NOVIKOV, Ya.A., kandidat tekhnicheskikh nauk; SHATSKIY, Ye.Z., kandidat tekhnicheskikh nauk, redaktor; ROSTOVTSEVA, N.P., redaktor; MEDVEDEV, L.Ya., tekhnicheskiy redaktor.

[From the work practice in using prefabricated reinforced concrete in industrial and housing construction] Iz opyta primeneniia sbornogo zhelezobetona v promyshlenom i grazhdanskom stroitel'stve. Moskva, Gos. izd-vo lit-ry po stroit. i arkhitekture, 1956. 58 p. (MLRA 9:6)

1. Moscow. Tsentral'nyy institut informatsii po stroitel'stvu. (Precast concrete)

SHATSKIY, Ye.Z., kandidat tekhnicheskikh nauk.

Making hollow panels for interstory floors. Opyt stroi. no.1:17-23 '56. (MLRA 10:4)

(Floors) (Concrete slabs)

SHATSKIY, Ye.Z., kandidat tekhnicheskikh nauk.

Precast reinforced concrete construction in the German Democratic Republic. Opyt stroi. no.1:34-44 '56. (MLRA 10:4)
(Germany, East--Precast concrete construction)

SHATSKIY, Ye.Z., kandidat tekhnicheskikh nauk.

Precast reinforced concrete elements for industrial buildings.
Opyt stroi. no.3:3-22 '56. (MLRA 10:4)
(Precast concrete) (Factories)

SHATSKIY, Ye.Z., kandidat tekhnicheskikh nauk.

Combined reinforced concrete construction elements. Biul. stroi. tekh. 13 no.6:31-35 Je '56. (MLRA 9:9)

1. TSentral'nyy institut informatsii po stroitel'stvu.
(United States--Reinforced concrete construction)

NOVIKOV, I.I., kand.iskusstvovedeniya arkh.; MANDRIKOV, A.P., kand.tekhn. nauk; SEDOV, A.P., kand.arkhitektury; KONYUSHKOV, A.[illegible], kand.tekhn. nauk; SOKOLOV, Ye.B., kand.arkhitektury; SHATSKIY, Ye.Z., kand. tekhn.nauk; KRICHEVSKAYA, Ye.I., kand.tekhn.nauk; SHLEINA, L.A., kand.tekhn.nauk; KOVEL'MAN, I.A., kand.tekhn.nauk; AGASYAN, A.A., kand.tekhn.nauk; USENKO, V.M., kand.tekhn.nauk, nauchnyy red.; BARSKOV, I.M., iznh., nauchnyy red.; YUDINA, L.A., red.izd-va; PECHKOVSKAYA, T.V., tekhn.red.

[Building practices in the peoples' democracies. Based on reports by delegations of Soviet biulders] Opyt stroitel'stva za rubezhom; v stranakh narodnoi demokratii. Po materialam ochetov delegatsii sovetskikh spetsialistov-stroitelei. Moskva, Gos. izd-vo lit-ry po stroit. i arkhit., 1957. 253 p. (MIRA 11:4)

1. Sotrudniki TSentral'nogo instituta nauchnoy informatsii po stroitel'stvu i arkhitekture Akademii stroitel'stva i arkhitektury SSSR (for Novikov, Mandrikov, Sedov, Konyushkov, Sokolov, Shatskiy, Krichevskaya, Shleina, Kovel'man, Agasyan)
(Building)

SHTAYERMAN, Mikhail Yakovlevich, professor, doktor tekhnicheskikh nauk; SHATSKIY, Ye.Z., kandidat tekhnicheskikh nauk, nauchnyy redaktor; YUDINA, L.A., redaktor izdatel'stva; GUSEVA, S.S., tekhnicheskiy redaktor

[Principles of building for the refrigeration and food industry] Osnovy stroitel'nogo dela v kholodil'noi i pishchevoi promyshlennosti. Izd. 2-oe, perer. i dop. Moskva, Gos. izd-vo lit-ry po stroit. i arkhit., 1957. 299 p. (MLRA 10:4)
(Building) (Food industry)

SHATSKIY, Ye.Z., kand.tekhn.nauk

Precast reinforced concrete components and prestressed structural elements used in industrial construction. Opyt stroi. no.10:3-36 '57. (MIRA 11:1)
(Industrial buildings) (Precast concrete)

SHATSKIY, Ye.Z., kand.tekhn.nauk

Using reinforced concrete, precast and prestressed construction elements in building machinery manufacturing plants abroad. Opyt stroi. no.12:3-29 '58. (MIRA 12:2)
(Industrial buildings) (Precast concrete construction)

SHATSKIY, Ye. Z., kand. tekhn. nauk.

Using monolithic and precast prestressed reinforced concrete in constructing highway bridges. Opyt stroi. no.13:3-20 '58.
(MIRA 11:12)

(Bridges, Concrete)

SHATSKIY, Ye.Z., kand. tekhn. nauk.

Designs of precast and prestressed reservoirs. Opyt stroi. no.13: 21-32 '58. (MIRA 11:12)
(Precast concrete construction) (Tanks)

SHATSKIY, Ye.Z., kand. tekhn. nauk

Reinforced concrete television antennas. Opyt stroi. no.13:33-35 '58. (MIRA 11:12)
(Precast concrete construction) (Television--Antennas)

SHATSKIY, Ye.Z., kand.tekhn.nauk

Industrial buildings built of precast reinforced concrete elements and prestressed reinforced concrete members. Opyt. stroi. no.16:3-26 '58. (MIRA 11:9)
(Industrial buildings) (Precast concrete construction)

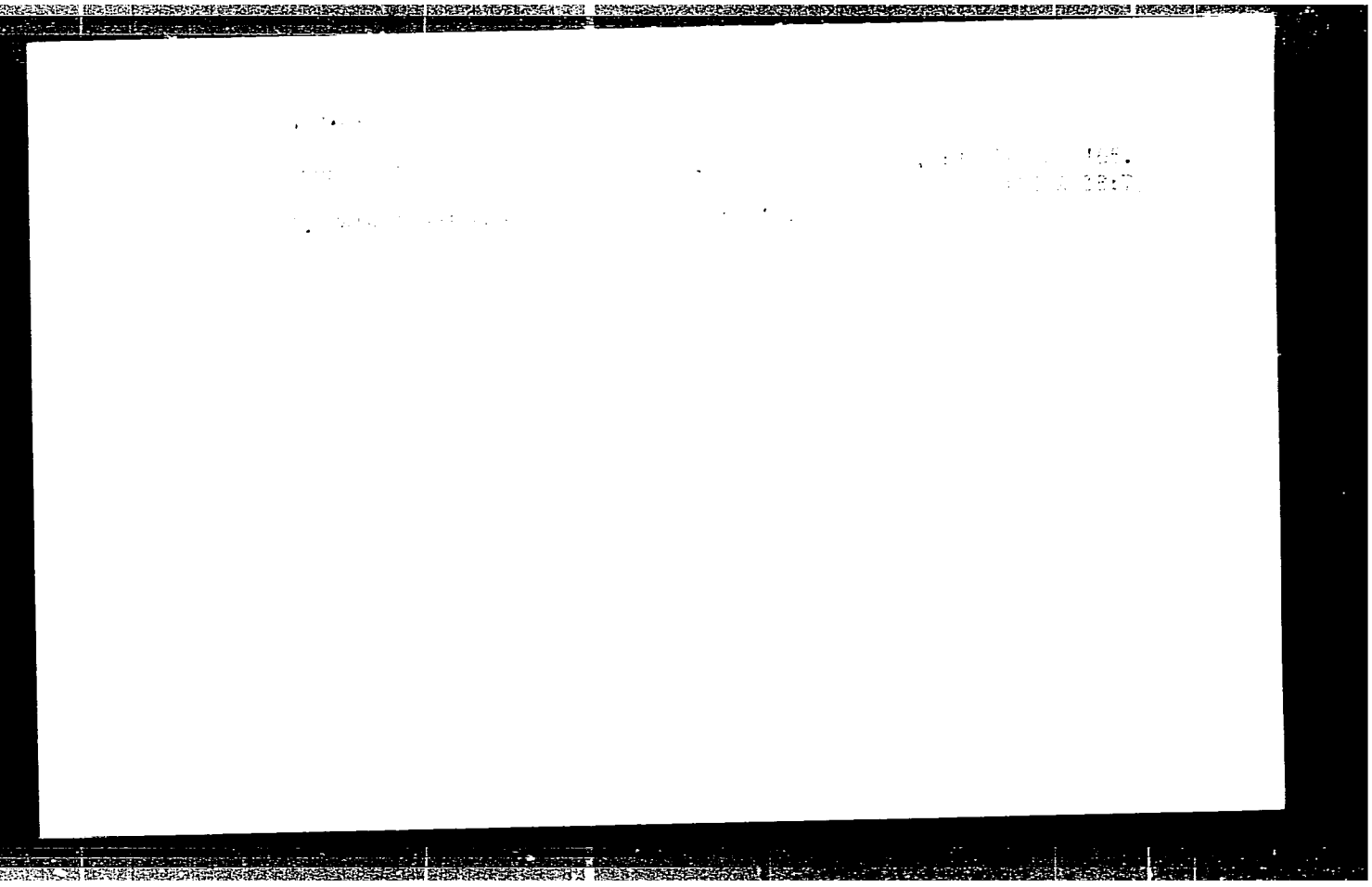
SHATSKIY, Ye.Z., kand. tekhn. nauk [deceased]

Designs of multistoried apartment houses. Opyt. stroi. 2:67-98 '59. (MIRA 13:3)

(Apartment houses) (Precast concrete construction)

TSVETKOV, P.M., inzh.; SHATSKOV, G.F., inzh.

Steel production in tilting open-hearth furnaces at the "Azovstal'" plant. Stal' 23 no.8:713-714 Ag '63. (MIRA 16:9)
(Zhdanov--Steel--Metallurgy) (Open-hearth furnaces)



IVANENKOV, V.N.; VINTOVKIN, V.R.; SHATSKOV, K.Z.

Distribution of oxygen in the water of the northern part of the Indian Ocean. Trudy Inst. okean 64:115-127 '64.
(MIRA 17.7)

KHOZAK, S.I.; SHATSKOVA, P.V.

