non-attended, automatic ultra-short wave FM radio stations and the reconstruction of the operating means of radio communication and radio broadcasting are continuing.

In the field of mail service, portable post offices mounted on motor trucks, semiautomatic devices for the sale of postage stamps, have been introduced. The length of the mail routes serviced by motor transport has been increased. At present it amounts to 55 % of the total length of routes.

The equipping of construction organizations with general road and special machines and mechanisms has raised to 60 % the level of mechanization in earth-removal jobs; which includes construction of urban telephone networks to 50 % mechanization, laying of long distance cables to 75 %.

In the current year development and testing have been completed on many models of new equipment, which are now going into serial production. These are: an improved ultrashort wave FM radio station distinguished from former ones by smaller dimensions, better efficiency factor and higher quality indices; radio transmitting station under remote control; automated shortwave transmitter; multiplexing apparatus for urban telephone networks; communication system in one-quarter cable multiplexed with 24-channel apparatus with intermediate repeaters in semiconductor elements, application of which is more economical than the existing 12-channel system of multiplexing aerial lines; automated diesel-generator units and so forth.

New developments were promoted in the field of postal technology with a view to solving, in the first place, problems of the complex mechanization of production processes at mail service enterprises. Transport operations at all large railway postal enterprises have been mechanized in consequence of the utilization of machines developed.

But, notwithstanding the considerable work done by the administrations of the Ministry of Communications USSR and the ministries of communications of the union republics

in the installation of new technology, a number of planned tasks still remain uncompleted.

Plans unfulfilled, for example, are: the opening of radio relay lines in the Belorussian and Lithuanian SSR, the establishment of ultrashort wave FM radio stations in RSFSR and the Ukrainian SSR, the automation of the urban telephone systems in the Azerbaidzhan, Latvian, Georgian and Lithuanian SSR. The non-fulfillment of the plans was a consequence both of the radio engineering industry's failure to deliver equipment and of the inadequate attention certain republican ministries of communication displayed toward the application of new technology.

The branch administrations (GUMTIS, GUKS, UMTSR) of the Ministry of Communications USSR did not provide for timely testing of all models of new equipment and the scientific research institutes (TsNIIS, NII, NIITS) did not finish research works important for the communication system.

In the next few years the communication workers confront immense tasks in the field of creating new technics, automation and mechanization of production processes. One of the most important is the task of creating a unified automatic telephone network of USSR, including interurban, urban and in the future also, rural telephone service.

The operating experience of the Moscow-Leningrad/^{automatic}
~~long distance telephone service has confirmed the~~

high efficiency of this kind of call connection as compared with manual and semiautomatic service. The automation of long distance telephone service has made possible great improvement in the service to the national economy and the population, and also provides an opportunity to lower operating expenses considerably, to reduce the number of operating personnel and raise several times the labor productivity of interurban telephone office workers.

The successful solution of this task depends a lot on the timely and highly qualified development of cordless type long-distance telephone office equipment and additional automatic office devices that are essential for the automation of intercity telephone service. Such research and development work is being done by the TsNIIS and NIITS of the Ministry of Communications, the NII GKRE, the designing office of the VEF plant and the Krasnaya Zarya plant. The GUMTS, UMTS and the ministries of communications of the union republics must in turn provide for the preparation of channels in the mainline directions, the installation of automatic service equipment at the long distance offices, the completion of automatic office equipment and expansion of the automatic long distance telephone service.

The Ministry of Communications USSR has set the task for automation of intercity telephone communications in the 1960-1965 period. The automatic long distance telephone system to be created will include the urban telephone networks of about 30 republican and oblast centers of USSR, the resort rayons of the Crimea, Georgia, Azerbaijan, Armenia and the Mineral'nye Vody resort. When the system has been completed, more than 35 % of the urban telephone network subscribers will be able to make calls automatically by dialing numbers without resorting to the service of a telephone operator.

The further automation of the urban and rural telephone service will be promoted on the basis of applying ten-step system equipment, rural unit dial offices in relay with magnetic holding-on and the crossbar system. Decentralization of station equipment, use of the non-attended type of dial intercommunication systems and multiplexing of urban telephone cables must be widely spread. All of this will contribute to raising the efficiency of the urban telephone service and the installation of automatic intercity telephone lines.

Communication workers confront a great task in the field of further automation of the telegraph service through wide installation of subscriber telegraphy

(especially within economic rayons and for cooperating enterprises), and direct connection systems in the general use network.

The rates and scope of the automation of general use telegraph service depends a lot on the times taken to develop direct connection stations and to organize serial production of them at the VEF plant.

The equipment produced at present makes it possible to construct automated cable and radio relay lines, having reduced operating personnel to a minimum, employing non-attended repeater stations with remote feed of apparatus, automated relay stations, automated power supply and diesel generator units, apparatus of telemechanization (remote control, signaling, measurement).

Wide promotion is essential for the work in the automation of the lines of shortwave radio communication; the production laboratories of DRTS must be drawn into the solution of these tasks.

In the field of creating and installing new technology the most important tasks now confronted, apart from those already mentioned above, are: development of the communication system in coaxial cables with small diameter conductors, permitting a seven-to-nine fold reduction in the consumption of non-ferrous metals in communication channels

with bundles of several hundred channels; creation of a radio communication system based on the new possibilities of radio wave propagation; development of new types of automatic telephone offices which would require one-third as much labor expenditure in operation as the existing ten-step system automatic offices do, owing to the use of crossbar connectors as switching elements and the application of electronics for purposes of control; the forcing of development of wholly electronic automatic telephone offices with dimensions four to five times smaller than at the automatic offices in electromagnetic relays, with low power consumption (which is especially important for the rural telephone service), not requiring large outlays of non-ferrous metals and not needing constant operational servicing. Numbered among the actual problems are also the development and industrial manufacture of communication cables with aluminum conductors, in aluminum and non-metallic jackets; the application of semiconductor amplifiers in multichannel systems of simultaneous transmission; the creation and putting into operation of short-wave transmitters which operate in a single lateral frequency band and secure high stability and efficiency of shortwave communication.

In the next few years new machines must be created

for handling letter mail, parcels and money orders, means for mechanizing the loading, unloading and transport of mail which will greatly ease the labor of workers and raise labor productivity.

Work is being completed on development of a number of highly productive special machines designed for raising further the technical level of construction. These include a milling machine type for work in frozen grounds, a special cable truck with a crane, a machine for post setting and others. All of these machines must be put into operation as soon as possible.

In all the branches of the communication system that are working on new developments, it is essential to apply boldly semiconductors, ferrites, new insulating materials and parts, which make it possible to raise the operational reliability and the durability of equipment, to reduce equipment dimensions and power consumption.

The output of an enlarged assortment of metal coins, which is to accompany the forthcoming change in the scale of prices and the replacement of the money now in circulation by new money, will make it possible to create automatic devices for making available many communication services, which it was impossible to do before because of the lack of metal coins of the necessary value.

There are now automatic devices for the sale of postage stamps and automatic telephones of the urban telephone system, but automatic sets must also be developed for the interurban telephone and telegraph services.

The scientific research institutes of the ministry of communication and industry, the designing office, the planning and construction organizations, the operating enterprises and production laboratories must reduce the time spent in developing, testing and putting new technology into operation, must engage in systematic modernization of equipment produced. The radio engineering industry of the national economy councils must increase sharply the production of means of communication in order to satisfy most fully the ever increasing demand for communication services to the population and the national economy of the country.

WE IMPROVE THE TELEGRAPHIC EQUIPMENT AND APPARATUS

During the time which has passed since the 21st Congress of the CPSU and the June Plenum of the CC CPSU, the collective body of the Central Telegraph USSR has carried out definite work in the automation and mechanization of the production processes and in the installation of new technology.

The automation of all telegraphic communications has been completed and on this basis the reorganization of the technical and instrument services was put through. The technical service personnel of the city telegraphic communications and the adjusting workshops under the leadership of engineer D.Z. Fedorovich have completely re-equipped this service. In consequence the traffic of local telegrams has been speeded up, owing to the division in the handling of transit and local telegrams; space has been freed for placement of the wirephoto system service with the object of its expansion; the city service communications has been laid out by the single-row system, which has created great convenience for the work of telegraph operators, technicians and has facilitated the distribution of telegrams to the transmission sets.

A new automatic subscribers station Teleks (an international subscribers station) for 100 call numbers and 100 channels was installed by the telegraph office's technical personnel according to a project developed by M.I.Grebenshchikov, chief engineer of the telegraph office, and A.S.Kogan, senior engineer of the automatic telephone service, who supervised the installation. Automatic telephone service engineer V.N.Savushkin displayed great activity in this work.

The technical department engineers A.A.Verkhovskaya and P.Ya.Kulikovskiy have developed a project by which under their management the room for receiving telegrams by telephone from subscribers of Moscow city has been reequipped, with the result that the number of worker positions has been increased and the working conditions of the telephone operators improved. Simultaneously, the handling of telegrams received by telephone has been mechanized.

One of the technical services has been reorganized according to I.I.Trukhov's plans and under the management of the telegraph office's chief engineer. At the same time the new service equipment facing a growing volume of work has been more properly placed, and almost 100 square meters of space freed in addition as well.

In accordance with the plan of further service reorganization we set about installing new wirephoto system equipment in the space we had freed. The project of the new wirephoto system equipment had been developed by laboratory engineer S.O.Mel'nik under the guidance of the chief engineer of the telegraph office. The transfer of the wirephoto service made it possible, in turn, to remove a large part of the adjusting workshop and laboratory to a new room and begin to reconstruct the international communications service.

We have intensively realized the conversion of communications to the new progressive technology - to work without printed control of transmission, for which the complete automation of telegraphic communications served as the basis. The promotion of this measure made possible the release of 273 ST-35 telegraph sets, substantial reductions in expenses for operational materials, maintenance of instruments and technical servicing. Inasmuch as a single set, instead of two sets, is installed at the attendant's place, the working conditions of telegraph operators have been improved.

The making of automatic consoles for winding control tapes (a development of V.V.Vasil'kov, senior laboratory technician) has continued at the telegraph office. Six

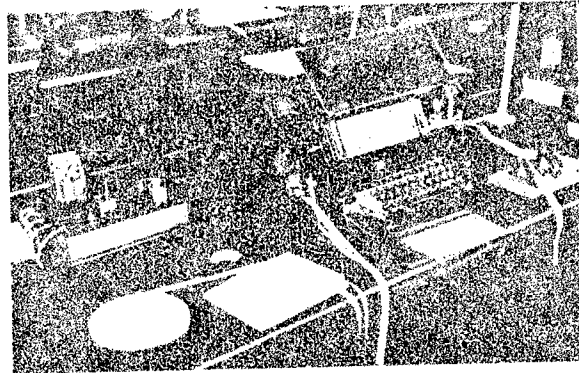
hundred such consoles have been produced, 120 of them being utilized in operation thus far (at communications of former technical type) but all the telegraph services operated by the new technology ^{without exception} are/simultaneously being equipped with automatic consoles. For this purpose we are producing 300 pedals for foot control of the console and 300 special forks for connecting the foot pedal to the autoconsole. Work is being promoted to reduce the speed of the consoles which will be used for winding the reception control tape.

For the automated services, complex attendant's places have been made. In developing them, telegraph office engineers Z.L.Bernatskaya, A.L.Donets, P.Ya. Kulikovskiy and others displayed creative initiative. At the telegraph office workshop 150 tables have been made for the city communications operating without transmission control and 73 attendant's places have been fully reequipped. For the room in which telegrams are received by telephone from Moscow subscribers, 15 attendant's places have been made.

For the purpose of electric power economy, operating noise abatement and reducing the periods between preventive repairs of ST-35 (STA) sets, 510 automatic stopping devices with set operating time meters have been produced. The automatic stopping device was designed by V.N.Kulakov,

senior technician of the telegraph office. At present laboratory specialists have proposed an auxiliary attachment to the automatic stopping device, making possible installation of the device on those sets that operate without transmission control. At the telegraph office, further installation and simultaneous improvement of the new measurement technique has been promoted, which raised the quality of the electrical adjustment of the channels and the telegraph sets. All services and shops have been provided with the KIS-1 device developed by the telegraph office engineer A.V.Gorbunov. He has also designed a device, now being installed, for the remote checking of the telegraph set's speed. To each line battery commutator has been added a parallel commutation field, developed by the telegraph office laboratory under the direction of engineer A.S.Sharayev; the field makes it possible to connect measuring apparatus to any operating service without disturbing its normal operation, i.e. to make systematic prophylactic measurements. Employing these very commutators, the operational control service realizes an objective check on the quality of the work of telegraph operators.

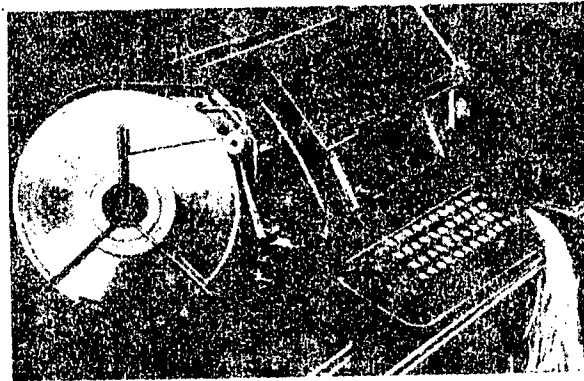
The equipment of 36 channels of two systems of voice-frequency carrier telegraphy of the VT-34 type has been modernized with the result that these channels have been



Position of telegraph operator servicing urban telegraphic communication without printed control of transmission. In duplex services one set has been installed instead of two STA sets: a receiver with reperforator is used for reception, and a transmitter with sending device for the transmission of telegrams.

converted from amplitude to frequency modulation. Two 18-channel systems have been reconstructed into 24-channel systems, which provided an additional 12 channels.

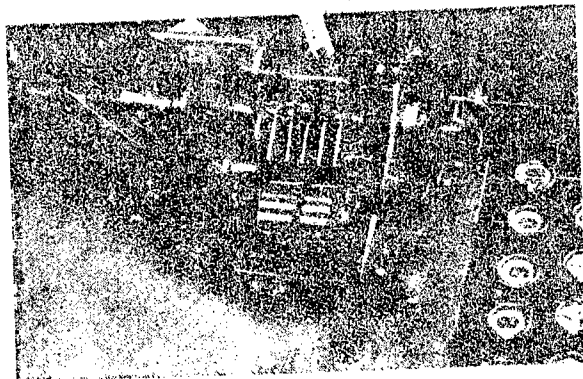
In connection with the conversion to the new method of servicing the telegraph sets (without control of the transmission) the transmitter at each such set has been supplied with a tape-extinguisher of the type applied



STA set with automatic console for automatic winding of the control tape of the transmission. The same kind of console, but with pedal drive, is being used for winding the control tape of reception.

at the Leningrad telegraph office. This tape-extinguisher has been perfected by M.M.Petrov, chief mechanic of the telegraph office. Now after the passage of the perforated tape in the transmitter, it is clearly seen that the transmission of the telegram has been accomplished. In the workshops of our telegraph office, 325 such tape-extinguishers have been installed and produced.

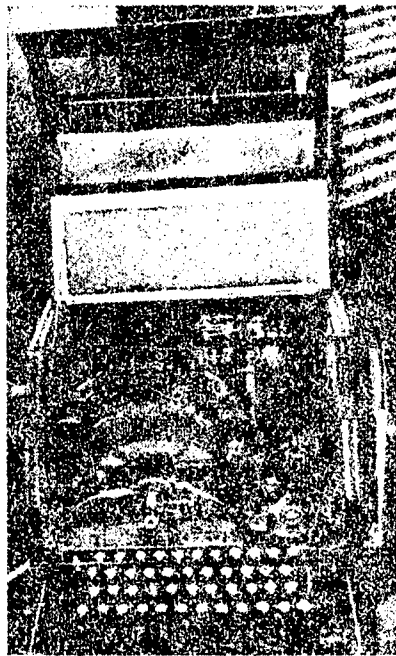
Moreover, in connection with the circumstance that with the new technology, the perforated tape must be preserved after transmission of the telegrams, there are at



Automatic responder of the ST-35 set in the system of direct connections. It is designed for the transmission of a station name or service number.

each telegraph operator's position two clamps for tape, which are installed on a wooden support with rubber legs. Two hundred such devices have been made. The permanently functioning production conference of the telegraph office discussed and adopted a final variant of the operator's position for communications serviced without printed control of transmission and at the present time is making the appropriate alterations of these operator's positions.

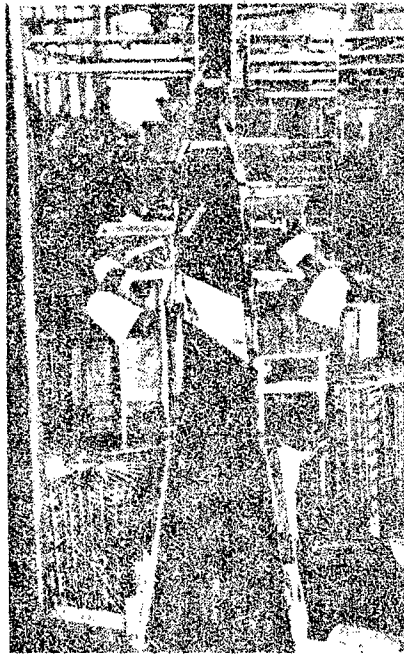
In the wirephoto system service the replacement of FT-38 phototelegraphic sets installed on the main telegraph lines by the new Russian-made Neva sets has been completed.



ST-35 set with automatic responder. In a system of direct connections, it is used as a terminal set.

Thirteen FT-38 sets have been removed. Only the latest model sets (of the Neva, FTAP, FChP-2, Rekord and other types) will be employed in the wirephoto service which has been set up in a new room.

The measures realized at the telegraph office for ~~the automation and mechanization of the production~~



Conveyor which distributes telegrams automatically to sorting telegraph operators' positions.

processes have contributed to the growth of labor productivity, to the economy of electric power and operating materials, to better utilization of technology, raising the quality of telegraph service to the population. The plan of incomes for the first year of the seven-year plan was fulfilled ahead of time by 17 December at 105.4 %, and



EIS-1 electronic measurer of telegraph sending distortions. The device makes possible measurement of the magnitude and character of the distortions of each message of startstop sign combination.

for the first quarter of 1960 at 102.9 %. The plan in volume output was fulfilled in 1959 at 107 %, and in the first quarter of 1960 at 104.8 %.

Compared with 1958, labor productivity increased by 6.9 % in 1959; in the first quarter of 1960 the plan was fulfilled at 102.3 % in labor productivity. The net cost

of processing one total telegram was, as compared to plan, reduced by 9.6 % in 1959, and by 10.1 % in the first quarter of 1960. The profit from the reduction in the net output cost in 1959 amounted to about 7,000,000 rubles. Compared to corresponding past periods, all qualitative indicators have been improved in the past year and in the first quarter of 1960.

For the best production results during the entire first year of the seven-year plan, the collective body of the Central Telegraph Office of USSR has, by the results of the All-Union Socialist Competition, been awarded in the first quarter the traveling Red Banner of the Ministry of Communications USSR and the Central Committee of the Trade Unions, and for the second, third and fourth quarters, the traveling Red Banner of the Council of Ministers USSR and the All-Union Central Council of Trade Unions.

This high rating obligates us to work still better. Together with the installation of the new technology, automation and mechanization we will give still more attention to organization work in the collective body so that the tasks of the second year of the seven-year plan might be successfully completed. The Central Telegraph Office of USSR completed ahead of time and with good indi-

ces the plan of the first quarter of the current year, for which the office was, in the all-union competition, again awarded the traveling Red Banner of the Council of Ministers USSR and the All-Union Central Council of Trade Unions.

Going ahead toward the July Plenum of the CPSU CC, the collective body of Central Telegraph Office workers has assumed additional raised obligations.

A.L.Guzovskiy, director of the Central Telegraph Office of USSR.

MECHANIZATION OF PRODUCTION PROCESSES IN THE MOSCOW JUNCTION MAIL TRANSFER SERVICE

A year ago the June Plenum of the CPSU CC outlined a concrete program for realizing technical progress in the national economy of our country. The workers groups of the enterprises of the Moscow mail transfer administration then set themselves the task of mechanizing the most difficult and labor-consuming production processes, in order to raise the labor productivity and ease the toil of workers in this way.

Special attention was given to mechanization of loading and unloading operations. For this purpose at all mail transfer branches, portable conveyors were installed in the windows through which the exchange of mail with motor trucks took place. The conveyors greatly eased and speeded up the forwarding and receiving of parcels and bags. At Moscow junction enterprises 82 such conveyors are being used. In addition, 45 stationary conveyors are being used with total belt length of 650 running meters.

Between all Moscow junction mail transfer branches near railways, the organization has been completed of container shipments of parcels. At every branch with the exception of the Riga railway station mail service branch,

telfer lines are employed for lifting containers when loading them on motor trucks and unloading. Owing to this the application of container shipments has greatly eased the toil of workers. In addition, it has speeded up the turn-around time of motor trucks, since the idle standing time per truck during loading and unloading has been reduced from 1.5 to 2.5 hours to 15 minutes.

When the use of containers was started, the need lapsed for mail escorts and more than 30 such workers were released. Less motor trucks are required as well for the transfer of parcels, their number having been reduced seven times.

With the change to container shipments, several stages in the manual handling of parcels were eliminated. Formerly, parcels were taken from the railway mail cars arriving at the mail transfer branch and loaded on hand carts, and from the carts were packed in stacks in the storerooms; then, when the motor truck arrived, they were put on the conveyor and from it into the motor truck. Now the parcels are taken from the railway car and packed directly in a container, and the containers are loaded on the motor truck. The situation is similar also with group parcels which arrive from other mail transfer branches in containers that are transported directly to the mail cars, and

from the containers the parcels are put into the mail cars. The application of containers has greatly improved the safe custody of mails both on the railway platforms as well as during the transfers between the mail service branches.

From March of this year, container shipments of newspapers were begun between the Pravda publishing plant and two mail transfer branches at the Yaroslavl and Belorussian railway stations. In the shipping department of the Pravda publishing plant, the bags with printed material are, in accordance with address and control dates, loaded directly into containers and delivered to the mail transfer branches where the bags are unloaded from the containers at the mail cars in which they are put. Thus, the stage of manual transfer of bags from the motor truck to the hand cart, which had existed heretofore, has been eliminated. It is planned this year to organize the container shipments between the Pravda publishing plant and three other mail transfer branches. It is planned next to convert the Izvestia publishing plant and Moscow Postoffice shipments to a system of container transfers.

The operating experience has exposed a number of defects in the design of containers employed. Taking this into account, the workers of the postal technique labora-

tory of the Moscow mail transfer administration have designed a new lighter container and an experimental model is now being made in the machine shop of the administration.

To ease the labor of workers in the newspaper-parcel post departments, the containers and hand carts are moved about the platforms within the mail transfer branches by electric tow cars of the TA-1 and TA-1M models and the EKP-750 model electric car. But because of the narrow passageways on platforms, it is extremely difficult to use them at certain mail transfer branches. Jointly with the workers of the postal technique laboratory, the innovators from among the engineering-technical workers of the mail transfer branches of the Kursk and Yaroslavl railway stations have reequipped tow cars and electric cars, after having reduced their dimensions. This made it possible in crowded conditions to employ the technical means for moving containers and hand carts inside the mail transfer branches. Almost all the mail transfer branches of the junction now have these reequipped tow and electric cars, 30 items in all, which has greatly eased the labor of the workers of the newspaper-parcel post departments.

