by 10% from one to the other. Aniline was substituted by equimolar amounts of ethanol amine. The efficiency of the inhibitors obtained was examined in 5, 10, 20, and 30% HCl along with the coagulation resistance to $FeCl_3$ (Fig.1); it was found that the protective action of the inhibitor much increased with a substitution of 10% of aniline, but decreased with a further increase in the degree of substitution. At the same time, the coagulation resistance increased to the 8-fold with the substitution of 10% of aniline, and increased further with the degree of substitution (Table 1). The corrosion rate of steel Ст-3 (St-3) in HCl solutions containing $FeCl_3$ increased proportional to the $FeCl_3$ concentration (Fig.2); the inhibitor ПБ-1/9 (PB-1/9) was best suited for this case. Table 2 shows the protective action of the inhibitors against atmospheric corrosion of metal, which was completely missing with the use of inhibitor PB-1/9. Fig.3 shows the dependence of the corrosion rate of steel St-3 on the composition of combined inhibitors in sea, tap, and distilled water. The authors studied the inhibition of steel corrosion in $CaCl_2$ solutions with the use of preparation ПБ-8/2 (PB-8/2) as

KOLPAKOVA, T.D.; BARANNIK, V.P.

Improvement of the properties of PB-type corrosion inhibitors.
Khim. prom. no. 7:596-598 O-N '60. (MIRA 13:12)
(Corrosion and anticorrosives)

BARANNIK, V.P., doktor khim.nauk, prof.; KOLPAKOVA, T.D., assistent

Efficient conditions of pickling carbon steel in sulfuric acid solutions. Stal' 20 no.8:753-755 Ag '60. (MIRA 13:7)

1. Orekhovo-Zuyevskiy pedinstitut.
(Metals--Pickling)

Kolpakova, V. A.

AUTHOR: Kolpakova, V. A. 20-3-39/52

TITLE: Sources of Sensitive Innervation of the Ovary (Istochniki chuvstvitel'noy innervatsii yaichnika).

PERIODICAL: Doklady AN SSSR, 1957, Vol. 117, Nr 3, pp. 496-499 (USSR)

ABSTRACT: The great importance of the ovary for the female organism has long been recognized. Therefore, the gap as regards the exploration of the sensitive innervation of the ovary is rather striking. Based on a review of literature on this subject the author finds out that the statements given in this literature are contradictory (references 4-8, 11-16, 18-20). As the modern methods of experimental-morphological analysis have not been applied so far with regard to the sources of the said innervation the author felt obliged to give a precise outline of the morphology of the same. Special attention was payed to the sources and courses of the sensitive fibres. As an experimental model served the ovaries of dogs: 1. normal, 2. after intersection of certain nerves and 3. after the removal of spinal ganglia. The ganglia have been removed from the lumbo to the upper breast ganglia either on one side (to have the control of the ovary of the opposite side) or on both sides, either

Card 1/3

more pairs at a time or one pair. With some animals nervi splanchnici on both sides, with others nervi hypogastrici, also on both sides, have been intersected. After 2 to four days the animals were killed. The results obtained lead up to the following conclusions: 1. Special ganglia of the middle part of the breast region are the source of the sensitive innervation of the ovary with dogs. 2. The removal of the spinal ganglia of the breast section in groups on one side leads to the decay of the sensitive fibres in the ovary of this side. 3. The nervi splanchnici are the conductors of the sensitive fibres to the ovary. 4. The nerve ends of all layers of the ovary belong to the type of free endings. In most of the cases they are polyvalent. 5. In the marrow layer of the ovary some nerve-ganglia, nerve cells and their groups can be detected according to the run of the nerve-trunks.

There are 3 figures and 21 references, 12 of which are Slavic.

ASSOCIATION: Karaganda State Institute of Medicine (Karagandinskiy gosudarstvennyy meditsinskiy institut)

PRESENTED: July 12, 1957, by I. I. Shmal'gauzen, Academician

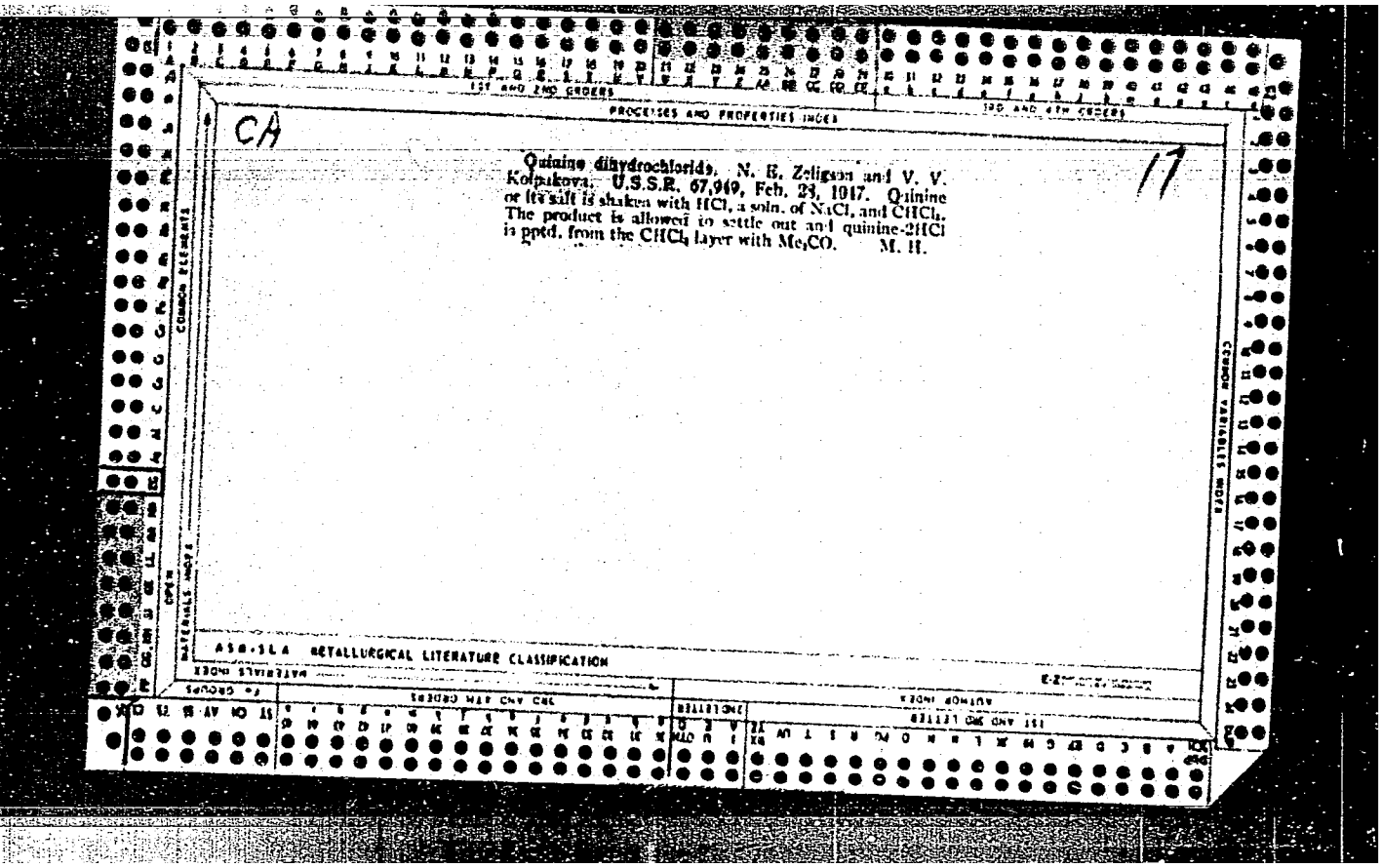
SUBMITTED: July 15, 1957

AVAILABLE: Library of Congress

SLOTVINSKIY-SIDAK, N.P.; KOLPAKOVA, V.I.

Structure of vanadium slags and the recovery of vanadium. Izv. vys. ucheb. zav.; chern. met. 4 no.8:37-42 '61. (MIRA 14:9)

1. TSentral'nyy nauchno-issledovatel'skiy institut chernoy metallurgii i Chusovskoy metallurgicheskiy zavod.
(Slag) (Vanadium)



CA

17

Quinine dihydrochloride. N. R. Zelignon and V. V. Kolpakova. U.S.S.R. 69,946, Dec. 31, 1947. Dissolve quinine-HCl in $CHCl_3$. The H_2O of crystn. separates as top layer. Remove the bottom layer, add a calcd. quantity of concd. HCl and shake. The liquid separates into 2 layers, the lower being excess $CHCl_3$. Collect top layer and in it ppt. quinine dihydrochloride with Me_2CO.

M. Hoseh

KOLPAKOVA, V. V. Cand Chem Sci

Dissertation: "Application of a Nickel Catalyst in Quantitative Analysis of Organic Compounds." 16/6/50

All-Union Sci Res Chemicopharmaceutical Inst imeni S. Ordjhosikidje (VNIKhFI).

