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

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WE MUST CREATE AN ASSORTMENT OF AUTOMATIC LATHES

Following is the translation of an article by V. Kochetkov, the Engineer of the Planning Department of Machine Tool Building Plant imeni Sergo Ordzhonikidze, in the Russian-language publication Ekonomicheskaya Gazeta (Economic Newspaper), Moscow, No 7(20), 16 February 1963, page 17.

The share of lathe operations in machine-building is high. Some engineers consider that it amounts to 11-12 per cent, others name a considerably larger figure. We are not going to argue either statement. We shall only mention that a good half of the labor consumed in lathe work is absorbed by mass-produced machine parts of relatively small sizes. Such machine parts, from the point of view of economic expediency, should be made on automatic lathes.

Machine builders have at their disposal a vast amount of such equipment. However, unfortunately, it includes numerous worn-out machines of outdated designs. It is not expedient to modernize them or perform capital repairs on them. These lathes have done a good job and now are obsolete and worn physically.

How do the matters stand with respect to replenishment of the stock of machine-tools in operation with new automatic lathes

They are produced in series by two plants, the Moscow Plant imeni Sergo Ordzhonikidze and the Kiev Machine tool-Automatics Plant. The Moscow Machine Tool Plant produces, in particular, the four- and six-spindle model 1240 automatic lathes. They are calculated for turning articles of rod metal with a diameter up to 40 mm. Operating qualities of these automatic lathes are high and they are in high demand. However, unfortunately, they are manufactured without auxiliary threading devices. These devices are delivered on consumers' requests for a separate price.

At present numerous plants, having received new increased assignments, request that threading devices be supplied

for model 1240 automatic lathes manufactured earlier. This demand cannot be satisfied by the Machine Tool Building Plant imeni Sergo Ordzhonikidze because it does not have sufficient production capacities.

In the future the higher planning organizations must plan the manufacture of automatic machines with all types of threading devices, even if it means a certain decrease in the volume of machine tools built.

The Kiev Plant builds automatic lathes for turning articles of rod metal with a diameter from 40 mm up. In their quality they are not inferior to the automatic lathes built in the Capital, are cheaper, and are delivered with a complete set of threading devices.

However, the output of such equipment is insufficient. If we take into consideration that numerous automatic lathes now in operation are, as we have mentioned earlier, obsolete and should be replaced, a legitimate question arises: Is not it the time to create a single assortment of native automatic lathes? Machine-building operation workers answer this question in the affirmative.

An assortment of automatic lathes should consist of quickly readjustable four-, six- and eight-spindle lathes intended for production of articles of rod metal. In particular, the four- and six-spindle automatic lathes should be suitable for turning machine parts of rod metal with a diameter of 25, 40, 60, 90, and 100 mm, and the eight-spindle lathes -- for rod metal with a diameter from 32 to 40 mm. We must also create automatic lathes for turning articles from blanks, drop forgings, forgings, and cast steel.

The Experimental Scientific-Research Institute of Metalcutting Machines (ENIIMS) should develop the standard types of the automatic lathes, in close collaboration with plant designers and operation workers of machine-building industry.

The Gosplan (State Planning Commission) and Sovnarkhoz USSR should organize production of automatic lathes at specialized machine tool building enterprises, since the Kiev Plant and the Plant imeni Ordzhonikidze will not be able to satisfy the increased needs of machine building industry for this equipment. Specialized production on the basis of extensive standardization of machine parts and units will ensure a rapid and significant increase of the output, decrease of the cost, and an improvement of the quality of the automatic lathes.

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OSO: 1830-S

AT THE MEETING OF THE SCIENTIFIC-TECHNOLOGICAL COUNCIL OF
ENIMS

Following is the translation of an article in the Russian-language publication Promyshlennost' Armenii (Industry of Armenia), Yerevan, January 1963, pages 70-72.

The joint session of the Scientific-Technological Council of the Head Institute and its branch, which took place at the Sovnarkhoz Armenian SSR, was devoted to the tasks, problems and long-range plans of development of the Transcaucasian branch of the Experimental Scientific-Research Institute of Metalcutting Machines (ENIMS). Scientists, engineers, representatives of Party, soviet, and public organizations of Armenia and Georgia, workers of machine-tool-building plants of the Northern Caucasus and Dagestan ASSR, and major specialists of machine-tool building, namely, the prominent workers of the Head Institute, participated in this meeting. Participants of the meeting visited a number of plants of Yerevan, Leninakan, Kirovakan, and Lusavan, where they exchanged opinions on the problems of designing of machine-tools, technology and organization of production.