Still more convenient for operation in our mail transfer branches will be the small-sized tow car which

is now being developed by the postal technique laboratory of the Moscow mail transfer administration.

It is very important to install container mail transfer on the railways. At the present time the Central Communications Scientific Research Institute and the engineering technical workers of our laboratory and the mail transfer branch of the Yaroslavl railway station are jointly engaged in solving this task. At the Akhtyrskiy plant a railway mail car is being equipped with a mechanism for loading containers in storage cars and unloading them from it, and the experimental shipment of mail in containers will begin in the near future on one of the traffic lines of the Moscow junction mail cars (Moscow-Ivanovo-Kineshma).

An actual task is to install containers in the mail shipment by aircraft, and of press material in the first place, in such a way that bags with press material packed in soft containers, might be loaded directly on aircraft. Such transfers are already being made in an experimental way, but this matter has not yet been finished.

Simultaneously, other work is being done in the mechanization of production processes -- parcel-tying, stamping and addressing machines, sluices and so forth are being installed.

It is at present no longer possible to imagine labor-

consuming work in the mail transfer branches without conveyors and other means of mechanization. New rooms of the mail transfer bases have been put into operation only after they were equipped with mechanized devices.

The mail transfer branch workers collectives are toiling on the improvement of the organization of the production processes, starting from the degree of their mechanization. Thus, at the mail transfer branch of the Belorussian railway station parcels are sorted directly in containers which are then delivered to train platforms for placement of parcels in the mail cars. This eliminates the stage of manual transfer and provides for more reliable safe custody during the transport about the platforms.

The work of the Moscow junction mail transfer branches proceeds in restricted areas, which often hampers the use of these or those means of mechanization, the mail-processing machines in particular. But the mail transfer branch workers are trying to install mechanisms where possible.

Much has been done to improve the operation of the available means of mechanization, but substantial shortcomings still remain in this affair, and we will eliminate them.

It must be said that the plants of the mail trans-

fer administration of the Ministry of Communications USSR continue to supply equipment (TP-3 model conveyors, containers, parcel-tying machines and so forth) with grave defects.

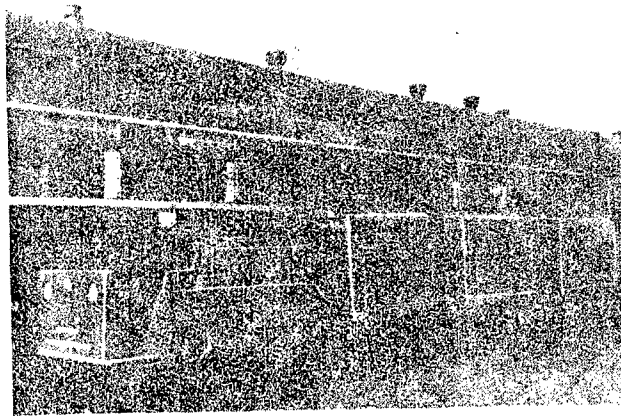
The unsatisfactory supply of spare parts and materials has a negative effect on the operation of machines and mechanisms.

The innovators give much assistance in the technological equipment of enterprises. The proposals installed in 1959 numbered 414, which is 94.5 % of the proposals adopted. Part of these proposals was sent to the competition in the Ministry of Communications USSR. By competition results five proposals were awarded premiums, in particular a device which eases the opening of doors of the storerooms of a mail car; an improved design of a bagholder; a proposal on modernization of a parcel-tying machine, a modification of the design of the EKP-750 model electric car and so forth.

All that has been done at the Moscow junction is just the beginning of a big job that has to be done in the light of the decisions of the July Plenum of the CPSU CC. In the current year we confront the task of enlarging and improving the container transfers both between the railway station mail transfer branches as well

as between the mail transfer branches (including those functioning at airports), the publishing plants and post-offices; beginning the use of containers in the transfers to mail cars and aircraft; improving the design of containers considerably. It is planned to install as many mail-processing machines as possible, to improve the organization of production processes in the treatment and transport of mail. The innovators and engineering-technical personnel of the Moscow junction mail transfer branches will exert every effort to replace manual by mechanized labor to the maximum in the conditions of each mail transfer branch.

N.D.Stas', director of the Moscow mail transfer administration.



Transport of containers with parcels and printed
matter by means of the TA-1M model electric tow car.
Photo by A. Bogdanov



Loading containers with parcels at the Paveletskiy
railway station in Moscow.

Photo by A. Bagdanov

TO DEVELOP IN EVERY WAY THE INNOVATOR AND
INVENTOR INITIATIVE OF COMMUNICATION WORKERS

The Ministry of Communications USSR has summarized the results of inventor and innovator activity at the communication enterprises in 1959. In comparison with 1958, the number of communication workers who have participated in the rationalization work has grown from 34,900 to 36,300. Contributing to this was the putting into force of the new regulations on discoveries, inventions and innovator proposals and the instructions on the payment of awards and premiums for active assistance in the application of inventions and innovator proposals, and also the conferences of inventors and innovators, the public inspections, the contests for the best proposal, the innovator relay events and other measures promoted in many republics, krais, oblasts and at enterprises.

As active participants of the contests for the best proposal in the field of mechanization and automation, which was promoted by the branch administrations of the Ministry of Communications USSR in the 1958-1959 period, the communication workers submitted a number of valuable proposals, many of which have already been put into practice in industry.

The rationalization work was improved at the communication enterprises of the Russian Federation, the Kazakh, Kirghiz and Tadzhik SSR, at several plants of the industrial enterprises administration, at sites of the Moscow management of radio communications and radio broadcasting, at a number of administrations of the cable and radio relay main lines, at enterprises of the Gosradiotrust (state radio trust), the Soyuztelefonstroy (All-Union telephone construction trust), at the Central Telegraph Office of USSR and in many other collective bodies of communication workers. As last year, the communication enterprises of the Belorussian SSR and the Leningrad management of radio communications and radio broadcasting had the highest percentage of worker participation in the rationalization work.

The application at communication enterprises of 90 % of the total number of proposals adopted for use is an important achievement. Such a high percentage of applied proposals has been achieved for the first time. In consequence, apart from the production effect, an economy reaching 29,700,000 rubles has been achieved, i.e. 3.5 % higher than last year.

At the same time there are substantial defects in the rationalization work. The number is still not large of

of workers participating in the rationalization movement at communication enterprises of the Georgian, Armenian, Turkmenian, Uzbek, Estonian and especially the Kazakh SSR. As before the innovators are few in number at the rayon offices of communication and the line technical junctions. Notwithstanding that the new regulations which enlarged the possibilities of encouraging workers who participated in the most rapid application of proposals, have been put into force, the work on application of adopted proposals has deteriorated at a number of enterprises. An essential shortcoming is the frequent turnover, and the absence of engineers in invention and rationalization at many enterprises and organizations of communication.

The ministries of communications of certain union republics did not conduct seminars of engineers in invention and rationalization for the study of the new regulations and instructions. The branch administrations of the ministries, the scientific-research institutes and the Central Design Bureau do not examine in time the applications made for proposed inventions, in certain cases crudely violating the periods set for their examination.

The Minister of Communications USSR N.D. Psurtsev issued an order which contained a summary of the results in the inventor and innovator work of 1959 and set forth

the tasks for 1960. The need is stressed in the order to develop and support in every way the creative initiative and activity of the communication workers and direct their efforts toward fulfillment of the state plan ahead of time, especially in labor productivity, with the object of a successful transition to the seven-hour working day.

The leaders of communication ministries, administrations, enterprises and organizations are told to examine at joint meetings with trade union committees the results of the innovator work and the measures for elimination of shortcomings and further development of the creative initiative of communication workers. It is essential to conduct conferences on problems of innovator work in the republics, oblasts, krais and individual enterprises of communication.

Special attention must be paid to recruiting communication workers of the rayon communication offices and line technical junctions into the innovator movement. The enterprises of the republican and oblast centers should be drawn into this work as a form of patronage. It is useful to practice the method of innovator relay events, which have proved themselves, for the purpose of exchange of experience.

By the 1 September 1960 deadline the manning should

be completed of a staff of engineers in inventor and innovator activity and their study of the invention and rationalization regulations and instructions at courses and seminars.

The exchange of experience in innovator and inventor work at enterprises has to be more widely organized. Wider use must be made of all available possibilities for encouragement of the most rapid application of inventions and innovator proposals. The application of not less than 92 to 93 % of the proposals adopted for use must be achieved in the current year.

The heads of the technical and branch administrations of the Ministry of Communications were told to promote a number of practical measures, directed toward the further activation of the inventor and innovator work.

For the successes achieved in the development of innovator work and especially in the application of proposals, the Minister of Communications USSR expressed gratitude and awarded premiums to the workers of administrations and enterprises of communication, which had most distinguished themselves in this work.

CREATIVE WORK OF THE PRODUCTION LABORATORIES OF THE LONG-DISTANCE TELEPHONE AND TELEGRAPH OFFICES

The production laboratories of the telegraph stations and long-distance telephone offices of the Russian Federation conduct a large creative work having important significance for the improvement of intercity telegraph and telephone communications.

In 1959 the laboratory of the Novosibirsk telegraph office carried out a program of work in the modernization of the ATA-59 station and the adaptation of it for the organization of intrablast direct connections, developed devices for tuning SORS (unipolar communication operations bay) and for automatic checking of telegraph signal distortions in TT channels, organized a test wirephoto system in "no-delay" service and so forth.

Jointly with telegraph operating workers, the collective body of the Gorky telegraph office laboratory is waging a determined fight against defective work in the intrablast telegraph services, with the result that the defective transmission of telegrams has been fivefold reduced.

The Leningrad telegraph office laboratory proposed and in 1959 put into practice the technique of operating ST-35 sets without printed control of transmission.

The associates of the Kuybyshev telegraph office laboratory have developed devices for preventive control and signaling on breaks and passage failures in TT channels, a Tst operation circuit in the ST-35 set with two points in one wire and others.

Proposals at the Khabarovsk telegraph office include the circuits and design of a distorted and nondistorted signal pickup feeler, circuit of city telephone system cable multiplexing with one channel of supersonic telegraphy, simplified model stamping machine, electronic device to signal distortions and others. Moreover, a very important work was done by I.A. Shestopal, telegraph office director, in the tuning of duplex cable balances in intercity communications.

The Sverdlovsk telegraph office laboratory has developed and put into practice a relayless SORS circuit for operation in duplex communications with ST-35 sets, a method of operating two or three ST-35 sets in one wire and others.

At the Khabarovsk long-distance office the laboratory collective body has developed equipment for automatic control of the residual attenuation magnitude of 12-channel system channels, simplified originating and incoming sets of voice-frequency dialing and others.

The production laboratory of the Leningrad long-distance office proposed the circuit of an automatic intrarayon junction in the city of Tikhvin.

The laboratories of the Rostov and Saratov long-distance offices have developed and installed a pneumatic mail service in the switchboard halls of the stations, which made it possible to release a staff of messengers. According to the plans of these laboratories, the pneumatic mail service has been installed and is being installed at many other large long distance offices.

The laboratories of other enterprises of the inter-city telegraph-telephone communications have also carried out valuable developments.

In marking the creative initiative of the production laboratories, and also the work of the chief engineers of enterprises in the matter of installing new technology and improving equipment and instruments, the Minister of Communications RSFSR A.V.Cherenkov expressed gratitude and presented monetary premiums to A.P.Suboch, chief engineer, G.A.Shchekin, laboratory director (Leningrad telegraph office), Ye.G.Ivanov, chief engineer, V.P.Korostelin, laboratory director (Kuybyshev telegraph office), A.P. Morozov, chief engineer, M.F.Pavlova, laboratory director (Leningrad long distance office), N.D.Neyelov,

chief engineer, L.A. Karpinskaya, laboratory director, (Rostov-on-Don long distance office), N.D.Khotin, chief engineer, Yu.A.Kozlov, laboratory director (Khabarovsk long distance office), V.B. Moshinsky, chief engineer, A.A.Matveyev, laboratory director (Novosibirsk telegraph office), A.A.Bardoyev, chief engineer, A.P.Mitrofanova, laboratory director (Sverdlovsk telegraph office), B.I. Popov, chief engineer, N.Ye.Rudom, laboratory director (Gorky telegraph office), D.V.Perkia, laboratory director (Saratov long distance office) and I.A.Shestopal, director of the Khabarovsk telegraph office.

IN DEFENSE OF THE INTERESTS OF THE
RADIO AND TELEVISION AUDIENCE

A scientific technical conference on problems of the campaign against electrical interferences in radio and television reception was held in Lvov. It was organized by the municipal street car and trolley bus administration of Lvov and the branch of the branch of the NTOR & E imeni A.S.Popov. Conference participants were representatives of the Lvov polytechnical institute, the state university imeni Ivan Franko, the railway administration, the oblast automobile trust, the sovnaarkhoz, the radio club, the municipal department and other interested organizations.

The conference heard the reports: "Radio Noises and the Elimination of Them at Point of Origin," by Prof. comrade Velichko, doctor of technical sciences (Lvov Polytechnical Institute); "Noises of Radio and TV Reception and Sources of Their Origin" by comrade Schko, director of the oblast administration of communications, and "Methods of Eliminating Radio Noises in City Electric Transportation" by comrade Vevurko, chief engineer of the city municipal department.

Reports on methods of combatting noises in radio

and TV reception were delivered by comrade Kolyadko, director of the TV studio, comrade Katkov, chief engineer of the radio center, comrade Savitskiy, chief engineer of the television center, comrade Mandel', director of the city radio workshop, comrade Pavlychev, chief engineer of the oblast telegraph-telephone communication offices and a number of other comrades.

The conference was lively, the audience taking an active part, which aroused great interest among the radio listeners and TV viewers who attended it. At the same time complaints were made to the enterprises and institutions, whose equipment is the source of the noises of radio and television reception. Desires were expressed that these noises be eliminated and useful recommendations were given to the radio and television audience.

The conferees spoke of the need to intensify the campaign against noises in TV and radio reception, of the fact that the state automobile inspection service does not take the necessary steps in this matter, and also noted that the city soviet had not fulfilled the decision adopted on this question at the end of 1959.

Typical noises in radio reception from various sources (transport, medical equipment, rectifiers, household electrical utensils and so forth) which had been

tape recorded were demonstrated to the conference participants. The reports were accompanied by the showing of diagrams and circuits.

The conference adopted a resolution directed to the defense of the interests of the radio and television audience of the city and oblast.

A.I. Sobko, director of the Lvov oblast administration of communications.

Communications Engineering

A MODERNIZED DEVICE FOR MEASURING TELEGRAPHIC TRANSMISSION DISTORTIONS AND TESTING A RELAY (II-57)

The article tells about the technical and operational possibilities and design of the II-57 distortion measurer.

The distortion measurers which have been produced until recent times have not satisfied the operational requirements in accuracy of measurements, stability of drive operation, combination and speed of test sendings, convenience in observation of the instrument indicators and reading the measured values, convenience of repair, circuit possibilities, dimensions and weight (55 kg). The need has therefore risen to modernize these devices for the purpose of reducing their dimensions and weight, and also their unification and maximal satisfaction of the operational demands.

In modernizing the distortion measurer, the circuits and designs both of individual units and of the device as a whole were revised. In particular, a relayless transmitter for 56 elementary sendings was installed, light durable materials were employed, small-dimensional and

lasting semimanufactured products, the dimensions and weight was reduced, the motor unit was improved in design. The modernized distortion measurer has been given the code name of II-57 (Fig.1).

The II-57 device is designed for determining the magnitude and character of distortions of synchronic unipolar and bipolar telegraphic sendings in lines, in voice-frequency carrier telegraphy channels and in the investigation of various circuits. By means of it, the telegraphic polarized relays RP-4, TRM and TRL can be adjusted and checked. For convenience of operation, the device is placed in a cart (Fig.2).

The device makes it possible to do measurement with smooth variation of the telegraphing rate within the limits from 35 to 80 bauds. Separate use of the transmitter and receiver is possible.

The relayless transmitter creates non-distorted bipolar or unipolar sendings of the 1:1, 1:6, 6:1 and "combination"(Q9S) kinds; it can serve also in the capacity of symmetrical circuit breaker.

The distortion measurer receiver is made in a relay, stroboscopic design (in RP-4 relay and MN-11 neon lamps). The instrument's natural distortions are, therefore, determined mainly by the receiver relay operation. These

distortions, as tests have shown, do not exceed 1 % and only in case of nonsymmetrical pulse trains in high speed teletgraphy do they reach 2 %.

A contact relay group operating in the circuits of another apparatus can be connected to the receiving relay block by means of a special cable; the possibility of checking these circuits is secured in this way. Although the input and output of the device are two-conductor, its conversion to a single-conductor circuit is readily accomplished.

When two distortion measurers are connected into a common "attendance" circuit, the high light does not exceed 1 rpm.

The testing of RP-4, TRM and TRL relays is done by feeding to one primary winding a current with a value correspondingly equal to 8,40 and 8 ma (operating condition), 3,10 and 2 ma (testing condition) and a current adjusted within the limits of 0.8 to 10 ma (dynamic condition). The currents in local and line circuits are measured by milliamperemeters installed in the facial plate of the instrument. For convenience in operation, this panel is placed at a slant; in the device there is free access to circuit elements and the possibility is provided for changing the stroboscope's angle of dip in

the cart. When transporting the instrument, the control elements are covered with a hood.

The instrument takes electric power from the AC network of 127 or 220 v voltage; its power consumption does not exceed 180 watts.

Instrument dimensions without the cart are 458 mm x 478 mm x 334 mm; the weight without cart is 29.5 kg. The cart dimensions are 1028 mm x 513 mm x 513 mm; its weight is 15 kg.

The instrument circuit contains: (1) transmitter and receiver of synchronous pulse trains, (2) commutation elements, (3) elements providing the instrument's power supply. The transmitter, stroboscope, electric motor and electric contact regulator are assembled in the instrument in a single motor unit. All other elements of the circuit are installed in the framework.

The motor unit is placed on the rotor and stator of a DTA-40 electric motor. From one side (rear) of the electric motor, directly on its axis, are installed the electric contact regulator and selective cam (with two lugs and two gaps) on which the selective contact groups rest. On the other side (the front) are the combiner discs actuated in motion through reducing gear 1:28, and the stroboscope, fixed on the same axis.

The two master contact groups have bearing on the combiner discs with 56 lugs and gaps arranged in the 1:1, 1:6 and Q98 combinations. These groups are switched not simultaneously but with a shift in time equal to 0.5 of the pulse train duration, and feed to the selective groups positive or negative battery pole (in accordance with the placement of lugs and gaps in the given disc).

With respect to the first master group, the selective groups operate with a time shift amounting to one-quarter of the pulse train duration. In the time during which the middle spring of the master groups is closed with one of the end springs, the middle spring of the selective group has time in turn to connect with the first and second springs of its group. In this way a closed circuit is created in which the plus and minus of the battery are fed to the transmitter output in accordance with the combinations set by the combiner disc. In this way, the selective group cuts out the nondistorted middles of the pulse trains fed from the first and second master groups, and summarizes them into a unified nondistorted sending. The precision manufacture of the selective cam and the employment of "fragment-less" selective groups (two groups operating in closed circuit) will guarantee the absence of sending distortions at the output.

The compensating contact group which is in the instrument preserves the closed circuit in the middle of the pulse train, preventing the possibility of the fragmentation of sendings at the transmitter output.

The tuning of the contact groups and the transmitter as a whole to neutral state and efficiency, the setting of the phase ratios and the choice of the required combination of sendings are done by means of two switches and the instrument's receiving part.

The transmitter can be used in the capacity of symmetrical circuit breaker in tuning telegraph adapters (for closing and opening the circuit in accordance with which master group is connected). In this case, one side of the transmitter circuit disconnected from the current source, is connected to the instrument output; the external circuit with the feed source is connected up to the same terminals. The spark discharge circuit equalizes the duration of the current and current-less sendings.

The instrument's feed device is developed in the DG-Ts24 and the EG-Ts27 diodes. RT-1 rheostat tubes and fuses realize the protection of the feed circuits from accidental short-circuits. The radio reception noises created by the instrument are suppressed to values that do not exceed set standards.

The instrument has passed tests which have confirmed the expediency of employing it in large and small communication junctions, in voice-frequency carrier telegraphy services, in workshops for repair of relay and synchronic telegraph sets, and also in laboratory practice. Serial production of the instrument has been launched.

Sh. S. El'kin, engineer

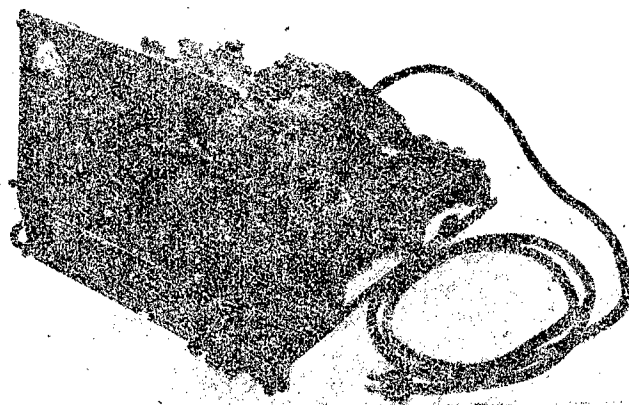


Fig. 1

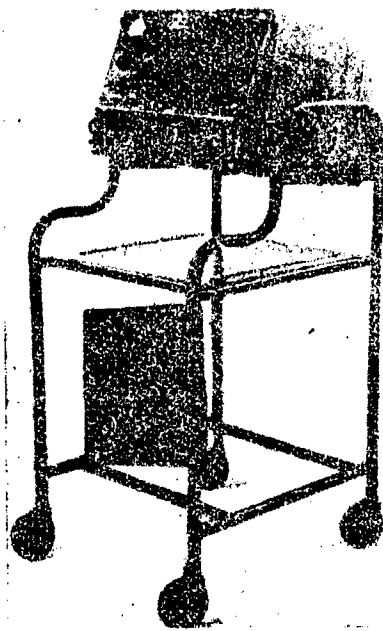


Fig.2

TESTER OF PHANOTRONS AND THYRATRONS

A simple device is described that is designed for checking the parameters of phanotrons and thyratrons in the process of their operation.

Periodic checking of phanotrons and thyratrons makes it possible to prevent the technical stoppages of equipment because these devices go out of commission. In an operating phanotron the permissible rectified current is reduced with time and the firing potential and internal voltage drop rise. The instrument described below makes it possible to appraise the degree of serviceability of a phanotron and thyatron. As is evident from the circuit (Fig. 1) the instrument consists of heater and anode

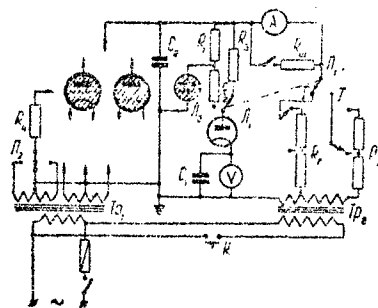


Fig. 1

transformers Tr_1 and Tr_2 , diode voltmeter in tube A_1 , amperemeter and loading resistances R_p and R_T .