Conference of readers of "Meditsinskaia promyshlennost' SSSR" at the Karpov Plant. Med.prom. no.3:47-48 Jl-S '55. (MLRA 9:12)
(MEDICAL INSTRUMENTS AND APPARATUS--PERIODICALS)

KHOZAK, S.I.; SHATSKOVA, P.V.

Inventors and rationalizers at the Karpov Plant in their struggle for technical progress. Med.prom. no.4:10-12 O-D '55. (MLRA 9:12)
(DRUG INDUSTRY
in Russia, contributions to progr.)

S/867/62/000/012/001/001
A006/A101

AUTHORS: Danilenko, L. F., Shatskova, V. A., Shapiro, G. I.

TITLE: On the problem of residual stress relieving in thermoplastic sheets

SOURCE: Akademiya stroitel'stva i arkhitektury SSSR. Institut sanitarnoy tekhniki. Sbornik trudov, no. 12, 1962. Polimernyye materialy v sanitarnoy tekhnike 122 - 127)

TEXT: Heating of thermoplastic sheets produces conditions which promote the formation of internal stresses and entail corresponding changes in the geometrical dimensions. Tests determining such changes by heating are not included in Soviet standard specifications although they are provided for in the USA (ASTM 702-56) and Japan (II S 6745-1956). The authors studied changes in 3 - 5 mm thick vinyl plastic and organic glass sheets caused by heating at 70 - 140°C of the former and at 80 - 150°C of the latter material. The deformation was measured on graduated specimens with a microscope of 0.005 mm accuracy. The results are represented in relationship curves of the sheet dimensions versus the

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On the problem of residual stress relieving in...

heating time at given temperatures, using mean values of longitudinal and transverse measurements. In heating organic glass sheets stresses arise during heating, independent of the sheet orientation. The same phenomenon is observed in vinyl plastic sheets heated to 140°C; the stresses arise during pressing but not during calendering. The optimum annealing time above which changes in the geometrical dimensions do not take place, is 40 min for 5-mm thick vinyl plastic sheets, heated to 80 - 140°C. At higher temperatures (130 - 140 C) and long lasting annealing it was found that stress relieving was not possible without lamination of the material. The method is proposed for evaluating changes in the geometrical dimensions of annealed thermoplastic sheets. There are 3 figures.

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S/035/59/000/003/027/039
A001/A001

Translation from: Referativnyy zhurnal, Astronomiya i Geodeziya, 1959, No. 3, pp. 65-66, # 2087

AUTHOR: Sharsmar, E.

TITLE: Cosmogonic Significance of T Tauri Stars

PERIODICAL: V sb.: Nestatsionarnyye zvezdy, Yerevan, AN ArmSSR, 1957, pp. 155-166, Discuss. pp. 162-168

TEXT: Estimates of the age of T Tauri stars, considered as contracting stars which did not yet reach the main sequence, lead to the value of $\sim 10^8$ years which is greater by an order of magnitude than the age of the T-association itself. This discrepancy could be eliminated, i. e., contraction time would be less, if stars during contraction have luminosities too large for their masses, or if contraction is accompanied by mass losses. It is pointed out that masses of these stars should be determined and spectra showing displacements of emission lines should be studied. There is a ground to assume that rotational speeds of T Tauri stars are high. The corresponding main sequence stars have low rotational

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Cosmogonic Significance of T Tauri Stars

speeds. Consequently, a mechanism should exist whose action results in the loss of the star angular momentum during contraction. The author explains this by the presence of a variable magnetic field at the surface of T Tauri stars. An important problem is studying dynamic features of T-associations in order to explain (assuming the gravitational contraction hypothesis) the existence of associations with positive energy whereas their constituent stars have negative energies. In a discussion A. G. Masevich noted that difficulties with age scale for T Tauri stars are even aggravated, when assuming contraction accompanied by the loss of mass. O. A. Mel'nikov holds that large line widths in spectra of T Tauri stars are mainly caused by large-scale turbulence and, possibly, by radial convection. The true rotational speed of these stars is probably not high, like the ordinary stars of low luminosities. Grinsteyn noted that difficulties connected with the T Tauri star age are exaggerated. Such formations as NGC 2264 are stable and have an age (determined from AO stars) $\sim 5 \times 10^6$ years. The formation of stable associations seems to be possible, exact data on star proper motions are necessary for studying this problem. A. G. Masevich pointed out that "time" discrepancy between stars of earlier and later classes take place also in NGC 2264. V. A. Ambartsumyan noted that, when solving the problem of the energy sign of stellar association, it is necessary to settle the question,

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whether only energy of translational motion of the stars and the energy of their gravitational interaction are taken into account, or the inner energy of binary stars as well. The problem of a possible exchange between the orbital energy of close binaries and translation motion energy of association members is most essential. Such an exchange is unthinkable in an expanding association, but it was possible in the past if, at that time, the association space was sufficiently small. Shatsman holds that, when considering a cloud of condensing gas, it is necessary to take into account the expansion energy and the energy of star interaction including multiple stars, in addition to the energy of the system being in the process of formation. V. S. Safronov notes that for the formation of visual binaries in associations at the initial stage of their development, a sufficiently high stellar density is necessary, which corresponds to association dimensions of the order of thousand astronomical units

A. G. Masevich

Translator's note: This is the full translation of the original Russian abstract

[illegible], I. [illegible], A. [illegible] and A. [illegible]

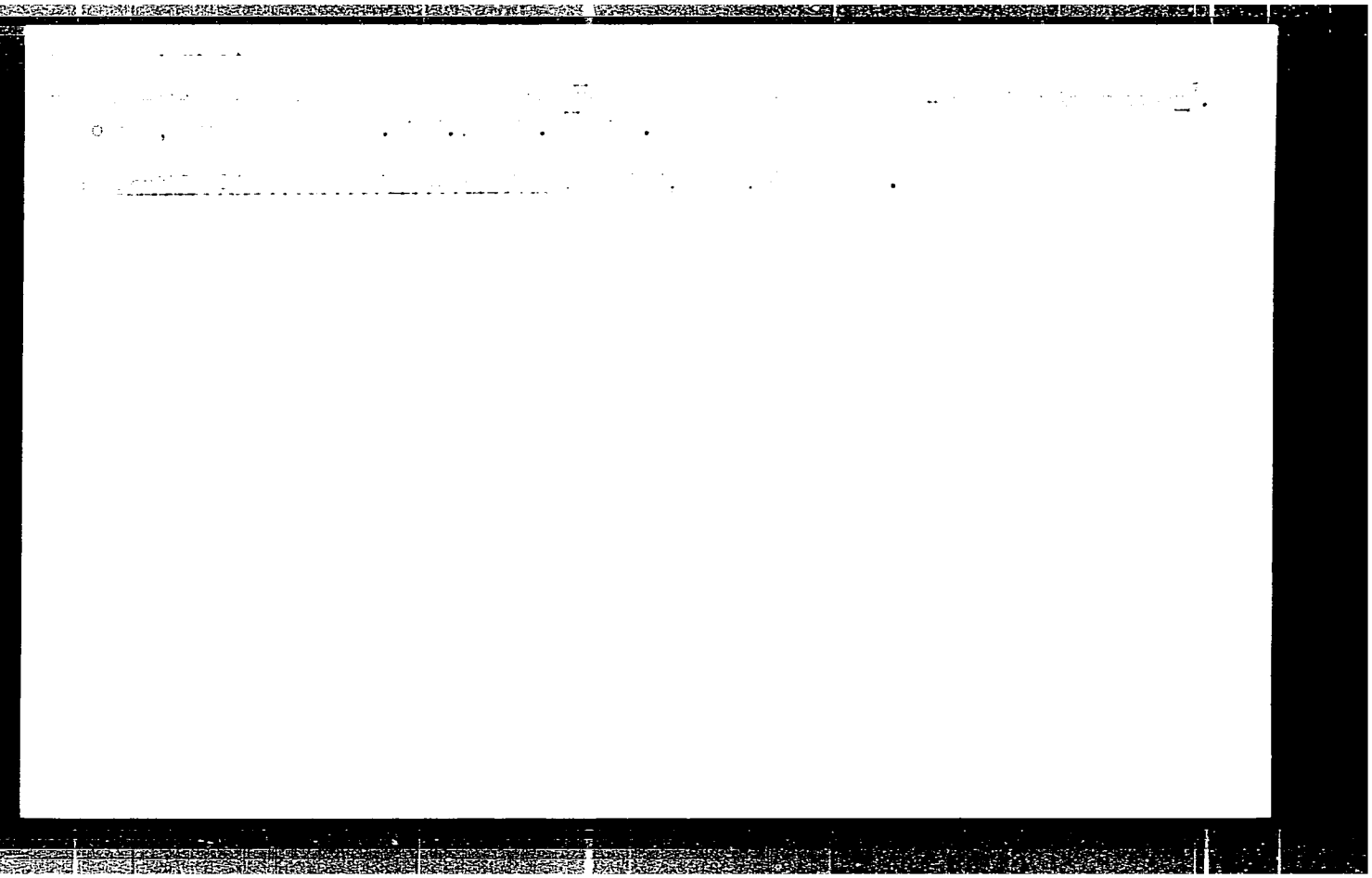
Skorostnoe tsekhovoe. Moskva, Mashgiz, 1948. 143 p. illus (Tekhnologiia mashinostroeniia: Stanki i obrabotka metallov rezaniem)

Bibliography: p. 142-(143)

High-speed grinding.

DLC: TJ1230.S7

SO: Manufacturing and Mechanical Engineering in the Soviet Union, Library of Congress, 1953.



GAIGNENSKOV, T. K., SHATSMAN, L. I.

Determination of uronic acids by a colorimetric method. Zhur. prikl. khim. 37 no.2:462-464 F '64. (MIRA 17:9)

1. Voronezhskiy sel'skokhozyaystvennyy institut.

GAPONENKOV, T.K.; SHATSMAN, L.I.

Chemical composition and aggregating capacity of a microbe mass.
Mikrobiologiia 30 no.2:271-274 Mr-Ap '61. (MIRA 14:6)

1. Voronezhskiy sel'skokhozyaystvennyy institut.
(BACTERIA)

GAPONENKOV, P.K.; SHAYSMAN, L.I.

