

YUDIN, M.I.; VULIS, I.I.

Use of statistical methods in studying the finite-difference structure of the balance equation. Dokl. AN SSSR 153 no.5: 1067-1070 D '63. (MIRA 17:1)

1. Glavnaya geofizicheskaya observatoriya im. A.I. Voyeykova. Predstavleno akademikom A.A. Dorodnitsynym.

VULIS, I. L.; RUKHOVETS, L. V.; YUDIN, M. I. (Leningrad)

"A statistical approach to the problem of integration of the equations of atmosphere dynamics"

report presented at the 2nd All-Union Congress on Theoretical and Applied Mechanics, Moscow, 29 Jan - 5 Feb 1964.

YUDIN, M. I.

"On the parametric description of radiative heating in the atmosphere."

report presented at the Atmospheric Radiation Symp, Leningrad, 5-12 Aug 64.

ACCESSION NR: APL011030

S/0049/64/000/001/0124/135

AUTHORS: Yudin, M. I.; Vulis, I. I.

TITLE: Application of statistical methods to the investigation of the finite difference structure balance equation

SOURCE: AN SSSR. Izv. Seriya geofizicheskaya, no. 1, 1964, 124-135

TOPIC TAGS: statistical method, finite difference, structure balance equation, finite difference equation, spectral density, error density, arithmetic mean, geopotential field, wind field

ABSTRACT: Starting from some results concerning the theory for the function of a random variable and from data on the statistical structure of the wind field and the geopotential field, the authors have determined the mean arithmetic value and the spectral density of errors associated with a finite-difference approximation of the balance equation. They point out the form of a difference equation that is distinguished by relatively small error. They conclude that the proposed method may have comparatively more general significance during analysis of many natural processes for which the statistical characteristics of the investigated

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ACCESSION NR: AP4014030

fields are known (structural or correlation functions) and which are defined by equations of mathematical physics. Orig. art. has: 4 figures, 3 tables, and 34 formulas.

ASSOCIATION: Glavnaya Geofizicheskaya observatoriya im. A. I. Voyaykova (Main Geophysical Observatory)

SUBMITTED: 23Apr63

DATE ACQ: 14Feb64

ENCL: 00

SUB CODE: AS

NO REF SOV: 009

OTHER: 003

Card 2/2

YUDIN, M.I., doktor fiz.-matem. nauk, prof.; IL'IN, B.M.;
RUKHOVETS, L.V.

One method for the control and correction of aerologic
telegrams. Meteor. i gidrol. no.5:35-39 My '64.
(MIRA 17:6)

1. Glavnaya geofizicheskaya observatoriya imeni A.I.
Voyeykova.

ACCESSION NR: AT4046059

S/2531/64/000/166/0182/0188

AUTHOR: Yudin, M.I. (Doctor of physico-mathematical sciences); Yesakova, N. P.; Afanas'yeva, V. B.

TITLE: Preliminary evaluation of the prognostic significance of the information obtained from meteorological satellites

SOURCE: Leningrad. Glavnaya geofizicheskaya observatoriya. Trudy*, no. 166, 1964. Voprosy* interpretatsii dannykh meteorologicheskikh sputnikov (Problems in the interpretation of data of meteorological satellites), 182-188

TOPIC TAGS: meteorology, meteorological satellite, cloud, precipitation, weather forecasting, long-range weather forecasting, snow cover, radiation balance

ABSTRACT: The objective of this paper was to develop a method for the preliminary characterization of anomalies of cloud cover, the radiation balance of the underlying surface and the limits of snow and ice cover for subsequent use of such characteristics in long-range weather forecasting. The authors establish statistical relationships between such anomalies and the characteristics of future weather (temperature and precipitation); certain direct characteristics of atmospheric circulation are also analyzed in relation to future weather. Determination of the characteristics of anomalies of the cloud cover,