When checking phanotrons, the switch \bar{H}_1 is set in the "P" (phanotron) position. After the heating of the phanotron being tested, push-button K is pressed, whereupon voltage is fed the phanotron anode through the loading resistance R_p and the amperemeter; the phanotron is fired and the average value of the rectified current is determined by the amperemeter showing. The diode voltmeter measures the voltage drop in the phanotron in that half period when current passes through the phanotron. The firing potential of phanotrons usually does not exceed 30 v (Fig. 2a), but for reliability of instrument in operation, an effective testing voltage equal to 45 v was taken.

Measurement of the voltage drop in a thyatron (switch \bar{H}_1 is in the "T" - thyatron - position) is complicated by the condition that its firing voltage (see Fig. 2b) is considerably in excess of the nominal voltage drop (for example, the TRi-6/15 thyatron has a firing voltage $U_{fir} = 400$ v, while $U_{drop} = 25$ v). The process of firing and setting the nominal voltage drop occurs during each positive half period in the anode. But the voltmeter must show only the working voltage drop (25 to 30 v).

At the same time, the case is possible when the thyatron does not fire; then the full voltage (more than 400 v) is found applied to the voltmeter. So that the working voltage drop might be measured in such conditions, a device is provided in the voltmeter tube circuit, which quenches the transient splashes of firing voltage, and also protects the instrument from overload in case the thyatron fails to fire. For this purpose, the stabilatron J_2 is connected in the section of the voltmeter's auxiliary resistance. With high voltage in the thyatron, the stabilatron is fired, owing to which a heightened voltage drop is created on resistance R_1 . The anode voltage of the thyatron part of the instrument (E_{aT}) chosen is such that it might correspond to the firing potential of the type of thyatron in which it is greatest. In the given case the TR1-6/15 thyatron having a $U_{fir} = 400$ v is taken. In order to heighten the voltage drop measurement accuracy, it is desirable to ^{take} the value E_{aT} as large as possible as then the thyatron will be fired earlier (Fig.3) in the working half period and for a larger part of the semiperiod it will be under the voltage which has to be measured. Under high voltage E_{aT} , however, the power dissipation grows on the ballast resistances of the load, in consequence of which they have to be taken for greater power dissipa-

tion which leads to an increase of instrument dimensions. Taking the foregoing into account, an effective E_{aT} voltage equal to 500 v is taken; in this case the thyatron is fired roughly 1/5th part of a semiperiod after the start, which amounts to $\alpha = 35^\circ$. (In the phanotron part of the instrument $\alpha = 22^\circ$.)

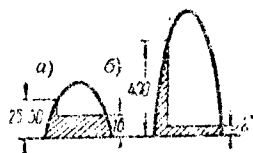


Fig.2

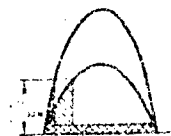


Fig.3

With such a circuit and the voltage indicated, the scale of the diode voltmeter derived is uniform to 75 v, which forms a 2/3 scale. In case of further voltage rise stabilizer SG-2S is fired, having $U_{fir} = U_{max} = \sqrt{2} \cdot 75 = 105$ v and the measurement of voltage in the limits from 75 to 500 v is done on the remaining 1/3 scale.

Checking the effect the grid potential has on the thyatron operation is provided for in the instrument. The switch Π_2 has three positions: in the middle the grid

is grounded and the thyatron must normally be fired; in one of the end positions the voltage on the grid is found in antiphase with the anode voltage and the operable thyatron must not be fired; in the other end position the firing conditions are eased (the voltage on the grid and anode are cophasal).

In design the tester is constructed in a metal box of 400 mm x 300 mm x 225 mm in dimension. On the facial panel are led out control handles and devices. Also installed are tube panels for all models of phanotrons and thyratrons employed in a radio center. For checking the BG-236 phanotron (and others like it) which do not have a base, a rack with a ring is installed and there are terminals for connecting up the electrode leads.

Data on parts: $R_1 = 8 \text{ kohm}$, $R_2 = 33 \text{ kohm}$, $R_3 = 18 \text{ kohm}$, $R_4 = 1 \text{ kohm}$, $C_1 = 1 \text{ } \mu\text{f}$ (by changing the capacitance of this capacitor in small limits, the sensitivity of the tube voltmeter can be modified), $C_2 = 0.5 \text{ } \mu\text{f}$ (serves for eliminating high frequency inductions in the wire which connects the valve anode with the instrument circuit, since the instrument can, at the radio center, be in a strong high frequency field), A_1 is 6S5S type (grid is connected with the anode, the filament is fed from the transformer winding of filament with 5 v voltage), A_2 is SG-2S type.

An instrument of the PM-70 model with a 0 to 1 ma scale is used in the voltmeter circuit. An amperemeter of the PM-70 type with 0 to 2.5 a and 0 to 5 a scales was employed. Transformer Tr_1 is a standard filament transformer of 220/5-2.5 v with auxiliary 10 * 10 v winding. Transformer Tr_2 is assembled in Sh-32 plates, 72 mm assembly; primary winding of 400 turns of PEL-1.0 wire, secondary winding of 1000 turns of PEL-0.8 wire with branch from the 85th turn (45 and 500 v).

The R and R_T resistances are calculated by the formulas:

$$R_T \approx \frac{U_P - U_{drop}}{2I_{av}}, \quad R_T \approx \frac{U_T}{2I_{av}} - R_{wind}.$$

The values of the resistances R_T and R_T are selected more accurately by experiment. For this purpose valves (new) known to be in good working order are taken, and varying the resistance value, the average value of rectified current is set according to nameplate data: In the VG-129 the current $I_{av} = 0.5$ a; the VG-236 $I_{av} = 1.3$ a; the TR1-6/15 $I_{av} = 6$ a. In the latter case, taking into account the large power dissipation P_{dis} on the resistance, a lesser current value, for example, 3 a can be taken. But even with such a current the power $P_{dis} = 3a \cdot 500v = 1500$ watts. Since the measurement is done during transient pressings of the pushbutton (practically, a few seconds is

sufficient), however, resistance of relatively small dimensions (wound on small stick insulators) can be taken.

The instrument voltmeter is usually graduated according to a standard voltmeter. The scale is twice graduated: for phanotrons to 45 v and for thyratrons to 500 v. In graduation it is convenient to employ the voltage from a Tr₂ transformer, using a divider.

It must be taken into account that in testing thyratrons, the voltmeter shows somewhat heightened voltage relative to the rating plate data (35 v instead of 25 v), since in this case the stabilitron does not fully compensate for the high firing voltage. But this does not have importance in determining the quality of thyratrons. It can be assumed provisionally that in serviceable thyratrons, the voltage drop must be equal to 35 v. For convenience in operating the tester of phanotrons and thyratrons, a table is attached to it giving nominal measurement data taking into account instrument characteristics.

Valve type	Heating time, minutes	I _{av} , a	U _{drop} , v
VG-129	1	0.5	12
VG-236	3	1.3	16
TR1-6/15	10	3	35

The phanotrons can be checked directly at the

places of operation; for this purpose the instrument is equipped with extension wires which by means of connectors "crocodiles" are connected to the valve being tested. At the same time the filament voltage must be fed to the phanotron and the anode voltage cut out from the circuit.

In measurement of the thyatron parameters with the instrument, it should be remembered that a dangerous high voltage is applied to the anode.

At communication enterprises, tubes are often taken from operation after the service term guaranteed by the factory has expired. This is justified for tubes with tungsten cathode (inactivated) in which it is impossible to determine beforehand the moment of filament burnout, but filament burnout is a rare case in ionic valves. Valves are usually not fully utilized in apparatus. Operating often in eased conditions, they preserve parameters longer than the guaranteed service term (double and more) which the operation of the instrument described here has confirmed.

At our radio center, valves in which the voltage drop has risen and the current declined by 30 % on the average, are taken out of operation. As operating experience with the instrument has shown, the voltage drop in the valve gradually increases, and the checking of

valves once a month (and once in two months, up to the guaranteed period) is quite adequate for inspection of their quality.

R.M. Morozov, engineer.

EFFECT OF MAGNETIC STORMS ON COMMUNICATION CIRCUITS

In the article cases of communication disruptions caused by magnetic storms are described and recommendations are given on putting into effect the necessary protective measures.

The onset of the current eleven-year period of the maximum of sun spots has been marked by the appearance of great, and also very great magnetic storms. According to information received from various communication administrations, in the period from 1955 to the present time, the effect of magnetic storms has been most intensely felt on the Murmanak-Petrozavodsk, Sverdlovsk-Nizhniy Tagil, Sverdlovsk-Tyumen', Komsomolek-Magadan and Ufa-Chelyabinsk lines of communication.

A very great magnetic storm was observed in the whole terrestrial globe in February of last year. In the USSR the most significant effect of this storm was felt in the telephone-telegraph main lines of the Murmanskaya and Sverdlovskaya oblasti and the Karelian ASSR. The earth's electric intensity on 10 to 12 February in separate rayons reached 1.5 to 5 v/km with current to 0.3 - 0.8 a. The magnetic storm began 11 February at 0126 hours. At 0430 hours of the same day, its maximum set in and con-

tinued to 0900 hours 11 February, after which the storm gradually began to abate. Complete cessation of the magnetic storm was recorded at 1600 hours 12 February. The storm was accompanied by intensive aurora borealis which was observed in Belomorsk, Petrozavodsk, Olen' and Kandalaksha.

The effect of the magnetic storm on the main communication lines was manifested as follows.

In the Murmanskaya oblast the period of most intensive oscillation of magnetic perturbation continued from 0430 to 0900 hours 11 February. Electrical measurements made in the Kolenergo Murmashi-Kandalaksha circuit (250 km long) showed extraneous voltage exceeding 600 v. In the Murmanak-Nikel' section the telephone and telegraph communications were discontinued from 0500 to 0800 hours 11 February. In the Murmansk-Kandalaksha section, the telephone and telegraph services in low and high frequency channels also did not operate from 0500 to 0800 hours 11 February. Besides, an intense monotonous humming was observed in the high frequency channels and an intense noise and crackle in the low frequency channels.

At repeater stations, telegraph and long distance telephone offices, the magnetic storm caused the following damage: RA-350 dischargers wore out and at places melted;

0.5 a fuses burned out (including fuses on plates of remote-control feed), 12Zh1L tubes and DTN transformers burned out; the wire running to the pole changers and the wire of the remote feed choke coil plate were ignited; capacitors in feed circuits of tube anodes were punctured (20 μ f, 250 v); screen of PVChS-160 wires (in the framework), linear jacks PSVK of the 12-channel system (in the framework) and D-2.8 filter plates (in the framework) were punctured.

In the Karelian ASSR the beginning of the magnetic storm was recorded at 1900 hours 10 February. The maximum of magnetic perturbation set in at 0435 hours 11 February. At that time the extraneous current measured in Belomorsk, reached 100 and more milliamperes. The indicated magnitude of the extraneous current was preserved to 0800 11 Feb. In the Petrozavodsk-Kem' section (430 km), the extraneous voltage measured in communication wires exceeded 500 v. During the magnetic storm maximum from 0500 to 1000 hours 11 Feb. the telephone and telegraph services in the high and low frequency channels did not operate in the Petrozavodsk-Murmanek section. The communication service in steel circuits was disrupted from 0500 to 1200 hours 11 February because of damages to station and line equipment. During this same time the communications running to the

south, north and east of Belomorsk were disrupted.

In the period of greatest intensity of magnetic perturbation, arbitrary on-and-off switching of VUS-12 equipment was observed in two circuits. Intense noise and crackle were heard in the low and high frequency channels; the voltage of interference currents in them reached 90 and more millivolts.

At the long distance telephone offices, the primary and auxiliary repeater stations of the Karelian ASSR, the following damages occurred: more than 100 RA-350 dischargers melted, 0.5 a fuses burned out, induction coils burned in DK-33 filters, locking coils, output transformers of linear amplifiers, variable resistances in plates of remote feed reception, transformers of PV-3 amplifiers, matching automatic transformers, linear transformers and resistances in the tube filament circuit burned out.

The curve shown in Fig. 1 is plotted on the basis of many years observations on the relative number of sun spots from which the number and intensity of magnetic storms chiefly depend. If on this curve the straight line A be drawn parallel to the axis of abscissas at the level of 70 which corresponds approximately to the appearance of appreciable interferences in single-wire circuits, then it is found that during the entire eleven-year period

the extraneous currents in the communication circuits disrupt communication services on the average only during 3 to 4 years (1.5 to 2 years before the onset of the maximum and during 1.5 to 2 years after it). During these 3 to 4 years great and very great magnetic storms appear, as a rule, in the periods of the vernal and autumnal equinoxes (during 4 to 5 months of the year). The measures to protect the communication circuits from magnetic storms and terrestrial currents must, therefore, bear a transient character: protective measures need to be taken only in the years of the onset of the maximum of sun spots.

In working out measures to protect the communication circuits from the effect of magnetic storms, it is expedient to divide the territory of the Soviet Union into three zones.

The European part of USSR situated south of latitude 60° north should be classed in the first zone; under the influence of magnetic storms here, as statistics show, the extraneous currents in conductors reaches 5 to 50 ma (voltage from 5 to 70 v). Recommended means of single wire circuit protection for the given zone are:(1) The Pk-70/03 model compensator of extraneous voltages developed by the Central Communications Scientific Research Insti-

tute, which serves for protecting remote feed circuits operating in a "wire-ground" or "two wire - ground" system (This device is described in Vestnik svyazi No 12, 1958); (2) transformer (bridge) circuit for protecting duplex telegraphic communications from extraneous currents of 100 ma magnitude (a description of the circuit is published in Trudakh Nauchno-issledovatel'skogo instituta svyazi (Transactions of the Scientific Research Institute of Communications), issue I, Svyaz'tekhnizdat, 1937). The first of the indicated protective means is designed for complex extraneous voltages with a magnitude reaching ± 70 v. Shown in Fig.2 in principle is the circuit of connecting the means into a two wire aerial multiplexed circuit with remote-control feed in a "two wire-ground" system. In this circuit K is the compensator of extraneous voltages, DK is the drain coil, Tr is the line transformer, CH-1.0 is the line protector (1 a); PB-500 is the valve discharger (firing voltage 500 v), WP-03 is the spark discharger (0.3 mm air gap), U_{dn} is the voltage of the remote feed battery.

The Far East, Siberia, Leningradskaya, Arkhangel'skaya and Vologodskaya oblasts, the Bashkirian ASSR, and also part of the Kola peninsula (south of Kandalaksha) and the Urals (south of Sverdlovsk) can be classed in the second zone. In this territory the extraneous

current in communication wires reaches from 5 to 150 ma (voltage from 5 to 300 v). For the zone being examined the combined transformer circuit developed by the Central Communications Scientific Research Institute can be recommended as a means of protecting single wire duplex telegraphic communications; this circuit provides for the

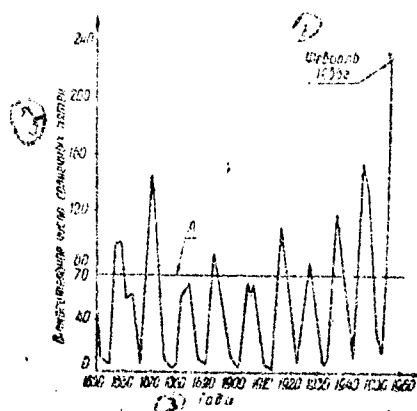


Fig. 1

- 1- February 1958
- 2- relative number of sun spots
- 3- years

protection of telegraphic circuits from ground current with a magnitude to 160 ma (there is a description of the circuit in the book of M.I.Mikhaylov, Vliyaniye

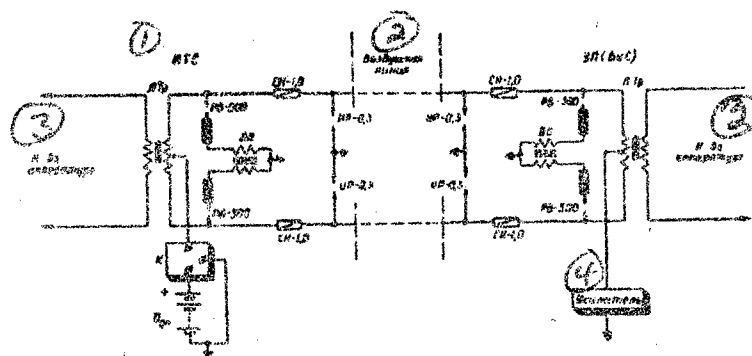


Fig. 2

- 1- long distance office
- 2- aerial line
- 3- to B₇ apparatus
- 4- amplifier

vneshnykh elektromagnitnykh polev na tsepi svyazi i
zashchitnyye meroprivatiya (Effect of External Electro-
magnetic Fields on Communication Circuits and Protective
Measures), Svyaz'izdat, 1959). In the given case the
remote feed must be design^{ed} basically in a two wire system
(wire - wire), and remote feed in a "wire - ground" or
"two wire - ground" system can serve only as reserve.

Part of the Kola peninsula (north of Kandalaksha),

the Urals (north of Sverdlovsk) and the Okhotsk-Kekra rayon are classed in the third zone. Here the extraneous current in the communication wires often exceeds 150 ma (voltage from 15 to 300 v and higher). In this zone the circuits of remote feed and telegraph communication can operate only in the two wire ("wire - wire") system.

In two wire communication circuits (with cut out mid points of line transformers) the action of magnetic storms is felt in districts with ground current gradient reaching 2 and more volts per 1 km. That is the northern part of the Kola peninsula, the eastern and northern part of the Urals and the Okhotsk-Kekra rayon, i.e. those districts in which the extraneous voltage in communication wires can reach 650 and more volts during magnetic storms.

At the moment the dischargers are in operation the ground current circuits are closed through protective elements (semiwindings of drain coils, dischargers, protectors) of both stations and the line of the amplifier section. In Fig.3 these circuits are shown by arrows. If there is asymmetry of wires or dischargers with non-identical characteristics are connected in the wire circuits, equalizer currents are created in the circuit which also affect the telephones and receivers of the TT apparatus, creating the noises spoken of in the begin-

ning of the article. In case drain coils are absent, the effect is particularly intense.

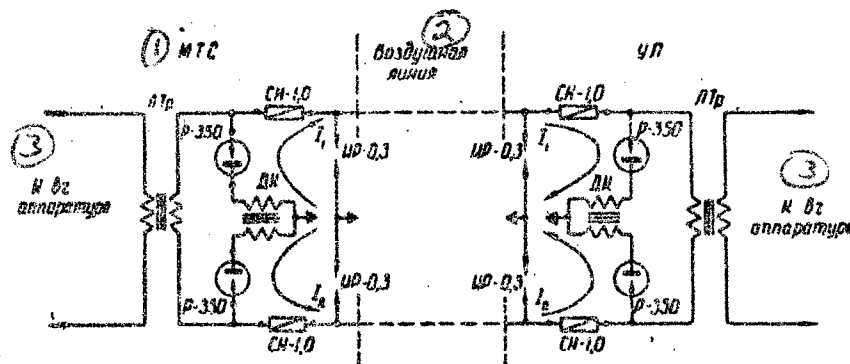


Fig. 3

- 1- long distance .
office
- 2- aerial line
- 3- to B₁ apparatus

Protective measures recommended in the given case are: (1) rendering circuit wires symmetrical; (2) the choice of dischargers excluding their nonsimultaneous operation; (3) connection of drain coils in series with dischargers at places where these coils were not connected.

The melting of PA-350 dischargers in two wire line

circuits, that was mentioned above, is caused by the circumstance that when they are in operation, ground current of high magnitude (0.5 and more amperes) passes through them for a prolonged period. In this case, it is recommended that the PA-350 dischargers be replaced by the more powerful P-350 (or 3P-350) dischargers.

At the present time NIZMIR is completing the development of a method of shortterm forecasting of magnetic perturbations and can now already give, with a high degree of accuracy, forecasts for five days ahead, for 12 hours and even three hours (the longterm perturbation forecasting service gives forecasts for a year and for a month). These data are being utilized so far only by the radio centers, although the magnetic perturbation forecasts have great importance also for enterprises of wire communication. Thus, for example, on receiving information about a forthcoming magnetic storm, the UP, LAZ and telegraph office directors will have an opportunity to carry out the necessary measures in time : to connect in the protective devices, prepare protectors and dischargers (to replace those that go out of commission), to check and bring into readiness reserve systems of electric power supply, instruments for measurement of the extraneous voltages and protective means

(gloves, rubber boots). In addition, the forecasting service information can be of use also to forewarn line personnel about the danger associated with work on the lines during great and very great magnetic storms.

G.G.Ogul'chanskiy, senior engineer of the Central Communications Scientific Research Institute.

DETERMINATION OF THE NUMBER OF TELEGRAPH SETS IN SERVICES CONNECTED IN A CONCENTRATOR

The method and conditions are examined for calculating the number of telegraph sets necessary for servicing communications connected in a concentrator unit. Calculation formulas and nomographs are cited.

The concentrator unit KY (Fig.1) or the concentrator, as it is often called, is essentially a commutator, in which are placed the city or intraoblast telegraph services with small load. Connected in the concentrator from the side of the Central Telegraph Office (CT) are a limited number of telegraph sets S_{tg} which is, as a rule, less than the number of services n_s connected in the concentrator, i.e. $n_s > S_{tg}$.

The use of concentrators makes it possible not only to economize telegraphic equipment and capital expenses on outfitting the telegraph junction, but also reduces the production space necessary for the city and intraoblast service sets, decreases the operational expenditures on the maintenance and servicing of the telegraphic equipment, maintenance of the production space

and the wages of technical personnel.

The great effectiveness of the use of concentrator units depends on their wide application at telegraph junctions. Naturally at the same time the need arises for accurate calculation of the number of sets at the CT when city or intraoblast services with small load are connected in a concentrator. The first attempt to solve this problem was made by A.G. Vasilevskiy (A.G. Vasilevskiy. Konsentrator dlya telegrafnykh svyazey oborudovannykh apparatami STA -Concentrator for Telegraphic Services Equipped with STA sets-, Vestnik Svyazi, No 2, 1959). Analysis has shown, however, that the formula comrade Vasilevskiy recommended for calculating the number of sets to service communications connected in a concentrator, gives grossly erroneous results and, cannot possibly be used.

Thus, if the internal control time for transmission of a telegram by the sets be taken as equal to 30 minutes, then calculation by this formula gives a number of sets that is roughly twice too high, with a 20 minute control time, the number is three times too high, and finally, with a 15 minute control time, almost four times.

The reason is that an incorrect premise lies at the basis of the formula proposed by comrade Vasilevskiy.

The formula recommended by comrade Vasilevskiy rests on the assumption that the whole hour load enters the attendant's places at once in the beginning of each ^{hour} hour. Thus, if in the busy (for example in the period from 1800 to 1900 hours) 80 telegrams enter, then the formula assumes that all these telegrams entered the attendant's places of the concentrator at 1800 hours sharp. But this never happens in reality. The actual load, although also nonuniform, enters during the course of the whole hour. In the given case A.G. Vasilevskiy took an uncritical attitude toward the recommendations of P.P. Fayngluz and M.A. Vlasov who erroneously advise that this same formula be applied also for calculating the number of operator's positions in the conditions of telegraphic services (P.P. Fayngluz and M.A. Vlasov, Tekhnicheskoye normirovaniye i organizatsiya truda v khozyaystve svyazi -- Technical Standardization and Organization of Labor in the Communications System -- Moscow, Svyaz'izdat, 1949. p 130).

