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New Automation Aids

rotating (up to 100 m/sec surface speed) smooth steel discs has been developed at the Stalingrad Tractor Works (Stalingradskiy Traktorny Zavod). The method is based on friction and dispenses with abrasive wheels. The steel discs rotate faster than grinding wheels and stand up better to shock loads. The machining of all the lugs takes 3.8 sec. 2.5 million components have been machined without change of discs. At the same method. Terminals of different polarity are attached to the link and to the rapidly rotating steel disc profiled to fit the machined surface. When the disc approaches the link, the electrically generated heat begins to melt the metal. The softened surface is removed by the rotating discs. The scientific Research Institute for Tractor and Agricultural Machinery has created a semi-automatic machine, type AET-2, with two melting transformers of 156 kw output and two working discs having a surface speed of 30-34 m/sec. 5 such machines are installed. Within

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8 hours they can be re-set for different tractor links. The removal and treatment of metal waste has been mechanised in the "Vulkan" Works in Leningrad following the proposals of Rassolov, A.Ya., Engineer and Mansyrev, I.G., Lecturer. Fig.4 shows pneumatic extraction and transport of cast iron swarf from large lathes. In one type, hopper shaped receptacles for swarf are positioned at floor level. In another, the flexible hose for pneumatic suction is attached directly to a tool holder of special design, wherein the swarf is extracted through a cavity. Air pipes of 66-150 mm diameter are laid under the floor, join in a manifold rising along the wall and emerge at a height of 4 m into an externally erected hermetically sealed cyclone, where the air is drawn to atmosphere by a fan and the swarf falls into a hopper with a self-sealing valve by which it is periodically unloaded on a lorry. In No.3 Bulletin of the Altay Economic Council, Kryuchkov, K.N., Engineer, reports on a lapping bench for machining the surfaces of housing components

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successfully introduced by the Barnaul Mechanical Equipment Works (Barnaul'skiy Apparato-Mekhanicheskiy Zavod). The bench, illustrated in Fig.5, has a rotating cast iron table against which the component, held by an arm, is lightly pressed and reciprocates in the radial sense. A polishing machine for the automatic polishing of timber components has been made and tested at the "Krasnyy Oktyabr" Factory in Leningrad. A spindle carrying the polishing swab performs a parallel rotating motion and reciprocating motions both longitudinally and transversely. Productivity is increased and skin diseases avoided. At the Lugansk "Imeni Artema" Factory an automatic conveyor line has been commissioned for the enamelling of chute components used in coalmines. Liquid enamels are sprayed on steel components suspended on an electrically earthed conveyor traversing the spraying chamber in which corona producing electrode frames, connected to the negative pole of a high voltage (100-140 kV) source are supported on insulators. Pneumatic atomisers are remotely controlled. The enamel

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is dried and sintered in a conveyor furnace. The components traverse the spraying chamber a second time to receive a top coat. A horizontal boring mill with programme control, designated model 262-PR, has been issued by the "Imeni Sverdlova" Works of the Leningrad Economic Council. The programme is recorded in a perforated card in binary code but the information is fed into the perforator by means of decimal telephone dials. The control panel can also operate by pre-selecting a number of co-ordinates for semi-automatic working. The accuracy is ensured by precision scales and optical devices. The stopping of the table in a precise position is facilitated by a change to slow approach before the co-ordinate is reached. Automation elements for universal machine tools are demanded by a writer in Nos. 3-4 Bulletin of the *Udmurtskiy* Economic Council. Examples are, the programme control of speed changes when machining stepped shafts and the variation of a drill spindle

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speed rate to maintain constant torque. Automation and mechanisation offices have been established in the bigger production plants. In Bulletin No.7 of the Perm' Economic Council, such offices are advocated also for small and medium factories. These offices project, design and make or procure equipment for the automation and mechanisation of production operations. There are 6 illustrations including 1 photograph.

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DUBASOV, A.A., inzh.

Exchange of advanced experience (from the bulletins of the technical
and economic information of Economic Councils). Vest. mash. 38
no. 8:68-75 Ag '58. (MIRA 11:8)

1. Nauchnyy redaktor zhurnala "Vestnik mashinostroyeniya."
(Mechanical engineering)

DURASOV, A.A., inzh.

Using capron materials in manufacturing machine parts. Mashinostroi-
tel' no.1:45-47 Ja '59. (MIRA 12:2)
(Nylon) (Machinery--Construction)

DUBASOV, A.A.

~~Using plastics for parts of forging and pressing equipment.~~
Kuz.-shtam, proisv. 1 no.4:42-47 Ap '59. (MIRA 12:10)
(Plastics) (Power presses) (Forging machinery)

DUBASOV, A.A.

Dies made of synthetic materials. Kus.-shtam. proizv. 1 no.7:44-48
Jl '59. (MIRA 12:10)
(Dies (Metalworking)) (Plastics)

AUTHOR: Dubasov, A.A., Engineer SOV/122-59-2-32/34

TITLE: New Machines and Their Design (Novyye mashiny i ikh konstruirovaniye)

PERIODICAL: Vestnik Mashinostroyeniya, 1959, Nr 2, pp 85-89 (USSR)

ABSTRACT: In bulletin Nr 3 of the Altay Economic Council [Sovmarkhoz] A.P.Doktorov and V.P.Krotov report on the completion of a pneumatic tyre tractor for factory transport and on a trailer carriage. Components of the GAZ-51 motor car have been used. The tractor has two rear and one front wheel, two speeds each in forward and reverse (4 and 8 kph). The engine is the ZID-4.5 Series A engine developing 4.5 hp. The tractor weighs 700 kg and develops a draw bar pull of 175 kg at a speed of 4 kph. The overall dimensions are 1850 x 1350 x 1300 mm. Loads vary from 1 to 2 tons according to conditions. The minimum radius of a full turn is 1.5 m. The Murom Works (Muromskiy Zavod imeni Dzerzhinskogo), is starting production of shunting diesel locomotives, type TGM-1. A solid injection, type 1 D12, 4 stroke engine, developing 400 hp at 1600 rpm drives the locomotive

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through a hydraulic torque converter and two hydraulic couplings. Recent attention has been devoted to multi-spindle automatic presses for the pressing of sheet metal. In deep drawing operations, the annealing between draws is unnecessary because the speed of moving the stampings from die to die does not allow work hardening to take place. D.G.Kravchenko, Chief Engineer of the Barnaul Works for Mechanical Presses (Barnaul'skiy Zavod Mekhanicheskikh Pressov) reports that the factory is starting the issue of powerful automatic presses of this type with maximum loads 80, 160, 250 and 400 tons. Enterprises in the Tula Economic Council are beginning to produce nail driving hand tools for building construction work. The energy of gunpowder gas is used to drive fastenings into brickwork, concrete and steel walls. L.A.Shubenko-Shubin, Corresponding Member of the Academy of Sciences UkrSSR, chief designer of the Khar'kov Turbine Works (Khar'kovskiy Turbinnyy Zavod imeni Kirova), reports in bulletin Nr 1 on the results of work concerned with the selection of new types of turbines and initial steam conditions for the

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improvement of turbine efficiency. The conclusions are stated as follows: 1) the required rate of growth of power supplies can be achieved by increasing the unit output of turbines up to 200 and 300 Mw without reducing the reliability of power supply; 2) the experience of the Khar'kov Works in the design and construction of turbines and also the investigations of scientific research establishments and plants have shown that the assemblies and components of turbines made of familiar pearlitic steels can operate continuously at pressures of 130 at and temperatures of 535°C; with some improvement in the heat resistance of the material, the working temperature can be increased to 565°C; 3) experience in the manufacture and operation of SVK-150-1 turbines with initial steam conditions of 170 at, 550°C, has shown that, once austenitic steels are used, it is advisable to increase the initial steam conditions to 250-350 at and 600-650°C; 4) the introduction in large turbo-sets of intermediate steam reheat in the

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boiler flue, when the boiler works in a single block unit with turbine, constitutes the most effective improvement of efficiency; 5) substantial increases in turbine efficiency can be expected from the achievements of aerodynamic science applied to the flow passages of turbo-machinery; 6) improved reliability and reduced operating costs are achieved by integral automation of the control and protection system of the turbine extending to an overall automation of the boiler-turbine block unit. The improved heat resistance of new materials of the non-austenitic class, primarily of modified stainless steels with molybdenum and vanadium additions, makes it possible to use them for high temperatures. The single shaft unit, type SKK-300, is therefore projected with initial steam conditions of 240-250 at and 580°C. The first prototypes are scheduled for 1960. Already in 1962-3 it is realistic to expect two-shaft units of 600 Mw, and possibly more, with super-critical steam conditions. N. Chumichev, the director of the Technical Section of the Heavy Engineering Industry Administration in the Leningrad Economic Council,