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the boundaries of the snow and ice cover and the radiation balance was done using mean 10-day values for the period September-November 1948-1957. These values were mapped, after which the parameters characterizing the fields of individual elements were determined. The method used for constructing the maps and defining the characteristics of anomalies is described briefly. The state of atmospheric circulation was described using the zonal index devised by Ye. N. Blinova, the M. I. Yudin meridional index and the A. A. Rozhdestvenskiy hydrodynamic indices. These parameters were used to supplement the 10-day means of temperature and precipitation for an analysis of these values determined for a grid of points covering much of the European SSSR. Synchronous statistical relationships were established between the 10 mentioned parameters; asynchronous prognostic relationships also were determined. The ten considered parameters were correlated with temperature and precipitation for the 10 days which followed. The computations of the correlation coefficients were performed on a "Ural-1" electronic computer. Most of the results of the computations were plotted on maps, and 66 such maps were constructed. In a considerable number of cases relationships were discovered which are characterized by quite high correlation coefficients and with a stable identical

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sign for the entire considered area. It was found that the selected parameters generally give more information for prediction of temperature than for prediction of precipitation. However, an absence of prognostic relationships is noted on a number of maps. The method described made it possible to establish a number of parameters of the state of the atmosphere and the underlying surface which are quite closely related to the characteristic of future weather for 10 days in advance. The greater part of the parameters apply to those elements which cannot be determined globally except by use of meteorological satellites. This emphasizes the great importance of satellite observations for long-range forecasting. Orig. art. has: 2 formulas, 5 figures and 1 table. X

ASSOCIATION: Glavnaya geofizicheskaya observatoriya Leningrad (Main Geophysical Observatory)

SUBMITTED: 00

ENCL: 00

SUB CODE: ES

NO REF SOV: 006

OTHER: 000

Card 3/3

GANDIN, L.S.; IL'IN, B.M.; LIBERMAN, Yu.M.; YUDIN, M.I.

Accuracy of determining finite differences in the analysis of
meteorological fields. Trudy GGO no.166:113-122 '65.

(MIRA 18:8)

L 06187-67 EWT(1) GH
ACC NR: AP6019519

SOURCE CODE: UR/0362/66/002/002/0208/0216

AUTHOR: Yudin, M. I.

ORG: Main Geophysical Observatory (Glavnaya geofizicheskaya observatoriya)

TITLE: Equilibrium temperature gradient

SOURCE: AN SSSR. Izvestiya. Fizika atmosfery i okeana, v. 2, no. 2, 1966, 208-216

TOPIC TAGS: atmospheric temperature gradient, lower atmosphere, heat exchange

ABSTRACT: Defending his concept of an equilibrium temperature gradient in the near-ground atmosphere, the author reviews theories and observations on the subject and disputes arguments, chiefly by A. S. Monin (Izv. AN SSSR, Fizika atmosfery i okeana, 1, No. 5, 1965.), against his contentions that the mean turbulent thermal flux becomes zero when the temperature gradient approaches 0.6C/100 m and that turbulent pulsations are not small when the turbulent thermal flux does not exist. Among studies in the lower atmospheric layer noted are a) temperature lapse rate observations which yielded 0.6C/100 m as the mean value of the equilibrium temperature gradient at altitudes from 1.2 to 88 m, b) free balloon observations of temperature fluctuations, vertical temperature profiles, and vertical flux velocity

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UDC: 551.524.77

L 06187-67
ACC NR: AP6019519

which produced the value 0.54C/100 m for altitudes from 100 to 3000 m, c) airborne observations by Monin et al. at 50 to 2000 m, which produced a value of 1.06C/100 m, the accuracy of which the author disputes, and d) more recent airborne observations at 600 to 1000 m, which yield a mean value of 0.58C/100 m. Orig. art. has: 8 formulas, 2 tables, and 3 figures.

SUB CODE: 08/ SUBM DATE: 24Aug65/ ORIG REF: 015/ OTH REF: 012

Card 2/2 afs

YUDIN, M.I.