In calculating the number of telegraph sets essential for servicing communications connected in a concentrator (CT sets), the operational processes in reception and transmission of telegrams must be taken into account.

The concentrator units can be of two types:- the

manual service and automatic operation. Besides, the concentrators employed in telegraph offices are, as a rule, designed on the principle of attendance with waiting. In practice this means that in case orders from the side of the city branch (CB) or the rayon junction (RJ) enter at a moment when there are free CT sets, the calling CB or RJ sets are connected directly with the CT sets; but in case all CT sets are busy, the orders coming from the CB or RJ sets await the freeing of the CT sets.

The CT telegraph sets connected to the concentrator can be variously used. For example, a division can be made of sets which accomplish only the reception of telegrams and sets which perform only the transmission of telegrams from the CT to the CB or RJ. Such a method of connecting the sets is the most widespread. Another procedure can also be applied, however, in which all the sets connected in the concentrator serve for both the reception and the transmission of telegrams. The latter method is usually employed at small telegraph junctions or also at large junctions but in the hours of small load.

The necessary number of CT sets are calculated with consideration of the varied organization of the process in reception and transmission of telegrams. At the same time operating conditions with manual transduction and with

the use of semiautomatic means are taken into account.

If a certain group of CT sets have the function only of telegram reception, whereupon the order from each service connected in the concentrator can enter any of sets connected from the CT side, then it is possible to determine their number by the formula widely used for similar cases in telephone service (the formula is applicable under the condition that not less than ten city or intraoblast telegraph services are connected in the concentrator).

$$\gamma = P(>0) \cdot \frac{\bar{t}_{za(np)} (1 + \nu^2)}{2(S_{np} - \gamma_{np})} \quad (1)$$

where γ is the average waiting time for release of a busy CT set when receiving sets are called from the side of the CB or the RJ (in computation the value of γ is taken as equal to 15 to 25 sec); $P(>0)$ is the probability of the occupation of all reception sets at the CT irrespective of the waiting time for set release; $\bar{t}_{za(np)}$ is the average set occupation time in reception of several telegrams for one order from the side of the CB or RJ, in seconds; ν is the factor of variation which characterizes the variability of the $\bar{t}_{za(np)}$ value with different calls; S_{np} is the unknown number of reception sets at the CT for servicing communications connected in

the concentrator; Y_{np} is the load on reception sets expressed in engaged hours.

The magnitude of Y_{np} is found from the expression

$$Y_{np} = \frac{\Sigma Q_{np} H_m H_d K_{qmn} \bar{t}_{zn(np)}}{3600 Z'} \quad (2)$$

Here ΣQ_{np} is the summary average daily (for a year) telegram exchanges in reception from these CB or RJ, the services of which are connected in the concentrator; H_m and H_d are factors of monthly and daily load irregularity (in general form these factors are determined on the basis of observations; in case possibility for observations is absent the factors H_m and H_d can, without large error in calculations, be assumed to equal respectively 1.2 and 1.1); K_{qmn} is the factor of concentration in the busy hour according to the summarized load of the services connected in the concentrator (K_{qmn} is also determined through observations; in practice without great error it can be assumed equal to 0.1); $\bar{t}_{zn(np)}$ is the the average set engaged time in telegram reception per one order, in seconds; Z' is the series quality factor characterizing the average number of telegrams transmitted to the CT for one call from the side of the CB or the RJ (the Z' value is determined by observations); according to data of the Central Telegraph Office USSR the value of

Z' amounts on the average to three to four telegrams for one order.

The average set engaged time $\overline{t}_{za(np)}$ is determined by various methods, depending on whether manual or semi-automatic means are employed at the telegraph office in transduction of telegrams to CT sets connected in the concentrator. With manual transduction, the set busy time and the telegraph operator's busy time coincide. In the latter case, therefore, for calculation of the $\overline{t}_{za(np)}$ time use is made of the expression

$$\overline{t}_{za(np)} = \overline{t}_{cn} + Z' (\overline{t} + \overline{t}_{of} + \overline{t}_{zx} + \overline{t}_{och}), \quad (3)$$

where \overline{t}_{cn} is the average time spent on one order in service conversations (proposal to receive the telegram, consent for reception on the CT side); \overline{t} , \overline{t}_{of} , \overline{t}_{zx} and \overline{t}_{och} are respectively the time spent on the average for one telegram; its immediate reception in the set, formulation, recording in journal and auxiliary transmissions. In the time \overline{t}_{och} is included the time spent on transmission of returns, demands, queries, corrections and so forth.

In case of semiautomated transduction, the telegraph operator performs part of the operation during the reception of the telegram, inasmuch as the pasting of tape on blanks is not required. Under these conditions the set

engaged time is determined by the expression

$$\bar{t}_{za(np)} = \bar{t}_{cn} + Z'(\bar{T} + \bar{t}_{scn}). \quad (3')$$

In this case it is assumed that such operations as the tearing off, rolling and placing of the perforated tape in the slots of the blank, the indication of the telegram destination point in the blank, the recording of the telegram in the journal and its formulation, the control of reception quality and winding of reception tape are done by the telegraph operator during the period of the set's immediate automated reception of the telegram.

Inasmuch as the direct calculation of the required number of sets by means of formula (1) is complicated, it is recommended that nomograph (Fig.2) be used for this purpose. In the nomograph the loads Y_{np} in engaged hours (y in the figure) are plotted in the horizontal axis, while in the vertical axis are the ratio $\frac{\bar{T}}{\theta}$, the value θ being found by the formula

$$\theta = \frac{\bar{t}_{za(np)}(1+v^2)}{2}.$$

Since the time $\bar{t}_{za(np)}$ oscillates in wide limits, the value v can be taken equal to 1 in calculations. Under these conditions θ is found to be equal to $\bar{t}_{za(np)}$. The corresponding values of S_{np} are shown in separate curves of the nomograph.

For determination of the number of CT sets connected to the concentrator and used only for transmission of telegrams, the following formulas can be used depending on the value of the internal staged control period for telegram transmission:

(a) with control period up to 15 minutes

$$S_{nep} = \frac{\sum Q_{nep} H_m K_{ksh} \bar{T}_{st(nep)}}{3600 Z''} \times \frac{1+X_0 v_e}{1+\tau} = g \cdot \frac{1+X_0 v_e}{1+\tau}; \quad (4)$$

(b) with control period from 15 to 30 minutes

$$S_{nep} = \frac{\sum Q_{nep} H_m H_d K_{ksh} \bar{T}_{st(nep)}}{8800 Z''} \quad (5)$$

In these formulas S_{nep} is the unknown number of transmission sets, $\sum Q_{nep}$ is the summary average daily (for a year) telegram exchanges in transmission from the CT through services connected in the concentrator, H_m and H_d are factors of monthly and daily load irregularity [H_d is absent in formula (4)], K_{ksh} is the factor of busy hour concentration according to the summarized load (in transmission) of all services connected in the concentrator, Z'' is the series quality factor indicating the average number of telegrams transmitted in the CB or RJ for one

order from the CT side; $\overline{t}_{za(nep)}$ is the average time (in seconds) of set engagement during transmission for one order, τ is the maximal allowable waiting time in transmission of telegrams lying on the set desk (in the formula is taken in fractions of an hour) connected with the staged control period of telegram transmission t_{kc} by the ratio $t_{kc} - \overline{t}_{za(nep)} = \tau$; V_τ is the variation factor of the load in the interval of time equal to τ ; X_0 is the factor determining the probability P_{X_0} that the actual load exceeds the rated. Its values for various probabilities P_{X_0} are given in the table.

X_0	P_{X_0}
1.28	0.10
1.64	0.05
1.98	0.03
2.33	0.01

In calculations the value $X_0 = 1.64$ can be used. The factor V_τ characterizes the variability of the load at different intervals of time τ . The values V_τ depending on the time τ are shown in Fig.3.

In computing, the internal (staged) control period for telegram transmission must be determined as an average weighted value taking into account the control periods and

and structures of telegraphic exchange (by various categories of telegram).

In case of manual transduction of telegrams the time $\bar{t}_{za(nep)}$ is determined from the expression

$$\bar{t}_{za(nep)} = \bar{t}_a + \bar{t}_{cn} + Z''(\bar{t}_p + \bar{t}_{c\phi} + \bar{t}_{ax} + \bar{t}_{ecn}). \quad (6)$$

and in case of semiautomatic transduction with tear off and transfer of tape - from the expression

$$\bar{t}_{sa(nep)} = \bar{t}_a + \bar{t}_{cn} + Z''(\bar{t}_{sa} + \bar{t}_a + \bar{t}_{ecn}). \quad (6')$$

in which \bar{t}_a is the average time spent on the CB or RJ order, \bar{t}_p is the average time spent on the immediate transmission of telegrams in the set with manual transduction, \bar{t}_{sa} is the same with semiautomatic transduction, \bar{t}_{ga} is the time spent on inserting tape in the transmitter set in case of semiautomated transduction. The remaining legends are the same as in formulas (3) and (3').

The component elements of the time $\bar{t}_{za(nep)}$ just as in equal measure those of the time $\bar{t}_{za(np)}$ are calculated according to the findings of photochronometric observations.

If control periods be taken that make possible use

of formula (5), then calculation of the number of sets does not present special difficulty. But if control periods have to be taken that require use of formula (4), then the number of sets is calculated by the following system.

By means of formulas (6) or (6') the time $\bar{t}_{za(nep)}$ is calculated and after that the load y' is found through the formula

$$y' = \frac{\Sigma Q_{nep} H_n K_{unn} \bar{t}_{za(nep)}}{3600 Z''} \quad (7)$$

After this, starting from the difference $t_{ke} - \bar{t}_{za(nep)} = \tau$, the value τ is determined. Knowing τ (in minutes), the value v_τ is determined from the nomograph given in Fig.3 (for example, if $\tau = 12$ min then this value will correspond to $v_\tau = 0.35$). After that the time τ is converted to fractions of an hour (by division of τ by 60). Finally, the correction factor K_n is computed, employing the expression

$$K_n = \frac{1 + X_0 v_\tau}{1 + \tau} \quad (8)$$

The unknown value S_{nep} is finally found from the expression

$$S_{nep} = y' K_n \quad (9)$$

At the same time the fractional value S_{nep} derived

by means of formula (9) must be rounded to the nearest larger whole number.

In those cases when the CT sets connected in the concentrator are utilized in both transmission and reception, the calculations are done by a somewhat different system.

At first the average time (in seconds) of set engagement with transmission or reception of one telegram is computed. This is done by the formula

$$\bar{t}_{sa} = \frac{\frac{\bar{t}_{sa(np)}}{Z'} \Sigma Q_{np} + \frac{\bar{t}_{sa(nep)}}{Z''} \Sigma Q_{nep}}{\Sigma Q_{np} + \Sigma Q_{nep}} \quad (10)$$

After this the number of required sets S is found through one of the following formulas:

(a) with control period up to 15 minutes

$$S = \frac{(\Sigma Q_{np} + \Sigma Q_{nep}) H_M K_{MHH} \bar{t}_{sa}}{3600} \times \frac{1 + X_0 v_r}{1 + v_r} \quad (11)$$

(b) with control period from 15 to 30 minutes

$$S = \frac{(\Sigma Q_{np} + \Sigma Q_{nep}) H_M H_D K_{MHH} \bar{t}_{sa}}{3600} \quad (12)$$

P.V.Prakhov, candidate of economic sciences,
lecturer, Moscow Communications Electrical Engin-

Engineering Institute.

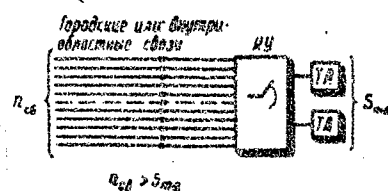


Fig. 1

1- city or intraoblast services

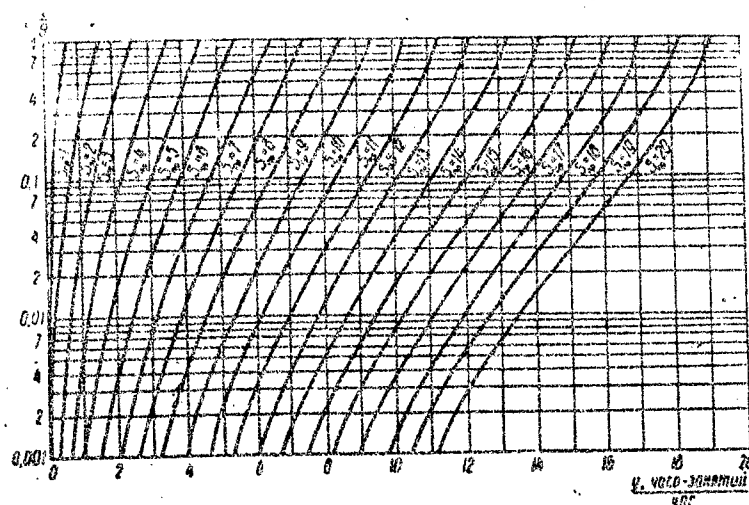


Fig. 2

1- hour-engaged
hour

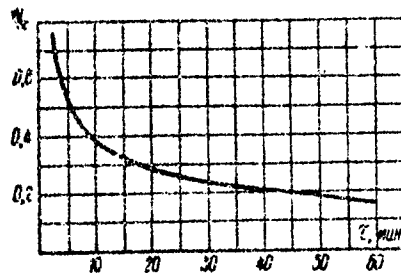


Fig. 3

1- min

Glossary of Russian language abbreviated subs in formulas

cb - svyazi - services
 ta - telegrafniy apparat - telegraph sets
 np - priyem - reception
 za(np) - zanyatie (priyem) - engaged (reception)
 nap - chas naibol'shey nagruzki - busy hour
 cn - sluzhebnyye peregovory - service conversations
 of - oformleniye - formulation
 zzh - zapic' v zhurnal - recording in journal
 3cn - vspomogatel'nyye peredachi - auxiliary transmissions
 per - peredacha - transmission
 n - popravochnyy - correction

Organization and Operation of Communication Means

Skilled Personnel for the Communications System

RAISE THE WORK WITH PERSONNEL TO A HIGHER LEVEL

The Soviet people have entered the period of all-out construction of communism and are, by their unselfish labor, successfully putting into practice the seven-year plan adopted by the 21st Congress of the CPSU.

It is stressed in the congress decisions that party and state personnel have a paramount role in realization of the seven-year plan. The work of personnel placement and training has to be improved, the congress decision states, by promoting to managerial positions persons of principle, trained and having a feeling of what is new, persons who would devote all their knowledge and energy to the welfare of the people, who would instill bolshevist passion in the work, who would be intolerant of defects.

Guided by these directives of the congress, the Ministry of Communications USSR, the ministries of the union republics and their local agencies have devoted much attention to strengthening decisive sectors with qualified specialists and also to raising the knowledge and qualification level of managerial and engineering-technical per-

sonnel and workers of mass occupations.

Problems of the work with personnel were discussed at meetings of the boards of the communication ministries of all union republics and at active member meetings in many administrations of communications. Problems of organizing correspondence training of communication workers, training the staffs of permanent educational institutions, the state of work with personnel in separate oblasts and communication enterprises were discussed at ministry board meetings in a number of republics. At Orel and Novosibirsk the Ministry of Communications RSFSR conducted group meetings of the personnel directors and workers at oblast administrations of communications.

The board of the Ministry of Communications USSR discussed how work with personnel is being carried out in the agencies of communication in the Ukrainian SSR. At the administration of managerial personnel and educational institutions reports were heard on the work with personnel by the ministries of communications RSFSR, Georgian, Moldavian and Estonian union republics, construction trusts, administrations of industrial enterprises and the central design bureau of the Ministry of Communications USSR. The administration also checked on the work with personnel in the communication agencies of the Latvian, Ukrainian and

Kazakh SSR, and also in a number of oblast administrations and enterprises of communication.

In the current year great attention was devoted to the reform of higher and secondary special educational institutions in accordance with the law "On Strengthening the Ties of the School with Life and Further Development of the System of Public Education in USSR," adopted by the Supreme Soviet USSR. The Ministry of Communications USSR defined the new student training terms and forms at institutes and technikums of communication, established the procedure for putting at the disposal of students attendant's positions in the period of their work in production, worked out new curricula, revised programs. Worker training in specialties was organized: (1) radioelectronics and (2) the machines and equipment of communications. The network of correspondence departments of institutes and technikums and local educational consultation offices was substantially enlarged. A faculty for post-graduate study of engineering-technical and managerial workers in communications was opened at the correspondence institute of communications.

The composition of managing personnel of local communication agencies has lately been improved in quality: the number has grown of specialists having much experience

in production and able to mobilize groups of communication workers in fulfillment of tasks set before them.

At the beginning of the current year communication agencies were at 62.3 % provided with engineers, at 54 % with technicians. Facts were known, however, indicating that engineers and technicians assigned to local offices after graduating from educational institutions were improperly utilized there, especially in construction organizations. Young engineers and technicians are often assigned to such work sections as do not require a higher or secondary education. In the Alma-Atinskaya oblast, for example, ten technicians with diplomas are working as supervisors.

Many enterprises make applications for specialists and afterward do not find use for them and reject them. That happened in the Kazakh SSR, at the Taldomskiy, Yur'yev-Pol'skiy, Kievskiy and Tashkentskiy plants of the UPP, in the Radiostroy and Gosradiotrest organizations. Specialists assigned to them were rejected by the NIITS, the Leningrad management of radio communication and radio broadcasts, the Leningrad city telephone system, the Ussuriyskiy radio center, the Tashkent branch of the State All-Union Design and Planning Institute, Central Design Bureau and a number of other enterprises and organizations.

Even elementary concern about young specialists is

not everywhere displayed. The Ministry of Communications Ukrainian SSR made an application to have 87 engineers assigned to the ministry in 1960, but promised to provide housing area only to 19 of them. The Ministry of Communications of Azerbaydzhan SSR provides housing only to 6 of the 23 engineers which it asks be assigned this year for work in the republic's communication agencies.

For a number of years the Ministry of Communications USSR has been persistently striving to have highly qualified, experienced and politically literate managers at the head of communication administrations. Positive results have been achieved in this matter. Among communication administration directors 86 % are specialists with diplomas, among chief engineers - 98 %. The composition has somewhat improved of the managers of many leading departments of the ministries and administrations, in particular, the electric communications, technical and planning-financial departments. But the vice directors of communication administrations and heads of the mail department administrations continue to remain weak in composition. Thus, only about half the vice directors of administrations are specialists with diplomas. Especially slow progress is being made in strengthening the managing personnel of the postal services in the Russian Federation, the Belorussian, Kazakh

Uzbek union republics. In the RSFSR only 14 out of 41 mail department directors have special education.

Essential defects are observed also in the selection of personnel for the management of the ministries of communications of the union republics and oblast administrations. Persons having neither special knowledge nor necessary experience are often appointed to managerial and engineering positions. Thus, in the management of the Ministry of Communications Ukrainian SSR, out of 84 positions in which must be specialists with a higher education, 38 are manned by practical persons, 32 of whom never studied anywhere. Notwithstanding this, persons without a higher education continue to be accepted for engineering positions.

During the past five years the number of specialists was increased by only four persons in the management of the Ministry of Communications Kazakh SSR. During this period 25 workers not having special education were accepted for managerial and engineering-technical positions in the ministry management. Workers known to be weak are appointed to managing posts in a number of communication administrations of the Kazakh SSR. In the eastern Kazakhstan oblast administration, for example, comrade Ostyakov, who had worked as director of a wirebroadcast network management, was released from this post because he failed

to meet his obligations; soon, however, he was appointed head of the administration's electric communications department. And at this post, comrade Ostyakov has also shown himself to be a misfit worker.

The practice of confirmation of workers in positions by correspondence is wholly improper. Violated as well is the principle of staff action in deciding questions about appointment to positions and transfer of managerial personnel. This leads to weak workers being appointed in certain cases to managing positions.

One of the decisive conditions for improving all the work with personnel is the established procedure by which questions of appointment and release of nomenclatured workers must without fail be considered at the boards of ministries. The managers of ministries and administrations are obligated to observe this procedure strictly, which makes it possible to study personnel more deeply, to place them correctly and train them.

The Ministry of Communications USSR has devoted much attention to strengthening construction and industrial organizations with experienced and qualified workers. Good cadres of builders capable of solving the most complex tasks have grown up at the construction sites of the communication system. Some of them have come up from rank-

and-file worker to manager of a large construction organization and successfully cope with the obligations imposed on them. Among them, for example, are comrades Kuchukov, director of SMU-305, Lantsman, head of SMU-14, Kachura, chief engineer of SMU-5, Nefedov, director of the installation-measurement administration of the Radiostroy trust, Glinka, chief engineer of this administration and a number of others.

Notwithstanding the comparatively large number of specialists in the constructing organizations and industrial enterprises of the Ministry of Communications USSR, many practical persons, among whom only a negligible part are studying in higher and secondary special educational institutions, are still in the managing and engineering-technical posts. A number of managers cope poorly with the obligations imposed on them; many positions have still not been changed.

A large turnover of engineer-technical personnel is observed in the communication construction organizations. In 1959 to them 89 engineers and 68 technicians were sent, while during the same period 68 engineers and 100 technicians left. Such a turnover of personnel indicates that individual managers of construction organizations pay inadequate attention to satisfying the needs and require-

ments of builders, are weak in organizing among them political training and mass cultural work.

Because of shortcomings in the work with personnel the Radiostroy trust (comrades Nogtev, former manager, and Tupanov, former head of personnel department) lagged seriously behind last year, failing to put a number of important projects into operation in the time set. The trust poorly organized the construction of radio relay lines having great importance for the national economy of the country.

The main line cable administrations were considerably augmented with engineering personnel. In the posts of directors and chief engineers of main line cable administrations and rayons are working mainly specialists with diplomas, who have the necessary practical experience. But the ministries of communication of the union republics and the GUMTTS have not devoted adequate attention to strengthening the composition of the managerial personnel of the line-technical junctions. The managements of wire broadcast networks are also inadequately manned with engineering personnel.

What important significance the rayon link, the rayon communication offices, have in the work of communication agencies is known. Much depends on them in the quality of servicing broad strata of the population,

particularly in rural area, with means of communication. During the current year the composition of communication office managers, their deputies and assistants had been somewhat improved. Now 26.6 % of these workers have a higher and secondary special education. The practical persons with incomplected secondary and elementary education have decreased in number. This has been achieved because of the raising of requirements for employment, the more determined promotion of specialists to managing positions in the rayon communication offices, and also the fact that many practical persons have completed correspondence schools.

The percentage of communication office directors with diplomas is highest in the Georgian, Belorussian, Azerbaydzhan, Moldavian and Ukrainian union republics. In the Ukraine, for example, the specialists among workers of this category were during 1959 increased in number by 31 persons, in Belorussia by 17.

During recent years considerable work has been done in the recruitment of managerial workers of the communication offices at the correspondence institutes and technikums of communications, and also at the general educational evening schools. Of those office managers who do not have special education, 30.7 % are studying in the correspondence and evening schools, likewise 19.2 % of the vice managers and 15.2 % of the assistant managers

of offices. This work is set up most successfully in the ministries of communication of the Belorussian, Ukrainian, Moldavian and Turkmenian union republics, less well in the Lithuanian, Latvian SSR.