SO Vecheryaya Moskva
Sum 71

CA

Use of skeletal nickel catalyst for quantitative determination of halogenic compounds. A. K. Ruzhentseva and V. V. Kolesnova (Sergo Ordzhonikidze Chem.-Pharm. Sci. Research Inst., Moscow). *Zhur. Anal. Khim.* 6, 223-9 (1951).—The method is based on reduction of halides in org. compds. with Raney Ni catalyst, the reduction being effected by the H liberated by the catalyst. Three procedures were worked out applicable to (1) aromatic and high-boiling fatty compds., (2) compds. b. 100–150°, and (3) compds. b. up to 100°. Method (1): Place 0.15–0.4 g. of compd. into a conical flask of 250-ml. capacity. Add 20 ml. of 0.5 *N* alc. soln. of KOH, 15 ml. of 10% aq. NaOH, and approx. 4 g. of catalyst paste. Connect a reflux condenser and boil for 1.5–2 hrs. Rinse condenser, filter off catalyst, wash to neg. halide reaction, neutralize filtrate, acidify slightly with HNO_3, add 40–50 ml. of 0.1 *N* $AgNO_3$ soln., and titrate excess with NH_4CNS. Method (2): Place into a conical flask 50 ml. of 0.5 *N* alc. soln. of KOH, approx. 4 g. of catalyst, and 0.15–0.3 g. of analyzed substance. Weigh the latter in a container provided with a ground-glass stopper. Open the container just before placing it into the flask, and place container and stopper into the flask. Rapidly connect a reflux condenser and proceed as before. Method (3): Transfer 20 ml. 0.5 *N* alc. soln. of KOH, 15 ml. of 10% aq. NaOH, 4 g. of catalyst, and 0.15–0.3 g. of analyzed substance sealed within an ampul into a 250-ml. flask. Stopper flask tightly, break ampul by vigorous shaking, and allow flask to stand for 2 days shaking it occasionally. Finish as before. By this method halogen was detd. in 23 aromatic, 7 fatty and alicyclic, 10 fatty b. 100–150°, and 5 fatty b. below 100° substances. The halogen found was 99.01–101.09% of its calcd. value with 2 extremes, 98.04% for dichlorotoluene and 103.29% for tetrabromobenzidine. The catalyst is prepd. from Ni-Al alloy contg. 40% Ni. The catalyst paste is kept under H_2O or alc. M. Hosch

CA

Quinine alkaloids. N. E. Zeligson and V. V. Kolpakova (S. Ordzhonikidze Chem. Pharm. Inst., Moscow). *Zhur. Prikład. Khim.* 24, 325-31(1951); *J. Applied Chem. U.S.S.R.* 24, 357-65(Engl. translation).—Quant. sepn. of the 8 main quinine-group alkaloids can be done only by group reactions: the Thros-Dircher method (*C.A.* 29, 2172[9]) for sepn. of vinyl and Et derivs., and the Zeligson-Sin'kovskaya method (*C.A.* 40, 6754[6]) for isolation of MeO-free alkaloids. The MeO-contg. alkaloids are converted to *hydrocupreine* and *hydrocuprеidine;* combining both methods yields the above mixt. and that of *hydrocinchonine* with *hydrocinchonidine;* the latter is analyzed by the optical activity of the mixt. The HCl salts of the main cinchona alkaloids are sol. in $CHCl_3$. The di-HCl salts of MeO-contg. alkaloids are sol. in $CHCl_3$ and in the presence of H_2O form viscous solvates, insol. in excess $CHCl_3$; other Cl-contg. solvents also give similar solvates. G. M. Kosolapoff

Ordzhonikidze

Anal. Lab., All-Union Sci. Res. Chemico-Pharmaceutical Inst. im'

C-2

BA

3573. **Determination of organic halogen compounds of the aliphatic series.** A. K. Ruzhentseva and V. V. Kolpakova *U. zavod. Chem., USSR*, 1952, 7, 71—73).—Many aliphatic halides are only partially attacked by refluxing for 6 to 8 hr. with 0·5 *N*-alcoholic KOH. Experiments with a heated rotating autoclave showed that at 100° some halides failed to become completely hydrolysed in 1 hr. but that at 200° the reaction was complete in 1 hr. with all the substances tested. 0·15—0·3 g. of the halide is placed in a thin-walled ampoule which is then sealed and the vessel is inserted after breaking the seal into a 250-ml. stainless steel autoclave containing 20 ml. of 0·5*N*-alcoholic KOH and 15 ml. of 10% aq. NaOH. The autoclave is hermetically closed, set in rotation, and heated by means of a burner at ~200° for 1 hr. After cooling the contents of the autoclave are washed into a flask and the halide is determined by Volhard's method or potentiometrically. With very volatile liquids the seal of the ampoule is not broken before insertion in the autoclave but the ampoule is broken, after the autoclave has been set in rotation, by a blade fixed to the lid. With solids a boat is used to contain the sample.

G. S. SMITH.

All-Union Sci Res Inst im S. Ordzhonikidze
Moscow

YAKHONTOV, L.N.; KOLPAKOVA, V.V.; SHEYNKER, Yu.N.; PERVACHEVA, T.D.

Scientific research in the institutes of the Czechoslovak Republic.
Med.prom. 13 no.11:55-58 N '59. (MIRA 13:3)

1. Vsesoyuznyy nauchno-issledovatel'skiy khimiko-farmatsevtsevticheskiy institut imeni S. Ordzhonikidze.
(CZECHOSLOVAKIA--PHARMACEUTICAL RESEARCH)

TRINCHER, Karl Sigmundovich, st. nauchn. sotr.; BERNSHTEYN, N.A., prof., otv. red.; KOLPAKOVA, Ye.A., red.

[Biology and information; elements of biological thermodynamics] Biologiia i informatsiia; elementy biologicheskoi termodinamiki. Moskva, Nauka, 1965. 118 p. (MIRA 18:8)

1. Institut biologicheskoy fiziki AN SSSR (for Trincher).

BOGOLYUBSKIY, S.P., prof., otv. red.; KOLPAKOVA, Ye.A., red.

[Characteristics of the development of skin and wool in sheep; age-related changes] Zakonomernosti razvitiia kozhi i shersti u ovets; vozrastnye izmeneniia. Moskva, Nauka, 1965. 198 p. (MIRA 18:7)

1. Akademiya nauk SSSR. Institut morfologii zhivotnykh.

NOVIK, I.Ye.; KUSHNER, Kh.F., doktor biol. nauk, otv. red.; KOLPAKOVA, Ye.A., red.

[Biology of the multiplication and artificial insemination of poultry] Biologiia razmnozheniia i iskusstvennoe osemenenie sel'skokhoziaistvennoi ptitsy. Moskva, Izd-vo "Nauka," 1964. 140 p. (MIRA 17:4)

SHMAL'GAUZEN, Ivan Ivanovich; IGNAT'YEVA, G.M., red.; KOLPAKOVA, Ye.A., red.izd-va; DOROKHINA, I.N., tekhn.red.

[Form control in individual development; a popular scientific essay]Reguliatsiia formoobrazovaniia v individual'nom razvitii; nauchno-populiarnyi ocherk. Moskva, Izd-vo "Nauka," 1964. 133 p. (MIRA 17:4)

KOLPAKOVA, Ye.A., kandidat sel'skokhozyaystvennykh nauk; DEMCHENKO, P.V., kandidat sel'skokhozyaystvennykh nauk.

Utilization of the nutrients and energy of rations by milk cows as affected by the amount of fodder beets of silage in the ration. Trudy VNIIK 3:3-23 '56. (MLRA 10:4)
(Cows--Feeding and feeding stuffs) (Beets) (Ensilage)

USSR/Farm Animals - Cattle Q

Abs Jour : Ref Zhur - Biol., No 15, 1958, 69286

Author : Kondyrev, V.Ye., Kolpakova, Ye.A.
Inst : -
Title : Nutritional Value of Corn Used as Green Feed Supplement

Orig Pub : Kukuruza, 1957, No 8, 55-58

Abstract : In respirational experiments carried out on three cows, fed daily 75-85 kg of green corn, per head, the following coefficients of digestibility of nutrient substances were obtained: dry matter 68.7, organic substances 69.8, protein 59.5, fat 64.9, cellulose 69.9 and extractive substances without nitrogen 72.2%. Nutritional value of 1 kg of corn with a moisture content of 85.6% was, on the average, 0.14 feed unit, including 10 g of digestible protein. Prolonged feeding of corn requires strict balancing of rations in relation to protein and mineral substances. -- A.D. Musin

Card 1/1

ROSIN, Yakov Anan'yevich; KOLPAKOVA, Ye.A., red.

[Physiology of the vegetative nervous system; a manual]
Fiziologiia vegetativnoi nervnoi sistemy; rukovodstvo.
Moskva, Nauka, 1965. 405 p. (MIRA 18:4)

GURFINKEL', Viktor Semenovich; KOTS, Yakov Mikhaylovich; SHIK, Mark L'vovich; KOLPAKOVA, Ye.A., red.; TSUZMER, T.S., red.

[Regulation of human posture] Reguliatsiia pozy cheloveka. Moskva, Nauka, 1965. 255 p. (MIRA 18:6)

KOLPASHCHIKOV, L.S., inzh.

Stabilizing railroad embankment slopes in the area of the Kama Hydroelectric Power Station. Transp. stroi. 7 no.11:29-30 N '57. (MIRA 11:2)
(Railroads--Track)

-2/EWA(h)