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reports in bulletin No 1 on the main trends in power machinery. By 1965, single unit steam turbines should reach 450-600 Mw, hydraulic turbines 500 Mw and gas turbines 50 Mw. A new condensing steam turbine, type PVK-200, of 200 Mw output has been completed in 1958 with initial steam conditions of 150 at and 565°C. A design study of a new steam turbine, SKK-300, developing 300 Mw at 300 at and 650°C initial steam conditions has been completed, embodying the use of austenitic steels. New turbine installations are projected in pearlitic steels. The specialisation of and cooperation between turbine constructors are inadequate. The centralised manufacture of turbine blades has not yet been organised. A batch of forced circulation boilers with an output of 643 tons per hour at 570°C and 140 at has been made. The weight of this boiler, intended for operation in a single block unit with a 200 Mw turbine, is 2700 tons. Design details are being prepared for forced circulation boilers of 700 and 810 tons per hour output at 225 at and 655°C and another

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boiler of 925-950 tons per hr at 250 at and 585°C. The 810 tons per hr boiler is intended for a block with a 300 Mw turbine. Design details for a complete set of fittings and valve gear for super-critical steam conditions have been prepared (315 at and 655°C). A designers' conference of the engineering enterprises in the Stalingrad Economic Council heard a proposal to simplify drawing procedures. The drawings of an assembly with a multiplicity of projections should be replaced by simplified scale sketches which permit solely to check the correctness of the fitting of parts. The full drawing of bolts, nuts and other simple components can be dispensed with. Pictorial presentations can often be replaced by brief notes. In Nr 4 bulletin of the Stalingrad Economic Council, A.G. Gayvoronskiy, Engineer, discusses these proposals and refers to the "General Electric" experience, reported by American authors, where simplified drawing methods have reduced the preparation of technical documentation by up to 30%. Drawing practice must be continuously simplified, symbolic notation should be

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used and components or assemblies should be made from sketches. Design offices concerned with production equipment and mechanisation means are especially in need of these techniques. A.I. Bobrov, Deputy Chairman of the Leningrad Economic Council in Bulletin Nr 1, poses the problem of the part played by design offices and scientific research institutes under the new conditions of industrial administration. The trend is towards specialised manufacture on the one hand, and complex assembly plants on the other. A better matched structure of the pattern of design offices and scientific institutes distributed in the territory of the separate economic administration regions is required. Regional barriers have prevented the specialisation of design offices and research institutes and have led to duplication of work and repeated creation of different components and assemblies for the same purpose. There is in practice no difference between design offices and scientific research institutes. Both develop experimental prototypes and both are substantially concerned, not with

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the technical level of development of their particular branch of industry, but with the completion of separate assignments. Design offices are not inclined to co-operate with scientific research institutes and the latter are overloaded with auxiliary and product design work. Design offices should be charged with the creation of prototypes of new engineering devices and the part of the scientific research institute is that of solving promising problems of science and engineering. Specialised plants should have their own design or planning offices. Enterprises making complex assemblies should have suitable project and design offices, specialised in the particular branch of engineering pursued by the plant. The rolling of caterpillar tracks links of the S-80 tractor is the aim of experimental work carried out with an experimental mill of the Chelyabinsk Tractor Works (ChTZ) and a laboratory mill of the Urals Polytechnic Institute (Ural'skiy Politeknicheskii Institut). Satisfactorily fashioned links have been obtained. The technical requirements and the basic production scheme for manufacturing these

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links in a semi-automatic flow line have been worked out. Industrial rolling of the links will be carried out in a mill with rollers of 1000 mm diameter rotating at 10-15 rpm driven by a 500 kw motor. An increase in productivity by a factor of 8 together with a metal saving of 5000 tons is expected by comparison with die-stamping. Following previous work on accelerating gas-carburising processes, carried out at the Chelyabinsk Tractor Works, the best carburiser has been found to be sulphur-free lighting paraffin. Raising the carburising temperature from 930 to 960°C increases the activity of the gas medium and reduces the consumption of liquid carburiser. Adding of barium carbonate into the muffle of the carburising furnace, activates the gas medium and improves the quality of carburising. The depth of the case is increased and the consumption of benzole reduced. In Bulletin Nr 2, Iashinskaya, A.S., Chief Metallurgist of the Altay Economic Council Plant, reports that, to improve efficiency, the quenching medium used at the works is a 0.5 to 0.7% aqueous solution of caustic soda.

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To reduce stresses which lead to crack formation in components of industrial chains made of steel 45, the dipping is performed through a layer of oil 40 to 60 mm deep. Such a quenching method permits the use of high output screw conveyor rotating furnaces, ensures the prescribed hardness and eliminates the formation of cracks. A new industrial rolling mill manufactured at the Khar'kov Tractor Works (KhtZ) "imeni Ordzhonikidze" is capable of rolling gear wheels from 200 to 500 mm outside diameter and a module of up to 7 mm. The stiffness of the calibrating mechanism is achieved by the introduction of additional master gears arranged immediately below the blank and the roller. After the hot rolling, the gear wheels are cold calibrated in the same mill to replace shaving. Gear wheels with tooth dimensions corresponding to the second grade of accuracy can be made. After case hardening and quenching, the dimensions over the tooth thickness increase by 0.05 mm. Taking account of this change makes it possible to obtain a completed precision gear. It was found on test that both the fatigue strength and the wear resistance of

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rolled gears are twice those of cut gears. The productivity of labour increases five times and the tool cost only three times. The testing of mechanical presses is usually carried out by blanking or coining from rolled sheet. This is stated to cause wastage. Engineer L. Prishchepionok reports in bulletin Nr 3 of the Altay Economic Council on the design and manufacture of a hydraulic device for the testing of presses. The device consists of a hydraulic cylinder with a false bottom diaphragm having a nest with a calibrated hole. The top plunger moves in a bearing liner and has on its lower face a punch which enters with its tapered projection into the calibrated hole. The press ram to be tested is lowered on to the top boss of the plunger, designed with a spherical seat to avoid side loads. When the plunger moves downwards, liquid is pressed through the annular clearance between the punch projection and the calibrated hole into the lower cavity underneath the false bottom and from there into a tank wherein the liquid compresses air. Reading the air pressure as a

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function of ram displacement yields the working load diagram of the press. At the Azov Works for Press Working Machinery (Azovskiy Zavod Kuznechnopressovogo Oborudovaniya), the finishing of the internal diameter of a cylinder has been developed by means of a hydraulic burnishing head. The cylinder diameter is 300 mm, its length up to 3500 mm. A surface finish up to the 8th grade can be obtained and the hardness of the surface layer can be increased by 5-6 Rockwell C. Compared with polishing with a chamois wheel, the machining time is reduced by a factor of 10 and compared with honing by a factor of 3. Tyutyunikov, B.D. and Chuzhensko A.V., report in bulletin Nr 8 of the Rostov Economic Council that the Azov Works have replaced honing by burnishing in all cylinders, where conditions permit. The burnishing head is illustrated in Fig. 2. Rocking levers carry burnishing rollers mounted on angular contact ball bearings. Three rollers, equally spaced, are used. The rocking levers are displaced by a plunger receiving oil pressure which enters the plunger chamber from a cylinder of the expanding control mechanism arranged at

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the end of the boring bar. The oil pressure, indicated on a pressure gauge, is adjusted by a nut compressing a spring and transmitted to the burnishing head. The burnishing roller should not be pressed against the wall with a load exceeding 50 kg/mm². The roller has a spherical radius of 50 mm and ensures a contact spot of about 5 mm² (with a cylinder diameter of 300 mm). The rollers are made of ShKh15 steel and hardened to 58-62 Rockwell C. Their surface is polished to the 10th grade of surface finish. Under the pressure of the burnishing rollers, the metal of the cylinder wall flows and fills the valleys of the micro-unevennesses. A mirror finish is obtained with a depth of a work hardened layer amounting to 0.25 to 0.30 mm. The burnishing speed has no effect on the surface finish and is chosen depending on the dynamic loads permitted. The bore diameter is increased after burnishing. An empirical formula used for the burnishing allowance adds up the micro-unevennesses (arithmetic mean) and the magnitude of the residual compression (for steel 20 and a bore of

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300 mm diameter, a typical value is 0.025 mm). In a 300 mm bore, the head is rotated at 80 rpm, fed 1.25 mm per revolution, and burnishing is completed after four passes. Yu.T.Avrarov reports in Bulletin Nr 8 of the Rostov Economic Council that, to improve the quality and eliminate scrap in the pressing of bearing sleeves, the sleeves are previously cooled in CO₂. The equipment used consists of a jacketed steel tank having an internal wall of 7 mm and an external wall of 3.5 mm thickness and covered with a steel clad wooden cover. De-greased sleeves are loaded into the tank, which is covered up and carbon dioxide is admitted from a bottle. During the pressure drop the carbon dioxide temperature falls. Sleeves of 3 to 5 mm thickness require 7 min and sleeves of 7 to 10 mm up to 15 min holding in the tank. The cooled sleeves enter their bores without pressure. A.M.Gavrilyuk reports in Bulletin Nr 4 of the Gor'kiy Economic Council on insert blocks made at the Gor'kiy Plant for Milling Machines (Gor'kovskiy Zavod Frezernykh Stankov) to manufacture small batches of plastic components.