Nevertheless, however, despite the measures promoted, it must be noted that the composition of the managing personnel in the rayon communications link does not yet meet the requirements set. At many places the practice has not yet been eliminated of appointing persons who have not finished even the secondary general school to the posts of office managers, their deputies and assistants.

In many cases the managers of communication ministries and administrations do not, when selecting personnel for the rayon communication offices, manifest the necessary exactions, have a tolerant attitude to communication office managers who perform their duties poorly, lag behind in life, do not know and do not study the modern technology and economics of production. Comrade Krysanov, the director of the Troyekurovskaya communications office, Lipetskaya oblast, failed during several years to perform the duties imposed on him, had an irresponsible attitude to his obligations. In August 1958 the administration of communications was obliged to issue an order on his discharge. Two months later, however, the administration

revoked its order and left comrade Krysanov in the same post. When the office was checked in February 1960, it was determined that comrade Krysanov works as unsatisfactorily as before.

A number of other communication administrations also commit gross violations of the principles in personnel selection. Whereas it must be taken into account that the rayon communication offices are being increasingly equipped with new techniques, for the servicing of which skilled specialists having theoretical training and good know-how are required.

The managers of ministries and oblast administrations of communications must set for themselves as a paramount task the strengthening of personnel at the lagging rayon offices of communication.

The turnover of mass occupation workers, which continues to remain high, has a negative effect on the work of communication agencies. The highest turnover of personnel occurred in the Turkmenian, Kirgiz, Uzbek and Ukrainian union republics. Many workers are discharged because of the absence of the necessary housing, living and working conditions, and also because the administration does not display concern about them. In a number of cases the mass occupation workers are not properly supplied with overalls and shoes.

The managers of oblast administrations, enterprises and offices of communications often explain the turnover of mass occupation workers by the low wages, but do not themselves utilize the available possibilities of fixing the wages by higher categories. Many experienced and qualified telegraph operators, telephone operators, supervisors and mailmen have been working a long time classed in the third category, although at the enterprises there are free positions of higher categories. Such facts were exposed at the Kiev long-distance telephone office, the Dnepropetrovsk telephone-telegraph office, the Ust'-Kamenogorsk city communications office and several other enterprises. Considerable overtime work is also tolerated, having assumed a systematic character at certain communication offices.

A check up showed that many cases of burocratism and red tape are encountered at a number of enterprises in the matter of employment and also in solving problems connected with the living needs of communication workers. In a joint decree of 25 February this year, the Central Committee CPSU and the Council of Ministers USSR condemned the improper actions of official persons who demand from toilers entering into employment and when solving living and other questions a large number of varied statements,

character references and other documents, although there is no need to present them, and ordered that such bureaucratic distortions be eliminated. In their practical work the managers of ministries, enterprises and organizations, and personnel workers especially, must be strictly guided by these directives.

The communication enterprises of the rayon centers and rural localities, the enterprises of the cable-line system, mail service, radio facility installation and intrarayon communication experience the highest shortage of qualified personnel. In order to man these enterprises with specialists, a large number of young people from the rayon centers and rural localities was enrolled in the higher educational institutions and technikums of communications in 1959, forming 54.6 % of those entering the institutes and 69.3 % of those entering the technikums.

The measures taken to train specialists for the communication enterprises from the local population are, however, as yet inadequate. The composition of the students at institutes and technikums of communications is to a considerable extent made up from the young people of the cities in which these educational institutions are located, a factor that causes great difficulty in the placement of graduates.

Now, when the requirements for specialists have been determined in every oblast and republic, it can be decided which educational institutions will train the engineers and technicians for the needs of this or that ministry or enterprise. Close mutual contacts of administrations and ministries with institutes and technikums to which they gravitate will help in more properly forming the composition of pupils of these educational institutions.

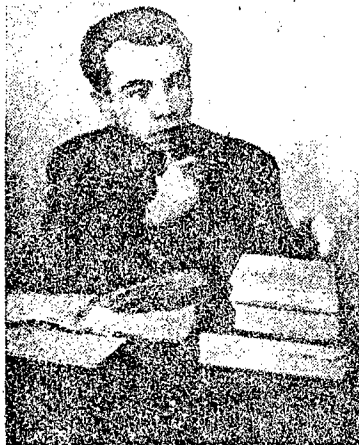
In noting the positive results achieved with the help of party organizations in the work of strengthening responsible sectors with specialists, in training and raising qualifications of specialists and mass occupation workers, we must at the same time not forget that the level of personnel work in the communication agencies does not yet meet fully the demands made upon it in modern conditions and persistent efforts are needed to eliminate the existing shortcomings.

V.N.Lebedev, vice minister of communications USSR.



Many workers of the central long-distance telephone office study at the evening courses of the Moscow Electrotechnical Institute of Communications. They can often be met in the production laboratory of the central long-distance office.

The photo shows: laboratory director V.P. Litvinov (standing) gives advice to evening faculty students A.P.Ovchinnikova (acting operations engineer) and N.V.Kanenкова (acting engineer of the laboratory).



S.T.Ochel'diyev came up the labor way from radio operator to vice director of the Leninabad administration of communications, Tadzhik SSR. Without quitting his work in production, he finished the correspondence technikum of communications and is now studying by correspondence at the Tashkent Electrotechnical Institute of Communications.

ON IMPROVING THE WORK OF THE HIGHER SCHOOLS
OF COMMUNICATIONS

The article "Higher Engineering School Enterprise" by N.V.Naumov, N.V.Strelkov, V.G. Rosenko and I.M.Musatov was published in the December issue of the journal Vestnik svyazi last year. The article tells about measures which are planned for realization at the Novosibirsk Electrotechnical Institute of Communications in the light of the tasks confronting the communications system in the improvement of the training of specialists and strengthening of the higher school contacts with life.

The article of comrades Naumov, Strelkov, Rosenko and Musatov provoked many comments from our readers. Lacking space in the journal to publish in full the comments received by the editors, we are printing below a survey of them.

* * *

The director of the Odessa Electrotechnical Institute of Communications (OEIS) I.P.Pyskin and the director of the Moscow Electrotechnical Institute of Communications (MEIS) V.A.Nadazhdin write the editors:

"The reform in the work of the higher school should be regarded a large-scale national economy task, for the solution of which use must be made of the experience accumulated over many years in organizing the educational process in the higher technical school and the experience of almost a year in the school work reform under the new study conditions of the communication institutes' first courses. Any kind of unreasoned hasty decisions can bring harm not only to this or that branch of the national economy but also to the specialists themselves, with whom the unsubstantiated experiment will be carried out.

"In the article 'Higher Engineering School Enterprise' ideas are discussed without reinforcement by diagrams, plans or even an approximate estimate of hours, of the educational process reform according to the study program adopted for the electrotechnical institutes of communications. Without going into the essence of the organization and conduct of the educational process, the authors of the article attempt to create some kind of special scheme of a 'Higher engineering school enterprise'.

"Higher engineering school plants are known to be organized at large scale enterprises in the first place on the basis of the branches and evening departments of the higher schools present in them. At such plants work

hundreds of students who are studying by correspondence and at evening departments of institutes. What communication enterprise even of such a large city as Novosibirsk has similar conditions?

"It is impossible to agree with the idea of transferring even a part of the operating communication enterprises into the walls of the institute. Organization of the operation of a normal communication enterprise on the grounds of the institute will lead to unnecessary large capital expenditures and not yield the required effect. The equipment installed will be obsolescent earlier than the period of physical wear calculated in scores of years. But the periodic replacement of outmoded with new equipment at the operating enterprises is inexpedient and practically impossible for a number of reasons.

"In the culminating stage of the higher engineering school enterprise organization, it is proposed that a rayon communications office with branches be created at the institute. These plans completely ignore the main task of the institute - the training of highly qualified engineering-technical cadres and the role of the higher engineering school is essentially reduced to the training of personnel for the rayon communications office.

"The tie-up of the institute with rayon scale communication enterprises can distract the attention

and energies of the faculty and students from problems and jobs in the development of communication engineering in the most promising and important directions. The huge number of organizational-technical questions in operating communication enterprises of a rayon will force a reduction in the volume of activity directed to the creation of new forms of communication engineering. Communication enterprises of the rayon office type cannot give any kind of deepening and enlargement of diploma and course planning.

"In raising the question about a higher engineering school enterprise, the management of the Novosibirsk Electrotechnical Institute of Communications should have, in its own practical activity, made the fullest use of the great possibilities presented by the communication enterprises of Novosibirsk. But acquaintance with student placement gives this picture: of 300 new enrollment students only 123 persons (50 of them are students of the engineering-economics faculty) work at communication enterprises, while 177 are employed at plants of other departments. If the number of technical faculty students working at plants exceeds 2.5 times the number of students working at communication enterprises, then what kind of higher engineering school enterprise is being discussed?

"In plant conditions the student performs some kind

of single insignificant operation that very feebly reflects his future specialty (drilling, tightening nuts, sanding and so forth). But at operating communication enterprises, the student will come into touch with a whole complex of jobs beginning with the elementary and ending with those requiring definite qualification. Here he has an opportunity not only to take part in the production process but also to get acquainted with communication equipment. The characteristic of conducting educational work in the new conditions is that it must be done both in the institute as well as in production, and this is more readily organized in the conditions of allied enterprises. The experience of OEIS which sent the heads of special faculties to manage the productive work of first course students has splendidly justified itself.

"Communication enterprises well equipped with the latest technology and not the higher engineering school converted into a rayon communication office must be the basis for acquisition of production skills during industrial training and production practice of students.

"The state of the scientific-research base at the Novosibirsk Electrotechnical Institute of Communications (NEIS) at present has not as yet achieved that level such as to raise now, as the article's authors do, the question

of converting the scientific-research department into a scientific-research institute.

"The organization at the institute of student project-design bureaus subordinate to the science department might have been conceived. In such a bureau under the guidance of the most experienced teachers of the institute and leading engineers of the city's communication enterprises, the senior class students might work performing tasks of local enterprises and institutions of communication and the sovnarkhoz.

"The 'higher engineering school enterprise' scheme does not suit a communication institute in general, all the less so is it appropriate for the very young and still unconsolidated Novosibirsk Institute of Communications.

* * *

"The authors of the article," observes I.A. Shamshin, chief engineer of the NGRS, observes in his letter to the editors, "raise a series of questions of principle in the organization of the educational process at the higher engineering school in combination with the production training of students. The scales of the higher engineering school merger with enterprises of the Novosibirsk oblast administration of communications, proposed by the authors, have been set, however, without properly taking into

account the real possibilities of these enterprises, and what is most important without considering that the higher engineering school must in the first place nevertheless remain a higher engineering school and not be dissolved in the complex production activity of the multibranch communications system. Moreover, it should not be forgotten that the higher engineering school must train highly qualified specialists not only for the communication system but also for many allied branches." In the opinion of comrade Shamshin, those measures which are outlined in the article cannot contribute to the conversion of the higher engineering school into a "laboratory of new technology, economics and organization of production," as the article authors write. It is likewise impossible to agree with the view that "on the basis of the NEIS scientific-research laboratories, the scientific-research department can be converted now already into a scientific-research institute." Such a measure, comrade Shamshin continues, "will inevitably deprive NEIS of precisely what it is striving for and namely, the creation, in the base of the higher engineering school enterprise, of new technology laboratories and a forgeshop of highly qualified cadres."

"A number of other theses advanced by the authors with which it is impossible to agree might also be pointed

out. Nevertheless the main point is that they raise a very important question of expanding and strengthening the connection of science and practice and in the experience of NEIS and the Novosibirsk oblast administration of communications show certain possibilities of establishing and expanding such a connection."

Further comrade Shamshin writes that while it is inexpedient to create a higher engineering school enterprise on the basis of the enterprises of the Novosibirsk oblast administration of communications and NEIS, the possibilities of the city's communication enterprises as well as of other allied enterprises have to be widely used for the production training of students. This can be done by utilizing part of the proposals advanced by the article authors, and just these:

(1) to set aside as permanent practice bases separate technical units and transfer them to partial servicing by students and teachers, retaining as instructors a limited number of the chief production workers of these units;

(2) to enlarge in every way the activity of the NEIS scientific-research department, bringing it closer to production enterprises, in the first place to their production laboratories. The scientific-research department

should be staffed chiefly from students and teachers, as a rule.

(3) to utilize^{students}/as widely as possible in planning and installation-construction organizations of communications and other allied branches, organizing where possible student-teacher brigades, sections and project groups. The organization in NEIS of a student-teacher designing office for solving various problems of designing would be of much benefit.

In a word, all possible and reasonable forms of establishing organic contact of NEIS with production should be utilized in every way, without resorting to the extremes set forth in the proposals of the Novosibirsk comrades.

The chief error of the authors is the mechanical transference of the conditions of organizing higher engineering school plants to the soil of NEIS and the Novosibirsk oblast administration of communications. Such an approach to the solution of the task of establishing the connection of the higher school with production applicable to a multibranch communications system can hardly lead to positive results especially in the conditions of Novosibirsk oblast in which not all branches of communication are as yet on a sufficiently high level.

Notwithstanding that many statements in the article cannot possibly be agreed with, much of what the authors write has actually long since matured and requires solution.

* * *

In his comment Prof. I.A.Koshcheyev (MEIS) writes that at the higher engineering school should be founded not an automatic office for 1000 numbers, not a rayon communication office, but a plant producing equipment of communications or equipment parts. At this plant must work students of junior classes, but not the students performing diploma projects.

The scientific research activity must, of course, be expanded in the higher engineering school and as many senior class students as possible drawn into it, as is being done, for example, at the LEIS (presumably Leningrad). To build scientific work on the basis of a 1000-number automatic office or on the basis of a rayon communication office is, however, impermissible. It is also doubtful if the fifth course students will succeed in working in the positions of engineers at such enterprises which are under institute management as an automatic office and communications office. How many engineer positions are there at these enterprises?

Comrade Koshcheyev observes that the statements made in the article correspond in spirit to the specialty "Economics and Organization of Communications Enterprises" and that in this sense some of them have definite value.

At the present time a number of higher engineering school plants are being created in the country. The communications system does not have, however, such large complex enterprises as would provide employment for all or almost all graduates of the higher engineering school. Other ways must, therefore, be chosen for improvement of the training of specialists in the technical specialties of communication.

Scientific laboratories and workshops should be gradually expanded, shops created for production of communication equipment parts and also repair shops; designing offices should be organized and as many students as possible attracted to work in them.

The administration of managing personnel and educational institutions of the Ministry of Communications USSR received similar comments on the "Higher Engineering School Enterprise" article ^{from} all branch administrations of the ministry, republican ministries of communications and a number of large communication enterprises.

For the Victory of Communist Labor

MAKE THE COMPETITION FOR THE TITLE OF BRIGADES
AND SHOCK WORKERS OF COMMUNIST LABOR A REAL
MASS MOVEMENT

* * *

The all-union conference of the leaders in the competition for the title of brigades and shock workers of communist labor was an important event in the public political life of our country. In an appeal to all toilers of the Soviet Union the conference participants called for making the movement for communist labor a genuine national movement.

This patriotic call met an eager response. The aspiration to live and labor in the communist way is becoming a command of every soviet man's heart.

*

The Appeal of Leading Groups of Communication Workers

The appeal of the conference participants called forth from communication workers a new high tide of creative activity. At communication enterprises and construction sites meetings and rallies attended by many

workers were held, at which competition leaders and production innovators spoke. Heightened socialist obligations were adopted.

New collective bodies are increasingly joining in the movement for communist labor. At the central long-distance telephone office 950 workers are competing for the titles of brigades and shock workers of communist labor. The workers of entire shops and shifts enter en masse into the ranks of the competitors.

The collective body of the semiautomatics shop created at the central long distance telephone office in 1956 has achieved great success. On entering the competition, the workers of this shop began seriously to study the equipment. Shop foreman engineer comrade Slavin, senior technicians comrades Shatokhin, Borisova and Belova began systematic lessons with young workers, helping them to raise the level of theoretical knowledge and to gain practical skills. When it appeared that the third shift was lagging, comrade Belova transferred to this shift and achieved considerable improvement in its work. The shop representatives helped the workers of allied shops to master the adjustment of relays and selectors. In September the semiautomatics shop, managed by comrade Slavin, was awarded the title of collective of communist labor.

The wide participation of office workers in the movement for communist labor has contributed to the fact that during the first half of 1960 the central long distance office overfulfilled the incomes plan almost by 3,000,000 rubles, afforded about 218,000 conversations above plan, improved quality indices, had fewer complaints about incompleting calls, and those completed with waiting above an hour.

After exchanging experiences and discussing their next tasks, the central long distance office workers who lead in the competition for the title of brigades and shock workers of communist labor took upon themselves the obligations: to help lagging brigades and shifts, to intensify the struggle for installation of the new technology, to changeover more boldly to semiautomatic means of making connections and the no-delay system of operation, to apply more widely new, more progressive noiseless type commutator equipment with automated process of connecting subscribers.

The workers collective body of the central long distance telephone office adopted an appeal to all communication workers of the Soviet Union with the call to promote still more widely the competition for communist labor.

The workers of the enterprises of the Moscow mail

transfer administration also issued the same kind of appeal. More than 1300 administration workers are participating in the competition for the title of collectives and shock workers of communist labor; 49 collective bodies and 92 workers have already won the honorable title. Some of them have made a request that they be transferred to lagging sections. Thus, V.I. Kalitina, leader of a brigade of the parcel handling department at Ryazhsk station, ignoring the fact that her earnings would temporarily be less, transferred to a brigade that did much scrap work. The brigade of Kalitina is now working well and overfulfills the output quotas. The director of a mail car of the mail transfer administration at Savelovskiy station, T.G. Khodyreva, also transferred to a lagging brigade. The general production uplift which emerged in the collective body together with the development of the movement for communist labor has led to the circumstance that the mail transfer administration enterprises are successfully fulfilling the planned tasks and have improved a number of important qualitative indices.

In Tashkent on 11 June a republican conference was held of the communication workers who are leaders in the competition for the title of brigades and shock workers of communist labor. The conference in which about 600 persons took part generalized the experience of the

competition at the communication enterprises of the republic and outlined the course of its further development.

Many leading communication workers of the Uzbek SSR have achieved remarkable progress in the work. Six thousand communication workers of Uzbekistan are engaged in various forms of study; every third worker is studying. In the correspondence institutes 340 persons are enrolled, in the technikums about 40, in the schools for worker youth - 483.

With great enthusiasm the conference participants adopted an appeal to all communication workers of the Soviet Union, in which it is stated:

"Communism is not only the tomorrow of our country. Communism begins today. It is in the mighty movement of collectives and shock workers of communist labor, in the creative, inspired labor of the entire Soviet people.

"We call upon all participants of the competition for communist labor, all communication workers of our country to make the movement for the communist attitude toward labor at communication enterprises really universal, to raise to a higher level the competition for steady growth in labor productivity, for fulfillment of the 1960 plan ahead of time and marked improvement in the quality of the work of communication enterprises, to meet the

forthcoming plenum of the CC CPSU with new triumphs in labor.

"We appeal to multiply our efforts in the struggle for completion of the seven-year plans ahead of time.

"Promote more widely the competition for the title of brigades and shock workers of communist labor.

"From the shock worker to the brigade, from the brigade to the shop, from the shop to the communication enterprise of communist labor -- such is the most important task of our days, such is our desire."

From Brigades to Shops, Shifts and Enterprises
of Communist Labor

At a joint meeting the collegium of the Ministry of Communications USSR and the presidium of the Central Committee of Trade Unions discussed the problem of developing the competition for the title of collectives and shock workers of communist labor at communication enterprises. Invited to participate in the meeting devoted to this problem was a large group of the leaders of the movement for communist labor at communication enterprises of Moscow, and also many other cities of the Ukraine and Uzbek SSR. Reports were heard from M.A.Sharkov, minister of communications Uzbek SSR, N.S.Gorelov, chairman of the Ukrainian republican

committee of the communications, motor transport and highway workers trade union, P.P.Nikul, director of the central long-distance telephone office and N.D.Stasi, director of the Moscow mail transfer administration. They cited facts and figures indicating that the creative activity of communication workers, their love for the Soviet fatherland, aspiration to spare no effort in fulfilling the seven-year plan ahead of time are being brilliantly displayed in the movement for communist labor.

The assembled delegates listened with rapt attention to the interesting speeches of competition leaders. The communist labor brigade leader Khaliman Khansoverova, senior telephone operator of the Tashkent long distance office, told how the members of her brigade, helping one another, are achieving a high level of public service.

Mail car director A.F.Marovich, of the mail transfer division at the Kurskiy railway station, reported that all the workers in his brigade had learned allied trades and could replace one another. Enroute the brigade members service passengers, selling envelopes and stamps, accepting telegrams, distributing newspapers and magazines. On arrival at the destination, in Yerevan, the brigade members spend rest hours together, do sightseeing in the city.

Communist labor shock worker, L.Ya.Panina, telephone operator of the Central Long Distance Office, related how having decided to help her lagging comrades, she transferred to another, more difficult sector and led it to the foremost. On her own initiative, comrade Panina mastered an additional specialty, that of information service telephone operator and recently challenged for a competition her fellow telephone operator at the Vinnitsa long distance station.

Communist labor brigade leader, P.M.Popov, overseer of the Slavyansk radio junction of Stalinskaya oblast, also shared his experiences.

Addressing the meeting vice minister of communications USSR, V.N.Lebedev, noted the important value of the beginning made by the radio facility installers of the Kharkovskaya and Kievskaya oblasts, who assumed the obligation to help the lagging communication workers of the Stalinskaya, Luganskaya and Khersonskaya oblasts in the fulfillment of the radio facility installation plan. At the same time he criticized the leaders of the ministries of communications of the Armenian, Georgian and Turkmenian SSR, and also of the Astrakhan administration of communications and the Moscow television center for insufficient attention to the movement for communist labor. Comrade

Lebedev pointed out that cases occurred in which individual brigades, after winning the honorable title of collectives of communist labor, are not helped in consolidating the progress made.

The need for daily attention to competitors was also stressed in the speech of B.G. Romanov, chairman of the central committee of the communications, motor transport and highway workers trade union. He underscored the value of wide propaganda of advanced experience, for which purpose use must be made of local radio broadcasts, wall and mass circulation newspapers, trips of leading innovators to allied enterprises and other forms.

After noting that the great gains of our soviet system are being vividly manifested in the movement for communist labor, minister of communications USSR N.D. Psurtsev emphasized the exceptionally high importance of the instruction of N.S. Khrushchev that the innovators must not lose contact with the remaining workers, holding themselves aloof. They should lead their working comrades along with them in order to achieve a general uplift. One of the most important tasks of the communist labor shock workers in communication agencies, said the minister, is the struggle for improvement of quality indices, for raising the cultural level in servicing the population

and the national economy with means of communication.

The collegium of the Ministry of Communications USSR and the Presidium of the Central Committee of Trade Unions approved and supported the appeal to communication workers adopted by the conference of leaders in the competition for the title of brigades and shock workers of communist labor at communications enterprises of Uzbekistan, and also the appeal of the collectives of the Central Long-Distance Telephone Office, the Moscow Mail Transfer Administration and a number of communication enterprises of the Ukrainian SSR.