Aluminum-uranide complexes of soils. Pochvovedenie no.12:84-88 (MIRA 18:2)
O '64.

AGTE, B.S.; SHATSMAN, L.Ye.

Indications for surgical intervention in closed fractures of the spine. Vop.neirokhir. 20 no.4:38-43 Jl-Ag '56. (MLRA 9:11)

1. Iz kliniki nervnykh bolezney i gospital'noy khirurgicheskoy kliniki Stalinskogo meditsinskogo instituta.
(SPINE, fract.
surg., indic. in closed fract.)

ACC NR: AR6034865 (A) SOURCE CODE: UR/0398/66/000/008/A020/A020

AUTHOR: Stepanyuk, Ye. I.; Shatsman, Yu. L.

TITLE: Experimental investigation of the work of partially submerged propellers

SOURCE: Ref. zh. Vodnyy transport, Abs. 8A115

REF SOURCE: Tr. Leningr. in-ta vodn. transp. vyp. 81, 1965, 71-75

TOPIC TAGS: gust load, ship component, load factor, propeller

ABSTRACT: The paper presents the results of a test to show the comparative effectiveness of an exposed propeller and a packed propeller under conditions of partial submersion and at comparatively high load factors. The tests were carried out with a single four-blade propeller (Kaplan type) of D = 0.098 m in a circulating flume, the speed of which was controlled within the limits of 0.2—1.3 m/sec. The results of the tests are presented in the form of diagrams. Orig. art. has: 5 figures. Bibliography of 1 title. [Translation of abstract]

SUB CODE: 13/

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UDC: 629.12:532.5.582.5

YERMAKOV, V.I.; SHATSOV, A.N.

Radiometric surveying in oil-bearing regions of western Turkmenia.
Geol.nefti 1 no.8:34-39 Ag '57. (MIRA 10:12)

1.Institut nefti AN SSSR.
(Turkmenistan--Petroleum geology)
(Radioactivity--Measurements)

SHATSOV, A.N.; PEYSIKOV, Yu.V.; GUSEYNOV, A.M.

Some results of using a radiometric survey in azerbaijan. Azerb. neft. khoz 40 no.11:7-11 N '61. (MIRA 15:1)
(Azerbaijan--Radioactive prospecting)

S/169/62/000/009/062/120
D228/D307

AUTHORS: Peysikov, Yu. V. and Shatsov, A. N.

TITLE: Application of underwater sea bottom radiometric surveying

PERIODICAL: Referativnyy zhurnal, Geofizika, no. 9, 1962, 43, abstract 9A285 (Geol. nefti i gaza, no. 3, 1962, 50-53)

TEXT: The results of investigating the natural γ-activity of bottom sediment samples in separate parts of the Caspian Sea are stated. By means of a device, which is described, the sea bottom's γ-activity was measured in order to ascertain whether underwater radiometric surveying can be conducted for the purpose of seeking oil and gas deposits and mapping the sea floor geologically. A method is suggested for the execution of underwater radiometric surveying. The results of experimental work in a number of oil-bearing areas are described. [Abstracter's note: Complete translation.]

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GUSEYNOV, A.M.; ASADOV, I.G.; PEYSIKOV, Yu.V.; SHATSOV, A.N.; SUDZHADINOV, R.Ya.; ALIYEV, M.B.

Experience in using the marine radiometric survey method in the Azerbaijan S.S.R. Sov.geol. 6 no.3:124-133 Mr '63. (MIRA 16:3)

1. Azerbaydzhanskiy nauchno-issledovatel'skiy institut po dobyche nefti.

(Azerbaijan--Radioactive prospecting)

[illegible], [illegible] Isa[illegible]ovich, [illegible].

The physical chemistry of clay mortar. Moskva, Gostoptekhizdat, 1947. 97 p. (Biuro tekhniko-ekonomicheskoi informatsii TsIMTnefti. Tekhniko-informatsionnye sborniki. Burenie) (51-27907)

ZHAROV, Naum Isaakovich.

Kuliev, Z. M. [illegible] textbook [illegible] izd-vo neftianoi i gorno-toplivnoi lit-ry, 1947. 2 v. (47-8171)

TN870.S5

SHATSOV, N.I., prof.

Analyzing initial data on drilling wells in eastern fields and designing drilling rigs of lifting capacity adequate to the depth of these wells. Trudy GGI no.7:139-147. (MIRA 12:1)
(Oil well drilling)

USSR/Petroleum - Well Drilling Oct 1947
Drilling

"The Scientific Basis for Generalizing Stakhanovite Practice," N. I. Shatsov, 8 pp

"Neftyanoye Khozyaystvo" No 10

Discussion and charts illustrating the effectiveness of using the Stakhanov system in drilling work to increase production and cut drilling time.

LC 30T72

USSR/Petroleum - Well drilling Feb 1947
Power

"Determination of Power for the Drilling Process," N. I. Shatsov, 10 pp

"Neftyanoye Khozyaystvo" Vol XXV, No 2

Mathematical discussion with graphs, tables and formulae

4T9

SHATSOV, Naum Isaakovich, ed.

an album of nomographs for well-boring Moskva, Gos. nauch.-tekhn. izd-vo neftianoi i gorno-toplivnoi lit-ry, 1949. 97p. (50-15766)

T.A670.S48

SHATSOV, N. I.

"Using the Bit Properly," Neft. khoz., No.2, 1951

SHATSOV, N.I., doktor tekhnicheskikh nauk, professor.

One of the decisive factors for rapid and cheaper oil and gas well completion is their simplified designs and increased operationals facility. Trudy MNI no.11:56-71 '51. (MLRA 10:3)
(Oil well drilling) (Gas wells)

SHATSOV, N.I., prof.

What we can learn from Mugalim Gimazov's crew on progressive oil well drilling. Trudy Akad. neft. prom. no.3:114-147 '56. (MIRA 10:11)
(Oil well drilling)

KUVYKIN, Stepan Ivanovich; SHATSOV, N.I., redaktor; DUBROVINA, N.D., vedushchiy redaktor; POLOSINA, A.S., tekhnicheskiy redaktor

[Boring small-diameter exploratory wells; practices in Bashkiria] Burenie razvedochnykh skvazhin malogo diametra; opyt Bashkirii. Moskva, Gos.nauchno-tekhn. izd-vo neft.i gorno-toplivnoi lit-ry, 1957. 83 p. (MLRA 10:7)
(Bashkiria--Boring)

SHATSOV, N.I., professor, redaktor; PETROVICHEV, N.G., inzhener, redaktor; KOVALEVA, A.A., vedushchiy redaktor; MUKHINA, E.A., tekhnicheskiy redaktor

[Simplification and facilitation of borehole construction; papers presented at a session of the Technical Council] Uproshchenie i oblegchenie konstruktsii skvazhin; materialy vyezdnoi sessii Tekhnicheskogo soveta. Moskva, Gos. nauchno-tekhn. izd-vo neft. i gorno-toplivnoi lit-ry, 1957. 124 p. (MLRA 10:7)

1. Russia (1923- U.S.S.R.) Ministerstvo neftyanoy promyshlennosti. Tekhnicheskiy sovet.
(Oil well drilling)

PHASE I BOOK EXPLOITATION 696

Shatsov, Nakhman Isaakovich and Khromov, Viktor Timofeyevich

Metodika obobshcheniya peredovogo opyta burovykh brigad; na primere kontory bureniya No. 4 tresta Tatburneft' (Method for a General Application of Advanced Practices of No. 4 Drilling Crew of the Tatburneft' Trust) Moscow, Gostoptekhizdat, 1958, 129 p. (Series: Opyt novatorov neftyanikov) 1,650 copies printed.

Ed.: Nurshanov, V.A.; Executive Ed.: Dubrovina, N.D.; Tech. Ed.: Polosina, A.S.

PURPOSE: This book is intended for driller foremen and engineers and technicians concerned with oil-well drilling.

COVERAGE: The book describes the work of advanced drilling crews in Tatariya and Bashkiriya. Methods for the general application of advanced drilling and the drawing of flow sheets are presented, and possibilities for increasing per bit footages and commercial drilling speeds

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are disclosed on the basis of an analysis of the principal production processes. A description is given of the progress achieved at the Tatneft' trust since 1950, and 1955 is singled out as the year the complex mechanization and automation of drilling began. Commercial drilling speed increased from 285 meters per rig per month in 1950 to 830 meters per rig per month in 1956, while per bit footage rose for the same period from 1.85 to 14.22 meters per hour. V.T. Khromov and V.Ya. Semashko, graduate students of the Moskovskiy neftyanoy institut im. akad. I.M. Gubkina (Moscow Petroleum Institute im. acad. I.M. Gubkin) contributed to the book their data for 1951 - 1955 and 1956 respectively. There are 7 Soviet references.

TABLES OF CONTENTS:

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AVAILABLE: Library of Congress

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TM/sfm
12-17-58

MAL'GOV, Ivan Aleksandrovich; SHATSOV, M.I., red.; GUREVICH, YA.D., vedushchiy red.; MUKHINA, E.A., tekhn.red.

[Theory and practice of the use of bits for hydraulic mining in the U.S.A.; based on materials published abroad] Teoriia i praktika primeneniia gidromonitornykh dolot v SShA; po materialam zarubezhnoi pechati. Moskva, Gos. nauchno-tekhn.izd-vo neft. i gorno-toplivnoi lit-ry, 1958. 135 p. (MIRA 12:1)
(Hydraulic mining--Equipment and supplies)

11(4) PHASE I BOOK EXPLOITATION SOV/2124

Mezhvuzovskoye soveshchaniye po voprosam novoy tekhniki v neftyanoy promyshlennosti. Moscow, 1956

Razvedka i razrabotka neftyanykh i gazovykh mestorozhdeniy; materialy soveshchaniya, tom. 1 (Prospecting and Development of Oil and Gas Deposits; Papers of the Inter-[illegible] Conference on New Techniques in the Petroleum Industry, Vol 1) Moscow, Gostoptekhizdat, 1958. 311 p. Errata slip inserted. 1,500 copies printed.