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The design and making of plastic moulds is accelerated and reduced in cost. With this equipment, only new mould inserts are required to press a new plastic component. A composite mould (Fig 3) consists of a lower part holding one mould insert and an upper part holding the other insert. The ejector mechanism is arranged in the lower part. The mould inserts are slid into position and clamped. The mating of the mould halves is ensured by guiding columns. The ejector mechanism has interchangeable ejector pins and its stroke can be adjusted. The upper mould plate is heated by an intermediate hot plate, the lower mould plate by means of tubular elements. An example of interchangeable inserts shown (Fig 4) serves the moulding of steel ring reinforced plastic housings. In Bulletin Nr 2 of the Valdimir Economic Council, B.S.Vorob'yev, Engineer and Yu.G.Maksimov report on the procedure of making moulds by the pressing of liquid metal over a master component. Such moulds can be used for plastics, rubber and other materials with a specific moulding pressure not exceeding

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30 kg/cm² and the making of fusible patterns for casting. After making a master component built up of detachable pieces, the two mould halves are made by pouring of a liquid aluminium alloy under pressure. The two mould halves are then mated up and the parting planes are fitted together. When making the master components, all vertical surfaces should have a draught of 20 to 30 minutes. The master surfaces which fashion the working surface of the mould are polished and hard chromium plated to a thickness of 3 to 4 microns in order to prevent sticking of the liquid metal to the master. Across the parting plane the master dimensions are increased by 0.3 to 0.4 mm as an allowance for mating up. The pressing of the mould halves is carried out in hydraulic or friction presses ensuring a pressure of not less than 200 to 250 kg/cm² over the meniscus of the mould halves. Before filling the cavity of the pressure die with liquid metal, all the parts and the master components are heated in an electric furnace to 500-600°C. Into the assembled die, with an inserted half-master, the necessary quantity of molten aluminium

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alloy is poured according to the required height of the half-mould. At the first instant of crystallisation of the poured metal, the press applies pressure to the plunger as required to obtain the necessary detail of contour in the half-mould cavity and to ensure a dense structure of the metal. The solidified half-mould is cooled down to 18-20°C, when the mould cavity assumes the dimensions corresponding to the dimensions of the master. Subsequent heating of the half-mould to 300-400°C makes it possible to remove the master from the half-mould. A formula is given for the dimensions of the master which takes into account the different shrinkages. 35 designs of aluminum alloy moulds used for making investment casting patterns have been made by this method. Engineer B.M. Mastikov reports in Bulletin Nr 5 of the Sverdlovsk Economic Council on the development of a centrifugal pump made of plastic materials in order to save brass at the Polevskiy Creolite Works (Polevskiy Kriolitovyy Zavod) for sanitary ware.

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plastics and all those carrying mechanical loads, of metal. The pump is used for acids of various concentrations. Plastics based on phenol formaldehyde resins are used in the main. The resin is obtained in a reaction between phenol and formaldehyde in the presence of an ammonia catalyst at 80-96°C. The resin concentration is 75-82%. The polymerisation time is 150 seconds. The impellers and sleeves are made of 56% (by weight) resin, filled with a mass consisting of 42.4% of paper pulp and 1.6% of stearin. K-1 moulding compound for the manufacture of nuts, covers and housings in the pump consists of 56% resin, 21.2% coke flour, 21.2% paper pulp and 1.6% stearin. The resin, in a concentration of 75-82%, is loaded into a mixer, previously heated to 55-60°C, and the pulp is added. If a coke filler is used this is mixed in after 1 hour following the loading of the pulp. After three hours mixing, the moulding mass is removed. During mixing, volatile vapours are extracted by means of a vacuum pump. The moisture content of the moulding mass is 8-10%. The components are moulded at 110-120°C in a

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hydraulic press of 200 tons maximum load. Polymerisation is carried out in the moulds placed in an electric muffle furnace heated to 300°C. The polymerisation time is 15-16 minutes. 125 kg of brass are saved on each pump. There are 4 figures.

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AUTHOR: Dubasov, A.A., Engineer

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TITLE: New Equipment for Industry and Building Construction
(Novoye oborudovaniye dlya promyshlennosti i
stroitel'stva)

PERIODICAL: Vestnik mashinostroyeniya, 1959, Nr 5, pp 42-45 (USSR)

ABSTRACT: The first Soviet Steel-Smelting Arc Furnace of 80 tons capacity has been produced by the Novosibirsk Electrothermal Equipment Works (Novosibirskiy zavod elektrotermicheskogo oborudovaniya) in co-operation with the Dnepropetrovsk Metallurgical Equipment Works (Dnepropetrovskiy zavod metallurgicheskogo oborudovaniya), the Elektrostal' Heavy Engineering Works (Elektrostal'skiy zavod tyazhelogo mashinostroyeniya), the Leningrad "Electrosila" Works (Leningradskiy zavod "Elektrosila") and the Moscow Transformer Works (Moskovskiy transformatornyy zavod). The new furnace, designated DSP-80, exceeds all previous Soviet designs in output and level of mechanisation. It has a special device for stirring the molten metal which ensures the removal of slag from the surface of the metal without manual labour. The output of the new furnace is over

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10,000 tons per annum. The Elektrostal' Heavy Engineering Works has designed and manufactured an electric arc tube welding mill, model 426-820, which will perform submerged arc-welding of water and gas pipes, 426-820 mm in diameter. The installation comprises a sheet setter, edge planers, a crimp press, presses for the preliminary and final shaping of the pipes, tube-welding units and hydraulic presses for testing the pipes. Its output is 50 tubes per hour (600 m length). Claimed to be the first in the world, the PD-1M Shaft Sinker, manufactured by the Ural Engineering Works (Uralsmashzavod), will sink shafts 6.5 m in diameter to any depth through medium hard rock with a water inflow rate of up to 60 m³/hour. It forms a three-floored unit provided with a planetary cutting mechanism for crushing and removing rock with its drive and feed mechanism, a vertical lift for conveying crushed rock to tipping hoppers, draining equipment as well as the protection and control devices.

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The total weight is 140 tons. When the machine is working, its framework remains stationary as it is wedged against the rock by means of jacks. The machine is controlled from a panel on the second floor. It increases the rate of sinking vertical shafts by a factor of 4 to 5 and raises labour productivity by a factor of 5 to 6. The BU-2B, new percussion cable drilling rigs, manufactured by the Voronezh Ore Concentration Equipment Works (Voronezhskiy zavod gornoobogatitel'nogo oborudovaniya), are intended to drill vertical wells for open-cast working. The number of percussions is 52 per minute. A cutter-loader unit, created by the Novosibirsk Works of the State Experimental Institute of Design and Construction for the Coal Machinery Industry (Novosibirskiy zavod instituta Giprouglemash), operates by the milling method and is designed for the mechanical working of thick coal seams. Its shuttle mechanism enables it to cut the coal in forward operation or in reverse. The maximum depth of the

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coal stint amounts to 150 mm and the maximum width to 3 m. Output is up to 3 tons per minute. The use of the unit reduces timber prop consumption by 90%. The same works have also produced hydraulic props for the up to 18 m thick seams of the Tom'-Usinsk coalfield. It is 50 m long and weighs over 100 tons. Compressors in L formation with cylinders mounted at an angle of 90° to each other - one vertical, the other horizontal - permit good mass balancing which makes a reduction possible in the weight of the compressor and its foundation since its crankshaft is mounted on two main bearings instead of the five main bearings for the shaft in vertical machines. L-compressors have a high efficiency. The "Borets" Works (zavod "Borets") have now produced improved models of the VP U0/8 and VP 30/8 compressors with an output of 10 and 30 m³/min. The weight of L-compressors is one half that of vertical compressors. The Altay Tractor Works (Altayskiy traktorny zavod) have produced several new tractors,

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one of which is the DT-4 track-laying type. At a speed of 4.35 - 8.7 km/h it has a drawbar pull of 4.1 - 1.9 tons and at 2.6 - 3.5 km/h a pull of 6.2 - 5.1 tons, which enables it to be used for agricultural work at the higher speeds and, with a bulldozer and scraper, for road construction, reclamation and other heavy work at the lower speed. Compared with the DT-70 tractor, which weighs 7.1 tons and has a 70 hp engine, the DT-4 tractor weighs only 6.4 tons and has an engine power of 85 hp. The DT-4 tractor will find extensive use in agriculture and industry where it can replace the S-80 tractor because of its adequate pull with a small overall size and its good manoeuvrability. The swamp version, DT-4B, has broad track chains to limit the ground pressure below 0.2 kg/cm². The TDT-75 tractor with an engine power of 70-80 hp has been produced on the towing tractor, TDT-60. Some of the sub-assemblies of this tractor are standard DT-4 units. Its speed ranges from 2.6 to 9.5 km/h at which it develops a pull of 5.2 - 0.7 tons.