It was proposed to the ministries of communication of the union republics, the leaders of communication enterprises, the republican, kray, oblast and local committees of trade unions that the appeal of the All-union Conference of leaders of the competition for the title of brigades and shock workers of communist labor, and also the appeals of leading collectives of communication workers be put for discussion at general meetings of communication workers.

Remuneration of Competition Leaders

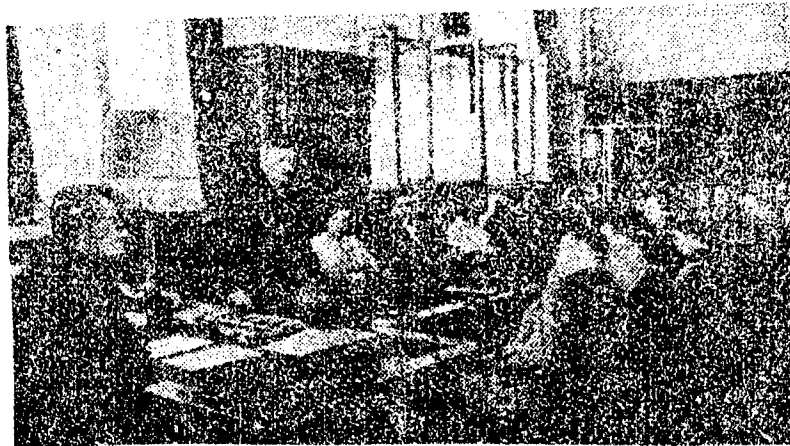
The leaders in the competition for the title of brigades and shock workers of communist labor, who came to Moscow to participate in the joint meeting of the

collegium of the Ministry of Communications USSR and the presidium of the Central Committee of Trade Unions, visited the capital's communication enterprises, went to the Exhibition of the Achievements of the National Economy of USSR and were received by the minister of communications USSR, N.D.Psurtsev.

In the talk with competition leaders, the minister was interested in how they lived and worked, how their experience is being spread in local centers, what kind of conditions must be created for further development of the movement for communist labor.

The Ministry of Communications USSR and the presidium of the Central Committee of Trade Unions awarded the badge "Distinguished Leader of Socialist Competition of the Ministry of Communications USSR" and also memorial gifts to the leaders of the competition for the communist attitude to labor: brigade leader telegraph operator V.T.Bochkareva (Tashkent telegraph office), senior technician of the Chirchik automatic office O.F.Vorobyeva, senior telephone operator of the Tashkent long distance office Kh.A.Khansoverova, leader of sorters brigade at the newspaper-magazine shipping section of the Tashkent postoffice U.S.Fazylbekov, telegraph operator of the Kharkov telegraph office M.M.Lyubchenko, mailman of the

Kiev postoffice L.A.Kadygrob, overseer of the radio junction of the Slavyansk communications office Stalinskaya oblast P.M.Popov, shift foreman of the mail transfer department at the Kurskiy railway station in Moscow A.I. Abramov, leader of sorters brigade of the mail transfer department at the Kievskiy railway station in Moscow A.I. Kravchuk, mail car director of the mail transfer department at the Kurskiy railway station in Moscow A.F.Marovich, leader of heavy mail sorters brigade of the mail transfer department of the Kazanskiy railway station in Moscow N.Z. Tsyganov, workers of the Central Long-distance Telephone Office: telephone operator L.Ya.Panina, shop foreman N.P.Slavin, technicians Z.M.Belova and Z.A.Yukhnovich.



Minister of Communications USSR N.D. Psurtsev talks with a group of leaders of brigades and shockworkers of communist labor.

CONFERENCE OF LEADERS OF THE COMPETITION FOR THE
TITLE OF BRIGADES AND SHOCK WORKERS OF
COMMUNIST LABOR

The competition for the honorable title of
brigades and shock workers of communist labor and the
movement of the followers of V. Gaganova is finding ever
wider development at communication enterprises of the
RSFSR.

A group conference of the Russian Federation's tele-
phone-telegraph system workers was convened to exchange
experience, summarize the first results and tell about
the obligations undertaken and the ways they were being
carried out. The best telephone and telegraph operators,
engineers and technicians of communication enterprises
came to the conference from all parts of the Republic.

Materials on conference transactions are published
below.

LIVE AND WORK IN A COMMUNIST WAY

Speakers at the conference told much that was in-
teresting and important about how the competition for the
title of brigades and shock workers of communist labor is
being promoted at the telegraph and long distance telephone
offices of the Russian Federation, shared their experiences

and spoke of the first achievements and shortcomings. In this article, we will dwell only on three main questions: on the essential, characteristic features of what is new in the competition of brigades and shock workers of communist labor, on the composition of brigades and on the new, progressive methods of their labor.

Almost all the speakers said that on joining the movement for communist labor, they assumed obligations that were new in principle and differed from the former ones. The chief characteristic of this competition is the aspiration to train the man of the communist future, a highly conscious person who loves labor, is always ready to help a comrade, is educated and cultured, one who would be a master craftsman in his work, always striving to move ahead.

But what unites into one patriotic movement the workers of various services of the telegraph and long distance telephone offices, the operators, engineers, technicians, overseers -- people of various occupations, of varied age -- from the Komsomols to the regular workers with many years seniority? They are united by a single purpose -- to work in such a way as to produce the most and the best output possible and with their labor to hasten the realization of the seven-year plan. Along with the obligations

to fulfill and overfulfill the production plans, to improve the quality of service, the features of new aspects have therefore appeared in the obligations: to influence the rest by their example, so as to go from the brigade of communist labor over to the shop, the service and finally the enterprise of communist labor; to act in a communist way in working and domestic life, to restrain comrades from bad behaviour; to struggle against manifestations of past survivals; to improve craftsmanship constantly and augment their knowledge by correspondence study in technikums, higher educational institutions, at courses; to organize cultured leisure.

A new aspect is also the fact that all this is being achieved in brigades and not in isolation but jointly, by the whole collective, each helping the other.

It is a new aspect that the competitors endeavor to cultivate in themselves a high consciousness in which labor becomes a requirement, and a sense of duty and responsibility for one's self and the collective becomes obvious. For example, along with the common obligations, each brigade member assumed in addition individual obligations, depending on seniority, education etc, in the komsomol brigade of telegraph operators of interoblast services of the Leningrad long distance office.

The very purpose of preparing one's self for communist society is a new aspect best expressed in the appeal "to work and live in a communist way."

And it is quite understandable that in sharing the experience of their work, the conference participants spoke in the first place about how these remarkable traits were being cultivated in each and everyone.

"We understand" spokesmen telegraph operators comrade Dolgova from Saratov and comrade Borodulina from Yaroslavl, telephone operators comrade Shevchenko from Novosibirsk and comrade Zolotareva from Stalingrad, engineers comrade Landysheva from Gorky and comrade Sokolov from Voronezh and many others said to the conference, "that the shock worker of communist labor is a highly conscious person possessing high craftsmanship, ready tirelessly to heighten his culture, take an active part in public life, be an example in domestic life. The shock worker of communist labor is a foremost fighter of the seven-year plan, going forward in the front ranks of the builders of communism."

At present the competition of communication workers for the title of brigades and shock workers of communist labor assumes ever wider scope. Much persistence, organized effort and labor are needed to fulfill systematically

the difficult and diversified obligations assumed by the competitors themselves.

Some brigades fail to achieve constant fulfillment of the production tasks. This was noted by comrade Zhdanova, telegraph operator of the Sverdlovsk telegraph office, shock worker of communist labor. "The brigade achieved good indices," comrade Zhdanova said, "holds the title of best for two to three months, but then some member does inferior work, and the stubborn battle for craftsmanship in labor has to be resumed again and again." Many others also confirmed the same thing.

In many brigades the obligations concerning the study of brigade members or some other obligations are still not being fulfilled.

Sometimes those who join in the competition for the title of communist labor collectives assumed general, abstract obligations. Thus, in the obligations of two brigades of the Kursk long distance telephone office, it is stated: "to raise their education" and no more. But, probably, the brigade members might have written that they assume the obligation to complete the secondary school, or prepare to enter the communication technikum, to finish the technikum and so forth. The same can be said with respect to some other obligations as well.

Many of the production leaders, achieving the systematic fulfillment of the obligations assumed, after winning the title of communist labor shock worker, join a brigade struggling for the title of communist labor collective, and often are also the initiators of the organization of such brigades. For example, the telegram delivery messenger comrade Shchitikova at the Kursk telegraph office constantly fulfilled the socialist obligations she assumed. After she had been awarded the title of communist labor shock worker, she joined a brigade of telegram delivery messengers of the Kursk telegraph office, which was competing for the title of communist labor collective, and is now the brigade leader.

The communist labor brigade members and shock workers actively participate in the public life of collective bodies: many of them are trade union organizers, people's militiamen, elected members of Komsomol committees, to the staff of party bureaus and so forth.

Almost all speakers spoke of the study of brigade members at the evening schools of worker youth, at the evening and correspondence technikums and institutes, at courses. Many leaders of production have begun to attend the universities of culture. Collective members keep close watch over how their comrades study, help them if it is

difficult, don't allow them to fall behind. In this is also a remarkable new manifestation.

The brigades pay considerable attention to the organization of cultured leisure. Some of the speakers said difficulties are also encountered in this: outside of work the members of some brigades sometimes have little contact with each other and with comrades from other brigades: some study, others have already seen the play or motion picture film which the whole brigade is planning to see. The promotion of mass cultural measures are, therefore, not always successful as yet.

Much was said at the conference also about the composition of the brigades of communist labor. This is evident, for example, from the speech, published here, of the Stalingrad long distance office telephone operator comrade Zolotareva who spoke on how the composition was changed of the telephone operators brigade in which belonged operators of various services. The brigade at the Gorky telegraph office led by engineer comrade Landysheva was organized in quite a different composition; to this brigade belong workers of one service, but of varied occupations. At the Voronezh telegraph office, the entire technical personnel of a shift belong to the brigade headed by engineer comrade Sokolov.

Comrade Vasil'eva from the Leningrad long distance office reported to the conference that at present the brigade composition was changed -- one telephone operator left to study in school, others were promoted to new work, some transferred to more difficult sections and so forth. But the brigade which had been filled up with other workers continues in the competition with success.

At the Ryazhskiy communications office of Ryazanskaya oblast all the telegraph office workers, 19 persons, have joined in the competition for the title of communist labor collective and have achieved excellent results in work. The brigade has already won the high title. In the Orekhovo-Zuyevskiy communications office of Moskovskaya oblast a brigade of three telegraph operators is participating in this competition.

The brigade composition can thus be most varied in the qualifications, age, number of its members. One thing only is important - to be united by a single common purpose, to work out concrete obligations and fulfill them creatively.

And there are no stops for creative initiative. Many interesting reports were made on the new approach to fulfillment of the primary obligation of communication workers, the best service to the population with means of

telephone and telegraphic communications, new methods and forms of work.

The mobile cashier of the Moscow postoffice's 227th branch, a follower of Valentina Gaganova, comrade Panferov, shared the valuable experience of her work. Her speech is given in the pages of the journal.

The director of the Kursk telegraph office, comrade Karmadonov related that the telegraph office did not fulfill the daily plan of income and in order to correct the situation, the members of the communist labor brigade, not confining themselves to the formal fulfillment of obligations in receiving telegrams, sent mobile cashiers to serve passengers directly in the trains that were passing through Kurskaya oblast. The mobile cashiers improved the service to passengers and helped achieve fulfillment and overfulfillment of the income plans. The telegraph office carried out such a measure, with full approval of the oblast administration of communications, along with servicing the railway station itself with cashiers of the Kursk postoffice, whose income was not thereby reduced.

Comrade Peshkova, mobile cashier of the 38th communications branch of the city of Moscow, reported that after studying the working experience of comrade Panferova, she began to receive at the railway station eight times more

1
telegrams than before. She displayed as well her own initiative -- in periods when the load permitted to fill in the telegram blanks under the sender's dictation. Thus, in one month comrade Peshkova wrote 300 telegrams, for which she won many thanks from citizens and received additional income.

At the Stalingrad long distance telephone office, the operators comrades Bondarenko, Babikova and Panchenko give only excellent service in handling subscriber orders and have therefore been released from the checking of their work by production inspectors. They themselves control their own work.

At the telegraph offices of many rayons, the quality of service is known to be still failing to meet requirements. For example, the address is wrongly indicated, the telegram beginning and ending symbols are transmitted incorrectly, distortions are made in the text and so forth. Taking that into account the Sverdlovsk telegraph office brigade, in competing for the title of communist labor collective, is achieving a rise in the quality of not only its own work but also of that of the telegraph operators of the rayon communication offices of the oblast. The brigade members have set the task of not passing a single telegram with defects for further handling outside

the limits of the Sverdlovsk telegraph office and teaching the telegraph operators of the rayon offices the skills in correct transmission of telegrams. If the communist labor brigades at all telegraph enterprises were to promote such work and, following their example, the remaining workers of telegraph offices as well, then the defective work in handling of telegrams would be rapidly reduced, and after that completely liquidated.

The telegram delivery messenger comrade Shchitikova from Kursk related that she puts a stamp and inscribes the train arrival time in every telegram which asks that the arriving person be met. On handing over the telegram, comrade Shchitikova asks if the receiver does not wish to send by means of her a telegram in reply, and accepts such telegrams. It is clear to all how pleased people must be by this small but cordial service. Now in Kursk following the beginning of comrade Shchitikova all telegrams about meeting trains are delivered with a notation on when the train indicated in the telegram will arrive.

Telephone operator of the Novosibirsk long distance office comrade Shevchenko, member of a brigade competing for the title of communist labor brigade, told about an interesting method of analysis of the service results. Her speech is also published below.

Representatives of the Leningrad and some other telegraph offices reported to the conference that the brigades and shock workers of communist labor there had assumed the obligations to look after the cleanliness of the attendant's positions themselves (as is being done by the Moscow telegraph operators), and to clean up the work tables, the floors around etc themselves. This made it possible to maintain the operator's positions and the apparatus room in exemplary order and eased the work of the cleaning personnel.

In Gorky, the subscriber telegraph office operators, members of the communist labor brigade, in the process of work ask subscribers if they wish to give a preliminary order for conversations. Every technician of this service can replace an operator in work, and also go out to a subscriber to eliminate breakage. The operators do cleaning and prophylactic inspection of apparatus, help technicians in servicing the automatic telegraph offices.

At the Voronezh telegraph office the communist labor brigade members in the day time when the technicians are in the rayon communication offices jointly with them train office telegraph operators to conduct tests of conductors. This helps in doing testing at night with no delay, when the technician is absent in the rayon office, and also

in this way speeds up the liquidation of technical stops.

The technicians of the Leningrad telegraph office, who service the complex Leningrad-Alma Ata, Leningrad-Baku communications, established contact with the technical personnel of the Alma-Ata telegraph office, and the arranged work of brigades of the two telegraph offices is already yielding good results.

The representatives of many telegraph offices who spoke at the conference told about the great and important initiative of the leading telegraph operators of the Leningrad, Moscow and other telegraph offices, and of the brigades and shock workers of communist labor first of all. They obligated themselves without technicians to carry out daily prophylaxis of the ST-35 and STA apparatus and simple adjustments.

The vice director of the Central Telegraph Office USSR, comrade Bronner, spoke about the interesting experience in competition for the title of brigades and shock workers of communist labor, in which the central office collective has emerged as zealot among communication workers.

Representatives of the Stalingrad long distance telephone office spoke about the practical assistance which the central long distance office gave to the oblast

offices.

The conference of leaders adopted an appeal to all workers of telegraph-telephone communications of the Russian Federation on development of the movement for communist labor.

A.G. Smiryagin, director of UMTTS of the Ministry of Communications RSFSR.



In the conference hall of communist labor brigades and shock workers of the telegraph offices and long distance telephone offices of the Russian Federation.



Conference participants - a group of leaders of
brigades and shock workers of communist labor:

In the first row, from left to right: ^{operator} A.I. Fedorova
(Kuybyshev telegraph office), telephone operator A.M.
Fomenko (Krasnodar long distance office), senior technic-
ian Ye.N. Sukhareva (Leningrad telegraph office); in the
second row: telegraph operator A.A. Dolgova (Saratov tele-
graph office), telegraph operator N.M. Borodulina (Yaroslavl
telegraph office), brigade leader Ye.F. Yermolenko (central

call office of the Leningrad long distance office),
telephone operator V.A.Semenovkh (Kazan long distance
office).

BRIGADE LEADERS AND SHOCK WORKERS OF COMMUNIST
LABOR TELL ABOUT THEIR EXPERIENCE

N.A. Zolotareva, telephone operator,
Stalingrad long distance office.

Our shift was initiator of the competition for the right to be called a communist labor brigade at the Stalingrad long distance telephone office. We seriously discussed new obligations, whether or not we could cope with them, would be able to be an example in work and in life.

An office veteran Ye.M. Samokhvalova, our shift foreman, who had come up from telephone operator to shift leader, had trained and educated many scores of telephone operators. And led by comrade Samokhvalova, we joined in the competition for the title of communist labor brigade. At first not only telephone operators of the line switchboards and order desk, but also cashiers of the central call office joined the brigade. Later on, experience dictated another decision and the cashiers of the central call office organized their own brigade. And in our brigade was left five line telephone operators and one order desk telephone operator.

Somewhat later three other shifts entered the competition for communist labor. Thus, there are now five

such competing brigades at our long distance telephone office.

At the Stalingrad long distance office 16 persons are competing for the title of communist labor shock worker. In October 1959 at the general meeting of the office workers, this honorary title was first awarded to Ye.V. Bondarenko who has held the title "Best in Craftsmanship" for 22 months. By her cordial and attentive attitude to subscribers, she has won universal respect.

For us 14 January 1960 was a memorable day. At the general meeting of office workers, our shift was awarded the title of communist labor brigade. For that title we had fought since March 1959. All the telephone operators of our brigade overfulfill the output quota from month to month, without defective work or complaints.

As soon as we assumed the obligation to live and work in a communist way, we immediately felt the full responsibility for our work. Formerly it had meant nothing to be rude or impertinent to a subscriber or telephone operator of another office; but now nobody tolerated such conduct because we understood that the honor of the communist labor brigade must be held high, that the entire collective body looked up to us.

We learn from Moscow telephone operators standards

of conduct, politeness in conversation with subscribers and production skills. At the central long distance telephone office personnel are also competing for the title of brigades and shock workers of communist labor. Our task is by common efforts to achieve coupled work one with another, mutual aid, which is reflected as well in the quality of service to toilers.

The workers of the central long distance telephone office carried out a very good measure - they sent to us shift foreman helper M.G.Lizunova who before this had observed the work of Moscow telephone operators from the periphery. After a stay in Stalingrad, she exposed many shortcomings in the work of the Moscow and our telephone operators. At the meeting on this question all spoke frankly; it was decided to eliminate the noted defects and establish mutual contact in work.

We are all studying in the current politics circle, do not miss a lesson. Two telephone operators of our brigade are studying in the correspondence communications technikum; one is preparing to enter the institute.

Our brigade lives harmoniously. We never abandon comrades in misfortune, firmly remembering the injunction "all for one, one for all."

Of course, we still have much to do in reeducation

of ourselves, in the improvement of service, have to display more attention to subscribers, to our comrades at work. We have now set ourselves the task to organize the competition in such a way that some of our shops might win the title of communist labor shop.

R.I. Zuyeva, telegraph operator,
Orekhovo-Zuyevskaya communications office,
Moskovskaya oblast.

At the Orekhovo-Zuyevskaya communications office, the three-person telegraph operators brigade is competing for the title of communist labor collective. We are fulfilling our obligation not to permit delays in telegrams and defects in processing them.

We have technical study conducted every week. We are studying the design of equipment and the rules of technical operation. In addition, each of us is striving to master several sets. Formerly we worked on the Morse set and T-15. Now we have been given the RTA-50 and ST-35 sets. Thus, we have studied various telegraph sets and are servicing them with success.

Comrade Biryukova, a member of our brigade, and I are training two pupils (from the telegram delivery messengers) to be telegraph operators. The telegraph operators of our brigade participate in the public life of our rayon communications office. We often go together to the

theatre, go on outings in the country.

The competition for the title of communist labor brigade has already yielded its fruit. Not only have the brigade members themselves begun to work much better. Looking at us, other communication workers of the office have also expressed the desire to work in a communist way and two more such brigades have now been organized: one of the long distance office telephone operators and the other, of telegram delivery messengers.

A.I.Sokolov, engineer of the Voronezh telegraph office, leader of a communist labor brigade.

The technical personnel of the first shift of the Voronezh telegraph office decided to enter the competition for the title of communist labor brigade. The brigade was organized from eight persons.

We assumed the following obligations: to reduce by 3 %, compared with last year, the number of technical stoppages; to master the servicing of allied sections; to have three comrades finish the all-union correspondence technikum of communications in 1959 and two in 1960; to finish the technical study with an annual mark of "4"; to contribute each month not less than one rationalization proposal (by the whole brigade); to attend political lessons promptly and always be prepared for them. The

brigade members are fulfilling all of their obligations with success.

For the purpose of reducing technical stoppages in start-stop equipment for line and station reasons, we have begun by means of the EIS instrument to check equipment not less than once in four days; measurement findings are at the same time entered in the technical journal.

Many line stoppages have occurred through the fault of the rayon communications offices, especially in the evening and night hours when the technical personnel is absent. We therefore decided to conduct training tests precisely in these hours so as to teach the telegraph and telephone operators of the rayon offices, in case of a breakdown, to switch the equipment to another conductor. We were supported in this undertaking not only by the telegraph office administration, but also by the oblast communications administration. But if it happens that any telegraph or telephone operator is unable to switch the set from the impaired conductor to a good one, we inform the rayon communications office director at once about this situation. When such a case occurs again in the same office we report it to the administration of communications and the latter then takes measures of influence on the

managers of the rayon communications office.

The members of our brigade systematically raise their level of knowledge. In 1959 three finished the all-union correspondence technikum of communications.

Our brigade has achieved high ratings in labor and drastically reduced the number of technical breakdowns. How did we achieve this? Formerly, before entering the communist labor brigade competition, we never discussed the ratings of our work. These ratings were usually shown on the labor quality index board, and nobody was interested in them. The competition changed the attitude of people to the results of their labor. Everyone began to take a lively interest in the ratings not only of his own work personally, but also of the brigade as a whole, watches the indices daily and even before the total results for the month are summarized knows which place the brigade occupies in the competition. Hence also the high ratings of our labor.

At the telegraph office at present there is one communist labor brigade which I am leading and 14 brigades competing for this honorary title. For the title of communist labor shock worker, 33 persons are competing.

L.N. Shevchenko, telephone operator,
Novosibirsk long distance telephone office.

I am the trade union organizer of a brigade which is competing for the title of communist labor brigade. At the office our brigade was one of the first to enter the competition.

The local committee together with the brigade leaders and active members of brigades verifies how the collectives are fulfilling their socialist obligations. The brigade leader keeps a diary in which are entered all the results of the brigade's work: fulfillment of the plans of income and exchange, quality ratings. Jointly with the local committee's commission on housing and living conditions, the active members are interested also in the everyday behaviour of brigade members. Brigades visit the theatre and lectures in collective fashion.