Eds.: I. M. Murav'yev, Professor, Doctor of Technical Sciences, and V. N. Dakhnov, Professor, Doctor of Geological and Mineralogical Sciences; Editorial Board: K. F. Zhigach, Professor (Resp. Ed.), I. M. Murav'yev, Professor, A. A. Tikhomirov, Candidate of Economical Sciences, V. I. Yegorov, Candidate of Economical Sciences, M. M. Charygin, Professor, F. F. Dunayev, Professor, N. I. Chernozhukov, Professor, Ye. M. Kuzmak, Professor, I. A. Charnyy, Professor, G. M. Panchenkov, Professor, V. N. Dakhnov, Professor, Doctor of Geological and Mineralogical Sciences, N. S. Nametkin, Doctor

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of Chemical Sciences, N. A. Almazov, Docent, V. N. Vinogradov, Candidate of Technical Sciences, V. I. Biryukov, Candidate of Technical Sciences, E. I. Tagiyev, and V. M. Gurevich; Executive Ed.: N. P. Dobrynina; Tech. Ed.: E. A. Mukhina.

PURPOSE: The book is intended for engineers and scientific personnel working in the petroleum industry and vtuzes. It may also serve as a textbook for advanced students of petroleum vtuzes.

COVERAGE: The book contains articles written by staff members of the Moscow, Groznyy, and Ufa Petroleum Institutes, the Kuybyshev and Azerbaydzhan Industrial Institutes, the UfNII (Ufa Scientific Research Institute), VNIIburneft' (All-Union Scientific Research Institute of Oil Drilling), KBNP (Design Office of Petroleum Instrument Making), the Bashneft Association (Bashkiriya Petroleum). These papers, read at the Mezhvuzy (Inter-Vuz) Scientific Conference, deal with new techniques in the petroleum industry introduced since 1956. Emphasis is given to the importance of efficient drilling, geophysical prospecting,

Vykhodtsev, S. V. [Moscow Petroleum Institute]. Methods of Appraising Labor Productivity in Oil Well Drilling 37

The author discusses the two basic methods for estimating labor productivity: 1) according to natural output, and 2) according to production costs. He rejects the latter method as unsuited for drilling, since drilling involves indefinite periods of time. He reviews other methods for estimating labor productivity, for which he considers two conditions essential: 1) proper understanding of the produced item, and 2) understanding of labor expenditure in standard units of time. The basic elements in well drilling are production casing, erection of derricks, and installation of drilling equipment. These operations can, in his opinion, be easily estimated according to a) footage drilled, b) the erection and hauling of derricks, c) the erection and dismantling of rigs. He produces a table listing the output of a derrick-erecting crew at the Tuymazyburneft' (Tuymazy Oil Drilling) Trust, and states that the assembling of drilling equipment can be estimated in a similar manner. Finally he cites the records attained by drilling enterprises during the Fourth and Fifth Five-Year Plan periods and notes that labor productivity of drill-

ing crews rose 2.17% in 10 years. He further stated that labor output in turbine drilling had been higher than in rotary drilling. It had also been higher in production drilling than in exploration drilling. He notes that growth in labor output was much more rapid in new areas than in old regions. Output had increased 30% during the Fourth Five-Year Plan period and 48% during the Fifth Five-Year Plan.

Shatsov, N. I. [Moscow Petroleum Institute]. Efficient Use of Bits 49

The author asserts that a basic factor in drilling is the performance of the bit at the bottom-hole. The better its performance, the faster, easier and less costly is the drilling of a well, and the fewer ... A table indicates the time spent in drilling for the USSR as a whole, and for the Bashkiriya and Tatariya Associations. It also gives 1954 data for the United States.

Kagarmanov, N. F. [Ufa Petroleum Scientific Research Institute]. Ways of Increasing the Performance of Standard Bits 81

The author states that actual data on the performance of

14(5)

AUTHOR: Shatsov, N. I. SOV/152-59-3-7/25

TITLE: On the Problem of the Simplification and Facilitation of Borehole Constructions (K voprosu ob uproshchenii i oblegchenii konstruktsiy skvazhin)

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Neft' i gaz, 1959, Nr 3, pp 33-38 (USSR)

ABSTRACT: A comparison between the diameters of the casing pipes generally used in the Soviet Union and those used in the USA shows that the diameters of the pipes applied in the Soviet Union are far too wide. In 1956 29,4% of 5 3/4" - pipes were used (whereas in the USA 64% were already used in 1955). Consequently, even at small depths much more iron is needed in the Soviet Union, and a surplus amount of rubble is being drilled per meter. From January 1, 1958 a new national standard (GOST) has come into force. The pipes of the new steel types L and M with flow limit 65 kg/mm^2 and 75 kg/mm^2 can compete with those of the USA. The strongly oval shape (0,025-0,02) of the pipes that has been retained is criticized as leading to an increased consumption of iron. The drill bits ought now to be adjusted to the new pipe standards. A table recommends such new neasures.

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On the Problem of the Simplification and Facilitation of Borehole Constructions

SOV/152-59-3-7/25

There are 4 tables and 5 references, 1 of which is Soviet.

ASSOCIATION: Moskovskiy institut neftekhimicheskoy i gazovoy promyshlennosti im. akad. I. M. Gubkina (Moscow Institute for the Petro-Chemical and Gas Industry imeni Academician I. M. Gubkin)

SUBMITTED: June 10, 1958

Card 2/2

SHATSOV, Nakhman Isaakovich; SMIRNOV, Aleksandr Petrovich; ASAN-NURI, A.A., red.; PETROVA, Ye.A., vedushchiy red.; GANINA, L.V., tekhn.red.

[Deep-drilling practices in foreign countries] Tekhnologiia bureniia glubokikh skvazhin za rubezhom. Moskva, Gos.nauchno-tekhn.izd-vo neft. i gorno-toplivnoi lit-ry, 1960. 268 p. (MIRA 13:11)

(United States--Boring)

SHATSOV, Nakhman Isaakovich; ISAYEVA, V.V., vedushchiy red.; POLOSINA, A.S., tekhn.red.

[Division of layers in oil and gas fields; constructing, bracing, and cementing wells] Razobshchenie plastov v neftianykh i gazovykh skvazhinakh; konstruktsii, kreplenie i tsementirovanie skvazhin. Moskva, Gos.nauchno-tekhn.izd-vo neft. i gorno-toplivnoi lit-ry, 1960. 286 p. (MIRA 13:4)
(Oil fields--Production methods)

SHATSOV, Nakhman Isaakovich, prof.; FEDOROV, Vasiliy Sergeyevich; KULIYEV, Saftar Mekhtiyevich; IOANNESYAN, Rolan Arsen'yevich; SHISHCHENKO, Roman Ivanovich; GLIKMAN, Leonid Solomonovich; BALITSKIY, Pavel Vladimirovich; TIMOFEYEV, N.S., inzh., retsenzent; ISAYEVA, V.V., vedushchiy red.; MUKHINA, E.A., tekhn.red.

[Drilling oil and gas wells] Burenie neftianykh i gazovykh skvazhin. Pod obshchei red. N.I.Shatsova. Moskva, Gos.nauchno-tekhn.izd-vo neft. i gorno-toplivnoi lit-ry, 1961. 666 p. (MIRA 14:4)

(Oil well drilling)

SHATSOV, N.I.

Drilling slim oil and gas test holes. Trudy MINKHiGP no.35:3-7 '61. (MIRA 14:11)

(Boring)

SHATSOV, N.I.; MATZ, B.A.; OGOLIKHIN, E.A.

Bit performance and drilling tests carried out in No.28 in the Ilishevo field. Trudy MINKHiGP no.35:23-30 '61. (MIRA 14:11)
(Ilishevo region--Oil well drilling)

SHATSOV, N.I.; MATS, B.A.; OGOLIKHIN, E.A.

Using "Ufimets" rigs for drilling slim holes in fields of the Oktyabr'skiy Geological Prospecting Bureau of the Western Bashkir Petroleum Prospecting Trust. Trudy MINKhiGP no.35:57-65 '61. (MIRA 14:11)

(Ilishevo region--Boring)

SHATSOV, Nakhman Isaakovich; RYBAKOV, Yuriy Fedorovich; KAYESHKOVA, S.M., vedushchiy red.; TROFIMOV, A.V., tekhn. red.

[Air and gas drilling abroad] Burenie skvazhin s produvkoi vozdukhom ili gazom za rubezhom. Moskva, Gos. nauchno-tekhn. izd-vo neft. i gorno-toplivnoi lit-ry, 1961. 120 p. (MIRA 14:6)
(Boring)