UR/0181/65/007/006/1756/1760

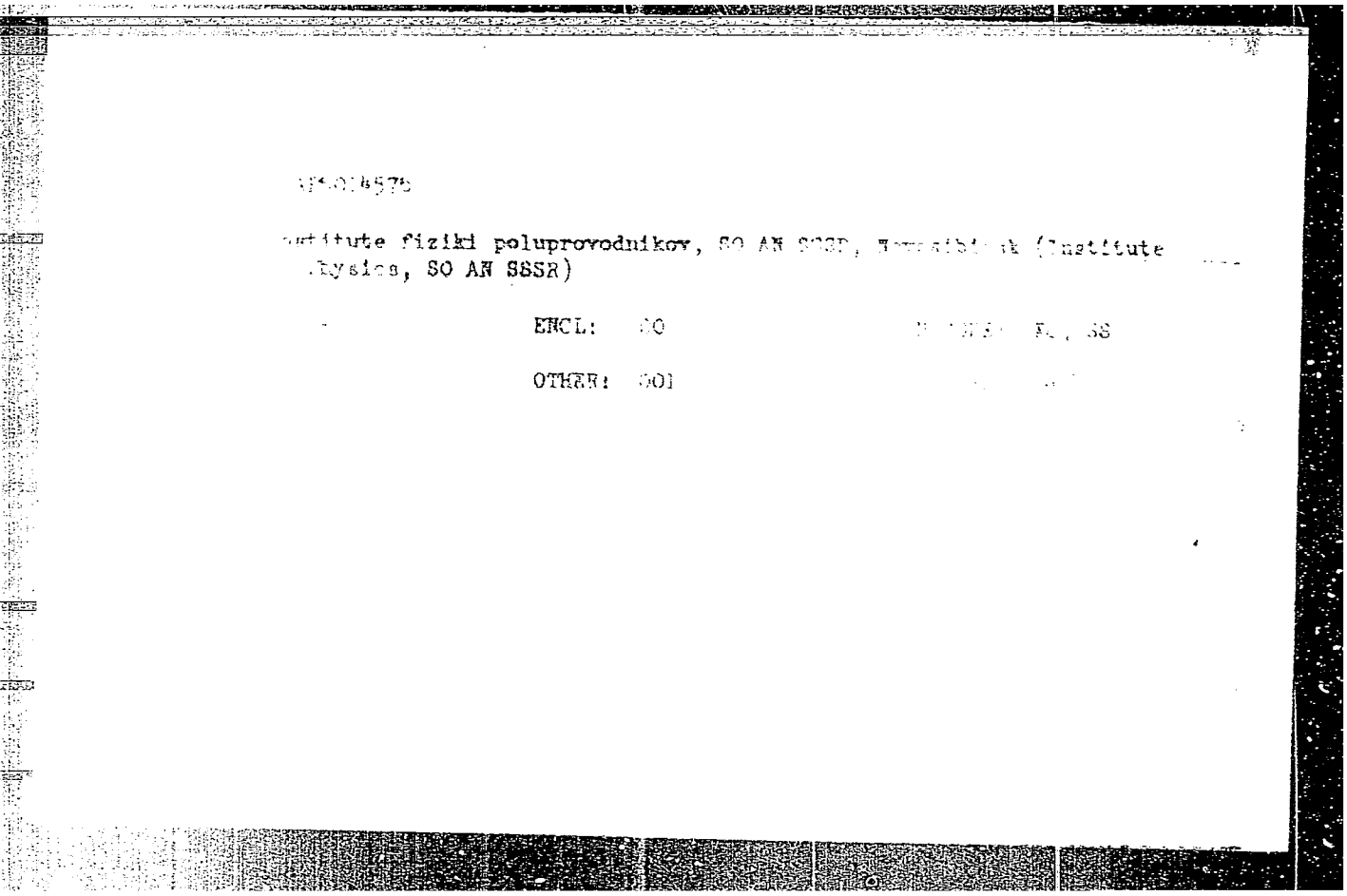
[illegible]; Kazantsev, A. P.; Kolpashchikov, V. I.; Smirnov, V. S.

[illegible] of stimulated emission in solids

Fizika tverdogo tela, v. 7, no. 6, 1965, 1756-1760

TOPIC TAGS: stimulated emission, laser action, solid laser, two level laser, system stability, laser, laser spiking

ABSTRACT: The article considers the pulsations of stimulated emission in solids at [illegible], when the interaction of the electromagnetic field with the medium [illegible] of two types of oscillations. Making use of [illegible] of a particle in a pot-ential [illegible] and a phase-plane analysis that [illegible] oscillations of the field amplitude [illegible] and the [illegible]. Orig. art. has: 2 figures and [illegible] formulas.



[illegible]

[illegible]stitute fiziki poluprovodnikov, SO AN S[illegible] [illegible]k (Institute [illegible]
[illegible]ysics, SO AN SSSR)

ENCL: [illegible] [illegible], SS

OTHER: [illegible]

OVSYANNIKOV, V.N.; KOLPASHCHIKOV, Ye.G.; ZIMINA, L.A. (Gor'kiy)

Accidental hanging. Sud.-med.ekspert. 7 no. 2:48-49
Ap-Je 64. (MIRA 17:7)

LAVSKIY, G.K., prof.; KORNOPELEVA, Ye.N.; POPOVA, A.A. [deceased]; KOLPASHCHIKOVA, L.P.

Electric anesthesia in treating hypertension. Terap.arkh. 31 no.4: 62-70 Ap '59. (MIRA 14:5)

1. Iz bol'nitsy 4-go Glavnogo upravleniya Ministerstva zdravookhraneniya SSSR, Moskva.
(ELECTRIC ANESTHESIA) (HYPERTENSION)

PAISOV, A. I.; KOLPASHNIKOV, A. I.; PAN YA-CHEN' [P'ang Ya-ch'en]

Structure and properties of sintered aluminum powder (S.A.P.).
TSvet. met. 35 no.10:71-75 O '62. (MIRA 15:10)

(Powder metallurgy) (Aluminum)

KOLPASHNIKOV, A.I., kand. tekhn. nauk; OSIPOVA, A.D., inzh.; SHOR, I.R., inzh.; SHLENSKIY, G.N., inzh.; SERGEYEVA, L.N., inzh.

Developing a procedure for the manufacture and investigating the physicomechanical properties of thin magnesium alloy sheets. Trudy MATI no.57:58-65 '63. (MIRA 16:12)

KOLPASHNIKOV, A.I., kand. tekhn. nauk

Distribution of the rate of metal movement, deformation, and stress in an ingot cross section during the rolling of aluminum alloys. Trudy VAMI no.57:5-16 '63. (MIRA 16:12)

KOLPASHNIKOV, A.I., kand. tekhn. nauk; DMITRIYEV, Yu.V., inzh.

Strength of clad sheet SAP [sintered aluminum powder].
Trudy MATI no.57:110-113 '63. (MIRA 16:12)

KOLPASHNIKOV, A. I.

KOLPASHNIKOV, A. I. -- "Investigation of the Flow of Rolled Metal in the Area of Deformation in Relation to the Degree of Reduction, Speed of Rolling, and Lubrication." Sub 26 May 52, Moscow Aviation Technological Inst. (Dissertation for the Degree of Candidate in Technical Sciences).

SO: Vechernaya Moskva, January December 1952

KOLPASHNIKOV, A.I.

Flow of metals during the rolling of strips of aluminum alloys. TSvet.met. 27 no.4:49-55 Jl-Ag '54. (MIRA 10:10)
(Aluminum alloys) (Rheology)

KOLPASHNIKOV, A. I.; TIMOFEYEV, D. I.

Reserves in action. Tekst. prom. 15 no.5:13-14 My '55.
(MIRA 8:6)

1. Zaveduyushchiy pryadil'nym proizvodstvom fabriki imeni Lakina (for Kolpashnikov). 2. Zamestitel' zaveduyushchego tkatskim proizvodstvom (for Timofeyev).
(Textile industry)

KOLPASHNIKOV, A.I., kandidat tekhnicheskikh nauk, dotsent.; IVANOV, I.I., kandidat tekhnicheskikh nauk.

Placticity and deformation resistance diagrams for aluminum alloys. Trudy MATI no.28:5-16 '55. (MIRA 9:7)
(Aluminum alloys) (Deformations (Mechanics))

KOLPASHNIKOV, A.I.; IVANOV, I.I., kandidat tekhnicheskikh nauk.

Spreading of deformation in rolling. Trudy MATI no.28:26-40 '55.
(Deformations (Mechanics))(Rolling (Metalwork)) (MLRA 9:7)

LIVANOV, V.A., kandidat tekhnicheskikh nauk, dotsent; KOLPASHNIKOV, A.I., kandidat tekhnicheskikh nauk, dotsent; IVANOV, I.I., kandidat tekhnicheskikh nauk.

Thermal effect in aluminum deformation. Trudy MATI no.28:41-45 '55. (Deformations (Mechanics)) (Aluminum alloys) (MLRA 9:7)

KOLPASHNIKOV, A.I., kandidat tekhnicheskikh nauk, dotsent.

Expansion in rolling aluminum and magnesium alloys. Trudy MATI no.28: 54-64 '55. (Light metals) (Rolling (Metalwork) (MLRA 9:7)

KOLPASHNIKOV, A.I., kandidat tekhnicheskikh nauk, dotsent.

Forward flow in rolling aluminum and magnesium alloys. Trudy MATI no.28: 65-70 '55. (Rolling (Metalwork)) (Light metals) (MLRA 9:7)

KOLPASHNIKOV, A.I., kandidat tekhnicheskikh nauk, dotsent; IVANOV, I.I., kandidat tekhnicheskikh nauk.

Ingot crazing in rolling aluminium alloys. Trudy MATI no.28:71-78 '55. (MLRA 9:7)
(Rolling (Metalwork)) (Aluminum alloys)

MUZALEVSKIY, G.G., doktor tekhnicheskikh nauk, professor [deceased]; KOLPASHNIKOV, A.I., kandidat tekhnicheskikh nauk, dotsent.

The Russian-made high-strength D6 duralumin. Trudy MATI no.28:79-101 '55. (Duralumin) (MIRA 9:7)

AUTHOR: Kolpashnikov, A. I. SOV/163-58-1-25/53

TITLE: New Problems on the Production of Sheet Aluminum Alloys (Novyye rezhimy v proizvodstve listov alyuminiyevykh splavov)

PERIODICAL: Nauchnyye doklady vysshey shkoly. Metallurgiya, 1958, Nr 1, pp 133-139 (USSR)

ABSTRACT: In the improvement of the technical production processes of sheet aluminum alloys the following conditions were found to be required, as demonstrated by the investigation carried out:

a) The temperature of the homogenization is between 490 and 500°.
b) This temperature must be maintained for at least 6-12 hours.
c) The duration of the heating of the metals to the temperature of homogenization must be 6-7 hours.

The sheet aluminum produced on these conditions have the best mechanical properties.

The new technological method of producing sheet aluminum alloys is very simple and has a great effect. The advocated processing in hot rolling permits an increase of usable output by 5-6%, and in the case of cold treatment an increase of the output by 1-2%. This new method also saves electric energy.

Card 1/2

New Problems on the Production of Sheet Aluminum Alloys SOV/163-58-1-25/53

The method elaborated offers new prospects for the perfection of the technological processes in the production of sheet aluminum and its alloys by increasing the rolling rate. There are 4 figures and 8 references, 8 of which are Soviet.