Specialists from the Head Institute conducted scientific-technological seminars at the plants of Transcaucasia.

Participants of the session of the Council greeted with enthusiasm the wide scope of machine-tool building in Armenia triggered by the decisions of the 22nd Congress of the Communist Party of the Soviet Union (CPSU). It is well known that the over-all volume of the output of the machine-building and metalworking industry of Armenia should increase more than 10 times in the nearest 10-15 years. It is from this point of view that the long-range plans and problems of the development of the Transcaucasian branch of ENIMS were examined at the Council.

What are these problems?

The Director of the Branch, S. Kandayan, made a report on the above matter.

The Transcaucasian branch of the ENIMS works in the sphere of designing of bandsaw and abrasive-belt grinding machines, small balancing machines, and the development of technology and design of machine-tools for electrical etching, ultrasonic treatment and electrochemical working of hard-to-machine materials and alloys. This branch was called upon to assist the corresponding departments of the Head Institute also in conducting the work connected with the activity of the machine-tool building plants of Caucasus.

In the future the branch will also be occupied by the problems of research, designing, and manufacture of tube-working machine-tools.

In addition to designing the machine-tools produced by the plants of Armenia, the branch has compiled a technical plan of an assortment of band-saw machines intended for the work in the preforming and instrumental shops for cutting curved contours, as well as filing, grinding, and polishing. These machines have great advantages both in the cutting speed and their weight. They are simple in design. The machine-tools of the assortment developed can also work in an automatic cycle. Their serial production will be realized by the Maykop Machine-tool Building Plant imeni Frunze.

At present the branch, together with other organizations, is working on creation of a high-resistant tool. Another problem which is being successfully solved by the branch, is the organization of a centralized production of dies, die-casting molds, and molds, based on the electrical etching and electrochemical methods of hard alloy working.

At the joint session the report of the department head of the branch, G. Gevorkyan was heard on the effectiveness of the centralized production of dies, die-casting molds, and molds, on the basis of the above mentioned metalworking methods.

The branch department has completed a full computation of this effectiveness. The requirement of the Sovnarkhoz of Armenian SSR for all types of dies, die-casting molds, chill molds, and molds in general has been made clear.

The over-all amount of labor consumed in the production of the necessary quantity of equipment has been determined. With centralized production it will be reduced approximately 2.5 times; the industrial efficiency will increase. Classification of all the equipment was performed.

All the work performed suggests an idea that it is necessary to build a special plant for the centralized production of such widely-used industrial equipment.

R. Babanov, the representative of the Sovnarkhoz of Georgian SSR in his speech at the Council expressed a desire

that even in 1963 the organization of such production be started at one of the plants of Georgia.

Among the designing works of the branch in the past year there is Model MA-459 vortex duplicator, developed under the direction of S. Kandayan. Experimental models of the machine will be built in Moscow at the Stankokonstruktsiya (Machine-Tool Design) Plant.

The machine is intended for machining by the vortex duplicating method of coal-graphite electrodes for the electric erosion machines.

Engineers work on the plans of a widely universal milling machine with table dimensions of 320 x 1,000 mm, which will be manufactured by the Yerevan Milling Machine Plant, and also on a semi-automatic machine for machining electric motor commutators for the Armenian Electric Plant imeni V. I. Lenin.

Beginning with the next year, the branch will begin designing modern abrasive-belt grinding machines and other machines.

At the joint session of the Scientific-Technological Council the report of T. Bendukidze on the state of production of tube-machining machines was heard; T. Bendukidze is the Chief Engineer of SKBS [Spetsial'noye Konstruktorskoye Byuro Stankostroyeniya; Special Design Office of Machine-tool Building] at the Tbilisi Machine-Tool Building Plant imeni S. M. Kirov.

The study of this problem also suggested to the branch that it would be expedient to begin the development of modern designs of tube-machining machines for tubes made of super-strong steels which are necessary for deep and ultradeep boring.

The problems were posed at the Council meeting on expansion of work of standardization of machine parts and individual units of the machines produced in the zone of operation of the branch, and on completion of a number of other works on standardization and normalization directed toward the improvement of the quality of the machine-tools built.

Naturally, the question of the cadres of scientific and technical workers in which the branch experiences an acute shortage, has been repeatedly posed.