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The force on the winch cable is 8.5 tons for the upper turns and 10.5 tons for the lower turns. The Works have also produced the TST-130, a tipping tractor with a load capacity of 15 tons and a 130 hp engine, as well as a wheeled tractor with four driving wheels with unit assemblies of the track-laying tractors DT-70 and DT-4. The Vladimir Tractor Works (Vladimirskiy traktorny zavod) have produced the experimental prototype of a tractor with front axle drive, the T28A "Vladimirets". In work on wet soil or in roadless conditions wheel-slipping is reduced by over 40%, which considerably increases its cross country performance. The front axle drive is engaged automatically when the slipping of the rear wheels exceeds 5%. The same works have created the experimental prototype of a new tractor, the T-29 model, with an air-cooled engine. The design of the machine ensures good accessibility of the engine. The pump of the hydraulic system is mounted on the transmission and not

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on the engine, which renders the hydraulic system lay-out more convenient. The weight of the new model is 200 kg less than that of tractor T-28. The air-cooled engine reduces the fuel consumption, diminishes the sensitivity to air temperature and simplifies servicing by eliminating the radiator, which is of great importance in the waterless and the northern regions of the country. The Kiyev Engineering and Pipe Fitting Works (Kiyevskiy armaturno-mashinostroitel'nyy zavod) has developed a tubular construction tower crane, designated SKB(t) 2/20, with a lifting capacity of 2 tons and a jib reach of 20 m. It is assembled of large units in order to speed-transfer to another building site. The crane is provided with remote control with the aid of portable electric push button panel. The Kiyev "Krasnyy ekskavator" Works (Kiyevskiy zavod "Krasnyy ekskavator") have created a new hydraulic excavator based on the "Belarus'" MTZ-2 tractor, Model E-221. Its bucket capacity is 0.22 m³. Compared with the

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E-153 excavator, which is also based on the "Belarus" tractor, its bucket capacity has been increased by a factor of 1.5. The excavator is provided with interchangeable equipment: direct and reverse shovel crane, loader and bulldozer. It can dig trenches 720 mm wide and 3.39 m deep as well as ditches and pits; lay pipes in the trench and load loose material and soil. All the working elements are actuated by means of hydraulic jacks. The Kovrov Excavator Works (Kovrovskiy ekskavatornyy zavod) have started the production of the E-6512, diesel-electric excavator. The operating equipment comprises direct and reverse shovels with a bucket capacity of 0.65 m³, a dragline with a 0.5 m³ bucket, cranes with a lifting capacity of up to 10 tons and a jib reach of up to 20 m. The excavator weighs 18.5 tons; it has a 75 hp diesel engine, a 62.5 kw generator and 6 electric motors; it can also operate from external a.c. mains. The same works have produced a drilling and lifting rig

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designated BKM-1, which is mounted on a GAZ-63A lorry and is driven by its engine. It is designed to drill pits 0.8 m in diameter and 2 m deep and to set poles into them up to 12 m long and weighing up to 1 ton. The time for setting up a pole is 1 - 1.5 min and the weight of the machine is 4.81 tons. The Dmitrov Milling Machine Works (Dmitrovskiy zavod frezernykh stankov) have developed, on the basis of the batch-produced milling machines 6N11 and 6N81K, a vertical electrical copying milling machine with programme control, designated 6N11KP. Seven special electromagnetic multi-disc clutches, with overhung discs designed by the Works, have been incorporated for controlling the traverse of the worktable, carriage, bracket and outrigger arm. The programme control for copying work is carried out by means of the above clutches which receive periodic control signals to engage or disengage emitted by an electromagnetic transmitter sliding along the master. A punched tape sets the pre-determined sequence of operations. The

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programming of the cycle of operations is performed from the detail drawing on the perforator attached to the machine. The machine is economical in the production of components of complicated contours and in the automatic machining of components with straight surfaces irrespective of their number and mutual disposition. The table size is 250 x 1000 mm, the feed rates of the table in each of the three directions are 20 - 1000 mm/min, the accelerated feed rate of the table is 1500 mm/min, the range of spindle speeds is 65 - 1800 rpm, the overall size 2430 x 1700 x 2300 mm and the weight is 2.5 tons. The Odessa Works (Odesskiy zavod) imeni Kirov have produced the 6P42K, a contour copying milling machine with programme control. The machining of components is performed on this machine with the aid of a hydraulic tracking system. The machining cycle is automatically operated throughout. A radial drilling machine with

Card 10/20 programme control for small components - the SKB. j -

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and the RSP-1 for large casing type components have been produced by the Moscow "Stankokonstruktsiya" Works (Moskovskiy zavod "Stankokonstruktsiya") and the Odessa Radial Drilling Machine Works (Odesskiy zavod radial'no-sverlil'nykh stankov) from Design SKB-3 of the Odessa Economic Council (Odesskiy sovnarkhoz). The principal sub-assemblies of these machines are: the input unit; the digital computer; the tracking system; the jig-borer table and the drilling head. The input unit comprises the tape feeding mechanism the the reading device. Its duty is to introduce the programme into the machine. A special mechanism pulls the punched tape containing the information past the reading device whose photoelectric cells register read-in data. The latter is then transmitted to the computer in the form of electric impulses. Any number of coordinates can be recorded on the punched tape, which enables any number of holes to be machined in a component. If the need arises for drilling a given number of holes in several components

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then, in the place of the punched tape, isolated information items can be fed into the machine by means of telephone type dials. During programme operation, the servo-control system sends impulses to the computer at set intervals. At the appropriate instant, the instruction is transmitted to stop the table at a given coordinate. The jig-borer table can be stopped at a given coordinate with an accuracy of 0.01 - 0.15 mm. The maximum combined error in centre distance does not exceed 0.04 mm. The Moscow Machine Tool Works (Moskovskiy stankostroitel'nyy zavod) "Krasnyy Proletariy" have produced a special hydraulic copying lathe, Model 1691, for machining external, internal and end surfaces as well as for additional non-copying machining. A special feature of the lathe is that it is possible to carry out the complete turning of a component with one setting by means of the two independent tool supports - namely the hydraulic copying and a mechanical support.

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The maximum diameter of the workpiece is 1200 mm, the max length 500 mm, the maximum length of longitudinal turning from a master with one setting of the tool - 220 mm, the overall dimensions of the lathe are 4050 x 4150 x 2350 mm; its weight, 15.2 tons. The same works have produced a vertical six-spindle semi-automatic lathe, Model 1272, and an automatic lathe for the machining of sleeves, Model MK-70. The Model 1272 machine is designed for machining components 750 mm long and up to 250 mm in diameter (when machining in the chuck). Each station of the lathe is provided with a hydraulic copying attachment, a transverse tool support and an upper centre tailstock. Wear of the copying tool is taken up by automatic re-setting. The lathe is provided with an automatic loading device. The weight of the lathe is 55 tons, its overall dimensions 4.2 x 3.68 x 4.27 m. Lathe Model MK-70 is to serve for machining the cylindrical surfaces and for cutting off of cast iron and bronze sleeves. The travel of the front and upper tool

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supports, the clamping and release of the components, the positioning and machining are performed automatically. Maximum diameter of machining and length of the component are 80 mm, the overall dimensions of the lathe 2.17 x 1.15 x 1.55 m, the weight 2 tons. The Gor'kiy Milling Machine Works (Gor'kovskiy zavod frezernykh stankov) have produced a wide-bed universal milling machine, Model 6N83Sh, for machining dies, moulds and metal patterns. The machine has one main tool spindle and an auxiliary spindle set into the swivelling milling head which is mounted on the telescopic tool slide of the machine and is able to rotate through 360° in the longitudinal plane of symmetry of the table and through 135° in the transverse plane. This permits the machining of components exceeding in size the dimensions of the table and to set the head up at any angle in space. Separate and simultaneous work with both spindles can be carried out on the machine. The overall

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dimensions of the machine are 2630 x 2140 x 2015 mm, the working surface of the work table 1600 x 400 mm, the maximum traverse of the table - longitudinal 900, transverse 320 and vertical 420 mm. The weight of the machine is 4.4 tons. At extra charge, the machine can be equipped with a rotary table, a dividing head, a machine vice and a slotting attachment. The Yegor'yevskiy "Komsomolets" Works (Yegor'yevskiy zavod "Komsomolets") of the Moscow Regional Economic Council have produced the prototype of a two-section semi-automatic gear hobbing machine, Model 5313, for cutting straight and helical gear wheels. The principal special feature of the machine is its two-section lay-out which permits an economy in floor area, increases the rigidity of the machine and facilitates its maintenance. The machine can cut straight gears up to 200 mm in diameter, helical gears with a helix angle of 30° up to 180 mm in diameter and up to 140 mm in diameter if the helix angle is 45°. The maximum module is 5 mm. The spindle speed is 80 - 710 rpm, the weight of the machine 11 tons.