Jadeite and natrolite rocks in the ultrabasites of the Borus Range
(Western Sayan Mountains) and their origin. *Izv. AN SSSR, Ser.geol.*
28 no.4:78-98 Ap '63. (MIRA 16:6)

1. Tomskiy politekhnicheskii institut.
(Borus Range--Jadeite) (Borus Range--Natrolite)

AUTHOR:

Yudin, M.I.

SOV/11-59-2-4/14

TITLE:

The Dunites from the Borus Mountain Range and Their Origin
(Dunity khrebtta Borus i ikh proiskhozheniye)

PERIODICAL:

Izvestia Akademii nauk SSSR, Seriya geologicheskaya, 1959,
Nr 2, pp 59-77 (USSR)

ABSTRACT:

Although the origin of dunites has for many years been the object of discussion, no unanimity was ever reached on this problem. Some scientists, such as A.N. Aleshkov, were of the opinion that dunites were formed from a special dunite magma. Others (F.Yu. Levinson-Lessing, A.N. Zavaritskiy, G.L. Padalka, P.I. Lebedev, Ye.A. Kuznetsov and others) considered the dunites as a product of a crystallizing-gravitational differentiation of the basalt magma. The partisans of the heterogenous origin of the ultrabasic rocks (Yu.A. Kuznetsov, M.A. Kashkay, G.V. Pinus and others) connected the origin of dunites not only with the basalt magma but also with a special hyperbasic magma. Finally, in the last 10 years, some of the geologists (N.M. Uspenskiy, S.V. Moskaleva, A.A. Kadenskiy and O.A. Vorob'yeva) came to the conclusion that the dunites were of a metasomatic

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The Dunites from the Borus Mountain Range and Their Origin

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origin. In the Borus mountain range (Western Sayan), dunites occur in a hyperbasic massif composed mainly of serpentinitous periodites and serpentinites. The author gives a very detailed description of dunites and other varieties, differing slightly in their composition. He came to the conclusion that the dunites and the genetically related pyroxenites were of a more recent formation than the serpentineous hyperbasic rock forming the Borus Massif. Both are qualitatively different products of two interconnected stages of a unique-metasomatic process. Each stage represents a result of a variation of the qualitative correlation of interacting components MgO and SiO₂ at different depths of the converted rock. The ordinary and folded pyroxenite veins were a product of the first metasomatic stage and were formed as a result of a chemical interaction of rocks containing a large amount of magnesium with the siliceous solutions ascending along the fissures. These solutions originated as a result of the admixture of silica from the plutonic depths where, by the addition of magnesium, the magmatic processes led to the formation of

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The Dunites from the Borus Mountain Range and Their Origin

dunites, which are basically olivine rocks. At each stage of the metasomatism the conversion bore a sharply selectional character. The pyroxenite veins originated on a given level before the dunites were only partly converted into dunites during the second metasomatic stage. The largest part of them remained in the dunites as relics - xenolythes, streak-like inclusions and other formations. The other geologists mentioned by the author were: N.I. Bezborod'ko, V.A. Lodochnikov, B.P. Krotov, P.M. Tatarinov, V.S. Koptev-Dvornikov, V.I. Luchitskiy, and A.A. Kadenskiy. There are 10 photos, 1 map, 1 table, 1 diagram and 23 references, 22 of which are Soviet and 1 American.

ASSOCIATION: Tomskiy Politeknicheskii Institut (The Tomsk Polytechnical Institute)

SUBMITTED: January 21, 1958

Card 3/3

08198

S/133/60/000/012/009/015

A054/A027

1.1300

AUTHORS: Filonov, V.A., Engineer, Yudin, M.I., Engineer, Troshchenkov, N.A., Engineer, and Movshovits, V.S., Engineer