The Academician of the Academy of Sciences Armenian SSR, Doctor of Technical Sciences M. Kas'yan spoke on the training of scientific personnel for the machine-tool building industry of Armenia.

- The rapid growth of industry, and especially, the machine-tool building industry, -- emphasized M. Kas'yan, -- requires that the branch itself began in earnest the training of scientific personnel.

At the present time the branch is training in post-graduate courses at ENIMS and other scientific-research institutes only 5 men for competition for the degree of the Candidate of Technical Sciences and 12 individual competitors.

At the seminar the report of the worker of Tbilisi Plant imeni S. M. Kirov, M. Gelashvili was heard on the experience of operation of the machine-tool and technological laboratory of the enterprise.

The speaker expressed his desire that independent machine-tool and technological laboratories be organized at the plants.

The Scientific-Technological Council approved the trend of the development of the branch specialization and adopted resolutions with respect to all the discussed problems, which contain specific recommendation to the Sovnarkhozes of Armenia and Georgia on the further development of the machine-tool-building industry.

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DELIVERY OF POOR-QUALITY MACHINE TOOLS FROM THE YEYSK PLANT

[Following is the translation of an unsigned article originally entitled "Bureau of Good Services" in the Russian-language newspaper Ekonomicheskaya Gazeta, (Economics Gazette), Moscow, No 50, 8 December 1962, page 43.]

A satire was printed in Ekonomicheskaya Gazeta, No 44 (65) under the title "Bureau of Good Services", which told how the Yeysk Machine Tool Building Plant had sent poor quality machine tools to the Samarkand Krasnyy Dvigatel' Plant. Upon verifying these facts, the Director and Secretary of the Party Bureau of the Yeysk Plant, comrades Albul and Pegorelov, informed our editors that they have sent to Samarkand a brigade which eliminated the flaws in the machine tools.

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CSO: 1830-3

PISTON RINGS FROM STEEL STRIPS

Following is the translation of an article
in the Russian-language publication Leninskaya
Smena (Leninist Young Generation), Alma-Ata,
15 January 1963.

Tselinograd. (Correspondent of Kazakhstan Technico-Agricultural Newspaper). The products list of the enterprises of the Tselinnyy Sovnarkhoz is replenished by tens of new articles and machines. Of especial interest is the work of the collective of the Makinsk Plant imeni V. I. Lenin on the production of piston rings made of steel strips instead of cast iron.

- Two new machine-tool lines have been installed at our enterprises, -- the Chief Engineer of the plant M. V. Stepanov told us, -- one for making oil-scraper piston rings for the DT-54 diesel engine. On the second line we shall make oil-scraper and pressure rings for the GAZ-51 automobile motor. The use of steel rings improves the quality of motor operation and yields a considerable economy of crank-case oil. The serial production of these machine parts from steel strips can be fully automated and consequently, labor productivity can be drastically improved.

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CSO: 1830-S

AT A SPECIALIZED CUTTING-TOOL PLANT

Following is the translation of an article in the Russian-language publication *Ekonomicheskaya Gazeta* (Economics Newspaper), Moscow, No 7, 16 February 1963, page 48.

Moscow Frezer (Milling Cutter) Plant imeni M. I. Kalinin is a major specialized enterprise which builds cutting tools. It was put into operation in the years of the first Five-Year Plan.

Mass production creates all the possibilities for mechanization and automation, adoption of new industrial processes, and better organization of production. And all this, in its turn, ensures the continuous growth of production and an improvement of technico-economic indexes of operation.

Last year the collective of the Plant produced 270,000 rubles worth of goods over and above the plan. In comparison to 1961 the goods output has increased 6.7%. The task of increasing the labor productivity and reducing the prime cost of production has been overfulfilled. The above-plan economy exceeds 180,000 rubles.

Numerous new developments can be seen in the plant shops. Let us take the controller's office communications. In the past they were carried out over the telephone and radio, now the controllers make use of television also. The industrial television set PTU-102 connects the key sectors of the plant. The work of each of them is seen at the central controller's office of the plant. This provides for a better and more effective guidance of production. The central controller's office of the plant is depicted in the upper photo.