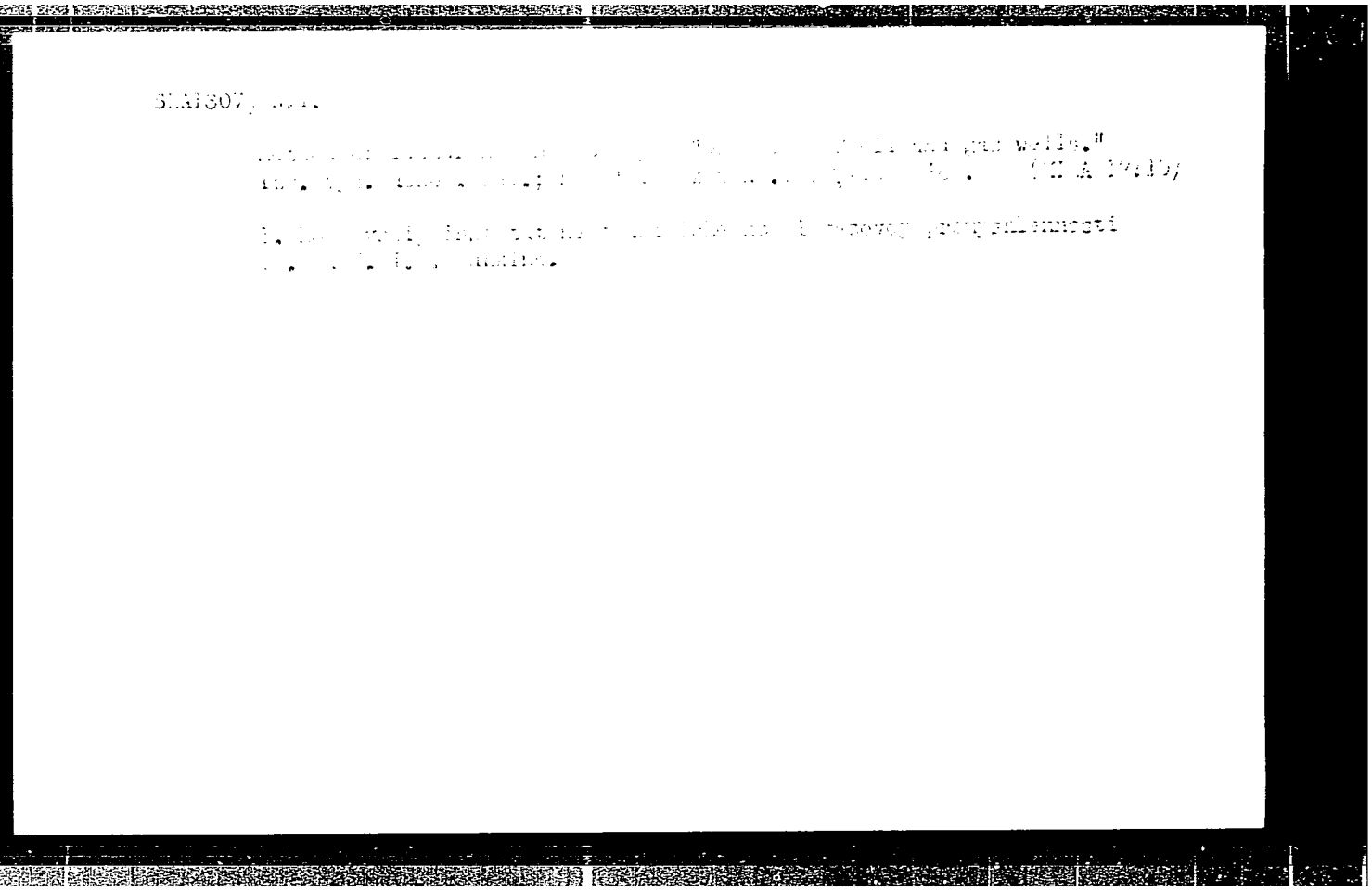
SHATSOV, Nakhman Isaakovich

Bureniye neftyanykh i gazovykh skvazhin (by) N. I. Shatsov (i dr.) Pod obshchey red. N. I. Shatsova. Moskva, Gostoptekhizdat, 1961.
666 p. illus., diagrs., graphs, tables.
Includes bibliographical references.

SHATSOV, N.I.; RAKOV, P.P., inzh.; AVETISOV, A.A., inzh.; DANIYELYAN, A.A.; BERLIN, S.G.; GLYADKOVA, V.I., starshiy tekhnik; KARASIK, G.Ye., inzh.

Standardized oil well drilling terminology. Neft. khoz. 40 no.5:66-69 My '62. (MIRA 15:9)

1. Gosudarstvennyy komitet Soveta Ministrov RSFSR po koordinatsii nauchno-issledovatel'skikh rabot (for Rakov). 2. Vsesoyuznyy nauchno-issledovatel'skiy institut po tekhnike bezopasnosti v neftyanoy promyshlennosti (for Avetisov). 3. Azerbadydzhanskiy nauchno-issledovatel'skiy institut neftyanogo mashinostroyeniya (for Daniyelyan, Berlin). 4. Bashnefteproyekt (for Glyadkova). 5. Gosudarstvennoye ob"yedineniye Azerbaydzhanskoy neftyanoy promyshlennosti (for Karasik).
(Oil well drilling--Terminology)



BORISENKO, L.V.; SHATSOV, N.I.

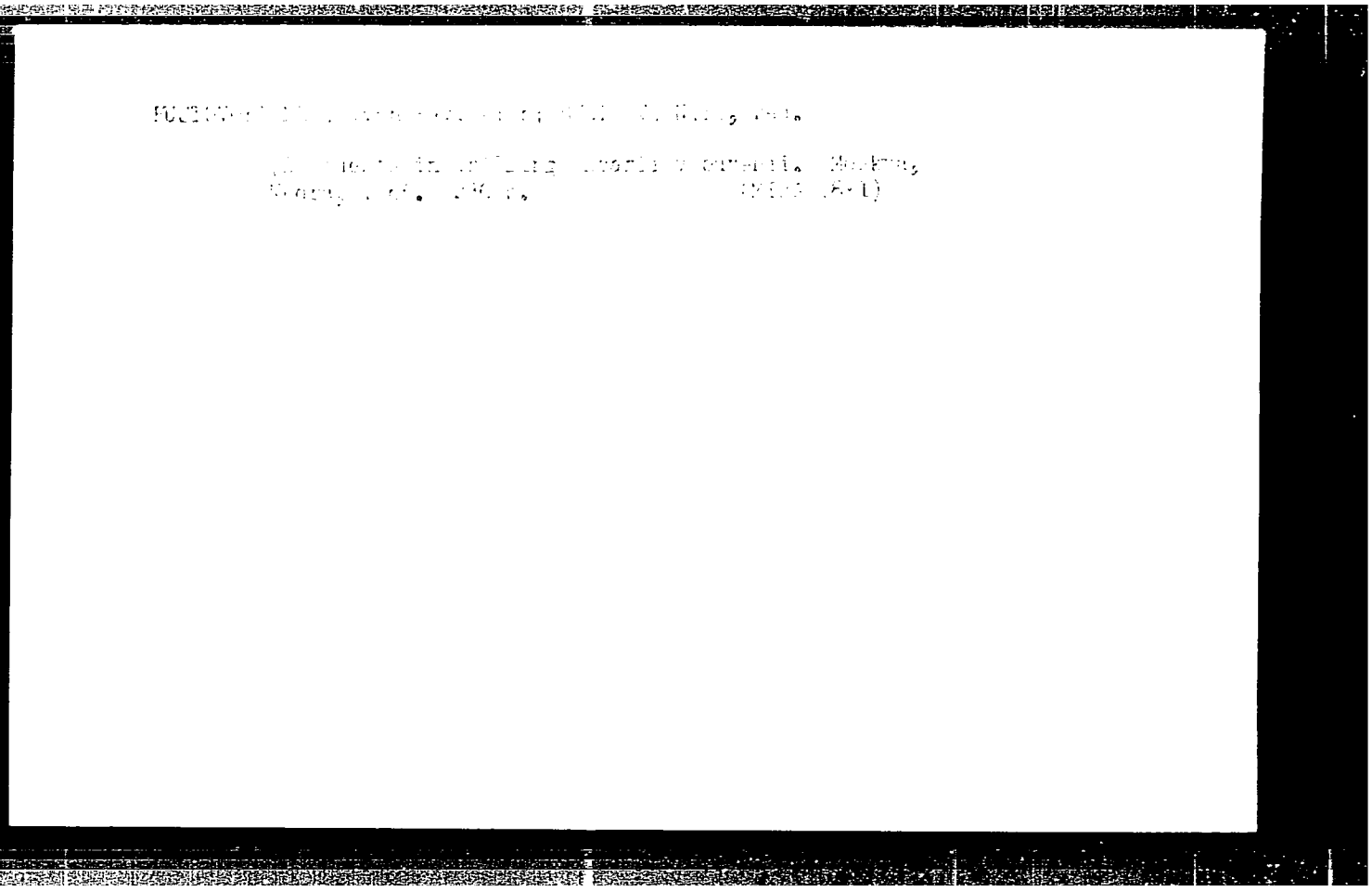
Using tanning extract for processing drilling fluids. Trudy MINKHiGP no.40:73-85 '63. (MIA 16:4)
(Oil well drilling fluids)

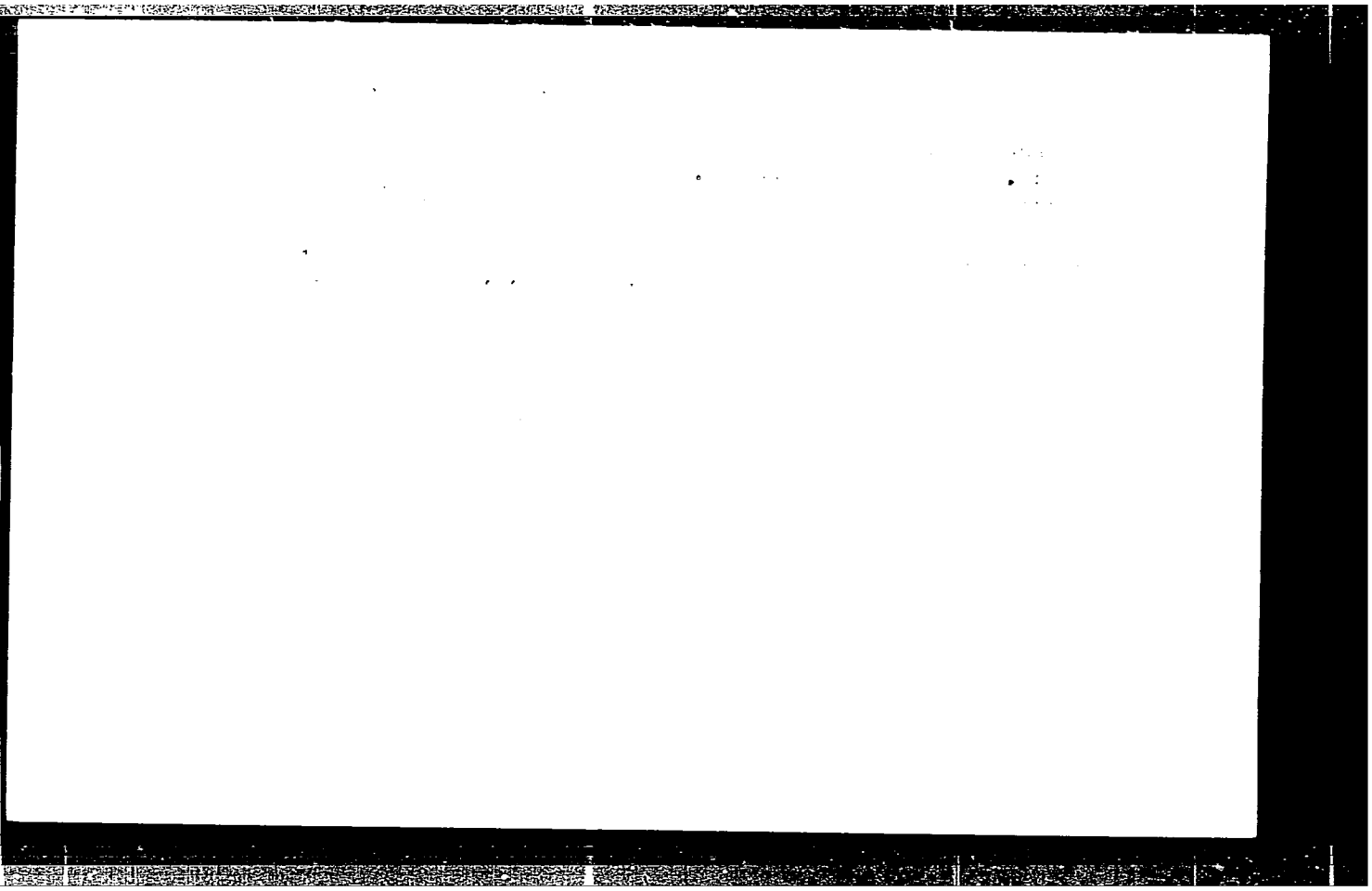
SHAISOV, [illegible]; [illegible]; [illegible], [illegible]