ASSOCIATION: Moskovskiy aviatsionnyy tekhnologicheskiy institut (Moscow Aviation Technological Institute)

SUBMITTED: October 1, 1957

Card 2/2

KOLPASHNIKOV, A.I.

Intensifying technological conditions in producing aluminum and aluminum alloy plates. Biul.tekh.-ekon.inform. no.2:10-12 '58.
(MIRA 11:4)

(Plates, Aluminum)

SOV/136-58-5-11/22

AUTHORS: Kolpashnikov, A.I., Candidate of Technical Sciences, and Chia-Ming-Kuang, Korolev, V.D., Engineers

TITLE: New Developments in the Production of Sheets From Aluminium and its Alloys (Novoye v proizvodstve listov iz alyuminiya i ego splavov)

PERIODICAL: Tsvetnyye Metally, 1958, Nr 5, pp 62 - 70 (USSR)

ABSTRACT: The authors give a condensed account of the results of their work on the improvement of the technology of aluminium and aluminium alloy sheet production. This has already been published in "Aviatsionnyye materialy", 1957, Nr 2 (Pekin, Chinese People's Republic). Their conclusions are that their investigations have established the possibility of hot-rolling ingots without edge trimming and of raising the reductions in cold-rolling to 90% and over without having to resort to intermediate annealing and without impairing mechanical properties, surface quality or structure. The new technology has been adopted

Card 1/2

SOV/136-58-5-11/22

New Developments in the Production of Sheets from Aluminium and its Alloys

at Soviet and Chinese works.
There are 6 figures and 5 tables

1. Aluminum--Processing 2. Aluminum alloys--Processing
3. Sheets--Production

Card 2/2

AFANAS'YEV, Ya.Ye.; KOLPASHNIKOV, A.I.

Method for measuring long-time hardness on a Rockwell tester for the purpose of determining creep of materials. Zav. lab. 24 no.5: 627-629 '58. (MIRA 11:6)
(Creep of metals) (Metals—Testing)

KOLPASHNIKOV, A.I., kand. tekhn. nauk; DZYA-MIN-GUAN [Chia Ming-kuang], inzh.; KOROLEV, V.D., inzh.

New developments in the production of aluminum and aluminum alloy sheets. TSvet. met. 31 no.5:62-70 My '58. (MIRA 11:6)
(Aluminum alloys) (Rolling (Metalwork)) (Plates, Aluminum)

SOV/136-59-4-12/24

AUTHORS: Kolpashnikov, A.I., Candidate of Technical Sciences and Korolev, V.D., Engineer

TITLE: Homogenisation of Duralumin Ingots in Modern Air-Circulating Electric Furnaces (Gomogenizatsiya slitkov duralyumina v sovremennykh elektropechakh s vozdushnoy tsirkulyatsiyey)

PERIODICAL: Tsvetnyye metally, 1959, Nr 4, pp 64-69 (USSR)

ABSTRACT: In the production of strip, homogenisation is important as it achieves the following: 1) an improvement in the mechanical properties and in the structure; 2) a decrease in anisotropy of mechanical properties occurring during rolling; 3) removal of internal stresses and 4) an improvement in anticorrosion properties. The present work investigated the rate of heating, the time of heating and the rate of cooling. The homogenising temperature must be lower than the eutectic temperature. The temperatures most likely to be useful were found by heating and examining metallographically. The influence of the homogenising treatment at various temperatures on the structure and mechanical properties was investigated.

Card 1/3

Homogenisation of Duralumin Ingots in Modern Air-Circulating Electric Furnaces

The alloys used were D16 (4.5 Cu, 1.5 Mg, 0.6 Mn, 0.3 Fe, 0.25 Si) and D1 (4 Cu, 0.7 Mg, 0.6 Mn, 0.3 Fe, 0.5 Si) and the homogenising temperatures varied from 400 to 500°C (tables 2 and 3). The influence of soaking time at 490°C is given in Fig 1. Increase in time results in increased plasticity (e.g. D1 increases from 2.7 to 8% after 36 hours). Fig 2 shows the effect of different treatments. 2 Hours at 400 and 6 hours at 440-460°C have little effect on the mechanical properties. The metallographic structures show no solution of the second phase. Even with 36 hours at 440-460° there is no significant difference in the plasticity or the structure. An analysis of the mechanical properties and the structures showed that the most efficient homogenising treatment was 6-12 hours at 500°C. This gave the optimum plasticity and allowed successful hot or cold rolling. It enabled hot rolling without scrap on the edges and cold rolling without any intermediate temper. Thus output

Homogenisation of Duralumin Ingots in Modern Air-Circulating Electric Furnaces

could be increased by 7-8%. The influence of homogenising treatment on the mechanical properties of hot-rolled specimens is shown in Fig 3, 4 and 5 and cold-rolled specimens in Fig 6 (the broken line is after homogenising). It can be seen that good properties are obtained after hot or cold rolling. Hot rolling with a finishing temperature of 380-400° followed by a slow cool to 240-250° gave good plasticity. The change in properties of 1 mm strip with homogenising treatment is shown in Fig 7. An air-circulating furnace (type Gidroaviaprom) gave good results. There are 7 figures, 3 tables and 3 Soviet references.

Kolpashnikov, A.I.

PHASE I BOOK EXPLOITATION

SOV/4256

SOV/10-8-44

Moscow. Aviatsionnyy tekhnologicheskiy institut

Voprosy obrabotki davleniyem legkikh splavov (Problems of Pressworking Light-Metal Alloys) Moscow, Oborongiz, 1960. 53 p. (Series: Its: Trudy, vyp. 44) 3,600 copies printed.

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

Ed. (Title page): V. M. Aristov, Candidate of Technical Sciences; Ed. (Inside book): T. M. Kunyavskaya; Tech. Ed.: V. I. Oreshkina; Managing Ed.: A. S. Zaymovskaya, Engineer.

PURPOSE: The book is intended for scientific workers and technical personnel in machine-building and for senior students of related departments.

COVERAGE: The collection of articles is concerned with problems of pressworking (rolling, extrusion, die-forming) of light-metal alloys.

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Results are presented of investigations performed to improve the process of manufacturing aluminum and aluminum-alloy sheets, and to improve the formability of aluminum-magnesium alloys. Also explained is the effect of the configuration of the extruded shape on the "extrusion effect" (longitudinal work-hardening) of the D 16 and AB alloys. Determination of power consumption in extrusion of shapes and the possibility of cold volumetric deformation of the AK6 alloy are discussed. No personalities are mentioned. There are 6 Soviet references following Engineer Tsipulin's article.

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Problems of Pressworking Light-Metal (Cont.) SOV/4256

AVAILABLE: Library of Congress

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S/136/60/000/02/015/022
E193/E483

AUTHOR: Kolpashnikov, A.I.

TITLE: Specific Flow Pressure in Extrusion of Magnesium Alloys

PERIODICAL: Tsvetnyye metally, 1960, Nr 2, pp 72-74 (USSR)

ABSTRACT: The object of the investigation described in the present paper was to study the effect of various factors on the specific flow pressure in extrusion of three magnesium alloys, VM65-1, MA8 and MA2. The experiments were carried out on a 12000 t press; direct method of extrusion was used and the tests consisted in extruding a 30 x 415 mm strip from a billet 520 mm diameter, 800 mm long, the speed of the metal leaving the die being 0.3 m/min; no lubricant was used; the extrusion tests were carried out at 280, 340 and 380°C on billets that had been subjected to a homogenization treatment (24 h at 400°C); tests on the as-cast billets were carried out at only 340°C. Manometer readings were taken at regular intervals (every 25 mm of the ram travel) during each test and the specific flow pressure σ (kg/mm^2) was calculated from the formula

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Specific Flow Pressure in Extrusion of Magnesium Alloys

$$\sigma = \frac{F_{II} \cdot M}{F_K \cdot 100}$$

where: F_{II} - the ram cross-section area, cm^2; M - manometer reading, kg/cm^2; F_K - the cross-section area, cm^2, of the container. Some of the experimental results are reproduced in Fig 1 where specific flow pressure (kg/mm^2) is plotted against the ram travel (mm) for the three investigated alloys, extruded at 280°C (circles) and 340°C (triangles). Some other data are given in Table 1 showing (in this order): specific pressure (kg/mm^2) during extrusion at 280°C; short time UTS (kg/mm^2) at 300°C; yield point (kg/mm^2) of the alloy stressed in tension at 300°C; resistance to creep at 200°C in terms of UTS determined by time to rupture tests of 100 h duration. The effect of homogenization on the mechanical properties of the investigated alloys is illustrated by data given in Table 2 under the following headings; orientation of

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Specific Flow Pressure in Extrusion of Magnesium Alloys

the test pieces relative to the extrusion billet (longitudinal, transverse, longitudinal, transverse); condition of the billet (as-cast, homogenized); σ_b (UTS, kg/mm^2), $\sigma_{0.2}$ (0.2% proof stress, kg/mm^2), σ_c (compressive strength, kg/mm^2) and δ (elongation, %) of the VM65-1, MA2 and MA8 alloys. Finally, the effect of homogenization on the specific flow pressure during extrusion is illustrated in Fig 2, where σ (kg/mm^2) is plotted against the ram travel (mm) for alloy MA8 (circles), MA2 (triangles) and VM65-1 (crosses) in the as-cast (broken curves) and homogenized (continuous curves) condition. Several conclusions were reached. (1) Of the investigated alloys, the MA8 alloy is characterized by highest flow pressure, the VM65-1 alloy by lowest. (2) High flow pressure observed in the MA8 alloy can be attributed to its relatively high strength at elevated temperatures. (3) Both the mechanical properties and the extrusion pressure of the studied alloys can be reduced by subjecting them to a homogenizing treatment. Acknowledgements are made to A.A.Lukomin and

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Specific Flow Pressure in Extrusion of Magnesium Alloys

M.L.Sher who participated in this work. There are 2 figures and 2 tables.