The new progressive industrial process, -- manufacture of cylindrical drills by the method of longitudinal thread rolling is very effective. At one of the sectors the

automatic machine for longitudinal-thread rolling of drills has been installed. Its output is 5,000 drills per shift. This is several times more than on an automatic miller. The drills cost less and their quality is higher than when manufactured by other methods. Moreover, we economize up to 30% of the hard-to-get steel. In the drill shop several automatic lines have been recently put into operation. On one of these lines the finishing of drills with a diameter from 6 to 8 mm. is performed. The output of the line is more than one million of articles per year.

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SARATOV BUILDS A NEW GEAR-LAPPING MACHINE

Following is the translation of excerpts of an article in the Russian-language publication Nauchno-Tekhnicheskiye Obshchestva SSSR (Scientific-Technical Societies of the USSR), January 1963, page 25.

The collective of the Saratov Gear-Shaping Machine Plant designed and built a new gear-lapping machine with flexible adjustment (model SP725). This machine is designed for lapping bevel gearing with the spiral tooth up to 400 mm in diameter.

Lapping on the new machine improves appreciably the quality of bevel and hypoid pinions, which fact, in its turn, increases the life of machines and mechanisms in which they are installed and renders the work of these machines noiseless.

The model SP725 machine is universal, highly productive, and is rapidly adjustable for lapping any pair of bevel pinions.

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CSO:1830-S

EIGHT-SPINDLE AUTOMATIC LATHE

Following is the translation of excerpts from an article by V. M. Mednikov in the Russian-language publication Mashinostroitel' (Machine Builder), Moscow, February 1963, page 17.

At the Kiev Automatic Machine-tool Plant imeni M. Gor'kiy Model 1A240-8 of an eight-spindle automatic lathe for making machine parts from steel or non-ferrous metal rods, was designed and built. On it turning, drilling, threading, and reaming operations can be performed. Eight parts are machined simultaneously.

Technical Characteristics

Diameter of rod, in mm	32
Length of rod, in mm	4,000
Length machined, in mm	160
Power of main-drive electric motor, in kw	14
Weight of machine, in tons	9

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CSO:1830-S

SEMI-AUTOMATIC PROFILE-CUTTER GRINDING MACHINE

Following is the translation of excerpts from an article by A. Kotov and A. Lerner in the Russian-language publication Mashinostroitel' (Machine Builder), Moscow, January 1968, page 18.7

The Vitebsk Tool-Grinding Machine Plant imeni 22nd Congress of the CPSU has manufactured, using the SIB-3 plan, a semiautomatic machine for grinding sharp-ground profile cutters over the back face with either straight or spiral tooth, with uniform or nonuniform circular pitch. Such cutters are used for machining turbine vanes.

Prior to the appearance of this machine at the Lenin-grad Metal Plant profile cutters were ground on three machines, and it took 12 hours to grind one cutter. With the VZ-71 this operation takes 30 minutes only. and thus the new machine increases labor productivity 2,300%.

Technical Characteristics

Diameter of cutters ground, in mm	100-300
Length of cutters ground, in mm	30-225
Helix angle, in degrees	0-40
End-clearance angle of cutters ground, degrees	10-20
Total power of electric motors, in kw	2.3
External dimension of machine, in mm ..	1670x1500x1700
Weight, in tons	2.2

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HYDRAULIC STRAIGHTENING PRESSES P957 AND P6039 WITH A FORCE OF 800 TONS

Following is the translation of excerpts from an article by N. I. Nayguz in the Russian-language publication Byulleten' Tekhniko-Ekonomicheskoy Informatsii (Bulletin of Technico-Economic Information), Moscow, No 1, 1963, pages 28-31.

The Odessa Press Plant mastered the production of models P957 and P6039 of special hydraulic presses with a force of 800 tons for straightening welded metal structures, merchant shapes, shafts, and pipes. The U-shaped design of these presses makes it possible to work from three sides and enables us to use them for various boiler, bending, and stamping operations.

Technical Characteristics of the Presses

	P957	P6039
Force of the press, tons	800	800
Stroke of piston, mm	500	500
Pressure of hydraulic fluid, newtons/sq cm	200	200
Electric motor of hydraulic drive of the press:.....	A094-6	A094-6
power, kw	75	75
rpm	985	985
Weight of press, tons.....	66	66

The P957 and P6039 presses are controlled electro-hydraulically, with a handle.

Welded straightening presses with a force of 800 tons are built at home for the first time and are 30-40% lighter than cast presses of similar design.

The use of these presses for mechanized straightening of metal structures in the cold state instead of fire-strai-

ghtening by acetylene burners with jacks or manually operated sledge hammers increases labor productivity several hundred per cent and excludes hard physical labor.