In socialist competition we attach especially great importance now to the improvement in work quality. For this purpose a large educational work directed to the elimination of defective service and complaints is being conducted by each brigade's active group - the brigade leader, trade union and Komsomol organizer (the so-called troyka - trinity). Any infraction of labor discipline, case of defective service, each complaint are analyzed by the whole brigade, discussed by the trade union group. The troyka talks with workers in connection with each case of

defective service and improper formulation of an order.

If during three months the brigade fulfills all the conditions, then apart from the general encouragement of the entire collective, the brigade leader, trade union and komsomol organizer are rewarded with money premiums or passes to a house of rest at the expense of the enterprise. The trovkas whose brigades fulfill all conditions during four months receive the right to travel to any long distance telephone office in the country for the exchange of experience at the expense of the enterprise's fund, the remaining brigade members are encouraged.

In each brigade is elected a correspondent of the long distance telephone office wall newspaper, who must daily report to its editors about all the defects that occurred.

The improvement of quality ratings depends a lot on the qualifications of the workers. Schools for study of advanced labor methods have been organized at the office. All the workers who must study in them are attached to experienced telephone operators, have drawn up a schedule of school lessons. At present there are 14 advanced experience schools at the office.

V.A. Zhdanova, telegraph operator,
Sverdlovsk telegraph office,

communist labor shock worker.

In 1956 I began to work at the Sverdlovsk telegraph office and at once went to study in the school of worker youth, and on graduating from it, in the electrotechnicum of communications. Now I am already in the fourth course.

I fulfill the output quota with good quality at 130 to 135 %. I was awarded first the title of best in craftsmanship, and in January of this year, the title of communist labor shock worker.

I was able to achieve successful results in work thanks to the use of progressive labor methods. We have a description of these methods, drawn up on the basis of a generalization of the best working methods of telegraph operators. The motto of our brigade is - help one another, and I try to help my fellow workers, tell and show them how to prepare the operator's position properly and transmit telegrams in time.

I combine labor in production and study in the technicum with social work.

Our brigade is struggling for the title of brigade of communist labor, and all brigade members are trying to fulfill the obligations they have assumed. We fulfill the production quota at 120 %, without tolerating defective service. Two members of our brigade are studying in the

technikum of communications, three are preparing to enroll in the institute and technikum; each one of us is engaged in political study.

All members of our brigade participated in the cross country ski race and in the summer city competitions in light athletics, in which the collective of our telegraph office won first place. For active participation in these contests, four of our brigade received a certificate of the Komsomol oblast committee. We often go to the theatre and cinema, read and discuss books of fiction, make tourist excursions in the environs of our city.

L.A. Panferova, mobile cashier in receiving telegrams (227th communication branch, city of Moscow).

I am working as a mobile cashier in the 227th communications branch of Moscow at the Yaroslavl railway station. The purpose of my work is to give the best service possible to passengers in the station waiting room and on the platform when passengers are getting on the trains.

In winter the passengers at the Yaroslavl station are fewer in number than in summer; consequently also I receive comparatively few telegrams. Boarding of trains lasts 40 minutes and during this time I have time to go through 8 to 10 cars. During a period on duty

15 to 20 telegrams are received directly in the cars, the remainder I receive in the waiting rooms of the station. Thus, I receive during a day about 35 to 50 telegrams, and have a quota of 30 telegrams.

With the approach of summer the number of telegrams sent by passengers increases considerably. From the second half of April on I no longer had time to go through 8 to 10 cars, since the persons who wished to send telegrams was very large in number. But how organize the reception of telegrams in such a way as to service all the passengers who wished to send telegrams? I decided to employ a small and readily extensible stand. At the moment when boarding began, I took a position in the middle of the platform and after putting a suitcase on the stand, loudly announced: "Don't forget to send a telegram!"

In this way the passengers saw and heard me, and all who wished to send a telegram, after putting their things in the cars, hurried to me.

Taking blanks and pencils (and I usually have 15 to 20 pencils) the passengers fill out the blanks, while I just have time to receive the telegrams. In the intervals between trains, I receive telegrams in the waiting rooms, in the mother and child room. If in winter I re-

ceived 35 to 50 telegrams, then in spring and summer about 80 telegrams a shift. I overfulfill the financial plan of 6,000 rubles per month which is given me at the present time.

Beginning with the 45th telegram I receive 30 kopeks bonus per telegram, and in this way my monthly bonus now amounts to 200 rubles.

A meeting of the mobile cashiers of Moscow city was held at the postoffice in July 1959. Many good proposals were made directed to improvement of the service to passengers. At this meeting I shared my working experience with the mobile cashiers of the other railway stations of the capital. Speaking to the meeting the cashier of the Kiev railway station declared that it was not possible to use a stand at their station as there are telegram receiving tables at all railway stations. Why tables are also standing in all rooms at the Yaroslavl railway station, but I receive a large number of telegrams on the platform. And at this meeting, I remember about the great beginning of Valentina Gaganova and decided to go temporarily to work at the Kiev railway station -- to show that among them also it is possible to organize better service to passengers. On my very first day at the Kiev station I received 108 telegrams.

I worked at the Kiev railway station for a month. Now the mobile cashiers there receive even more telegrams than the cashiers at the Yaroslavl station.

At present the Baumenskaya communications office, to which the Yaroslavl communications branch is subordinate, has supplied ^{all} its mobile cashiers, of whom there are 12, with light metal stands and new suitcases, and the work of receiving telegrams is being done not only in the station waiting rooms but also on the platform.

Our 227th communications branch has assumed the obligation to win the title of communist labor collective. For this purpose we have created three brigades (of cashiers, telegraph set operators and insurance department workers) which have assumed the obligation to live and work in the communist way. Moreover, all the mobile cashiers have entered the competition for the title of communist labor shock worker.

We fulfill our obligations with success, strive to receive the most possible telegrams, recommend to passengers that they utilize additional communication services, which raises the income. We are trying to have the telegram text written cleanly and clearly on the blank, which eases the transmission of it through the set.

We mobile cashiers have repeatedly raised before the

Moscow postoffice the question of arranging a telegram receiving booth on the platforms of the railway stations. This will be very convenient both for the passengers and the communication workers.

Ye. F. Yermolenko, communist labor brigade leader, central call office of the Leningrad long distance telephone station.

He entered the socialist competition for the honorary title of communist labor brigade in December 1958, assuming the socialist obligations of raising labor productivity, improving the work quality and a number of others.

Every brigade member has studied well all sectors of the central call office's work, knows and observes the intercity telephone rules; subscribers are therefore serviced promptly and in a cultured way. Thanks to such work of the telephone operators, I as brigade leader am relieved of distractions in various explanations to clients, and can watch constantly the time taken and the quality of the work in filling the orders of clients, take measures to eliminate any kind of delays when encountered during the provision of telephone conversations.

The joint work of central call office telephone operators with shift telephone operators, brigade leaders and shift foremen of the long distance telephone office switchboard hall has contributed very much to the production

results which our brigade achieved. Mutual aid in the brigade itself is also well organized: if it is difficult for one, a comrade always comes to the rescue. For example the telephone operator of the payment accounting office and the telephone operator servicing the switchboard to which the call booths are connected help one another, while the latter helps the telephone operator of the Moscow line switchboard.

We are aiming to have no waiting lines at any order taking window in the hall; we recommend to clients all the services which the long distance telephone office can provide. It is not accidental that many permanent subscribers of the central call office order long distance telephone calls only when our brigade is at work.

Ever since we began to compete for the title of communist labor collective, the members of our brigade are fulfilling the plan of incomes every month and have not committed a single case of defective service, haven't had a single complaint which might have been caused through the fault of brigade members. The brigade has received many thanks for cultured and polite service to clients.

I am studying in a seminar on the economics of communication, am an agitator in our brigade, conducting regular newspaper readings, talks on various topics that

I closely associate with the tasks of the long distance telephone office collective and the work of the brigade. Telephone operator comrade Turenko is studying at the Komsomol political school. Comrade Stepanova is acting at the peoples theatre of the Palace of Culture imeni S.M.Kirov. As a whole brigade we often go to this theatre and also to others. Brigade member comrade Kireyeva was elected organizer of the trade union group of the call office workers and is coping well with his social obligations. Comrade Stepanova has mastered the work at the intercity telephone switchboard of the Moscow line, where connections are made by semiautomatic means.

In the school of advanced working methods, the young telephone operators are studying the experience of the best telephone operators.

In 1959 our brigade members submitted four innovator proposals directed toward improvement of the work quality.

Our collective exerts a positive influence on each one of its members. Thus, comrade Turenko was rude in her conduct with neighbors in the apartment. Our whole brigade condemned her behaviour. Now, Turenko has established good relations with these people.

Recently our brigade member comrade Kireyeva went over to work as brigade leader in the most lagging brigade

in order to lead it into the number of the foremost.

In November 1959 our brigade was awarded the title of communist labor collective. After this we assumed still higher obligations. I assumed the obligation to teach, without remuneration, two persons to work in one of the central call office sectors, and other obligations.

O.P. Landysheva, engineer of the subscriber telegraph office, city of Gorky.

The collective of the subscriber telegraph office workers, which I lead, acted as initiator of the competition for the title of communist labor brigade at our enterprise. In the brigade are three telegraph operators, two overseers, eight technicians, one engineer. The brigade is composed of young workers, and also comrades with seniority of 10 to 15 and more years. I myself have been working at the telegraph office for 26 years.

Our brigade accomplishes the entire technical and operational servicing of the office and also the terminal offices of the city and oblast network of subscriber telegraph system.

In recent years our collective has constantly distinguished itself among other telegraph services by its organized nature, discipline and high production indices. We have many times been awarded the title of "Best Tele-

graph Service", and individual service members have won the title of best in craftsmanship. They were awarded honorary certificates, their names were enscribed in the "Honor Board" and "Honor Book."

After entering the competition for the title of communist labor brigade, the subscriber telegraph office workers assumed new obligations which differ from all previous obligations in that they reflect our desires to cultivate in ourselves the traits of a person of communist society.

The subscriber telegraph office collective is concerned, first of all, with raising labor productivity. The obligation assumed to raise labor productivity by 5 % has been fulfilled owing to the wide interchangeability of workers of the collective, especially of allied occupations. Each technician can replace an operator, while the operators carry out the cleaning and prophylactic inspections of sets, help technicians in servicing the office.

The time of an operator's response to a client averages 8 seconds. This is the result of careful study of the circuit of communication line directions, the numeration of cities and subscribers, and also the spread of the experience of comrade Kazakova, the best operator.

In the busy hours the entire collective body engages

in the work in order to assist the operators. Hence there are no refusals to afford calls to subscribers.

In 1959 we fulfilled the plan of incomes by 110.3 %, the plan of outgoing paid connections by 107.8 %. These indices are higher than in the obligations. This was achieved owing to the close connection of the collective with subscribers. In the busy hours the operators explain to subscribers the advantages of direct conversations over communication by the usual telegram. The conveniences of subscriber telegraphy are popularized through the press, letters and personal trips of brigade representatives to plants and institutions. On account of consolidation of the working day, the subscriber telegraph office operators come to the subscriber in case a telegraph operator has not appeared at work. The operators work swiftly and accurately, which contributes to the growth in the number of conversations and income; complaints are not coming in from subscribers.

In 1959 the brigade members submitted 15 innovator proposals, one of which was taken for publication in the TEXCO index. It is typical, that a majority of the proposals is created collectively. Thus, recently a group of workers developed an indicator of the engagements of subscriber services connected in the set hall of the central

telegraph office. Our innovators comrades Tsarev, Pimashkin, Fevraleva not only submit innovator proposals, but also apply them themselves. In 1960 the brigade has decided to submit not less than 18 innovator proposals.

The brigade gave substantial help to the Dzerzhinskaya communications office in servicing subscribers and adjusting terminal devices.

Our collective lives a large and interesting life.

All service workers are studying. Three - Gubina, Abidova, Velichko - are enrolled in the correspondence institute of communications; Shumskaya finished the correspondence technikum in 1960; overseer Chugreyev received a secondary education, studying in the evening school. Two have graduated, one from course for raising qualifications in Moscow, the other from the correspondence communications technikum in 1959. The remaining eight members are going through technical courses at the telegraph office. Many are studying in the political circles.

Talks and newspaper readings are given systematically in the collective. We frequently organize group visits to the theatre, evening parties and lectures. Some of us take part in amateur art activity. Problems of living and working conditions are discussed and resolved by all together.

A sensitive attitude toward comrades, help to those lagging behind in work, study, everyday life -- all this strengthens the friendship in the collective. As the brigade leader and senior comrade, I carry out educational work in the collective, find out the reasons for the bad disposition of this or that comrade, together with the others strive to eliminate the disorders jointly.

Being a deputy of the Gorky city soviet, I try honestly to carry out the instructions of the electors and give assistance in solving the living problems of our workers.

Ye. N. Sukhareva, communist labor brigade leader,
Leningrad telegraph office.

Our brigade which unites workers servicing the main line telegraph communications, consists of 24 persons. Our work is varied: the processing of international telegrams on teletype machines, the correcting of incoming and outgoing telegrams and so forth.

Our brigade formerly competed for the title of "Best Brigade" and held that title. But the obligations embraced chiefly production indices. On entering the movement of communist labor brigades, we assumed diversified obligations.

From the very first days of the competition, we

resolved that every worker must master all allied occupations. The workers of some sections were attached to the workers of other sections, periods for mastering the trades were set and now we watch how this is being done. The telegraph operators study the work of proofreaders and vice-versa. Technicians are able to do good work on the telegraph sets and at a moment of need help the telegraph operators or replace them. All of this makes possible a highly manouvreable working force.

We devote much attention to the young people. The composition of our brigade has been augmented with young comrades whom we are assiduously training. Despite all the difficulties, the more experienced telegraph operators combine the performance of their main obligations with the training of personnel.

Not one person in the brigade is failing to enlarge his knowledge. Some are studying in the technikum, others attend the university of culture organized at the Leningrad house of culture of communication workers, still others are studying at the English language courses, in the political circles. Training work is systematically done in the brigade. We invite qualified lecturers to deliver lectures and reports on topics that interest members of our brigade. Not only at work but also off the job, the collective does

let the young comrades get outside the field of vision. If some kind of improper case occurs, we assemble the brigade immediately and talk with the transgressor. Comradely mutual aid is now felt in everything.

We do not forget either our retired workers on pension, often visiting them. When lonely persons are ill, we organize attendance duty by brigade members.

For the purpose of contributing to the fulfillment of the plan of incomes, we investigated the possibility of opening a Teleks subscriber's station. In addition, we do checking on the quality of the processing of international telegrams by the city communication branches. For more than a year, our brigade did not have a single case of defective service.

Our brigade maintains cleanliness and order in the work room by its own resources alone. We ourselves prepare the glue and paint; we clean up the operators positions, take care of the flowers.

In the brigade there is a work program for the quarter. At the general meeting each month, we check on the fulfillment both of the work program and the obligations. We hear the reports of comrades, how they have mastered allied trades, and also of those who had been commissioned to carry out this or that measure; we discuss

the everyday behaviour of certain workers.

After we had eliminated the defects in work, after 10 months of stubborn work, our collective was awarded the title of communist labor brigade.

N.M. Borodulina, telegraph operator of the Yaroslavl telegraph office, communist labor brigade leader.

When we discussed the decisions of the 21st congress of CPSU, the desire arose among us to work still better, to participate more actively in the construction of communist society. This desire led us to the thought that it was necessary to join the movements of brigades and shock workers of communist labor.

Many were the disputes and agitation experienced before our brigade of four persons decided to compete for the title of communist labor brigade. On entering this competition, we assumed the obligations: to work, live and study in a communist way; to overfulfill each month the output quotas with excellent quality of work; not only to work well ourselves but to help our comrades; to participate actively in the public life of our enterprise; to raise our production qualification through study in the seminar at the communications office, and also to raise our general educational level, enlarge our cultural range of vision (reading prose and political literature, visit-

ing the theatre, the cinema).

We decided to arrange our work so: to draw up one report card for the brigade, dividing the entire quota produced by all, although all of us had differing categories. If anybody did defective work in handling a telegram, the defects related to the whole brigade.

At the start it was this way. The communications which we serviced were varied: one was main line, two were intrarayon and one communication with the city branches. Not only did we ourselves have to work well, but also we had to teach the communication workers of the rayon offices and city branches to observe strictly the instructions on processing telegrams in automated services. In the beginning there were cases when individual telegraph operators declared that they are unable to fulfill the obligations and they drag the entire brigade backward, that we will achieve nothing. At this time the brigade had to help a comrade, to encourage him, to prove that we have the forces to fight for the title of communist labor collective and to win it.

We have persistently worked to raise labor productivity. And the output quota we now fulfill at 115-130 % with excellent quality of work. At the end of 1959, our brigade won the title of communist labor brigade, and we have since kept this title.

We service communications by the group method: three work on the primary services while the fourth performs auxiliary work (preparation and checking of blanks, checking of telegrams sent, the giving of information, assistance to that telegraph operator on duty whose load has grown), then the fourth replaces some one. Every brigade member is able to service any communication. Once one of the brigade members did not come to work, was ill, but we three did all right. We overfulfilled the quota and did not permit a single case of defective service.

At present our brigade services four main lines of communication without printed control of transmission. Among the telegraph operators of the Yaroslavl office we were first to master this method.

The brigade has added one person: we have taken in a lagging telegraph operator in order to help her improve her service. Formerly this worker did defective work, was repeatedly penalized. We found an approach to her and now when she has with such love taken hold of the work, we are very delighted at the consciousness and feeling of duty which has been awakened in her.

The brigade members take an active part in the public life of the telegraph office collective body. In the brigade composition are the trade union organizer, a member of the komсомол committee.

All in the brigade are komsomols, actively participate in the work of the komsomol organization and increase their political knowledge.

We not only work but also rest together. In winter we go ice-skating; on free days go skiing in the country.

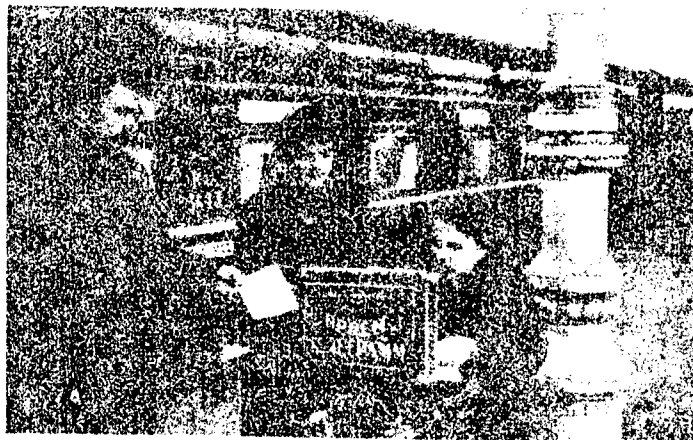
To say that everything is well, running smoothly with us, that we have already achieved everything, is impossible. No, we have also assumed the obligation to study allied services, to acquire a higher skill rating, to draw into the competition the remaining members of our shift -- the technical personnel, the sorters and workers of the control-information service, in order that the entire shift might become a collective of communist labor.

The work in the brigade obliges us to do very much, to inculcate the feeling of collectivism, to cultivate the communist consciousness. All of this raises the productivity of labor and secures highly skilled handling of telegrams.



Parcel receiving and processing brigade of the eleventh dispatch office of the Moscow postoffice, which won the title of communist labor collective. From left to right: senior postal agent N.S.Titkova, brigade leader Ye.A.Ryneyskaya, sorter Ye.V.Pal'chenkova, internal service mail messenger A.S.Fomina, sorters N.P.Zhabanova, N.P. Aleshinskaya and R.M.Kozlovskaya.

Photo M.Stepanenko



L.A. Panferova, mobile cashier of the 227th communications branch of the city of Moscow, receives telegrams from passengers on the platform of the Yaroslavl railway station.

A CULTURED COMMUNICATIONS BRANCH

The residents of the growing city of Fryazino (Moskovskaya Oblast') received a remarkable gift for May First. A new first class communications branch was opened here in an office space of 500 square meters which the city soviet allotted in a recently built multistory apartment house. Everyone who has been there has expressed admiration for the bright, well-arranged, convenient communications branch.

A communications branch existed previously in Fryazino, but it was located together with the savings bank office in one small room. Conveniences of any kind in this place could not even be discussed in terms of service to the public. The working office occupied only 6 square meters, and clients often had to wait in the street until the few visitors who had gone in came out.

When you enter the new communications branch, one's eye is immediately struck by a bas-relief of V.I. Lenin on red velvet, hanging on the wall, and the remarkable words of Vladimir Ilyich underneath: "Socialism without mails, telegraph, machines is the emptiest phrase."

The spacious working office is handsomely equipped.

The tables and chairs, partitions, showcases in windows, communication service advertisements on glass, booths for long distance telephone calls, ink wells, a special table on which lie telegram and postal money order blanks, the attendant's places for mail clerks and carriers - all these were made in the workshop attached to the Shchelkovskaya communications office, to which the branch is subordinate. The craftshop makes office furniture of its own design for all the branches of the Shchelkovskaya communications office. The office manager L.V. Lokshtanov displayed great initiative in organizing this work.

The white curtains, the sliding screens in the doors of the service rooms, the flowers, the exceptional cleanliness lend an especially cultured appearance to the working office.

The communications branch operates without free days and provides the population with communication services of all kinds. Here letters, parcels, money orders, telegrams are received and delivered, from here telephone conversations can be conducted both with residents of Moscow and with subscribers in other cities of the country. In the working office on glass at the communication attendant's places are inscribed beautiful advertisements about additional communication services. Here is one of such ads:

"If you wish to know when mail forwarded to an addressee will be delivered, submit it with notification about delivery."

In the premises of the communications branch, a telephone station with a capacity of 400 numbers is being installed. This will meet still more fully the population's needs in telephone communications.

In one of the spacious halls of the communications branch is situated a kiosk of the Soyuspechat (Central Administration for the Distribution of Printed Matter) of original design. At it can be obtained not only the fresh copies of newspapers and magazines of the Soviet Union but also periodical publications of other socialist countries. Sample copies of the books for sale are exhibited in windows from the external and internal sides of the communications branch. Newspapers and magazines worth several hundred rubles are sold here daily.

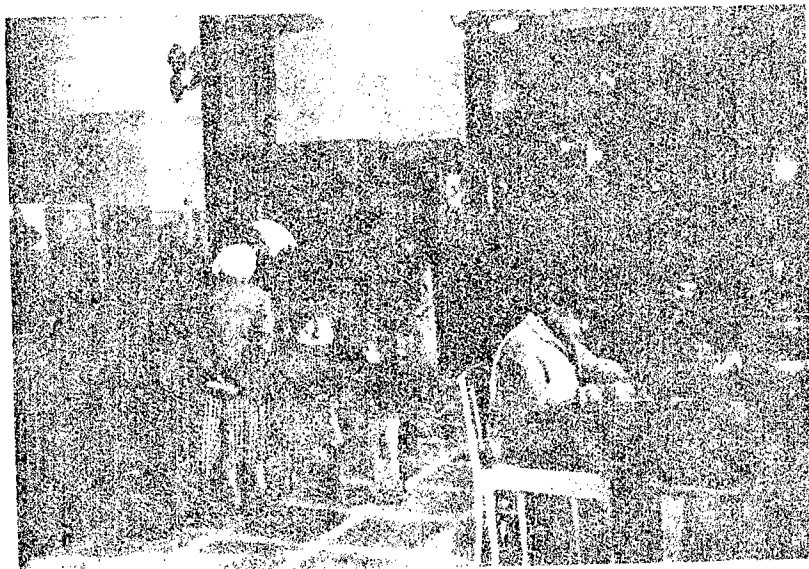
From the first days since the new communications branch has been organized, its collective body has been struggling for service of high quality. The residents of Fryazino receive central newspapers on the day of issue. Press shipment is mechanized. The suburban zone mail transfer department delivers press and mail forwardings to the Shchelkovskaya communications office by motor truck three times a

day, and mail from the office is delivered to the branch twice in twenty-four hours. All the press and postal shipments are delivered to the population in the control periods set. In the city are five delivery sections. In multistory apartment houses subscriber boxes (one box to eight apartments) are installed. The boxes are made in the communications office workshop and will number 50 by the end of the year.