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69831
S/136/60/000/05/012/025
E071/E235

18.1245

AUTHORS: Kazakov, A. A., Kovalev, I. G., and Kolpashnikov, A. I

TITLE: Heat Resistant Deformable Magnesium Alloy MA13

PERIODICAL: Tsvetnyye metally, 1960, Nr 5, pp 62-65 (USSR)

ABSTRACT: On the basis of preliminary investigations of various magnesium alloys, carried out during 1956 to 1957 by VIAM, and literature data, an alloy of the system Mg-Th-Mn under the name of MA13 (similar in composition to an American alloy NM21KhA) was found to be the most heat resistant and was chosen for more detailed investigations; the results of these are reported in the paper. A few heats of the alloy were prepared for the investigation in a steel crucible (12 kg) with the application of flux VI2. Magnesium and alloying addition MGS-1 was melted at 700 to 720°C. Thorium was introduced in the form of turnings at 800°C in a preheated bell. During the introduction of thorium, the surface of the metal bath was covered with a small amount of flux containing 55% of KCl, 28% of $CaCl_2$, 15% of $BaCl_2$ and 2% of CaF_2. The alloy (cooled to about 720 to 740°C) was cast into metal moulds, preheated to 100 to 150°C. The experimental ingots (25 x 150 x 300 mm) were rolled into sheets 1 to 6 mm

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Heat Resistant Deformable Magnesium Alloy MA13

thick, on a two high mill, with rolls 4000 mm in diameter, preheated to 100 to 120°C. Temperature at the beginning of rolling 450 to 500°C, at the end of rolling 300 to 350°C, reduction per pass 20 to 30%. Rolled sheets were thermally treated with an intermediate cold rolling: a) heating (for hardening) to 550 to 560°C with a 30 minute soaking in a protective atmosphere (sulphurous gas) and cooling in air; b) cold rolling with total reduction of 7 to 10%; c) ageing at 200°C for 16 hours. After hardening, the sheets were pickled in a 5% solution of nitric acid and hand dressed. After hot rolling, the alloy possessed a fibrous structure of a deformed, partially recrystallised material. After hardening, a fully recrystallised equiaxial structure is formed. The physical properties of the alloy are entered in Table 1; the mechanical properties are given in Table 2; a comparison of the mechanical properties of the alloys MA11, MA2-1, MA8 with those of MA13 are given in Tables 3, 4 and Fig 4. It was found that at temperatures above 240°C alloy MA13 possesses superior mechanical properties

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Heat Resistant Deformable Magnesium Alloy MA13

not only in comparison with standard magnesium alloys, but also compared with the most heat resistant aluminium alloy D20 (Table 4). An investigation of the corrosion resisting properties indicated that it has no tendency to corrosion cracking under stress. It has good welding properties (argon arc welding) and shows no tendency to cracking. Annealing for the removal of internal stresses in welded joints is not obligatory. The strength of a welded joint amounts to not less than 75% of the strength of the main metal. The alloy is suitable for stamping; bending and stretching of sheets should be done at 350 to 400°C. The limiting coefficient of the first stretching 3 to 3.2, the minimum permissible radius of bending 3 to 3.5 of the thickness of the material. The alloy MA13 is recommended for the manufacture of parts operating for long periods at 300 to 350°C and short periods at 400°C. The necessary precautions against the radioactivity of thorium during the preparation of thorium alloys are outlined. There are 4 figures, 4 tables and 7 references, 2 of which are Soviet, 3 English and 2 German.

4

1.2300 2408

25936
S/136/61/000/008/004/005
E193/E135

AUTHORS: Orlov, B.D., Kolpashnikov, A.I., and Dmitriyev, Yu.V.

TITLE: Spot welding of duralumin clad with alloys of the aluminium-magnesium system

PERIODICAL: Tsvetnyye metally, 1961, No.8, pp. 66-72

TEXT: The most dangerous defect of joints made by spot welding consists in incomplete fusion of the metal, resulting in the reduction of the effective area of the joint. In the case of welding of clad metals this defect is due to the fact that the mating cladding layers remain solid although the adjacent base material melts during the welding cycle. A microsection through a faulty spot weld of this type, reproduced in the paper, shows that no bond is formed between the two cladding layers. A certain degree of mechanical keying takes place but the joint has practically no load-carrying capacity. A more frequent type of failure of this kind is that in which only a portion of the cladding layer near the periphery of the welded spot remains unmolten. A photograph of a section through such a welded joint is reproduced, showing the actual and the nominal diameters of the

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Spot welding of duralumin clad with ...

weld nugget. The unfused and unbonded cladded layers, extending in to the weld nugget, constitute an "undercut", the degree of undercutting being given by

$$\triangle = \frac{d_{nominal} - d_{actual}}{d_{nominal}} \cdot 100\%$$

The defect, described above, occurs most frequently in spot welding of relatively thick (thicker than 2 + 2mm) clad duralumin sheet. If, however, the current density during the welding cycle falls appreciatively, faulty joints may be also produced in thin materials. Faulty joints of this type are particularly dangerous because, in contrast to similar faults found in spot-welded unclad metals, they cannot be detected by non-destructive tests. The object of the present investigation was to find means of preventing the formation of the defects of this type, or at least reducing the degree of undercutting in faulty joints. Regarding the relevant properties of aluminium-clad duralumin, it will be seen that the melting range of the duralumin Д16АТ (D16AT) core is 502-638 °C, its electrical resistivity 0.073 ohm mm^2/m, and its thermal conductivity 0.29 cal/cm sec °C; the corresponding figures

for aluminium (the cladding material) being 658 °C, 0.0269 ohm mm^2/m, and 0.052 cal/cm sec °C. The manner in which these two materials differ regarding these properties is bound to render aluminium-clad duralumin susceptible to the welding failures under consideration. It was, therefore, decided to replace the aluminium cladding by other corrosion resistant material with better electrical and thermal properties, and the AMГ (AMG) alloy consisting (in wt.%) of 2.0-2.8 Mg, 0.15-0.4 Mn, remainder aluminium (with no more than 0.4 Si, 0.1 Cr, 0.1 other impurities) was used for this purpose. The melting range of this alloy is 627-652 °C, its electrical resistivity 0.0476 ohm mm^2/m, and its thermal conductivity 0.37 cal/cm sec °C. (A schematic description of the method of fabrication of AMG-clad duralumin sheet is given in the paper). The improvement brought about by adopting this measure was demonstrated by a series of experiments, the results of which are reproduced graphically. The welding conditions during the preparation of the first series of test pieces are given in Table 3. The results of the first series of experiments are shown in Fig.4, where the degree of undercut Δ(%) of spot-welded joints is plotted against the duration of the current pulse, the

four curves relating to results obtained on: 1) 4 + 4 mm thick sheet of AMG-clad duralumin; 2) 4 + 4 mm thick sheet of Al-clad duralumin; 3) 2 + 2 mm thick sheet of AMG-clad duralumin; and 4) 2 + 2 mm thick sheet of Al-clad duralumin. The results of some other experiments are reproduced in Fig.6, where Δ (%) is plotted against the welding pressure (kg) applied in welding of clad sheet 4 + 4 mm thick, curves 1-3 relating to AMG-clad duralumin and curves 4-6 to Al-clad duralumin. Curves 1 and 4, 2 and 5, and 3 and 6, were constructed from data on welds produced, respectively, by 'soft', 'medium' and 'hard' welding schedules. [Abstractor's note: No explicit explanation of these terms is given in the paper, but they seem to indicate the duration of the current pulse, 'soft' schedule corresponding to short pulses]. Finally, the effect of various factors on strength of spot-welded joints is illustrated in Fig.7, where the average force (P_{cp}, kg) required to shear the joint is plotted against the duration of the current pulse (secs). The four curves relate to: 1) 4 + 4 mm thick AMG-clad duralumin; 2) 4 + 4 mm thick Al-clad duralumin; 3) 2 + 2 mm thick AMG-clad duralumin; and 4) 2 + 2 mm thick Al-clad duralumin. The results obtained prove conclusively

1.2300 2408 1573

28982

S/135/61/000/011/002/007
A006/A101

AUTHORS: Dmitriyev, Yu. V., Engineer, Kolpashnikov, A. I., Candidate of Technical Sciences, Fomin, A. P., Engineer

TITLE: Spot and roller welding of SAP (Sintered aluminum powder)

PERIODICAL: Svarochnoye proizvodstvo, no. 11, 1961, 7-10

TEXT: The most serious deficiency of sintered aluminum powders (SAP) is their poor weldability which prevents the assimilation of this valuable material in the industry. SAP-1 sheets, 1 - 1.5 mm thick containing 7.6 to 8.5% oxides, do not melt when exposed for a short time to a temperature as high as 800 to 1,000°C; the oxide layer on the surface remains intact and prevents fusion. Consequently, spot or seam welding under conventional conditions results in adhesion rather than in fusion. Some improvement can be achieved by increasing current and pressure and prolonging pulse duration, and also by inserting a copper or brass foil between electrodes and sheets. The welds obtained have satisfactory strength and a ring-shaped fusion zone. However the base metal around the weld is softened and frequent expulsions of overheated metal are caused. In 1960 the authors developed a technique for cladding SAP-1 sheets

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with aluminum, aluminum alloys, SAP type materials with low oxide content (up to 4%) and SAP-1 annealed at high temperatures. Cladding consisted in the preparation of blanks of basic and cladding material, mechanical cleaning of the contact surfaces, degreasing and rolling. Hot rolling was performed in several passes with 60 - 70% total reduction at 420 - 460°C. Subsequently the sheets were rolled at room temperature to a required thickness at 50 - 65% degree of cold deformation. During the cladding process the oxide film on the SAP blank is destroyed under the effect of high plastic deformations and is distributed between the base and cladding materials, thus creating conditions for their strong connection. Difficulties in producing a cast nugget in SAP sheets are eliminated, since this is not necessary when welding cladded material. This process, especially cladding with aluminum manganese alloys greatly improves the weldability of SAP-1 sheets, eliminates all the difficulties and produces reliable spot and seam welds with satisfactory reproducibility. With cladding it is also possible to weld SAP sheets to other aluminum alloy sheets. The weld strength at room temperatures and particularly at 350 and 500°C is much higher than can be expected from the cladding metal alone. Spot welds 6.1 to 6.2 mm in diameter on clad 1 mm thick SAP-1 sheets break under shearing loads of 313 to 357 kg at 20°C; 170 to 210 kg at 350°C, and 70 to 80 kg at 500°C. Tensile

strength of SAP-1 at these temperatures is 31 to 37, 15 to 16, and 6 to 8 kg/mm^2 and elongation, 4 to 8, 3 to 5, and 2.5 to 3% respectively. The high strength of clad SAP welds may possibly be explained by the diffusion of the strengthening phase of SAP to the cladding, during rolling or welding. There are 6 figures, 4 tables and 2 Soviet-bloc references.