Results of the operation of bits in experimental wells of small diameter in the Sterlitamak geological office of the East Bashkir Petroleum Prospecting Trust. Trudy MINKHiGP 46 3-27 [illegible]. (MIRA 17:6)

BUYANOVSKIY, N.I., KARAYEV, A.K., KULIYEV, S.M., NOKTAMBEKOV, T.F., STROYKOV, N.I., TIMOFEYEV, N.S., SHATSOV, N.I.

Technical progress in the drilling of oil and gas wells over the last one hundred years. Neft. khoz. 42 no.9/10:99-106 S-O '64. (MIRA 17:10)





LEPETYUKHA, I.D., gornyy master; BARDAVELIDZE, O.; SHATSOV, Yu.B.; KHOROSHKEVICH, N.F.

Readers' letters. Bezop.truda v prom. 5 no.4:31 Ap '61. (MIRA 14:3)

1. Starshiy inzh.upravleniya Chelyabinskogo okruga Gosgortekhnadzora RSFSR (for Bardavelidze). 2. Nachal'nik uchastka bashennykh kranov Upravleniya mekhanizatsii No.16 stroitel'no-montazhnogo tresta No.1 Kiyevskogo sovnarkhoza (for Shatsov).

(Industrial safety)

USSR/Astronomy - Parallax of Stars Sep/Oct 52

"Average Parallaxes of Absolute Weak Stars," R. B. Shatsova, Tambov State Pedagogical Inst

"Astron Zhur" Vol 29, No 5, pp 568-573

It was found that av parallaxes det by Luyten and Boss (cf. Minnesota Publ 2, 7, 1939) contain systematic errors of the form $\Delta M(M)$. Boss' method requires detailed classification of materials according to spectral subclasses of M-stars, while Luyten's method needs a detn of narrower limits of proper motion. Such detn is processed by the author. Av abs magnitude of dwarfs, subdwarfs and white dwarfs is compared. Received 5 Apr 52.

234T61

SHATSOVA, R. B.

USSR/Astronomy - Weak stars, Luminosity Sep/Oct 52

"Luminosity Function of Absolute Weak Stars," R. B. Shatsova, Tambov State Pedagogical Inst

"Astron Zhur" Vol 29, No 5, pp 574-581

(M) is redetd to eliminate errors in parallaxes of abs weak stars obtained by Luyten (see 234T61). The luminosity function obtained differs from Luyten's. According to the writer's (M), the density of stars near the sun exceeds 0.56 stars/ cu parsec. Indebted to Prof P. P. Parenago. Received 5 Apr 52.

234T62

SHATSOVA, R.B.

Assymetry of radial velocities of stars. Uch.zap.Len.un. no.153: 67-75 '52. (MLRA 8:6)
(Stars--Motion in line of sight)

USSR/ Astronomy

Card 1/1 Pub. 8 - 8/13

Authors : Shatsova, R. B.

Title : Movements of stars of the spiral branch of the galaxy

Periodical : Astron. zhur. 32/1, 61-71, Jan-Feb 1955

Abstract : The movements of the giant stars comprising a part of the spiral branch of our galaxy are studied. Only the B 0 - B5 stars (the Boss GS catalogue) which are at distances not greater or less than 150-600 parsec are considered; also, stars with (astronomical) altitudes greater than ± 30° are not considered. The total number of stars studied is 494. Thirteen references: 11 USSR and 2 USA (1948-1953). Diagrams; tables.

Institution : The Tambovskiy State Pedagogical Institute, Tambov

Submitted : February 25, 1954

SHATSOVA, R.B.

Two selections of observations of absolute faint stars. Astron.zhur. 33 no.6:866-879 N-D '56. (MLRA 10:1)

1. Tambovskiy gosudarstvennyy pedagogicheskiy institut.
(Stars--Magnitudes)

90831

S/033/60/037/02/010/013
E032/E914

3.1430

AUTHOR: Shatsova, R. B.

TITLE: Variance of the Logarithms of Tangential Velocities of Stars in the Lower Part of the Spectrum-Luminosity Diagram (Hertzsprung-Russell Diagram)

PERIODICAL: Astronomicheskiy zhurnal, 1960, Vol 37, Nr 2, pp 344-347 (USSR)

ABSTRACT: It is well-known that dwarf stars belonging to different sequences in the Hertzsprung-Russell diagram have both physical and kinematic differences. The mean velocities and velocity variance increase along the sequence: red dwarfs with emission, ordinary red dwarfs, white dwarfs, sub-dwarfs. In studying the distribution of the logarithms of the tangential velocities of these stars, the present author discovered that in the groups enumerated above the variance of the logarithms of the tangential velocites is almost the same. The following observational material was employed:

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Variance of the Logarithms of Tangential Velocities of Stars in the Lower Part of the Spectrum-Luminosity Diagram (Hertzsprung-Russell Diagram)

red dwarfs were taken from Visotskiy's catalogue (Ref 1), white dwarfs from a paper by Pavlovskaya (Ref 3), and sub-dwarfs from Parenago's catalogue. The tangential velocity was calculated for each of the stars selected. The distribution $\log v_t = T$ was obtained for each of the groups and, as can be seen, all the distributions can be represented by an equation of the form

$$\phi(T) = \frac{1}{2\pi\sigma} e^{-\frac{(T-T_o)^2}{2\sigma^2}} \qquad (1)$$

The parameters T_o and σ are given in Table 1. This table shows that T_o increases from emission stars to ordinary red

4

Card2/3

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E032/E914

Variance of the Logarithms of Tangential Velocities of Stars in the Lower Part of the Spectrum-Luminosity Diagram (Hertzsprung-Russell Diagram)

dwarfs and beyond white dwarfs and sub-dwarfs. The variance is $\sigma = \pm 0.32$. The mean tangential velocity. and the variance of tangential velocities is given in Table 2. It is concluded that the ratio of these two quantities is a constant. Two possible values are obtained for this constant, namely 0.85 $\pm$0.1 and 0.67 $\pm$ 0.17. There are 2 tables, 1 figure and 12 references, of which 5 are English, 2 German and 5 Soviet.

ASSOCIATION: Rostovskiy-na-Donu gos. pedagogicheskiy institut (Rostov-on-the-Don State Education Institute)

SUBMITTED: May 6, 1959.

Card 3/3

S/033/60/037/005/011/024
E032/E514

AUTHOR: Shatsova, R. B.

TITLE: The Luminosity Function for Red Dwarfs

PERIODICAL: Astronomicheskiy zhurnal, 1960, Vol.37, No.5, pp. 870-881

TEXT: Red dwarfs in the neighbourhood of the Sun are considered. The luminosity function is determined analytically from a solution of the integral equation of stellar statistics, which contains the distribution of the logarithms of tangential velocities. The general form of the integral equation of stellar statistics (Parenago, Ref.1) is of the form

$$A(x_1, x_2) = \omega \int_0^{r^*} r^2 D(r) F(X_1, X_2) \frac{\partial X_1}{\partial x_1} \frac{\partial X_2}{\partial x_2} dr, \qquad (1)$$

where X_1 and X_2 are two absolute characteristics of a star, which in this context are identified as the absolute magnitude and the logarithm of tangential velocity, i.e.,

$$X_1 = M, \; X_2 = \ln v_t = T \qquad (2)$$

The Luminosity Function for Red Dwarfs

The quantities x_1 and x_2 are the corresponding apparent characteristics, namely the apparent magnitude and the logarithm of the proper motion so that

$$x_1 = m \text{ and } x_2 = \ln \mu = \tau \qquad (3)$$

and $F(X_1, X_2)$ is the relative number of stars in the intervals $X_1 \pm dX_{1/2}$ and $X_2 \pm dX_2/2$. The quantity $A(x_1, x_2)$ is the total number of stars within the limits $x_1 \pm dx_1/2$ and $x_2 \pm dx_2/2$. $D(r)$ is the density at the distance r and ω is the solid angle. In the absence of absorption of light, the following relations hold between the variables given by Eqs. (2) and (3).

$$M = m + 5 - 5\rho \text{ where } \rho = \ln r \text{ and } k = \ln 4.74 \qquad (4)$$

$$T = \tau + \rho + k$$

It follows that

$$\frac{\partial X_1}{\partial x_1} = \frac{\partial M}{\partial m} = 1 \text{ and } \frac{\partial X_2}{\partial x_2} = \frac{\partial T}{\partial \tau} = 1 \qquad (5)$$

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The Luminosity Function for Red Dwarfs

In the case of stochastic independence between T and M the function F(T,M) can be written down as a product so that

$$F(M,T) = \varphi(M)\ \psi(T) \qquad (6)$$

where $\varphi(M)$ is the luminosity function and $\psi(T)$ is the distribution function for the logarithms of tangential velocities. It is then assumed that within a radius of a few tens of parsecs around the Sun, the spatial density of stars is constant so that

$$D(r) = D_o. \qquad (7)$$

Using Eqs.(6) and (7) and the relationships given by Eq.(4), one finds that the function $A(m,\tau)$ is given by

$$A(m,\tau) = \alpha\omega \int_{-\infty}^{\rho^*(m,\tau)} \left[D_o \varphi(m + 5 - 5\rho)\right] \psi(\tau + \rho + k) e^{3\alpha\rho} d\rho \qquad (9)$$