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The machine cuts gear wheels to grade 2 accuracy (GOST 1643-46), permits the use of high-speed and carbide hobbing cutters and operates with either ordinary or climb milling. With the installation of an automatic loading and unloading mechanism, the machine could operate with a closed automatic cycle. It has a mechanism for the automatic adjustment of the hobbing cutter to compensate for wear. The hydraulic feed-in mechanism provides for the following work cycle: rapid traverse of the cutting tool to the blank; slow cutting to the depth of the tooth at a previously set rate of feed; automatic engagement of axial feed after completion of the cut to the full depth of the tooth. The magnitude of the axial movement of the cutting tool is set beforehand within the limits 0.5 - 2.5 mm for each work cycle of the machine. The total cutter spindle traverse is 40 mm. At present, the automatic section-type machine, Model A514, is used
Card 16/20 for the manufacture of springs from 6.3 to 10 mm

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New Equipment for Industry and Building Construction

diameter wire. It has some design faults and a low output. The Azovskiy Works for Automatic Press-Working Machines (Azovskiy zavod kuznechno-pressovykh avtomatov) has started producing the A524 automatic machine. Compared with Model A514, the new machine has smaller overall dimensions and weight while its output is doubled. The machine produces right-hand and left-hand coil springs of cylindrical, conical and barrel shape with flattened and non-flattened end coils. The overall dimensions are 1960 x 3000 x 2000 mm, the weight 8 tons, length of stock 346 - 21,000 mm, internal diameter of the coil spring 30 - 120 mm, the rate of winding 20 - 40 m/min, the output 0.87 to 87 springs per minute, the electric motor type A82-12/6 is rated 12.5 kw at 480/970 rpm. The spring stock is 65G type steel, 6.5 - 10 mm in diameter. The Odessa Press Works (Odesskiy zavod pressov) has started producing new 315 ton hydraulic presses, Model P-458, for plastic moulding. The control process is fully automatic and is performed in accordance with a pre-set cycle as follows:

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(1) Rapid approach of the movable beam until the die closes. (2) Slow closing and raising of the pressure to a pre-set magnitude. (3) Opening and closing of the die for the discharge of gases (depending on the composition of plastic material and the shape of the article, the number of pre-pressing cycles may fluctuate between 1 and 3). (4) Pressing; the oil pressure in the press system rises to the nominal value in accordance with the adjustment of the safety valve. (5) Holding under pressure. (6) Opening the die and (7) Ejecting the finished moulding. The automatic operation of the process is carried out in the main by standard hydraulic and electrical equipment. The Izhora Works (Izhorskiy zavod) have produced a 4000-ton vertical hydraulic press for the manufacture of wood-fibre board 1280 x 5580 by the hot-pressing method. The press weighs 420 tons. It is the first of its kind produced in the USSR. Its operation is fully automatic and provides for an output of 68 tons

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of board per day. The Novosibirsk Works (Novosibirskiy zavod) "Tyazhstankogidropress" has produced a series of horizontal plunger pumps, Model G301B, with a crankshaft speed of 145 rpm, an output of 1000 litre/min and a pressure of 320 at; compared with the Model G302 pump, the G301B weighs 8 tons less. The new high-speed pump of the same Works, Model G335B, has an output of 500 litre/min at a pressure of 100 at, is designed to supply water under high pressure to individual hydraulic press installations but can provide water also to ganged hydraulic presses working with an air-hydraulic accumulator. In order to prevent harmful suction losses and to ensure a constant flow in the suction main, a special suction manifold, two thirds of whose volume content is taken up by water and one third by air, is fitted to the lower part of the cylinder block; the manifold thus fulfills simultaneously the part of a suction manifold and air trap and the principal hydraulic losses in the suction line, due to the

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fluctuation in the motion of a liquid, are reduced to a minimum. The feed tanks of the G335B model pump can be installed at a distance of 60 m or even in a different location; the pump can operate with the feed tanks installed below floor level and is switched off automatically if lubrication fails. Models G357 and G366 pumps were designed on the basis of the G335B pump. Output of the G357 pump is 250 litre/min at a pressure of 250 at and of the G366 pump, 170 litre/min at a pressure of 320 at. The Works designers are also developing the project study of a three-plunger pump, Model G305, which will have an output of 500 litre/min at a pressure of 320 at. The pump has no reducing gear, the drive will be by electric motor. This is the first pump of its kind produced in the USSR. During the current year the "Tyazhstankogidropress" Works will produce the prototype of the press.

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28(2)

307/122-59-7-9/25

AUTHOR:

Dubasov, A.A., Engineer

TITLE:

New Means of Automation and Mechanization

PERIODICAL:

Iiteynoye Proizvodstvo, Nr 7, 1959, pp 21-23 (USSR)

ABSTRACT:

During the period from 1959 to 1965 the machine tool industry will contribute much to the mechanization and automation of the foundry trade and the stamping trade. In the foundries, much will be done for the manufacture of molds and for the propagation of sand molding machines. But the molding machines still have some disadvantages. The plant "Krasnyy Aksay" at Rostov (rationalizer I.P. Gorobchenko) has improved the already-operating machine into a semi-automatic one. One drawing explains this new machine and describes its manner of operation. The operation done thus far by hand is omitted by the semi-automatic operation. The plant "Voronezhskiy Mash" too has designed a similar sand molding machine for the manufacture of casting molds (type VC-1) which is better than the one produced in series by the plant "Krasnaya Presnya". The

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difficult process of ramming too has been facilitated in several plants. In the Tractor Plant at Stalingrad and the Tractor Plant at Khar'kov ramming work has been done mechanically with only one worker. According to designs of the Ural -Sibirian Section of the "Soyuzprommekhanizatsiya" (Byulleten' Sovnarkhoza, 1958, Nr 2, Sverdlovsk) a machine for mechanical sand ramming has been manufactured. The machine in question has been made from local shop supplies, but cannot serve as a prototype. The cleaning of patterns too is done mechanically in many plants. For instance, already in 1958 the machine OET-2 was made at the Tractor Plant at Stalingrad (Byulleten Sovnarkhoza, 1958, Nr 6 Stalingrad). Technical data are given. Grinding of tractor tracks too is done automatically (Byulleten Sovnarkhoza, 1959, Nr 5, Stalingrad) with only 3,8 sec for each track link working time. Those examples should be accepted by other plants. There are 5 diagrams and 6 Soviet references

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SOV/118-59-9-2/20

AUTHOR: Dubasov A.A., Engineer

TITLE: Automation of Universal Metal-Cutting Machines

PERIODICAL: Mekhanizatsiya i avtomatizatsiya proizvodstva, 1959,
Nr 9, pp 6-10 (USSR)

ABSTRACT: The 21st Party Congress decided to realize, in the period 1959-1965, automation of technological processes in the field of machine-building. Automation must encompass all kinds of equipment including metal-cutting machines. Analysis has shown, up to the present time 50-60% of the work in the metal-cutting industry is done by manual labor used in performing auxiliary operations. Needless to say, in order to save time and labor, and raise the production level, automation should be carried out on a large scale. Individual steps in this direction have been already taken by a number of plants; thus, at one of the plants belonging to Tula sovnrarkhoz, designers Yerokhin and Nearonov have worked out a number of designs for automation of lathes.

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M-7 3

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Automation of Universal Metal-Cutting Machines

Fig. 1 shows a modernized lathe, Type 161, provided with pneumatic and electric devices permitting the cutting of 10 mm thick rods and pipes 8-32 mm in diameter. The Izhevskiy Plant belonging to the Udmurtskiy sovnarkhoz has built the automatic device, Type 51 TM, which cuts rods up to 20 mm thick, and pipes up to 30 mm in diameter (Fig. 2). At the Tula sovnarkhoz, a vertical milling machine of improved Type TBM-2, operating on the basis of pneumatic-hydraulic control, has been built (Fig. 3). At the Stalingrad Tractor Works, Engineer Bykov has constructed an improved Type 6B82 horizontal milling machine (Fig. 4). The Kiyev Plant producing wormellar chains uses automatic grinders for making roller-bushing chains. At the Tula sovnarkhoz, a double-spindle machine provided with an automatic device has been constructed (Fig. 5). In meeting decisions passed at the 21st Party Congress and June Plenum, exchanges of experience between separate plants will be of great help to Soviet industry. There are 5 diagrams.

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DUBASOV, A.A., insh.

Equipment made of plastics. Mashinostroitel' no.12:29-33
D '59. (MIRA 13:3)
(Plastics--Molding)

DUBASOV, A.A., inzh.

Automation of auxiliary operations in machinery plants of the
United States. Mekh.i avtom.proizv. 14 no.1:58-61
Ja '60. (MIRA 13:5)
(United States--Machinery industry)
(Automatic control)

DUBASOV, A.A., inzh.