ASSOCIATION: MATI (The Moscow Aviation Technological Institute)

S/136/62/000/008/004/004
E193/E383

AUTHOR: Kolpashnikov, A.I.

TITLE: Specific features of plastic working of magnesium alloys by the squeezing group of operations

PERIODICAL: Tsvetnyye metally, no. 8, 1962, 68 - 72

TEXT: The low plasticity of magnesium alloys, associated with their specific crystal structure, gives rise to specific problems in plastic working of alloys of this type. The main points covered in a general discussion of these problems, presented in this paper, can be summarized as follows.
1) Magnesium alloys display highest plasticity when deformed by triaxial, nonuniform compression. This mode of deformation, however, requires very high pressures and powerful equipment.
2) The equipment normally used for plastic working of magnesium alloys includes: horizontal and vertical extrusion processes; hydraulic, crank-actuated and friction-driven processes for forging and stamping. 3) Although cast magnesium blanks can be mechanically worked, extruded blanks have higher plasticity.

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S/136/62/000/008/004/004
Specific features of E193/E383

Plastic working of magnesium alloys requires preheating of both the tools and the metal worked. The latter should be preheated in electric furnaces with forced-air circulation. The preheating temperature varies between 320 - 420 °C; when forgings or stampings with better mechanical properties are aimed at, follow-up stamping is recommended at a temperature ranging from 250 - 350 °C. The temperature of the container in extrusion should be 20 - 50 °C below the temperature of the extrusion billet. Forging dies should be preheated to 150 - 300 °C. 5) Magnesium alloys are particularly sensitive to overheating, which causes deterioration in their mechanical properties due to recrystallization and excessive grain growth. Consequently, the total number of preheating operations, the preheating temperature and the total time at temperature should be kept to a minimum. 6) Magnesium alloys show a tendency to deformation of preferred orientation during plastic working. The degree of anisotropy in plastically-worked parts can be reduced by increasing the degree and rate of deformation and by decreasing the plastic-working temperature.
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Specific features of ....

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E193/E383

7) Precautions should be taken to prevent self-ignition of magnesium alloys during preheating; these include removal of magnesium dust and shavings from the blanks, avoidance of localized overheating, maintaining the temperature of the furnace below 420 °C when no protective atmosphere is used, avoiding the use of a salt bath for preheating, etc. There are 3 figures.

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S/032/62/028/002/025/037
B124/B101

AUTHORS: Filatov, F. I., and Kolpashnikov, A. I.

TITLE: Determination of residual stresses in brake drums of airplane tires

PERIODICAL: Zavodskaya laboratoriya, v. 28, no. 2, 1962, 223-224

TEXT: A method based on the change of resistance to deformation before and after cutting out the places of attachment of the strain gauges on brake drums made of the magnesium alloy ВМ65-1 (VM65-1) was used to determine the relevant residual stresses. The glue БФ-4 (BF-4) was found to give most satisfactory results after drying for 24 hrs at 60°C. Tests were performed with punched VM65-1 drums hardened at 170°C for 24 hrs, and then mechanically treated, and on drums tempered at 170°C for 6 hrs following the mechanical treatment. Strain gauges were glued to joints on two planes perpendicular to each other. One was used to measure the radial and axial components of the stresses, and the other to measure the tangential components. After attachment of the strain gauges the resistances are measured with an ЭИД-3 (EID-3) electronic deformation-

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41546

S/136/62/000/010/003/004
E021/E435

1.1600 2408

AUTHORS: Paisov, A.I., Kolpashnikov, A.I., P'ang Ya-Chen'

TITLE: Structure and properties of SAP (sintered aluminium powder)

PERIODICAL: Tsvetnyye metally, no.10, 1962, 71-75

TEXT: The aim of the present work was to establish the connection between structure and properties. SAP of three types was investigated: Al + 7.5% Al_2O_3, Al + 10% Al_2O_3 and Al + 8.5% Al_2O_3 + 0.3% Zr. Samples were hot-pressed and also cold-rolled with various degrees of reduction. The structure was examined by an electron microscope, using carbon replicas of polished and electrolytically etched microsections. Mechanical tests were carried out at room temperature and at 500°C. It was shown that, after hot pressing, the oxide phase was present as individual irregular and regular particles and not as films round the Al powder. The particles were not uniformly dispersed but existed in chains. An increase in oxide content resulted in a larger number of particles but not in an increase in coarseness; this indicates that the higher oxide content is due to a finer initial powder rather than a thicker initial oxide film.

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Structure and properties ... S/136/62/000/010/003/004
E021/E435

The SAP containing 10% Al_2O_3 (batch 2) had better mechanical properties than that containing 7.5% Al_2O_3 (batch 1) which, in turn, had better properties than the SAP containing 8.5% Al_2O_3 and 0.3% Zr (batch 3).
Results:

Batch	U.T.S. kg/mm2	Elongation %	Hardness (Brinell)
1	27.2	11.5	79
2	33.1	-	84
3	23.1	13.0	64

This was true both at room and higher temperatures. The low properties of the SAP containing 8.5% oxide are attributed to the nonhomogeneous structure of the specimens. Cold-rolling resulted in increased strength because of the cold work in the

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aluminium matrix. Neither hot nor cold rolling of hot pressed samples increased the properties of SAP at elevated temperatures. Cold rolling even reduced the strength at higher temperatures, probably as a result of destruction of the coherent bond between the oxide particles and the aluminium matrix. There are 5 figures and 2 tables.

KOLPASHNIKOV, A.I.

Characteristics of the press forging of magnesium alloys.
TSvet.met. 35 no.8:68-72 Ag '62. (MIRA 15:8)
(Magnesium alloys) (Forging)

L 15643-66 EWT(1)/EWP(e)/EWT(m)/EWP(t)/EWP(k)/EWP(z)/EWP(b) IJP(c) JD/HW

ACC NR: AT5027914 SOURCE CODE: UR/2536/65/000/062/0005/0013

AUTHOR: Sakharov, G. S. (Candidate of technical sciences); Kolpashnikov, A. I. (Doctor of technical sciences, Professor); Paisov, A. I. (Candidate of technical sciences); Shiryayev, Ye. V. (Engineer)

ORG: Moscow Aviation Technology Institute (Moskovskiy aviatsionnyy tekhnologicheskiy institut)

TITLE: Forging and hot stamping of sintered aluminum powder

SOURCE: Moscow. Aviatsionnyy tekhnologicheskiy institut. Trudy, no. 62, 1965. Obrabotka davleniyem legkikh splavov (Pressure working of light alloys) 5-13

TOPIC TAGS: metal stamping, sintered aluminum powder, hot die forging, closed die forging, material deformation, metal stress

ABSTRACT: Currently some organizations can accomplish with a fair degree of success the hot stamping of non-intricately shaped SAP (sintered aluminum powder) blanks (containing 6-11% Al_2O_3). This stamping, however, involves a number of difficulties owing to the low plasticity margin of the material. In this connection, the authors present the findings of an experimental study of the deformability of SAP by hot stamping. The SAP specimens used for forging and hot stamping differed in their Al_2O_3 content and as-delivered state: sintered briquets, pressed bars, clad rolled stock, etc., in order to determine the stampability of SAP as a function of the state of the specimen.

Card 1/2 UDC: 669.716:621.97.07

L 15643-66

ACC NR: AT5027914

The following experiments were performed: free drop forging, hot stamping in open dies, hot stamping in closed dies, high-temperature stamping. The free drop forging of specimens (pneumatic drop hammer with falling weight of 75 kg, hammer block heated to 130-150°C, SAP specimens, 20x20x60 mm, heated to 470-500°C) resulted in their early failure, apparently due to the unfavorable stressed state accompanying this forging technique. Hot stamping in open and closed dies also resulted in early cracking and failure owing to the low plasticity of SAP. However, the experimental hot stamping of Al-clad specimens in open dies produced much more encouraging results, since the cladding of SAP contributes to the healing of all sorts of surface microdefects which represent stress concentrators. Hot stamping in closed dies requires the prior vacuum degassing of SAP (particularly of SAP-2 and SAP-3, with their lower plasticity compared with SAP-1: the optimal hot-stamping temperature for SAP-2 and SAP-3 should be at least 600°C). High-temperature stamping (at 750°C) in a 200-ton vertical hydraulic press can be used to obtain intricately shaped forgings but it has the disadvantage of resulting in some nonuniformity of the distribution of oxide in individual sectors of the forging and hence the forgings thus produced can be used only for minor purposes. Orig. art. has: 10 figures, 1 table.