TITLE: Improved Production Process for Cold Rolled Alloy Steel Sheets

PERIODICAL: Stal', 1960, No. 12, pp. 1116-1118

TEXT: Until recently the production of the alloyed steel sheets, 0.5-3.0 mm thick, in the Zaporozhstal' Plant was divided into 8 stages. The technology had certain drawbacks: because the sheets had to be moved about a great deal during processing, their surface defects were numerous: 16.6-25.1% were defective, moreover, it was not possible to obtain the required mechanical properties. About 30% of the sheets had to be rejected because the strength limit was too low. In order to simplify and at the same time to improve this process, cold rolling tests were made with 12Г2А (12G2A), 25ХГСА (25KhGSA), 30ХГСА (30KhGSA) and other steel sheets, 0.8-3.0 mm thick, omitting bright annealing, i.e., the second phase of the conventional production process. The tests were carried out on a 1,680 mm stand, at a maximum rolling speed of 3.95 m/sec and it was found that the 12G2A steel sheets, 0.8-3.0 mm thick and 730-1,270 mm wide could easily be rolled in 3-7 passes. The cold rolling of 25KhGSA and 30KhGSA steel sheets without bright annealing was only possible up to 1.2-3.0 mm thickness, irrespective of the strip width, with normal metal.

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Improved Production Process for Cold Rolled Alloy Steel Sheets

pressure at the rollers and with normal load on the main motor. Omitting bright annealing decreased rolling waste 2.2 times for the 12G2A and 3.2 times for the 25KhGSA and 30 KhGSA brand steels. Furthermore, tests were carried out with cold rolling steel sheets (12G2A) containing manganese up to 0.5 mm thickness, without bright annealing and intermittent annealing, on a 4-high reversible mill stand (1,200 mm) and it was established that by applying this technology wastage could be reduced 3.3 times as compared with the conventional method, while the metal pressure on the rollers was kept within the limits allowed (1,800 t) and by applying hydrogenated sunflower seed oil as a lubricator, the main motor load could be reduced. Maximum rolling speed attained 6.7 m/sec. Tests were also carried out to improve the annealing of hot rolled sheet coils of 23 X 2HBΦA (23Kh2NVFA), 17 X 2HBΦA (17Kh2NVFA), 12 X 2HBΦA (12Kh2NVFA), 25XΓCA (25KhGSA) and 30XΓCA (30KhGSA) steels and it was established that optimum conditions can be obtained by annealing unpickled sheet coils in a protecting atmosphere of nitrogen, containing not more than 0.5% CO₂, 4-6% CO and 4-6% H₂. Annealing takes place in this protecting atmosphere at 850°C for periods of 16, 18, 20 hours, depending on the weight of the charge, (≤ 6, 7-8, 9-10 coils, respectively). By annealing in protective atmosphere it was possible

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to prevent decarbonization and to increase the output of the pickling equipment considerably by setting free great part of its capacity. Further improvement in the quality of cold rolled 12G2A steel sheets could be attained by normalizing the sheets in coils, in electric hood-furnaces with ventilators. The heat conditions of the process were the same as when normalizing the sheets in small packets (heating up to 840-860°C, holding time: 1 hour, furnace temperature 900°C, cooling under muffle to 180°C); the improvement in mechanical properties was obtained by the special size and the construction of the furnace securing a uniform heating and cooling in the entire coil while waste due to inadequate mechanical properties could be eliminated. This waste had amounted to about 80% when normalizing in the conventional production process single packets. There is 1 table.

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Improved Production Process for Cold Rolled Alloy Steel Sheets

① Steel brand; ② Initial and final thickness of the strip mm; ③ Strip width mm; ④ Total reduction %; ⑤ Load on the main motor a; ⑥ Metal pressure on the roll ton; ⑦ Rolling speed m/sec; ⑧ Number of passes.