Scientific technical conference on economic problems in the
automation of the manufacture of machines. Vest.mash. 40
No.3:81-82 Mr '60. (MIRA 13:6)
(Automation—Congresses) (Machinery industry)

S/122/60/000/003/015/015
A151/A133

AUTHOR: Dubasov, A.A., Engineer

TITLE: Conference on economical aspects of automation in machine industry

PERIODICAL: Vestnik mashinostroyeniya, no. 3, 1960, 81 - 82

TEXT: A scientific and technical conference was convened on December 15-18, 1959, in Moscow to discuss the economic aspects of automation in machine production. It was organized by Moskovskiy inzhenerno-ekonomicheskii institut imeni S. Ordzhonikidze (Moscow Institute of Engineering Economics imeni S. Ordzhonikidze) and the Moscow City Sovnarkhoz. Delegates of other sovnarkhozes, institutes and other organizations took part. The following reports were heard. By Doctor of Technical Sciences, Professor K.I. Klimenko and A.I. Katsenelinbogen of Institut ekonomiki AN SSSR (Institute of Economics AS USSR) - On the economic effect of large-scale mechanization and automation of machine plant production; Honored Scientist and Technologist RSFSR Doctor of Technical Sciences, Professor E.A. Satel' - on up-to-date problems of organization of automated production in machine industry; Doctor of Technical Sciences, Professor A.P. Vlazitsyevskiy - On the basic development trends of machining automation during 1959 - 1965; Engineer

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S/122/EG/000/003/015/015
A161/A170

Conference ...

V.V. Kuz'min - On the mechanization and automation problems in small-lot production; Engineer N.A. Razunov - On the organization of automation at the plants within the Moscow city area; Lenin Prize Winner Candidate of Technical Sciences S.P. Mitrofanov - On application of standardized technologic processes for automatic transfer lines; Rector of the Higher Technical School in Prague (Czechoslovakia) Professor F. Brabets - On evaluation methods for economic effect of technical progress. Apart from the above listed, 20 more reports on various problems were heard. The discussions of existing automatic lines indicated some development trends and led to the conclusion that highest effect of automation is only possible in a combination of reduced capital investment in the result of automation, reduced labor, and reduced expenditures of the production users. One only or a combination of two of these three factors may even lead to higher costs than in nonautomated production. The wrong practice of comparisons not with the latest in the world but with the old and even obsolete local techniques was repeatedly criticized in discussions. The necessity was emphasized to develop standard automation plans not for mass production only. Series output industry needs more universal automation lines making quick resetting possible, and a standard classification of all machine parts to facilitate the standardization of production processes and equipment. More high-productive machines with standard unit com-

Card 2/3

Conference ...

S/122/EO/000/003/015/015
A161/A130

ponents are necessary, and the automation of auxiliary operations and processes is particularly important. Special attention was paid to economical automation ways for forging and foundry production. Candidate of Technical Sciences Ye.P. Voronin (NII Truda) discussed the labor functions in automatic production and the necessity of new labor classifications. Automated industry will need much higher numbers of high-skilled workers with a new and wide skill range, and the training practice must be changed. It is evident that already now the skill level of labor is inadequate for the new equipment. The author expects that the discussions and the recommendations made by the conference will provide a great help in the solution of problems.

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S/191/60/000/012/014/016
B020/B066

AUTHOR: Dubasov, A. A.

TITLE: Use of Epoxy Resins in Machine Building

PERIODICAL: Plasticheskiye massy, 1960, No. 12, pp.45-52

TEXT: Epoxy resins produced from diphenyl-chloro propane and epichloro hydrine with a molecular weight of 350 - 4000 have been used in industry. The properties of cured epoxy resins are given in Table 1. Filled and unfilled, plasticized and unplasticized epoxy resin compounds are used. Acid hardeners (maleic and phthalic anhydride and their mixtures), and basic hardeners (hexamethylene diamine, polyethylene polyamine, meta-phenyl diamine, triethanolamine) are applied in curing. Gypsum, red ocher, quartz sand, porcelain powder, ground glass, quartz dust, cement, mica, talc, metal chips, and others, proved to be suitable as fillers. The most universal plasticizers are dibutyl phthalate, tricresyl phosphate, polyesters, and others. High-molecular resins are better suited for casting since they warrant an elastic cast without cracks. In machine building, the epoxy resins ЭД-5 (ED-5), ЭД-6 (ED-6), and

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Use of Epoxy Resins in Machine Building

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B020/B066

Э-37 (E-37) with molecular weights of 340 - 450, 450 - 600, and 550 - 700, as well as the Э-40 (E-40) resin whose technological properties are equal to those of ED-6 resin, are used. The epoxy-resin plastic was produced in special devices; it was heated to 120°C and cooled to room temperature, mixed in vacuo, the mixture was cooled, and the mixing was carried out in portable containers which are easily cleaned. The manufacture of forces and die blocks with plastic coating becomes more and more universal. They work more economically in spite of higher costs of plastics as compared with metals. When the working surfaces of dies are metallized, up to 100,000 parts can be produced with them. The properties of compounds used in the casting of forces are given in Table 2. The labor input in force production from plastics is 40 - 50% lower than in the production from metals; manufacturing time is reduced 2 - 3 times. In addition to the NIIPlastmass (Scientific Research Institute of Plastics) and the branch institutes, the Gor'kovskiy avtomobil'nyy zavod (Gor'kiy Automobile Plant), the Moskovskiy zavod malolitrazhnykh avtomobiley (Moscow Plant of Low-consumption Automobiles), the Kolomenskiy zavod tyazhelogo stankostroyeniya (Kolomna Plant of Heavy Machine Tool Building), and others, are concerned with the introduction of plastic machines. Epoxy

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Use of Epoxy Resins in Machine Building

S/191/60/000/012/014/016
B020/B066

resins for the manufacture of laminated glass-reinforced plastics are produced in the "Elektroizolit" Plant and the Bobrovskiy zavod (Bobrov Plant) of the Sverdlovskiy sovnarkhoz (Sverdlovsk sovnarkhoz). The Yaroslavskiy zavod "Proletarskaya svoboda" (Yaroslavl' Plant "Proletarskaya svoboda") is mentioned. There are 8 figures and 2 tables.

Card 3/3

DUBASOV, Aleksandr Alekseyevich; BONDAROVSKAYA, G.V., red.;
DORODNOVA, L.A., tekhn. red.

[Equipment for machine building made from plastics] Os-
nastka iz plasticheskikh mass v mashinostroenii. Moskva,
Vses. uchebno-pedagog. izd-vo, Proftekhizdat, 1961. 113 p.
(MIRA 15:2)

(Machinery industry--Equipment and supplies)
(Plastics)

GAL'PERIN, Abram Isayevich; MEYNERT, V.A., inzh., retsenzent; DUBASOV,
A.A., inzh., red.; SMIRNOVA, G.V., tekhn. red.

[Pipe laying cranes] Krany-truboukladchiki. Moskva, Mashgiz, 1961.
161 p. (MIRA 14:11)
(Cranes, derricks, etc.) (Pipeline—General)

DUBASOV

MAKAROV, Petr Aleksandrovich; TSEYTLIN, Yefim Solomonovich; LAPIR, F.A.,
inzh., retsenzent; DUBASOV, A.A., inzh., red.; SMIRNOVA, G.V.,
tekhn. red.

[Molding units for the manufacture of multihollow reinforced-
concrete articles] Formovochmye ustanovki dlia proizvodstva mnogo-
pustotnykh zhelezobetonnykh izdelii. Moskva, Gos. nauchno-
tekhn. izd-vo mashinostroit. lit-ry, 1961. 172 p. (MIRA 14:9)
(Reinforced concrete)

DUBASOV, A.A.

Design of cutting tools with the mechanical fastening of bits.
Trakt. i sel'khozmasb. 31 no.1:43-45 Ja '61. (MIRA 14:1)
(Metal-cutting tools)

BATISHCHEV, Ivan Ivanovich; SHUMOV, Aleksandr Vladimirovich; DUBASOV,
A.A., red.; STRYZHKOVA, N.I., red.; GALAKTIONOVA, Ye.N.,
tekh. red.

[Operation of self-loading motor vehicles] Eksploatatsia avto-
mobilei-samogruzchikov. Moskva, Avtotransizdat, 1962. 158 p.
(MIRA 15:9)

(Motor vehicles)

DUBASOV, Aleksandr Alekseyevich; NIKOLAYEV, M.N., red.;

[Repair of tractors under operating conditions] Remont traktorov v ekspluatatsionnykh usloviakh. Moskva, Goslesbumizdat, 1963. 81 p. (MIRA 17:4)

DUBASOV, Aleksandr Alekseyevich; GOTESDINER, S.G., nauchn. red.

[Use of plastics in the repair of construction equipment]
Primenenie plastmass pri remonte stroitel'nykh mashin.
Moskva, Stroiizdat, 1965. 195 p. (MIRA 18:9)

2-58-3-4/17

AUTHOR: Dubasov, B., Head of the Statistical Administration of the Lithuanian SSR

TITLE: On the Reorganization of Machine-Tractor Stations Under Lithuanian SSR Conditions (O reorganizatsii mashino-traktor-nykh stantsiy v usloviyakh Litovskoy SSR)

PERIODICAL: Vestnik Statistiki, 1958, Nr 3, pp 20-24 (USSR)

ABSTRACT: The author outlines the reasons for the great increase over the last few years in Lithuanian agricultural production, attributable in particular to further mechanization and a considerable increase in the average size of kolkhozes. During the last four years, kolkhoz income has more than doubled. Nevertheless, labor productivity is frequently extremely low, and some types of work are still very inadequately mechanized. The MTS have been guilty of grave inefficiency in organization, and tractors worked on an average, only 60% of the time. Consequently, over the last two years kolkhozes have begun to purchase their own tractors as well as other equipment, and as a result production has been considerably boosted. The author considers that kolkhozes with incomes of around 2 million rubles should be in a position to buy all the

Card 1/2

2-58-3-4/17

On the Reorganization of Machine-Tractor Stations Under Lithuanian SSR
Conditions

equipment required from the MTS within a year; those with incomes between 500,000 and 2 million rubles may start by buying lowpowered tractors and other suitable equipment. The author stresses the need for reformed and simplified statistical accounting methods for use by the kolkhozes after their purchase of MTS equipment.