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GEAR-MILLING MASTER-MACHINE MODEL 543

Following is the translation of excerpts from an article by N. S. Burgomistrov in the Russian-language publication Byulleten' Tekhniko-Ekonomicheskoy Informatsii (Bulletin of Technico-Economic Information), Moscow, No 1, 1963, pages 31-33.

The Stankokonstruktziya Plant, using blueprints developed by the Experimental Scientific-Research Institute of Metal-Cutting Machines (MIMIS), manufactured in 1961 and delivered to the State Commission a pilot model 543 of a gear-milling master machine. The machine is designed for final-finish milling and shaving of the teeth of high-precision worm index gears with a module up to 6 mm and diameter up to 800 mm. The machining is performed by the method of generating with radial feed (either continuous or periodic).

As the cutting tool the machine uses finishing worm cutters and worm shavers, built, with respect to all elements of engagement, strictly identical with the worm which is paired with the wheel being milled. The machine ensures manufacture of worm gears of the third class of precision according to GOST [Gosudarstvennyy Obshchesoyuznyy Standart; National Soviet Standard] 3675-56.

TECHNICAL CHARACTERISTICS OF THE MACHINE

Diameters of wheels machined, mm.....	200-800
Greatest module machined, mm.....	6
Number of teeth on wheel milled	30-400
Number of rpm of milling spindle	5.5-40
Distance from milling spindle axis, mm:	
to axis of table	130-560
to surface of table	300
Radial feed values, mm/revolution of table	0.06-0.6
Power of main-drive electric motor, kw.....	2.8
Outer dimensions of machine, mm.....	2,950x1,950x1,515
Weight, tons	appr. 10

According to tentative data adoption of the machine will yield an annual economy of 1.2 million rubles.

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PLANO-MILLING MACHINE, MODEL 6,610FR WITH
CUTTER-AND-BORING HEADS

Following is the translation of excerpts of an article by L. N. Stel'man in the Russian-language publication Byulleten' Tekhniko-Ekonomicheskoy Informatsii (Bulletin of Techniko-Economic Information), Moscow, No 1, 1963, pages 33-35./

The Minsk Plant imeni October Revolution built an experimental model of a plano-milling machine with cutter-and-boring heads. The machine was designed by the division of the chief designer of the plant and is part of a set of standardized plano-milling, planing, and plano-grinding machines.

The machine is universal and is designed for machining various types of plane surfaces and openings on body-parts of ferrous and nonferrous metals under conditions of single-piece and small-series production, as well as in repair and tool shops of large enterprises.

Technical Characteristics of the Machine

Greatest dimensions of the part machined, mm:..	
width	1,000
height	1,000
Number of spindle speeds	16
Rpm range of spindles	25-800
Power of spindle-turning electric motor, kw....	14
Weight, kg.....	40,000

Plano-milling machines with cutter -and-boring heads reduce appreciably the auxiliary working time, connected with rearranging of the article machined.

The total time of machining of body parts on the plano-milling machine with cutter -and-boring heads, in comparison with machining on two machines -- a plano-milling and a boring machine, is reduced, according to preliminary calculations, approximately two times (taking into account transporting and rearranging of the part).

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CONTOURING MILLING MACHINE, MODEL LF-23, FOR
MACHINING DIES

Following is the translation of excerpts of an article by G. A. Monakhov and I. A. Sukhov, in the Russian-language publication Bulleten' Tekhniko-Ekonomicheskoy Informatsii (Bulletin of Technico-Economic Information), Moscow, No 1, 1963, pages 35-37.

The Special Designing Bureau in collaboration with the Experimental Scientific-Research Institute of Metal-Cutting Machines (ENILS) designed, and the Machine-Building Plant imeni Sverdlov built a single-design contouring milling machine, Model LF-23.

The machine is designed for machining by the method of automatic contouring, of wedges, trimmers, punching dies, die-casting molds, molds for pressure casting, and other articles of complex shapes.

The maximum area of the part machined is 2,500x8,000 mm with depth of machining up to 1,000 mm, and maximum weight of 100 tons.

Technical Characteristics of the Machine

Greatest dimensions of part machined, mm ..	2500x800x1000
Rpm of spindle	25-3,000
Weight of machine, tons	250
Power of the main drive, kw	14

The machine was approved by the plant commission.

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- END -