Марка стали 1	Исходная и конечная толщина полосы, мм 2	Ширина полосы, мм 3	Суммарное обжатие % 4	Нагрузка главного двигателя а 5	Давление металла на валки б 6	Скорость прокатки м/сек 7	Количество пропусков 8
12Г2А	Реверсивный стан 1680						
	2.3-0.8	1270	65.1	1200-2800	1400-1700	1.17-3.44	7
		1020	65.1	800-3000	800-1100	1.57-3.52	5
	2.3-1.0	1270	56.5	1200-3000	1300-1700	1.57-3.71	5-7
		1020	56.5	1000-3400	900-1700	1.57-3.60	5-3
	2.3-1.2	1020	47.8	1000-3000	850-1506	0.78-3.52	3
		1020	44.5	1600-2500	900-1100	1.76-3.52	
	2.7-1.5	1270	37.5	2000-3200	1200-1700	1.57-3.52	
		1270	32.4	2000-3000	1400	2.54-3.14	
	3.7-2.5	1270	25.0	2000-3000	1400-1600	2.34-3.14	
1270		25.0	2000-2500	900-1100	2.34-3.14		

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Improved Production Process for Cold Rolled Alloy Steel Sheets

25XГСА	2,3-1,0	1020	56,5	800-2000	1200-2000	0,78-2,74	7
	2,7-1,5	1020	44,5	800-3000	1200-1800	0,78-3,14	3
	3,0-1,8	1020	40,0	800-1600	1200-1500	0,78-3,14	5
	3,2-2,0	1120	37,5	2000-2800	1300-1800	1,17-2,35	3
	3,7-2,5	1200	32,4	800-1600	1300-1800	0,62-1,95	7
		900-1020	32,4	800-2000	1050-1600	0,78-2,34	3
	4,0-3,0	1020	25,0	800-2000	1100-1500	0,75-3,14	3
	2,3-1,0	1020	56,5	400-1600	1300-2000	0,78-1,76	9-11
	2,5-1,2	1020	52,0	2000-3500	1300-1800	0,78-2,74	3
	30XГСА	2,7-1,5	1270	44,5	1000-3000	1000-1800	0,78-3,14
730			44,5	1200-1600	1200-1300	0,78-1,57	3
3,0-1,8		1020	40,0	800-3000	800-1600	1,17-2,74	5
3,2-2,0		1270	37,5	1200-3500	900-2000	0,78-3,14	5-3
		1020	37,5	400-3000	1200-2100	0,78-3,14	5-7
3,7-2,5		1270	32,4	800-2800	1100-1700	0,70-1,57	5
		1020	32,4	400-3500	1100-1900	0,78-2,74	3-7
4,0-3,0		1270	25,0	800-3000	1300-2000	0,47-2,15	3-5
12Г2А	Реверсивный стан 1200						
	2,0-0,5	1020	75,0	1000-6000 1500-4500	900-1600 900-1400	1,05-6,70 2,09-6,70	7 7

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S/130/61/000/001/003/006
A006/A001

AUTHORS: Yudin, M. I., Chief of the Cold Rolling Shop, Troshchenkov, N. A.,
Chief of the Rolling Group TsZL

TITLE: Stainless Steel Ground Plates

PERIODICAL: Metallurg, 1961, No. 1, 1961, pp. 21-23

TEXT: In connection with the development of polished plastic articles, manufactured by pressing, the demand of polished and ground stainless steel backing plates is continuously increasing. The production of ground stainless steel plates was started at "Zaporozhstal" in 1957, using the ШПМ-1500 (ShPM-1500) grinding machines. The authors together with M. M. Stekachev, L. A. Zagadchenko and G. A. Drobot investigated the effect of individual technological parameters on the surface of the finished plates and revealed deficiencies in the design of the aforementioned machine. Heat treated, etched 1X18H9T (1Kh18N9T), 1X18H9 (1Kh18N9) and 2X18H9 (2Kh18N9) steel sheets, and quenched and etched cold-worked 1Kh18N9T steel blanks were used. Since the quality of the ground plates depends on the surface conditions of the blanks, measures were taken to improve the quality of the blank surface. For this purpose water glass used as a binding material on abrasive

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S/130/61/000/001/003/006
A006/A001