SUB CODE: 11, 13/ SUBM DATE: none/ ORIG REF: 000/ OTH REF: 000

Card 2/2

L 19778-66 EWT(l)/EWT(m)/EWP(e)/EWA(d)/EWP(t)/EWP(k)/EWP(z)/EWP(b) IJP(c)
ACC NR: AT5027916 MJW/JD/HW SOURCE CODE: UR/2536/65/000/062/0022/0029

AUTHOR: Paisov, A. I. (Candidate of technical sciences); Kolpashnikov, A. I. (Doctor of technical sciences, Professor); Tsipulin, I. P. (Engineer); Shelamov, V. A. (Candidate of technical sciences)

ORG: Moscow Aviation Technology Institute (Moskovskiy aviatsionnyy tekhnologicheskiy institut)

TITLE: Dependence of the structure and properties of sintered aluminum powder on the temperature of sintering and the degree of deformation during rolling

SOURCE: Moscow. Aviatsionnyy tekhnologicheskiy institut. Trudy, no. 62, 1965. Obrabotka davleniyem legkikh splavov (Pressure working of light alloys), 22-29

TOPIC TAGS: sintered aluminum powder, metal grain structure, ultimate strength, plasticity, plastic deformation, elongation

ABSTRACT: High-temperature sintering of aluminum powder at >500°C, employed with the object of degassing this powder so as to eliminate from it the oxide phase present in a hydrated state within this powder, also has disadvantages of its own since it contributes to the formation of such microstructural defects as striae of structurally free aluminum, bubbles, cracks, and the partial presence of pseudogranular structure (each pseudograin corresponds to a particle of the original lumpy powder). In this connection the authors investigated APS-1 aluminum powder containing 7.1%

Card 1/4 UDC: 669.7.017:621.97.07

L 19778-66
ACC NR: AT5027916

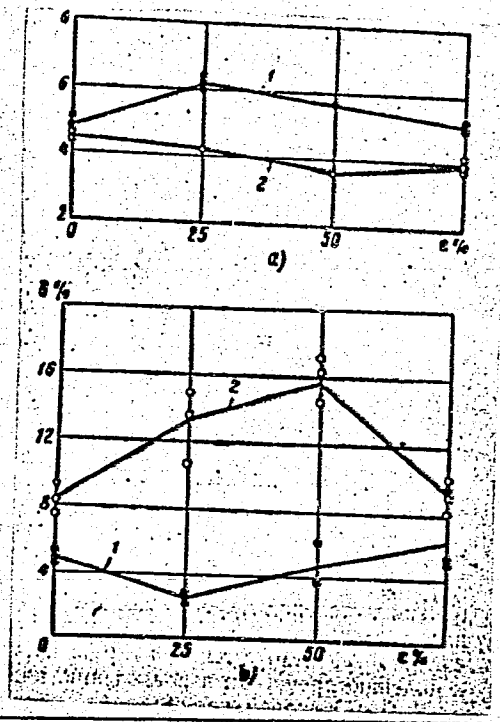

Fig. 1. Effect of degree of cold deformation during rolling on the ultimate strength (a) and relative elongation (b) of SAP; tests at 500°C.

1 - group No. 1; 2 - group No. 2

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Al_2O_3 and having a bulk weight of 1.4 g/cm^3. The powder was briquetted at a unit pressure of 40 kg/mm^2; the briquets were sintered for 8 hr at 600°C (group 1) and 650°C (group 2). The sintered briquets were pressed into blanks at 500°C for 1 min under a unit pressure of 60 kg/mm^2. The blanks were clad with technically pure Al of a thickness amounting to 5% in proportion to thickness of blank and hot-rolled, by the method proposed by A. I. Kolpashnikov et al. (V sb. Novyye tekhnologicheskiye protsessy pri obrabotke metallov davleniyem, Oborongiz, 1963, pp. 99-103), into 4 mm thick sheets. This was followed by cold rolling with reduction of thickness to 3, 2, 1 and 0.5 mm. Subsequent tests of ultimate strength and plasticity showed that on the whole the SAP specimens in group 1 are stronger but less plastic than the specimens in group 2. Metallographic examination revealed that the structure of SAP in group 2 contains a large number of striae of structurally free Al. By contrast for the SAP in group 1 the number of these striae is extremely limited, which accounts its higher strength and lower elongation. For SAP in group 1 ultimate strength and relative elongation remain relatively unaffected by the degree of deformation during the rolling of sheets, whereas for SAP in group 2, with their relatively large amounts of striae of structurally free Al, tests at 500°C indicated a different pattern of variation in properties: ultimate strength decreased, and elongation increased, in the presence of low and medium degrees of deformation (Fig. 1). This may be explained by the onset of softening in the sectors with structurally free aluminum. Thus, the presence of striae of structurally free Al not only reduces the strength and enhances the elongation of SAP but also affects the pattern of variation in these properties

L 19778-66

ACC NR: AT5027916

according to the degree of cold deformation of the sheets by rolling. Orig. art. has: 5 figures.

SUB CODE: 11, 13 / SUBM DATE: none/ ORIG REF: 007/ OTH REF: 003

Card 4/4 OLR

L 15201-66 EWT(l)/EWP(e)/EWT(c)/EWP(t)/EWP(k)/EWP(z)/EWP(b) IJP(c) JD

ACC NR: AT5027917 SOURCE CODE: UR/2536/65/000/062/0030/0037

AUTHOR: Paisov, A. I. (Candidate of technical sciences); Kolpashnikov, A. I. (Doctor of technical sciences, Professor); Kotiyeva, L. U. (Candidate of chemical sciences); Serbinovskaya, Ye. L. (Engineer); Shelamov, V. A. (Candidate of technical sciences)

ORG: Moscow Aviation Technology Institute (Moskovskiy aviatsionnyy tekhnologicheskiy institut)

TITLE: Transformations occurring in aluminum powder during its heating

SOURCE: Moscow. Aviatsionnyy tekhnologicheskiy institut. Trudy, no. 62, 1965. Obrabotka davleniyem legkikh splavov (Pressure working of light alloys), 30-37

TOPIC TAGS: aluminum powder, powder metal production, heating, aluminum oxide, phase composition, metal heat treatment

ABSTRACT: The investigation of the changes in the amount and composition of the oxide phase in heated Al powder is of great interest to the heating of this powder or to its briquetting in heated state, as well as to the heating of cold-pressed briquets to temperatures of 600°C and higher, performed for the purposes of degassing and sintering. The authors performed this investigation on the basis of a method proposed by L. U. Kotiyeva, since the conventional method of determining Al_2O_3 in Al powder and in sintered Al powder (SAP) according to the difference between the weight of sample

Card 1/3 UDC: 669.017:669.7.017.3

and the amount of Al metal fails to take into account the possible changes in the composition of the oxide phase due to the hydration of Al_2O_3 and the decomposition of hydrated crystals. Kotiyeva's method is based on determining the content of Al metal by the customary gas-volumetric method and then titrating the solution with H_2SO_4 in order to determine the total amount of Al in the suspension. The difference between the total amount of Al and Al metal reveals the amount of Al bound in oxygen compounds. The amount of Al_2O_3 is then determined by calculating the bound Al in terms of Al_2O_3. On this basis it is established that, given the current conditions of the production and storage of Al powder, its oxide phase is represented by $Al_2O_3 \cdot 3H_2O$. In the SAP obtained by sintering and pressworking at 450°-500°C the oxide phase is represented by monohydrate of Al_2O_3 ($Al_2O_3 \cdot H_2O$). If the powder or SAP is heated above 550°C, its oxide phase does not contain chemically bound hydrated-crystal moisture (γ-Al_2O_3). The formation of γ-Al_2O_3 is not, however, tantamount to the complete degassing of the material: γ-Al_2O_3 is highly hygroscopic and can absorb moisture chemically, which accounts for the presence of considerable quantities of moisture in the residue. The vacuum heating of cold-pressed briquets at the rate of 50°C/hr results in the cessation of gas release only at 670-680°C. In view of the change in the composition (and hence also density) of the oxide phase during heating, the increase in its gravimetric content may be accompanied by a decrease in volumetric content. Further, prior heating in an oxidizing atmosphere for degassing purposes is allowable only in the case of properly nodulized powder; heating of non-nodulized powder leads to rapid increase

L 15641-66

ACC NR: AT5027917

in its content of Al_2O_3. Thus the purpose of the nodulization of powder lies not only in increasing its pour weight but also in reducing its additional oxidation during hot degassing or hot briquetting. From the standpoint of additional oxidation during heating, the presence of finer fractions in the nodulized powder is undesirable. The currently produced nodulized powder contains a large proportion of finer particles and briquetting of such powder in heated state or the high-temperature sintering of cold-pressed briquets will inevitably augment the nonuniformity of distribution of the oxide phase. Orig. art. has: 6 figures.

SUB CODE: 11, 13 / SUBM DATE: none/ ORIG REF: 009/ OTH REF: 003

BC

Card 3/3

SAKHAROV, G.S., kand.tekhn.nauk; KOLPASHNIKOV, A.I., doktor tekhn.nauk, prof.; MANUYLOV, V.F., inzh.

Seizing of structural elements. Trudy MATI no.62:48-56 '65.
(MIRA 18:10)

TSELIKOV, A.I., akademik; KOLPASHNIKOV, A.I., doktor tekhn.nauk, prof.; ANUFRIYEV, A.N., inzh.

Flow rates and stresses in metals being rolled. Trudy MATI no.62:67-82 '65. (MIRA 18:10)

KOLPASHNIKOV, A.I., doktor tekhn.nauk, prof.; ANUFRIYEV, A.N., inzh.

Investigating the distribution of metal pressure on the rolls during rolling. Trudy MATI no.62:83-90 '65.

(MIRA 18:10)

L 10650-66 EWT(d)/EWT(l)/EWT(m)/EWP(e)/EWP(w)/EWP(v)/T/EWP(t)/EWP(k)/EWP(z)/EWP(b)/EWA(

ACC NR: AT5027919 IJP(c) JD/HM/HW/EM SOURCE CODE: UR/2536/65/000/062/0048/0056

AUTHOR: Sakharov, G. S. (Candidate of technical sciences); Kolpashnikov, A. I. (Doctor of technical sciences; Professor); Manuylov, V. F. (Engineer)

ORG: Moscow aviation technological institute (Aviatsionnyy tekhnologicheskiy institut)

TITLE: Bonding of the elements of structures

SOURCE: Moscow. Aviatsionnyy tekhnologicheskiy institut. Trudy, no. 62, 1965. Obrabotka davleniyem legkikh splavov (Pressure working of light alloys), 48-56

TOPIC TAGS: aluminum alloy, SAP alloy, alloy joining, alloy bonding, pressure bonding, bond strength /SAP1 alloy, D16 alloy

ABSTRACT: Experiments have been made to determine the strength of permanent joints between various aluminum alloy and SAP-1 shapes. The joints were made by bonding together two cylindrical or square bars, two tubes, or a cylindrical bar and a tube. The bonding was accomplished by hot plastic deformation (upsetting) of the parts with a hammer or in a hydraulic press. Metallographic examination revealed that in most cases, a perfect bond without a distinct boundary between the surfaces of the joined elements was obtained. The joints were sound, airtight, and had a tensile strength equal to or exceeding the strength of the parts joined. The strength of the joints depended on the method of preparation of the surfaces being joined, the technological parameters, the materials being joined and, to a

Card 1/2 UDC: 669.715:539.378.3

KOLPASHNIKOV, A.I., kand. tekhn. nauk; DMITRIYEV, Yu.V., inzh.; SHLENSKIY, G.N., inzh.