Card 2/2

DUBASOV, B.M.; MASLENNIKOV, M.Ye.; PRETER, I.Kh., tekhn. red.

[Twenty years of Soviet Lithuania; statistical collection]
20 let Sovetskoi Litvy; statisticheskii sbornik. Vil'nius,
Gosstatizdat, Litovskoe otd-nie, 1960. 351 p.

(MIRA 15:3)

1. Lithuanian S.S.R. Statistikos valdyba. 2. Nachal'nik
TSentral'nogo statisticheskogo upravleniya Litovskoy S.S.R.
(for Dubasov).

(Lithuania--Statistics)

DUBASOV, B.M., otv. red.; TYKOTSKIY, L.I., red.; PRETER, I.Kh.,
tekhn. red.

[The national economy of the Lithuanian S.S.R. in 1960;
brief statistical handbook] Narodnoe khoziaistvo Litovskoi
SSR v 1960.godu; kratkii statisticheskii sbornik. Vil'nius,
Gosstatizdat, Litovskoe otd-nie, 1962. 192 p. (MIRA 15:7)

1. Lithuanian S.S.R.Statistikos valdyba. 2. Nachal'nik TSen-
tran'nogo statisticheskogo upravleniya Litovskoy SSR (for
Dubasov).

(Lithmania—Statistics)

DUBASOV, B.M., otv. red.; TYKOTSKIY, L.I., red.; PRETER, I.Kh.,
tekh. red.

[National economy of the Lithuanian S.S.R. in 1961;
statistical abstract] Narodnoe khoziaistvo Litovskoi SSR
v 1961 godu; statisticheskii sbornik. Vil'nius, Gosstat-
izdat, Litovskoe otd-nie, 1963. 227 p. (MIRA 16:12)

1. Lithuanian S.S.R. Centrine statistikos valdyba. 2. Na-
chal'nik Tsentral'nogo statisticheskogo upravleniya Litov-
skoy SSR (for Dubasov).

(Lithuania--Statistics)

DUBASOV, B.M., otv. red.; KORNIYENKOV, V.Ya., red.

[25 years of Soviet Lithuania; a statistical abstract]
25 let Sovetskoi Lityy; statisticheskii sbornik. Vilnius,
Statistika, 1965. 270 p. (MIRA 18:8)

1. Lithuanian S.S.R. Centrine statistikos valdyba.

LIBEROVA, R.A.; DUBACOVA, I.M.

Increasing the light fastness of plasticized polyvinyl chloride
regins. Plast. massy. no.9:64-65 '65. (Mik. 8:3)

LIBEROVA, R.A., kand. tekhn. nauk; DUBASOVA, L.M., nauchnyy sotrudnik

Manufacture of film materials based on vinyl chloride
copolymers. Nauch.-issl. trudy VNIPIK no.14:126-134 '63.
(MIRA 18:12)

LIBEROVA, R.A., kand. tekhn. nauk; DUBASOVA, L.M., nauchnyy sotrudnik;
SHNEYDEROVA, V.V., kand. tekhn. nauk

Benzene- and water-resistant materials for the insulation of
reinforced concrete tanks. Nauch.-issl. trudy VNIPIK no.14:
117-126 '63. (MIRA 18:12)

1. Vladimirskiy nauchno-issledovatel'skiy institut sinteticheskikh
smol (for Shneyderova).

DUBASOVA, V.S., inzh.; EYGENBROT, V.M., inzh.

Diagram of multichannel automatic control of air conditioning
systems. Vod.i san.tekh. no.4:17-20 Ap '62. (MIRA 15:8)
(Air conditioning) (Automatic control)

D u B A s o v, V. T.

1(2)

PHASE I BOOK EXPLOITATION

80V/3265

Moscow. Aviatsionnyy tekhnologicheskiy institut

Nekotoryye voprosy aerodinamiki i dinamiki samoleta (Some Problems in Aerodynamics and Dynamics of Aircraft) Moscow, Oborongiz, 1959. 11 p. (Its: Trudy, vyp. 42) 2,100 copies printed.

Additional Sponsoring Agency: RSFSR. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniya.

Ed.: (Title Page): S.I. Zonshayn, Doctor of Technical Sciences, Professor; Managing Ed.: A.S. Zaymovskaya, Engineer.; Ed. of Publishing House: S.I. Vinogradskaya. Tech. Ed.: V.P. Rozhin.

PURPOSE: This collection of articles is intended for the engineering and technical personnel of design offices and scientific-research organizations. It may also be used by students of aeronautical vuzes, specializing in the field of aircraft construction.

COVERAGE: This collection of articles contains some results of scientific research performed by the Aerodynamics and Design of Aircraft Department of MATI
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Some Problems in Aerodynamics (Cont.)

SOV/3265

(Moscow Aviation Technology Institute) during the period 1955 - 1957. The collection considers a number of problems in wing theory for three-dimensional flow and in the dynamics of aircraft, and also methods for research conducted at the initial stages of design and configuration of aircraft. A report by V.T. Dubasov presents a variational method for approximate determination of the velocity field for potential unsteady, compressible and incompressible air flow about bodies. S.I. Zonshayn considers the methods of research performed to determine rational dimensions of aircraft during the initial design stages. The problem is solved in a general formulation, but the obtained results are applied to particular problems, for instance, to the calculation of optimum wing loads. In a report by N.Ya. Fabrikant, the theorem regarding the lifting force of a wing, given by N.Ye. Zhukovskiy, is generalized for the case of a rotational three-dimensional flow and a compressible medium. A formula is given for calculating force arising from the mutual interaction of two flows. The results obtained are used for calculating the effect of the accompanying jet on the lift coefficient of the wing and for calculating the load distribution along the span in the region bordering on the wing tip. A report by S.M. Matveyev deals with one of the important problems in aircraft dynamics - the loop - first investigated by N.Ye. Zhukovskiy. The problem is solved for the mathematically simplest case, namely a loop with uniform turning of the flight path. The kinematic and dynamic analysis

Card 2/6

Some Problems in Aerodynamics (Cont.)

80V/3265

of the motion of an aircraft is developed up to the calculation of the characteristic of the loop. The formulas obtained turn out to be universal, that is, applicable to any aircraft. A report by A.A. Tupolev makes certain recommendations regarding the configuration of high-speed aircraft. No references are given.

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Some Problems in Aerodynamics (Cont.)

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Some Problems in Aerodynamics (Cont.)

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4-1-60

Dubasov, V. I.

PHASE I BOOK EXPLOITATION

SOV/4312
SOV/10-S-41

Moscow. Aviatsionnyy tekhnologicheskii institut

Nekotoryye voprosy mekhaniki i fiziki (Problems in Mechanics and Physics) Moscow, Oborongiz, 1959. 84 p. (Series: Its: Trudy, vyp. 41) Errata slip inserted. 3,100 copies printed.

Sponsoring Agency: RSFSR. Ministerstvo vysshego i srednego spetsial'nogo obrazovaniya.

Eds.: V.T. Dubasov and R.G. Gevorkyan; Ed. of Publishing House: V.M. Tokar';
Tech. Ed.: N.A. Pukhlikova.

PURPOSE: These studies are intended for teachers of higher educational institutions, for people working on applications of spectral analysis in industry, and for scientific workers who use voltage stabilizers.

COVERAGE: This book contains eight theoretical and experimental studies dealing with specific problems of physics and mechanics. The subjects considered in these studies are: principle of relativity, theory of physical measurements, integrability of equations of motion, accuracy of voltage stabilizers of alternating currents, roentgenoscopy and spectral analysis of metals and alloys.

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Problems in Mechanics and Physics

SOV/4312

No personalities are mentioned. Some of the studies include bibliographies of Soviet technical literature.

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<u>Dubasov, V.T.</u> On the Problem of Integrability of Equations of Motion For a Heavy Rigid Body Fixed at One Point It is shown that all known (general and particular) fourth integrals of a system of corresponding differential equations are obtained from the coplanarity conditions of the following three vectors: 1) angular momentum with reference to the fixed point, 2) instantaneous angular velocity of the body rotation, and 3) radius vector.	42

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Problems in Mechanics and Physics

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Pryadilov, Yu.N. Effect of Load Reactance on the Accuracy of an A-C Voltage Stabilizer With a Saturation Choke 47

A theoretical analysis of factors causing additional error in high-precision a-c voltage stabilizers is made. It was shown analytically and proved experimentally that the load reactance is such a factor in stabilizers with saturation chokes and with diode bridges.