Card 3/6

The Luminosity Function for Red Dwarfs

where $\alpha = 2.30$, $\varphi^* = \ln r^*$ and $\left[D_0\varphi\ (M)\right]$ is the absolute luminosity function. It is shown that the following approximations can be employed

$$A(m,t) = e^{a+bm+ct} \tag{10}$$

$$\psi(T) = \frac{1}{\sqrt{2\pi}\sigma} e^{-\frac{(T - T_0)^2}{2\sigma^2}} \tag{11}$$

Under these assumptions the required luminosity function is then represented in the form

$$D_0\varphi(M) = Be^{\beta M} \tag{12}$$

Eqs. (10), (11) and (12) taken in conjunction with Eqs (9) and (4) yield

The Luminosity Function for Red Dwarfs

$$\beta = b \quad \text{or} \quad \beta = \frac{c + 3\alpha}{5} ,$$

$$B = \frac{\exp\left[a - 5b + c(T_o - k) - \frac{1}{2} c^2 \sigma^2\right]}{\alpha\omega\,\Phi\left(\frac{T^* - T_o}{\sigma} + c\sigma\right)} \qquad (14)$$

The quantity B is then shown to be independent of τ. Thus, in order to determine the absolute luminosity function, one must know the parameters of the distributions $A(m,\tau)$ and $\psi(T)$ as well as T^*, where

$$T^* = \bar{T}^* + \tau + k$$

A reduction of catalogues of stars with large proper motions compiled by Luyten (Ref.2), Deich (Ref.3) and Buscombe and Morris (Ref.4) shows that $A(m,\tau)$ can, in fact, be represented by the above Eq.(10). On the other hand, Vyssotsky's list of red

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E032/E514

The Luminosity Function for Red Dwarfs

dwarfs (Ref.6) shows that the logarithms of tangential velocities have a normal distribution and hence Eq.(12) can be employed. By varying the parameters of $A(m,\tau)$ and $\psi(T)$ within permissible limits, different luminosity functions are obtained. The mean is $0.18\ e^{0.32\ M}$ The maximal luminosity function is found to be $0.33\ e^{0.28M}$ For $M < 12$-13 these results differ little from the Van Rhijn function. The increase in $D_o\varphi(M)$ for large M is still open to discussion, since it is based on the assumption that the variance of the logarithms of velocities is independent of the absolute magnitude. There are 4 figures, 7 tables and 12 references: 4 Soviet, 8 Soviet.

ASSOCIATION: Rostovskiy-na-Donu gosudarstvennyy pedagogicheskiy institut (Rostov-on-Don State Institute of Education)

SUBMITTED: May 6, 1958 (initially)
May 18,1960 (after revision)

Card 6/6

ACCESSION NR: AP4032732 S/0033/64/041/002/0418/0419

AUTHOR: Shatsova, R. B.; Maly*sheva, T. G.

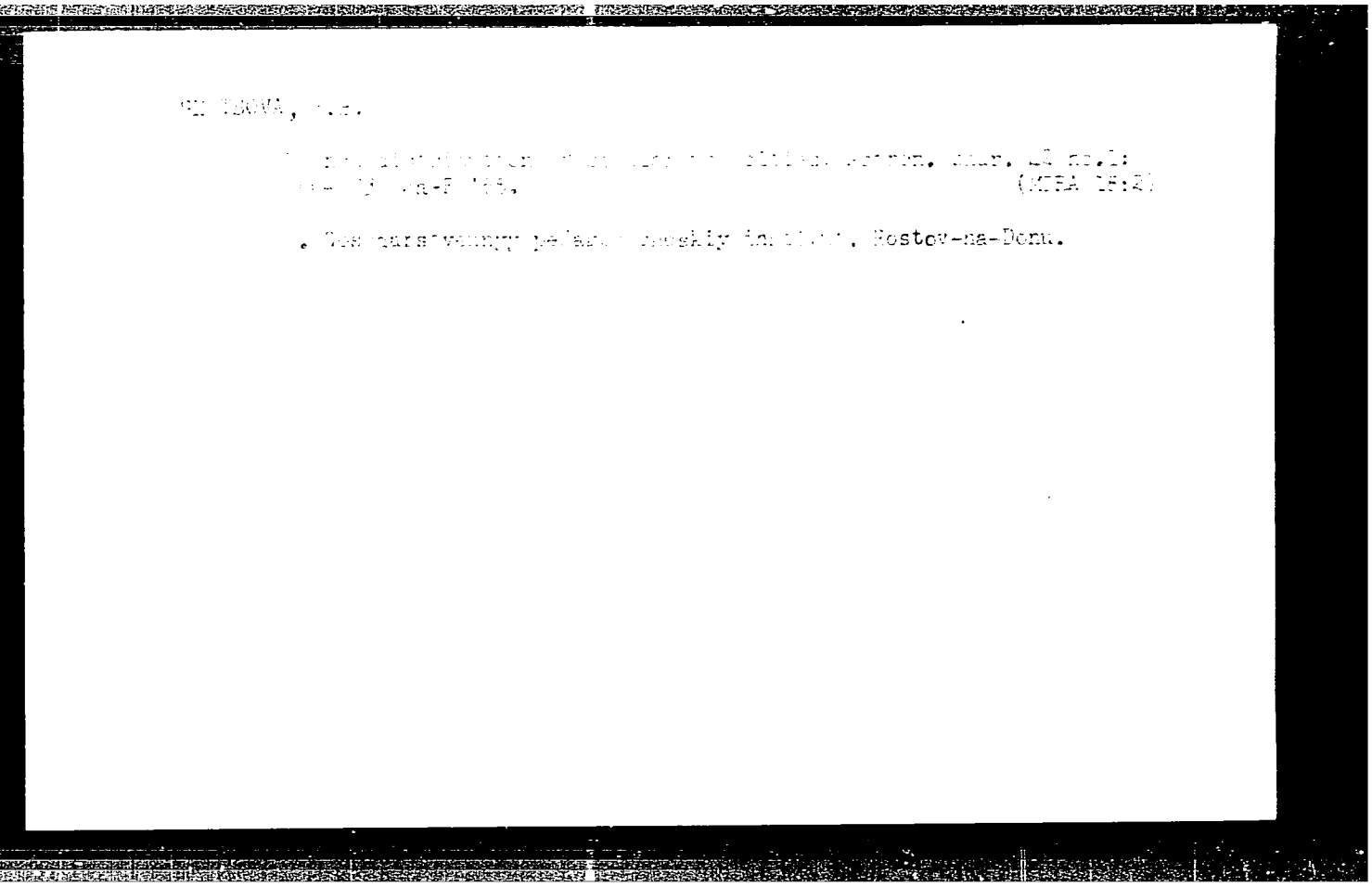
TITLE: The diameter distribution function of craterlets and domes in the vicinity of Copernicus

SOURCE: Astronomicheskiy zhurnal, v. 41, no. 2, 1964, 418-419

TOPIC TAGS: moon, astronomy, Copernicus crater, lunar surface, lunar feature, lunar crater

ABSTRACT: The lunar chart at a scale of 1:1,000,000 compiled and published in 1961 by the United States Air Force and NASA has been used in a study of the linear diameters of 4,336 craterlets and domes in the vicinity of Copernicus. The information was taken from map No. 58, which extends 20° in longitude and 16° in latitude; at the scale of the map it is possible to measure diameters of details beginning from 0.5 mm, which corresponds to approximately 75 m on the lunar surface. The 4,336 features were divided into 10 intervals (1 mm intervals from 0.5 to 10.5 mm). The data, after tabulation and construction of corresponding histograms and a curve, indicate that the linear diameters have a logarithmic normal distribution; this can be considered as evidence of statistical confirmation of their simultaneous formation. Orig. art. has 2 formulas,