Cladding of SAP [sintered aluminum powder]. Trudy MATI no.57:99-103 '63. (MIRA 16:12)

ACCESSION NR: AP4045109 S/0067/64/000/009/0007/0009

AUTHOR: Kolpashnikov, A. I.; Palsov, A. I.; Zakharov, G. S.; [illegible]

TITLE: Pressing of parts from SAP-2 and SAP-3 aluminum powders in a die

SOURCE: Kuznechno-shtampovochnoye proizvodstvo, no. 9, 1964, 7-9

TOPIC TAGS: sintered aluminum powder, SAP-1, SAP-2, SAP-3 closed die pressing, SAP-3 closed die pressing, optimum pressing temperature

ABSTRACT: The effect of temperature, specific pressure, and lubrication on the formability and the structure of extruded SAP-2 and SAP-3 extruding blades has been investigated. Billets were compacted from SAP-2 and SAP-3 aluminum powders, containing 11 and 17% Al_2O_3, respectively. In the extruding blades from SAP billets, the pressure was varied from 20 to 60 kg/mm^2 and the temperature of the dies, from 500 to 600°C. The die cavity was lubricated with graphite lubricant. It was found that in extruding blades from SAP-2 and SAP-3, the billets should be degassed in a vacuum at temperatures higher than the tempera-

ACCESSION NR: AP4045809

extrusion. The optimum extrusion temperature for both SAP-2 [illegible]) is 620C. Extrusion at higher temperatures facilitates formation of the blade shape but impairs the material structure because of melting of the aluminum matrix. The nature of the lubricant has a substantial effect on the homogeneity of the structure. Under [illegible] frictional conditions, a lubricant consisting of graphite powder [illegible] oil was the best. Orig. art. has: 6 figures.

ASSOCIATION: none

SUBMITTED: 00 ATD PRESS: 3121 ENCL: 00

SUB CODE: MM NO REF SOV: 002 OTHER: 000

MALAN'IN, A.V., inzh.; KOLPASHNIKOV, A.I., kand. tekhn. nauk; GOROKHOV, V.P., inzh.

Investigating conditions of seizing during the mutual plastic deformation of duralumin-type alloys with alloys of the system Al - Mg. Trudy MATI no.57:66-90 '63. (MIRA 16:12)

KOLPASHNIKOV, A.I., kand. tekhn. nauk; SHLENSKIY, G.N., inzh.

Ways of increasing the weight of blanks for the rolling of SAP [sintered aluminum powder] sheets. Trudy MATI no.57: 104-109 '63. (MIRA 16:12)

KOLPASHNIKOV, G.

There are potentials in minutes. Sov.profsoiuzy 19 no.3:12-13 F '63. (MIRA 16:2)

1. Predsedatel' tsekhovogo komiteta, starshiy master vagonosborochnogo tsekha vagonoremontnogo zavoda imeni Voytovicha, Moskva.
(Moscow—Railroads—Cars)

KOLPASHNIKOV, G.A.

Accumulation of sediments in the lateral migration of the Pripet River near Narovlya. Trudy Inst.geol.nauk, AN BSSR no.1:78-80 '58. (MIRA 12:1)

(Pripet River--Sediments (Geology))

KOLPASHNIKOV, G.N.

Engineering equipment for railroad car shops. Zhel.dor.transp. 37 no.6:81 Je '56. (MLRA 9:8)

1. Master vagonoremontnogo zavoda imeni Voytovicha.
(Railroads--Repair shops)

KOLPASHNIKOV, N.P., kand.tekhn.nauk; MELENT'YEV, V.A., kand.tekhn.nauk

Earth-fill dams using cohesive soils. Gidr.stroi. 31 no.6:22-27 Je '61. (MIRA 14:6)

(Dams)

KOLPASHNIKOV, N.P., Cand Tech Sci -- (diss) "Alluvium of earth structures with the use of binder-treated soils." Len, 1958, 15 pp (Min of Electric Power Stations USSR. Tech Administration of the All-Union Sci Res Inst of Hydraulic Engineering im Ye. B.Ye. Vedeneyev VNIIG) 150 copies (KL, 27-58, 109)

Kolpashnikov, N.P.

10(4)

AUTHOR: Rozinoer, S.T., Chairman

SOV/98-59-7-21/22

TITLE: Conference on Scientific Research in the Field of Hydromechanics

PERIODICAL: Gidrotekhnicheskoye stroitel'stvo, 1959, Nr 7, pp 62-65 (USSR)

ABSTRACT:
The article is a chronicle of the above-named con-
ference, which was held in Moscow from April 15-17,
1959, on the initiative of the coordinatory commis-
sion for hydromechanization in the Council for Hyd-
raulic Affairs of the Academy of Sciences of the
USSR. The All-Union MSES Hydromechanization Trust,
the Mining Institute of the Academy of Sciences of
the USSR and the Moscow oblast board of the Techno-
logical Department of the construction industry al-
so participated in the organization of the confe-
rence, which was attended by more than 400 repre-
sentatives of 149 organizations, including the Offi-
ce of State Construction of the USSR, ministries,
national economic councils, institutes of the Aca-
demy of Sciences of the USSR and the union republics,

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the ASiA of the USSR and the Ukrainian SSR, the
Academies of Agricultural Science and the GNTK of
the union republics, and official scientific and
research institutes. The conference was opened by
Academician A.N. Terpigorev, and at the plenary
session papers were read by the following: Prof.
A.P. Yufin, Doctor of Technical Sciences: "The State
of Scientific Research Work in the Field of Hydro-
mechanization"; Engineer V.A. Platanov: "The Cons-
truction of Alluvial Dams and the Work of Scienti-
fic Organizations"; Engineer M.A. Gorin: "The Pre-
sent State of and the Outlook for Design and Re-
search Work in the Field of Equipment for Hydrome-
chanization"; Engineer S.B. Fogel'son: "Certain
Problems of the Economy of the Hydromechanization
of Earth Works"; Prof. G.A. Nurok, Doctor of Tech-
nical Sciences: "The Present State of and the Out-
look for the Development of the Hydromechanization
of Opencast Coalmining"; Engineer B.M. Shkundin:
"Means of Perfecting Hydromechanisation in the Non-
Metallic Mineral Industry." The remainder of the

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conference was divided into 3 sessions: on technolo-
gy, equipment and transport. At the session dealing
with technology papers were read by the following:
Prof. N.N. Maslov, Doctor of Technical Sciences:
"Certain Problems in the Planning of Alluvial Dams";
P.L. Ivanov, Candidate of Technical Sciences (Insti-
tute of Mechanics of the Academy of Sciences of the
USSR): "Peculiar Features of the Dilution and Com-
pression of Sand Foundations"; P.D. Lobanov, Candi-
date of Technical Sciences (VNIIGS): "Piecemeal Al-
luvial Construction"; V.A. Molentyev, Candidate of
Technical Sciences (B.E. Vedeneyev VNIIG) and V.P.
Spiridin, Candidate of Technical Sciences (Institute
of Mechanics of the Academy of Sciences of the USSR):
"The Consolidation and Compression of the Foundations
of the Key Parts of Earth Dams"; N.P. Kolpashnikov
(GISI): "Research on Alluvial Construction by Means
of Cohesive Foundations"; M.P. Kuzminov, Candidate of
Technical Sciences: "The Hydraulic Construction of
Earthworks by Means of Loess Foundations"; B.A. Vol-
nin (V.V. Kuybyshev MISI): "The Alluvial Construction
of the Sary-Yazynsk dam on the Murgab River by Means
of Fine-Grained Sand"; L.Ya. [illegible], Candidate of
Technical Sciences (A.F. Mozhaiskiy VVIA): "Research
into the Morphological Peculiarities of Sand Founda-
tions"; Engineer [illegible] Shneyer (SAOGIDEP) and I.I.
~~Yakovlev~~ (VNIIGiM): "Formulae for the Determination
of the Angle of Inclination of Earth Foundations";
N.V. Zolotarev, Candidate of Technical Sciences: "A
Method of Calculating the Thawing Rate of Frozen
Foundations on the Upper Slope of Sand Dams when Cons-
tructed in Winter"; D.I. Melamut, Candidate of Tech-
nical Sciences (VNIIGiM), and Engineer K.P. Kopiyevskiy
(GNTK of the Moldavian SSR): "Problems of Spanning
Rivers Without the Use of Bankets";

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CHELNOKOV, V.; KOLPASHNIKOVA, R.

Economic work performed by workers' representatives. Den. i kred. 19 no.11:35-40 N '61. (MIRA 14:12)
(Industrial management)

VIL'YAMS, Vasiliy Robertovich, akademik. Primala uchastiye KOLPENSKAYA, M.P., dotsent, starshiy nauchnyy sotrudnik. BUSHINSKIY, V.P., akademik, zasluzhennyy deyatel' nauki, red.; AVAYEV, M., red.; LIL'YE, A., tekhn.red.

[Selected works] Izbrannye sochineniia. Moskva, Moskrabochii, 1948. 465 p. (MIRA 13:8)

1. Vsesoyuznaya akademiya sel'skokhozyaystvennykh nauk imeni V.I. Lenina; chlen-korrespondent Akademii nauk SSSR (for Bushinskiy). (Agriculture)