Kurdinovskiy, Yu.P. Use of X-Ray Spectroscopy for the Determination of Inclusions in Steel 54

This paper describes a method of studying inclusions in steel by means of x-ray spectrograms. This method was originally introduced at the metallurgicheskoy zavod im. Vladimira Il'icha (Metallurgical Plant imeni Vladimir Il'ich) by the author.

Vvedenskiy, L.Ye. Improving the Accuracy of Spectral Analysis of High Concentrations by the Method of Overlapping Spectra 58

It is shown that the accuracy of alloy analysis at high concentrations of the analysis element can be increased approximately 1 1/2-2 times by the application of the overlapping spectra method.

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Problems in Mechanics and Physics

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Vvedenskiy, L.Ye. Reflecting Spectrograph-Monochromator for the Visible and Ultraviolet Region of the Spectrum Designed in Accordance With the Two Mirror Scheme

63

This paper describes an optical scheme and design of a reflecting spectrograph-monochromator for convenient use with photoelectric methods of analysis. The author thanks Professor V.K. Prokof'yev, and S.A. Ukholin.

Vvedenskiy, L.Ye., and V.I. Shekhobalova. Arc of an Alternating Current as a Light Source for Spectral Analysis of Molten Metals

68

This paper examines problems relating to spectral analysis of metals in the molten state when the effect of structure, liquation, and sparking is considerably weakened. In this connection the suitability of the arc of an alternating current as a source of light is under consideration.

Vvedenskiy, L.Ye., and V.I. Shekhobalova. Condensed Spark as a Light Source for Spectral Analysis of Molten Metals

76

The obtained data lead to the following conclusions: 1) The condensed spark is one of the best light sources for spectral analysis of molten samples; 2) Spectral analysis of molten metals, due to the absence of the sparking, liquation, and third element effects, is free of the systematic errors associated with solid state metals and gives more accurate results than the solid samples at the same reproducibility.

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Card 4/4

JA/rn/sfm
11/4/60

ARZHANIKOV, N.S.; SADEKOVA, G.S.; DUBASOV, V.T., redsentsent;
ABGARYAN, K.A., redsentsent; PRATUSEVICH, G.M., red.;
GAVRILOVA, T.M., red.

[Supersonic flow about bodies of revolution] Obtekanie tel
vrashchenia sverkhzvukovym potokom. Moskva, Mosk. avitatsi-
onnyi in-t im. Sergo Ordhonikidze, 1962. 65 p. (MIRA 16:4)
(Aerodynamics, Supersonic)

FABRIKANT, Nikolav Yakovlevich; DUBASOV, V.T., red.

[Aerodynamics; general course] Aerodinamika; obshchii
kurs. Moskva, Nauka, 1964. 814 p. (MIRA 17:10)

VDOVENKO, V.M.; DUBASOV, Yu.V.

Physicochemical study of some radium compounds. Part 1:
Ionic refraction of radium. Radiokhimiia 7 no.2:214-220
'65. (MIRA 18:6)

L 2677-56 FWT(m)/EPF(c)/EWP(j) RM

ACCESSION NR: AP5022230

UR/0191/65/000/009/0064/0065
678.743.22.019.36

AUTHOR: ⁴⁴⁵⁶ Liberova, R. A.; ⁴⁴⁵⁵ Dubasova, L. M.

TITLE: Increasing the light resistance⁶ of plasticized polyvinyl chloride resins

SOURCE: Plasticheskiye massy, no. 9, 1965, 64-65

TOPIC TAGS: polyvinyl chloride, light aging, stabilizer additive, resin

ABSTRACT: Several organic compounds containing keto and hydroxy groups were studied as stabilizers for plasticized polyvinyl chloride resins. Film samples of the latter were tested for tensile strength and elongation as a function of the amount and nature of the light stabilizers added. While the tensile strength was not appreciably affected by the additives, the elongation was, indicating that structural changes took place in the polymers. Based on the change in elongation, one can select the most effective light stabilizer and establish its optimum amount which insures a constant elongation. As a result of the tests, the light stabilizers can be arranged in the following order of decreasing stabilizing effectiveness: 2-hydroxy-4-methoxybenzophenone; tetrahydroxysebacophenone; 2,4-dihydroxysebacophenone; diphenylolpropane; 2,4-dihydroxyacetophenone; ethylresorcinol; dihydroxyphenylcyclohexane. "All the compounds tested were

Card 1/2

L 2677-66

ACCESSION NR: AP5022230

synthesized and recommended by Z. V. Popova. ^{44,55} Orig. art. has: 2 figures. ³

ASSOCIATION: none

SUBMITTED: 00

ENCL: 00

SUB CODE: MT, OP

NO REF SOV: 002

OTHER: 001

Card 2/2 *OP*

MASLENIKOVAS, M.E.; DUBASOVAS, B.M., otv. red.; PRETERIS, I.Ch.,
tekhn. red.

[Twenty years of Soviet Lithuania; statistical data]
Tarybu Lietuvos dvidešimtmetis; statistiniu duomenu
rinkinys. Vilnius, Valstybine statistikos leidykla,
Lietuvos skyrius, 1960. 349 p. (MIRA 16:6)

1. Lithuanian S.S.R. Centre statistikos valdyba.
(Lithuania--Statistics)

DUBATOLOV, V.N.

Some middle Devonian Tabulata of the Mimusinsk Basin. Uch.zap.Len.un.
no.159:207-212 '53. (MIRA 9:6)
(Mimusinsk Basin--Tabulata)

BEIYAKOV, N.A. [deceased]; BUL'VANKER, B.Z.; DUBATOLOV, V.H.; YELFYSHEVA, R.S.;
KRISHTOFOVICH, A.N., [deceased]; MAKSIMOVA, Z.A.; MOZDAIEVSKAYA, Ye.A.;
MELESHCHENKO, V.S.; MUKHOROSHEV, V.P.; NALIVKIN, B.V.; NOVOZHILOV, H.I.;
OBRUCHEV, D.V.; RZHONSNITSKAYA, M.A.; YANOV, B.N.; SPIRINA, N.I., redaktor;
GUROVA, O.A., tekhnicheskii redaktor

[Field atlas of characteristic complexes of fauna and flora of Devonian
deposits of the Minusinsk Basin] Polevoi atlas kharakternykh kompleksov
fauny i flory devonskikh otlozhenii Minusinskoii kotloviny, Sost. N.A.
Beliakov, i dr. Pod red. M.A.Rzhonsnitskoi i V.S.Meleshchenko, Moskva,
Gos.nauchno-tekhn.izd-vo lit-ry po geologii i okhrane neдр, 1955. 139 p.
(MIRA 9:1)

1. Leningrad. Vsesoyuznyy geologicheskii institut.
(Minusinsk Basin--Geology, Stratigraphic--Devonian)

15-57-4-4185D

Translation from: Referativnyy zhurnal, Geologiya, 1957, Nr 4,
pp 21-22 (USSR)

AUTHOR: Dubatolov, V. A

TITLE: Devonian Tabulate Corals From the Kuznetsk Basin and
Their Stratigraphic Significance (Devonskiye tabulyaty
Kuznetskogo basseyna i ikh stratigraficheskoy znacheniiye)
Author's abstract of his dissertation for the degree of
Candidate of Geological and Mineralogical Sciences,
presented to the LGU (Leningrad State University),
Leningrad, 1956.

ABSTRACT: The dissertation describes 145 species from the families
Favositidae (3 genera, 36 species), Syringolitidae (1
genus, 1 species), Micheliniidae (1 genus, 2 species),
Thamnoporidae (5 genera, 39 species), Dendroporidae
(1 genus, 2 species), Alveolitidae (4 genera, 23
species), Coenitidae (6 genera, 20 species), Syringo-
poridae (1 genus, 7 species), Thecostegitidae (1 genus,
2 species), Auloporidae (1 genus, 2 species), Aulo-
cystidae (1 genus, 1 species), Heliolitidae (3 genera,

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15-57-4-4185D

Devonian Tabulate Corals From the Kuznetsk (Cont.)

6 species), and Chaetetidae (1 genus, 4 species). Two new genera were established: Formichevia (family Thamnoporidae) and Eogsiella (family Coenitidae). A new description is given for the genus Natalophyllum (family Coenitidae) in which the author notes the position of connecting pores in neighboring corallites at a single level. Additions are made to the descriptions of the genera Tyrganolites and Adetopora. Representatives of the genus Roemeripora and of Upper Devonian tabulate corals from the USSR are described for the first time. Groups of species are distinguished for all the formations in the Devonian section. The determination of age of the groups is confirmed by comparison with corals from the Urals, the European part of the USSR, the Minusinsk and Tuva basins, China, and Western Europe; brachiopods are also used to support the age assignments. The Tom'-Chumysh (S₂) and the Mamontovo (D₂¹) formations are dated more precisely than they were formerly. Supporting data are given on age differences between the Pesterevo limestones and the Nadkrekova (Supra Krekova) beds. Givetian age is established for the Lebedyan' and Zarubina formations. The Krekova beds are determined to be Gedinian; the Salairka and Shanda beds to be

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