With every passing day ever more and more people visit the communications branch. The efficient and cultured service to the Fryazino population with communication means is already being felt in the growth of the communication branch's income.

The collective body of the branch is youthful, a majority having completed the full secondary school. At the head of the collective is G.K.Kondrashov, an experienced manager, who has worked 30 years in communication agencies.

The Fryazinskoye communications branch has all grounds necessary to become an exemplary enterprise in the near future.



In the working office of the
Fryazinskoye communications branch



Mail clerk E.I. Mochalova receives subscriber's payment for use of a radio receiver.



Mail clerk M.F. Kondrashova formulates the receipt of a parcel



Telegraph operator R.M. Polikarpova engaged in transmission of a telegram



Director of the Shchelkovskaya rayon communication office L.V. Lokshtanov and director of the Fryazinskoye communications branch G.E. Kondrashov talk with visitors about the work of the branch.

Information

WORK WITH COST ACCOUNTING IN THE COMMUNICATIONS SYSTEM

Cost or budget accounting plays a large role in improving the management of communication enterprises, in the matter of cost complete utilization of production resources, in the improvement of service quality and raising the profitability of the communications system. It is planned to complete, during the period 1961-1963, the transfer of all the enterprises of the Ministry of Communications USSR and the ministries of communication of union republics to cost accounting.

In realizing this task, the Ministry of Communications USSR has proposed that communication ministers of the republics, Uzbek, Kirgizia, Moldavia, Latvia, Lithuania and Estonia submit the republics' councils of ministers on the transfer of the entire communication system in these republics to a cost-accounting self-support basis from 1 January 1961, and that the ministers of ^{some} other republics petition on the transfer of certain plant administrations with the operating communication enterprises subordinate to them.

In connection with the installation of cost account-

ing by the communication ministries of the union republics, it is essential to promote explanatory work among communication workers and give instruction to managers, economists and accounting workers of enterprises and administrations of communication, to provide for the working out and confirmation of the production-financial plan for 1961, and what is most important, to organize the activity of the communication enterprises and oblast administrations on the basis of budget accounting, to realize the control and analysis of the results of their work, utilizing the conclusions of this analysis for the improvement of the production and financial activity of enterprises.

The Ministry of Communications USSR recommended that each republican minister send his workers to one of those communication ministries in which the communication system has been fully transferred to cost accounting in order to study the experience of installed budget accounting. In its turn the planning-financial administration and the central bookkeeping office of the Ministry of Communications USSR will send its workers to the republican communication ministries whose enterprises are transferring to cost accounting in order to give them practical assistance.

AWARDS TO COMMUNICATION WORKERS OF THE TATAR ASSR

In connection with the 40th anniversary of the establishment of Soviet power in the Tatar autonomous republic and, marking the fruitful work of the republic's collective body of communication workers, the Minister of Communications USSR, acting in accordance with the decision of the board of the Ministry of Communications USSR and the presidium of the Central Committee of the trade union of communication, motor transport and highway workers, declared gratitude to a large group of communication workers of the Tatar ASSR and awarded them the badge "Distinguished in socialist competition of the Ministry of Communications USSR."

Among them: telephone operator of the Bugul'minskaya communications office A.I.Bychkova, director of the Kazan telephone long distance office Z.S.Gaynutdinov, overseer of the Kazan line technical administration P.M.Elin, teacher of the Kazan electrotechnikum of communications A.V.Kashcheyev, technician of the Kazan long distance telephone office A.A.Kamalejev, sorter of the Laishevskaya rayon communication office Ye.D.Koreyeva, mail carrier of the Kazan postoffice V.A.Makarova, technician of the Kazan city telephone service V.S.Mel'ts, director of the Leninogorskaya rayon office Z.M.Tukhvatullina, technician of the

wire broadcast system management M.F.Chubareva, director
of the Kazan electrotechnikum of communications T.Kh.
Shakhmametyev.

RADIO SERVICE AT THE CZECHOSLOVAK EXHIBIT

The flags of the Czechoslovakian Republic have flown for about two months over the exhibition pavilions at the Sokol'niki park in Moscow. Situated here was the "Czechoslovakia 1960" exhibition, the largest exhibition of all this country has shown at any time abroad.

The "Czechoslovakia 1960" exhibition was organized to ^mcomemorate the 15th anniversary of the liberation of the Czechoslovakian republic by the Soviet Army. It demonstrated the results of the free labor of the people of a socialist country friendly toward us, their great achievements attained by them in economic and cultural construction during 15 years, the prospects of further development of Czechoslovakia.

This Czechoslovakian exhibition, like all preceding ones as well, was distinguished by the original, beautiful displays of all its stands and pavilions. Of great interest also were the new forms of servicing visitors applied at this exhibit on a broad scale for the first time.

Instead of the usual guides, a singular information office was established at the exhibit. About 20 TV sets and several telegraph receiving sets were installed over the whole exhibition grounds. Before each of them stood a microphone. Exhibition visitors could ask any questions

of interest to them about the exhibits displayed here, about the living and working conditions in Czechoslovakia. The information experts whom the questioners saw only on the TV screens, answered the most diverse questions swiftly and with exhaustive completeness. Replies to questions asked might also be received directly on the telegraph set, from a roller of which one could tear off part of the telegraph tape with the text for memory.

That is how the work of the exhibition's information service was organized. Small insulated booths for the information experts were installed in one of the exhibition rooms. Each of them was supplied with all essential reference data and equipped with appropriate apparatus.

In the booths of one of the units were installed compact TV transmitter cameras which were connected by coaxial cable with the TV sets located in the various sectors of the exhibition. Transmitting tubes of the vidicon type were used in these cameras, the scanning system being made in semiconductor triodes and the camera amplifier assembled in tubes. In the camera is also a high frequency oscillator which can operate in any of two standard TV channels.

The high frequency oscillations modulated by the television signal passed by cable to the input of the TV sets. The sets themselves were one of the latest model.

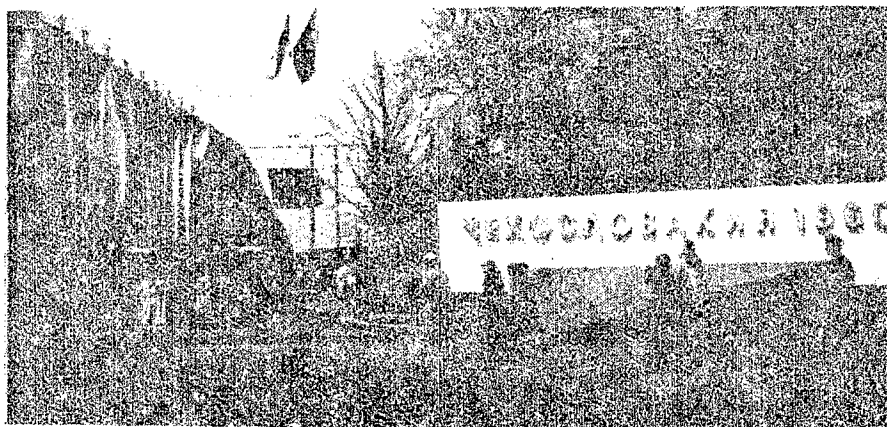
television receivers being serially produced by the Tesla factories. These television sets named Amethyst are distinguished by high quality pictures. Installed in them are rectangular tubes with 90° angle of beam deflection; the screen size is 43 cm. along the diagonal.

In booths of another unit were information experts who gave replies by telegraph sets. These booths were equipped with a keyboard acting by remote control on telegraph sets situated at several points of the exhibition.

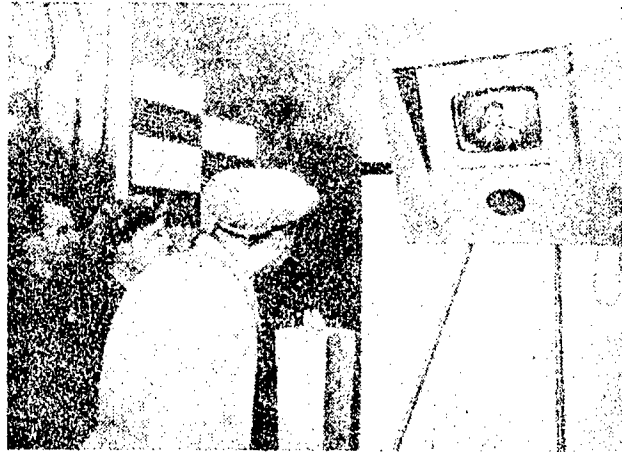
The exhibition designers paid much attention to the sound equipment of its pavilions and open grounds. A large number of loud speakers and acoustical columns provided high quality sounding of programs transmitted from the amplifier apparatus. To the various groups of loudspeakers four programs could be fed simultaneously. All the necessary switching and adjusting was done at a special panel. At its input might be fed programs from six sources: microphones, three magnetic tape recorder and two phonograph pickups, and after preliminary amplification and the necessary correction be switched to four output channels.

The low frequency equipment used at the exhibition possesses high electroacoustical indices. Thus, the amplifying channel is designed for uniform passage of frequency bands from 50 cycles to 15 kc with nonlinear distortions not exceeding 1 %.

The Czechoslovakian Republic has a developed industry which produces varied equipment of communication, broadcasting and television. Unfortunately, few samples of such articles were shown at the exhibition itself. The equipment used to service visitors, however, demonstrated once again the high level of radio engineering reached in fraternal Czechoslovakia.



At the entrance to the exhibition.



Exhibition visitors ask questions of interest to them at the microphone installed in front of the TV set.



Booths for information experts are located in the apparatus room. In the photo information expert Maria Urbanova gives answers in front of the TV transmitter.



Information expert Miroslava Genchiova replies by teletype transmitter to questions of exhibition visitors.



An exhibition visitor gets a reply to his question by teletype.

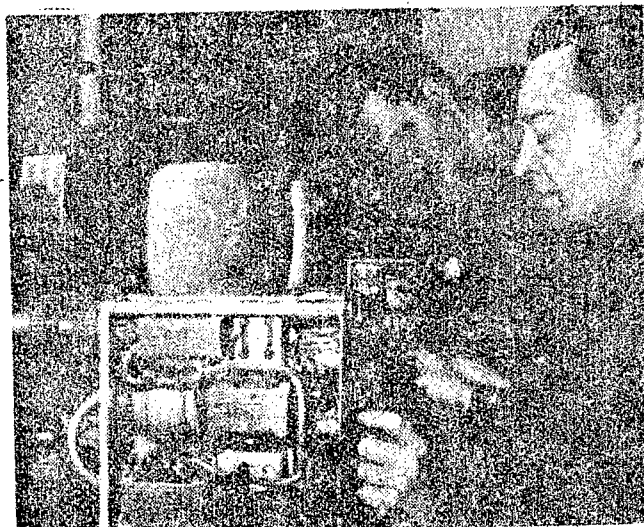


Sound technician Yaromir Shubert checks the operation of 300-watt amplifier units.



Special equipment sound amplification was installed at the exhibition.

In the photo: sound technicians Oldrikh Drozd and Vil'yam Dyurkovich at the control panel adjust the level of transmission.



Technicians Bedrzhikh Gudlik (seated) and Otokar Tsorna tune TV transmitting apparatus which is used in the exhibition radio service system.

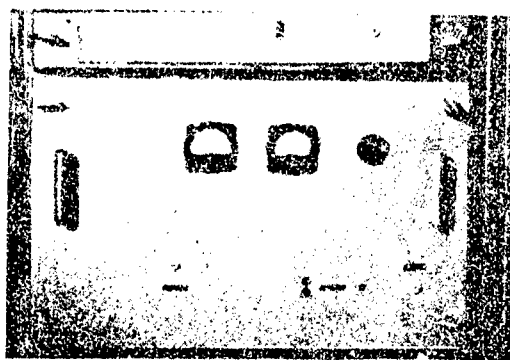
CREATIVE WORK OF INNOVATORS AND INVENTORS

Pulse-phase Activator for Ultrashortwave

FM Radio Broadcasting Station

A pulse-phase activator for ultrashortwave frequency modulated transmitters of radio broadcasting has been made at the Leningrad management of radio communication and radio broadcasting. The activator has high operational stability and provides stable maintenance of high electro-acoustical indices. With these advantages it differs favorably from the activators with automatic frequency control produced by industry.

A.V.Serdobol'skiy, an engineer of the management's zonal laboratory, is author of the development.

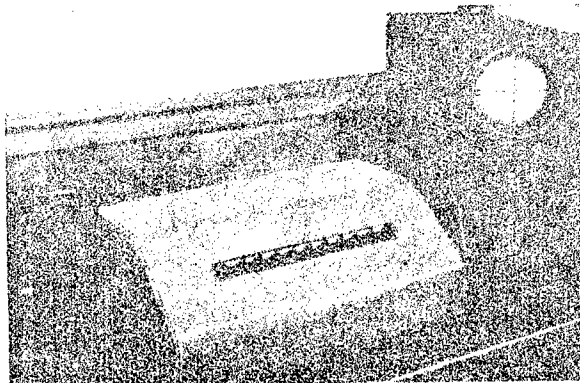


Apparatus for Remote Control of Radio

Communication Channels

A.I. Potapov, senior technician of the zonal laboratory of the Leningrad radio communication and radio broadcasting management, has developed an apparatus for the remote connection of technical control equipment to various points of a radio communication channel. The apparatus consists of two sets: a control panel installed at the point of technical control, and a switching unit placed in the radio office. Both sets are assembled in telephone relays.

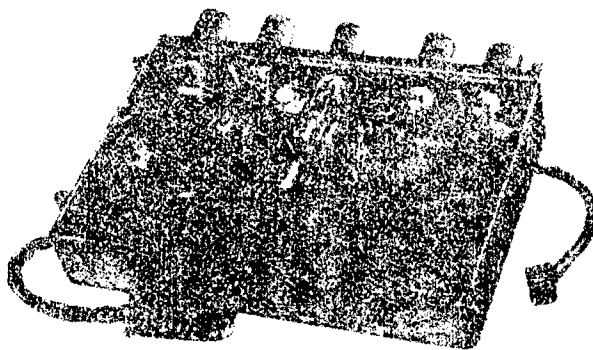
The apparatus makes it possible for the attendant at the technical control point to connect into any of the lines joining the radio office with the transmitting and receiving radio stations, and to control the quality of the telegraph signals in various sections of the channel.



Preamplifier of KT-3 and KT-5A Cameras

A new amplifier has been installed in the mounting frame of the UT-10 preamplifier of the KT-3 and KT-5A cameras in accordance with the proposal of I.I. Shoytis and K.A. Shiryayev, workers of the Moscow television center. Owing to the introduction of complex antinoise correction, this amplifier has a high signal/noise ratio, permitting the introduction of full "aperture"-type compensation in the channel. The higher signal/noise ratio has made it possible to reduce the current of the 11-7 tube beam, which has increased its term of service.

Five pentropic tubes are used in the new amplifier.



DELEGATION OF POLISH COMMUNICATION WORKERS
IN THE SOVIET UNION

At the invitation of the Minister of Communications USSR, a delegation of responsible workers of the Ministry of Communications of the Polish Peoples Republic, headed by the minister of communications, comrade Z. Móskva, recently visited the Soviet Union.

During the delegation's stay in the capital, N.D. Psurtaev, the minister of communications USSR, acquainted the Polish comrades with the organizational structure and the work of communication agencies of our country. The delegation visited the Central Telegraph Office USSR and took part in a meeting of the members of the Soviet-Polish friendship society held there. At the Moscow postoffice the guests observed the work of separate departments and the dispatching service. At the central long distance telephone office, they looked at the switchboard hall and the technical cabinet. In addition, the delegation visited in Moscow the armory chamber in the Kremlin, the Tret'yakovskaya art gallery and other sights of the capital.

After that the Polish communication workers travelled to Leningrad and Kiev. In Leningrad our guests became

acquainted with the production of automatic telephone office equipment at the Krasnaya zarya factory and with the manufacture of coaxial cable at the Sevkabel' plant, visited the Hermitage and the Museum of Communication imeni A.S.Popov. In Kiev they paid a visit to the minister of communications Ukrainian SSR, G.Z.Sinchenko, saw the Kiev post office, television center and went on an excursion around Kiev. The delegation also visited Minsk. The minister of communications Belorussian SSR, P.V.Afanas'yev, acquainted the guests with the structure of the ministry and the work of communication agencies of BSSR. After that the Polish comrades looked over the Minsk long distance telephone office and television center. An evening meeting with communication workers of Minsk took place in the postoffice club. In seeing the town, our friends visited the House-Museum of the First Congress of the RSDRP and other memorial spots.

From Minsk the delegation went to Vilnyus. At the ministry of communications a friendly talk took place between the Lithuanian and Polish communication workers, at which they exchanged opinions on problems of improving the operation of communication means. After that the Polish communication workers visited the city telephone station, the mail delivery department and did sight-seeing

in Vil'nyus. From Vil'nyus the delegation went back to the native country.

On returning to Warsaw the minister of communication of the Polish Peoples Republic, comrade Z. Moskva, expressed thanks to the Ministry of Communications USSR and all the communication workers the delegation had met for the attention, hospitality and genuine freindship shown, indicating at the same time that every visit to the Soviet Union remains unforgettable and contributes to the further strengthening of friendship and business collaboration between the communication workers of both countries.



Delegation of Polish communication workers, headed by the minister of communications of PPR, comrade Z. Moskva (third from right) together with workers of the ministry of communications BSSR on the railway station square in the city of Minsk.

(blue paper insert, back cover)

The Following Svyaz'izdat. (Communications Press)

Books Currently On Sale

Shamshur V.I. Lenin i razvitiye radio (Lenin and Development of the Radio); Commemorating the 90th Anniversary of the Birth of Vladimir Il'yich Lenin, 1960, 194 pages + 2 color insets. Price in leatherized binding, 6 rubles.

The book tells about the main stages in the founding and development of Soviet radio, with which the name of Lenin, who highly appreciated the limitless possibilities of this branch of technology, is inseparably connected. A number of documents, notes and written instructions of Vladimir Il'yich are cited, indicating how much V.I. Lenin helped the development of Soviet radio engineering. Along with interesting facts from the history of the founding of a newspaper without paper and "without distances", the reader will meet in the book the names of many Soviet people, ardent patriots and enthusiasts, who in the difficult years of the civil war and restoration of the national economy, acting under the leadership of the Communist Party and Vladimir Il'yich Lenin personally, unselfishly solved theoretical and practical problems in the field of radio.

The book was written on the basis of documents published at various times and on memoirs of eyewitness participants of Soviet radio construction in the first years of October. It is designed for the broadest reading circles.

Svyaz' strany sotsializma (Communications of the Land of Socialism). Symposium edited by N.D. Psurtsev, 1959, 190 pages. Price in binding, 7 rubles 65 kopeks.

The symposium brings together a series of articles on the development of the means of electrical and postal communications in our country during the years of Soviet power, their modern condition and the ways of further development and improvement of the means of communications.

Mnogokanal'naya apparatura vch telefonirovaniya po vozdushnym i kabel'nym liniyam svyazi (Multichannel Apparatus of High Frequency Telephone System in Aerial and Cable Lines of Communication), Borodzyuk G.G., Blokhin A.S., Stepanov G.N. and others, 1959, 510 pages + 9 insets. Price in binding 18 rubles.

Contents. Technical data, a description of separate elements and working principle of a 12-channel telephone system in B-12, B-12-2, BUS-12 aerial circuits and a telephone system in the K-12, K-14 non-coil-loaded cable circuits, and also the basic data of the K-24-2, K-60 and K-1920 apparatus.

Shirman Ya.D. Radiovolnovody i ob'yemnyye rezonatory
(Radio Waveguides and Cavity Resonators), 1959, 378 pages,
Price in binding 12 rubles 50 kopeks.

Contents. Theory and physical processes in wave guides and wave guide resonators. The theory of excitation of wave guide devices; discontinuity in wave guides. Examination of electromagnetic waves in retarding systems, anisotropic wave guide systems.

Sluzhebnyye radiokody (Service Radio Codes), 1956,
211 pages. Price in binding 6 rubles 85 kopeks.

The service radio code is drawn up on the basis of the existing international "Q" and "Z" codes and supplemented with code expressions which are used by the radio stations of the various ministries and departments of the USSR. Excerpts are cited from the instructions and rules of technical operation in management of radio communication, that are obligatory for all radio stations.

Koblents Ya.G. Postroyeniye skhemy i uzlov beskontaktnogo magnitnogo upravleniya ATS (Construction of Circuits and Elements of Contactless Magnetic Control ATS), 1959, 63 pages, price 2 rubles.

Contents. Principles of constructing high speed, durable and cheap magnetic switching elements for automatic control devices in automatic telephone office technics.

Svyaz'izdat books are sold in book trade stores and booths of the Soyuzpechat.

In Moscow the chief stores for the sale of Svyaz'izdat books is store No.120 of the Mosknigotorg (Moscow book trade) (Ulitsa Kirova, 6, Tel. B 8-92-63), in Leningrad, the Voyennaya kniga (Military Book) store (Nevskiy prospekt, 20, Tel A 5-73-09).

MOSCOW ELECTROTECHNICAL INSTITUTE OF COMMUNICATIONS

Announces Enrollment

for Postgraduate Study in 1960, with and without
quitting work in industry,
in the following specialties:

Theoretical radio engineering. Radio wave propagation
and antennas. Radio transmitting devices. Radio receiving
devices. Radio broadcasting and acoustics. Television.
Radio relay communication. Theory of electrical communica-
tion. Long distance communication. Telegraphy. Telephony.
Communications system power engineering. Line cable stru-
ctures. Theoretical bases of electrical engineering. Organ-
ization and operation of electrical communications. Organ-
ization and operation of postal communications. Economics
of communications.

Applications for admission to postgraduate study
are submitted to the institute director by 1 September
1960 with the following documents attached: a copy of
a diploma on graduation from a higher educational institu-
tion, verified by a notary public, and excerpts from the
examination record, references from the last place of em-
ployment, autobiography, personnel record sheet with photo-

graph, published scientific works, data on inventions, experimental-design works with references about them (in the absence of published works, an abstract is appended on a theme chosen by the applicant).

Entrance examinations in a special discipline, the history of the CPSU and a foreign language in the scope of the program of higher schools of technology are to be conducted from the 10th to the 30th of September.

Dormitory accommodations are provided students enrolled for postgraduate study, who quit work in industry.

Institute address: Moscow E-24, Aviamotornaya Ul. 8,
Telephone Zh 4-03-90.

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