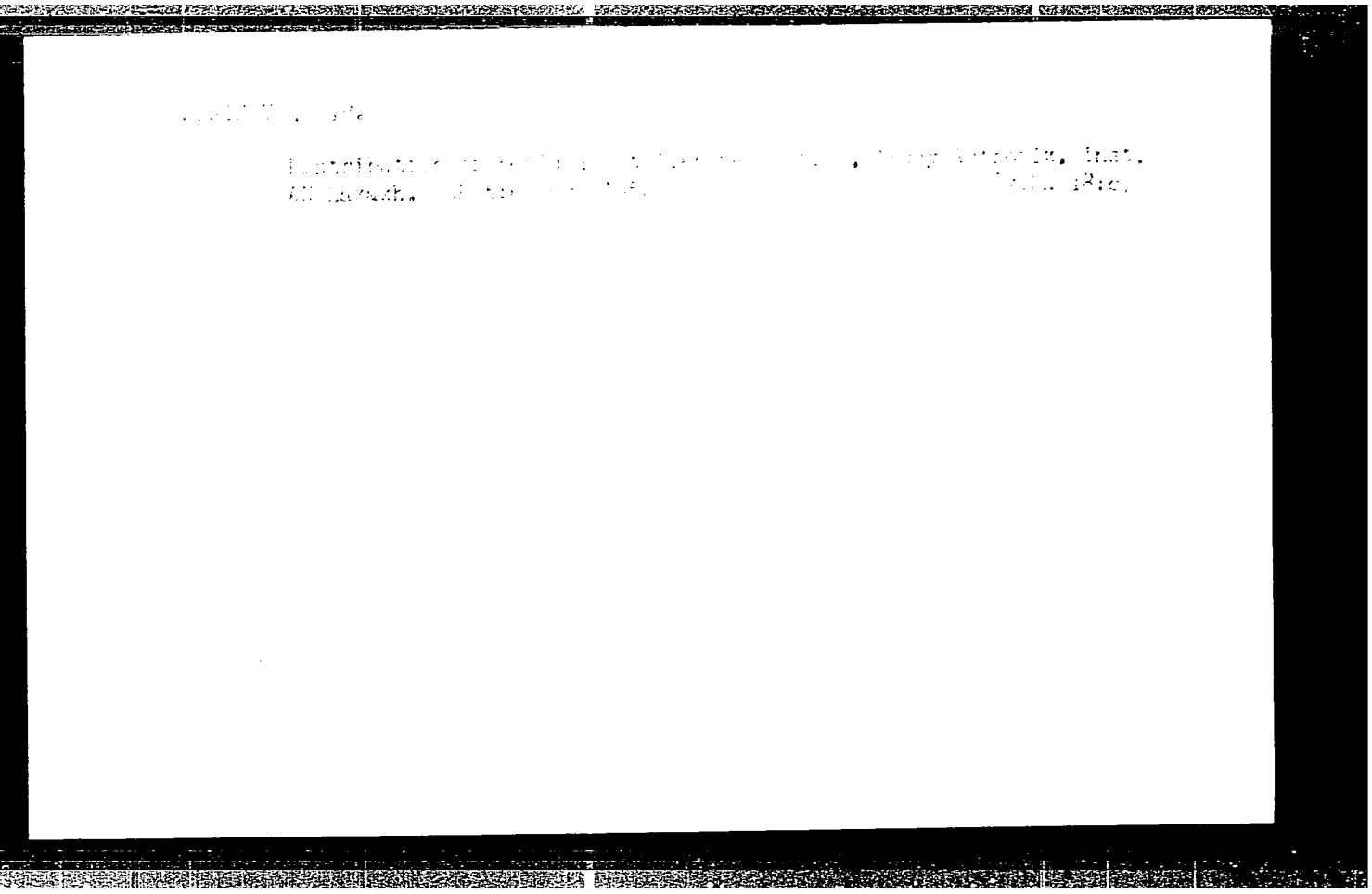
Card 1/2



SHATSOVA, R.B.

Planck stellar velocity distribution. Part 2. Astron. zhur. 42 no.3:581-589 My-Je '65. (MIRA 18:5)

1. Rostovskiy-na-Donu pedagogicheskiy institut.



S/081/62/000/006/058/117
B149/B108

1,1800

AUTHOR: Shatsova, S. A.

TITLE: Intensification of electroplating processes by ultrasound

PERIODICAL: Referativnyy zhurnal. Khimiya, no. 6, 1962, 408, abstract 6K186 (Sb. "Primeneniye ul'trazvuka v tekhnol. mashinostr.". no. 2, M., 1960, 139 - 148)

TEXT: The influence of ultrasound on copper plating, brass plating, and silver plating in cyanide electrolytes, and on zinc and cadmium plating in acid, cyanide, and alkaline electrolytes was investigated. A study was also made of the effect of ultrasound on the BT and limiting D_k, on the rate of metal deposition, anode passivation, the composition of brass, and the dispersibility of the electrolytes. When simply shaped articles are plated the D_k can be increased to 10 - 15 a/dm^2 in nickel plating, to 10 - 20 a/dm^2 in copper plating, to 10 - 15 a/dm^2 in silver and zinc plating, to 2 a/dm^2 in brass plating, and to 8 - 12 a/dm^2 in cadmium plating. The use of ultrasound is recommended for thick platings (up to 1.5 mm).

Card 1/2

S/081/62/000/006/058/117
B149/B108

Intensification of electroplating ...

[Abstracter's note: Complete translation.]

X

Card 2/2

S/194/62/000/005/085/157
D222/D309

AUTHOR: Shatsova, S.A.

TITLE: Intensification of galvanic processes under the influence of ultrasound

PERIODICAL: Referativnyy zhurnal. Avtomatika i radioelektronika, no. 5, 1962, abstract 5-5-40 r (V sb. Primeneniye ul'trazvuka v tekhnol. mashinostr. no. 2, M., 1960, 139 - 148)

TEXT: Experiments on the influence of ultrasound on galvanic plating were carried out in АВДИ(AVDI), АВДБИ(AVDBI) and УЗВ(UZV) baths with radiation frequencies of 16 and 20 kc/s. The results with cyano-copper plating indicate that the application of ultrasound enables the permissible current density to be increased by a factor of 5-6 (at 50°C up to 25 a/dm^2). It is remarked that for the greater efficiency of ultrasound action the concentration of the electrolyte must be increased (optimal concentration 80 g/lit). The speed of precipitation of copper at a current density of 20 a/dm^2 is 7 - 8 microns/minute. Brass plating for lustrous finish is best

Card 1/2

done at a current density of 2 a/dm^2, and for mat finish at 15 - 20 a/dm^2. The speed of precipitation increases with the use of ultrasound from 1.6 - 5.0 microns/hour to 0.5 - 2.5 microns/minute. During silver plating the use of ultrasound enables the current density to be increased up to 10 - 15 a/dm^2 (at a silver concentration of 40 g/lit.), and the speed of precipitation is 6 - 9 microns/min. Similar results were obtained also with nickel, zinc and cadmium plating. It is noted that the utilization of ultrasound is always advantageous for the plating of pieces if their form is not complicated, because time can be saved (a factor of 4 - 12). 11 references. [Abstractor's note: Complete translation].

FEL'DMAN, Yuliy Azar'yevich, kand. tekhn. nauk; SHATSOVA, Sulamif' Abramovna, kand. khim. nauk; MIKHAYLOV, Viktor Alekseyevich; SHATSILLO, G.I., inzh., red.; SHILLING, V.A., red. izd-va; BELOGUROVA, I.A., tekhn. red.

[Accelerating processes of the electrodeposition of metals in acoustical baths] Intensifikatsiia protsessov elektroosazhdeniia metallov v akusticheskikh vannakh. Leningrad, 1961. 19 p. (Leningradskii Dom nauchno-tekhnicheskoi propagandy. Obmen peredovym opytom. Seriia: Elektricheskie metody obrabotki metallov, no.8) (MIRA 14:12)

(Electroplating)

11800 (1273, 2707) S/...-/...34/002/008/025
5 1300 (1273, 2319) A050/A122

AUTHORS: Shatskaya, S.A., Fal'dman, Yu.A., Bondareva, I.S., Ryazanova, A.Ye.

TITLE: Effect of ultrasonic waves on processes of electroplating of metals from cyanide electrolytes

PERIODICAL: Zhurnal Prikladnoy Khimii, v 34, no 2, 1961, 331-339

TEXT: Conditions of an intensification of copper, brass and silver electroplating processes in cyanide electrolytes were experimentally investigated. Relations between principal parameters of the electroplating process in an ultrasonic field were studied and the results obtained with and without ultrasonic waves were compared. Few of the papers recently published concerning the effect of ultrasonic waves in electroplating deal with cyanide electrolytes, and in several cases no quantitative comparisons are made. However, the positive effect of ultrasonic waves on the process

Card 1/5

S/[illegible]/034/000/008/025
A056/A129

Effect [illegible]

was observed and that the preliminary investigations in this question were of interest. In order to compare results obtained with and without ultrasonic waves the [illegible] experiments were carried out in the same tanks and under the same [illegible]. The types of tanks were used: YZ (UZ-7), a welded metal [illegible] tank with a cylindrical overall side wall containing a magnetostrictive [illegible] with a power of about 2 kw/s and a capacity of 0.4 kva (Ref 9: Yu.A. K[illegible] "Primeneniye ul'trazvuka v tekhnologii mashinostroyeniya" ("Application of ultrasonic waves in technology of mechanical engineering", 2nd rev. and enl. edition (Edited by the House of Technology), M., 113 (1958)), and AVDI-1 (AVDI-1) type, a 100-l plastic tank with working frequencies of 18 kc/s and a capacity of 0.4-0.5 kva (Ref 10: Ye.A. Feldman et al. "Primeneniye ul'trazvuka v tekhnike i promyshlennosti" ("Advanced scientific, technical and industrial practice"), TsITEIN GNTK SSSR, M., (1960)). For the UZV tank an industrial generator of the UZG-10 (UZG-10) type was used, and for the AVDI-1 tank a GZUK-2 (GZUK-2) experimental generator. The experiments were carried out at 16 and 20 kilohertz, and the current yield was determined by a coulometer. The effect of ultra-

Card 2/3

25308

S/080/61/034/002/008/025
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Effect of ultrasonic waves ...

sonic waves on copper plating was investigated in 3 electrolytes (Tab. 1) and it was observed that maximum current densities can be increased 5-6 times by the effect of sound vibrations (Fig 1). The rate of copper deposition is much greater when ultrasonic waves are applied and current yield increases considerably. Thus in electrolyte no. 3 at a current density 20 amp/dm^2 and 40°C the rate of copper deposition is 7-8 μ/min (at 50°C it is 11 μ/min), i.e., 15-20 times greater than in the existing practice of copper-plating from cyanide electrolytes. Comparison of the investigated electrolytes indicates that the best ultrasonic effect is obtained in electrolytes containing 80 g copper cyanide per liter. No noticeable deterioration of dispersion capacity due to the effect of ultrasonic waves was observed. The sound vibration effect on brass electroplating was studied in two electrolytes (Tab. 2) and it was determined that current density can be increased from 0.1-0.5 amp/dm^2 to 2-3 amp/dm^2 to obtain glossy deposits, and to 3-20 amp/dm^2 for pasty deposits. With increasing current density the rate of deposition increases up to a certain limit which depends on the content of free NaCN. At optimum content of

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free NaCN (4-6 g/l) and 40°C the rate of deposition is at 2-3 amp/dm^2 0.5 μ/min for shiny brass and at 15-20 amp/dm^2 2-2.5 μ/min for dull brass. Processes occurring above 2 amp/dm^2 current density are of theoretical and practical interest and have to be studied in further experiments. Current yield decreases with increasing current density and NaCN content, but the rate of deposition can be increased up to 120-150 μ/hr, i.e., 25-30 times higher than in existing electroplating. The effect of sound vibrations on cathodic polarization is the same as in copper plating, i.e., polarization decreases and the potential shifts towards more positive values. Increasing temperature, higher current density, and ultrasonic waves effect a change in composition of the deposited brass. Apparently ultrasonic waves have a different effect on deposition of copper and of zinc. The composition of electrolytes used in silver-plating experiments is presented in Tab. 3. With electrolytes containing about 40 g silver per liter current density can be increased to 10-15 amp/dm^2 by means of ultrasonic waves and the rate of deposition is 6-7 μ/min. The latter depends linearly on current density. In distinction from copper- and brass-electroplating, no noticeable effect of temperature was observed in silver-plating.

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