Stainless Steel Ground Plates

belts was replaced by hide glue and the following optimum conditions for grinding the plates were established: 1) rough grinding with 100 mesh abrasive material; 2) pre-finishing grinding with 150 mesh abrasive and 3) finishing grinding with 180 mesh abrasive powder. Electrocorundum was found to be the best abrasive material. The abrasive powder was applied to the belt by a special device consisting of a sheet metal container with four rolls - two for tightening the belt and two for applying and levelling the abrasive material. The ShPM-1500 belt-type machine consists of a feed and a grinding mechanism. The sheet to be ground is sucked on to a perforated feed belt by a vacuum pump retaining the work on the belt during its processing with the abrasive belt. The feed belt moves at a speed of 3.2 - 11 m/min. The grinding mechanism consists of three rolls onto which an endless 1 mm thick, 1300 mm wide abrasive belt is fastened. The abrasive belt moves at a speed of 10 m/sec. The belt is pressed against the work piece with four 100-mm diameter steel rolls. The grinding operation can be switched over to the vertical direction. Experience gathered in the production of stainless steel ground plates by the aforementioned method has led to the following conclusions. 1. The quality of finished plates depends in the first place on the quality of cold and hot rolled blanks. There should not be any visible defects on the blank surface, since their elimination would require the removal of a thick metal layer. This would extend

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Stainless Steel Ground Plates

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the grinding process and impair the quality of the ground surface. 2. The existing method of applying the abrasive material and the glue to the belt by manual pulverization does not assure a uniform covering of the belt with the material on its whole length and width. Therefore mechanical processes of applying the abrasive powder should be developed. 3. The rubberized transportation belts do not yield satisfactory results due to different thickness across their section (2 - 4 mm at a 12-mm thick belt); non-admissible expansion during operation (up to 10%); cracking and scaling of the upper coating. 4. The endless woolen abrasive belts produce considerable non-uniform longitudinal stretching (up to 15%) causing cracking of the abrasive coating and breakdown of the belt. Inclusions of foreign material in the belts produce scratchings on the surface to be ground. 5. The grinding machine described has a series of deficiencies and cannot be recommended for the grinding of large size sheets. Designs of machines should be developed for the grinding of sheets on both sides by taking into account domestic and foreign experiences. 6. Large scale production of ground plates should be performed in special shops, starting with cold rolling of blanks. There are 3 figures.

ASSOCIATION: Zaporozhstal' Plant

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NATAPOV, B.S.; BARZII, V.K.; OL'SHANETSKIY, V.Ye.; Prinimali uchastiye:
FILONOV, V.A., inzh.; YUDIN, M.I., inzh.; IOFFE, M.M., inzh.;
POPOV, S.M., inzh.; RYBALKO, G.I., inzh.; ODINETS, L.I., inzh.;
SIGALKO, P.V., inzh.; TSIVIRKO, D.Ye.; VOLOSHCHUK, M.D., inzh.

Heat treatment of cold-rolled sheet metal. Stal' 22 no.2:163-
165 P. '62. (MIRA 15:2)

1. Zaporozhskiy mashinostroitel'nyy institut i zavod
"Zaporozhstal'". 2. Zavod "Zaporozhstal" (for Filonov,
Yudin, Ioffe, Popov, Rybalko, Odinets). 3. Zaporozhskiy
mashinostroitel'nyy institut (for Sigalko, TSivirko, Voloshchuk).
(Sheet steel--Heat treatment)

YUDIN, M.I.; KOMANOVSKIY, A.Z.; TROSHCHENKOV, N.A.

Redesign of the 1618 continuous cold rolling mill. Metallurg 8
no.11:28-29 N '63. (MIRA 16:12)

FILONOV, V.A., inzh. [deceased]; YUDIN, M.I., inzh.; LOLA, V.N., inzh.;
MOYSHOVICH, V.S., inzh.; AVRAMEHKO, I.N., inzh.; PAVLISECHEV, V.B., inzh.

New technology for the production of wide-strip stainless steel with
a thickness of less than 1,5 mm. Stal' 23 no.1:60-61 Ja '63.
(MIRA 16:2)

1. Zavod "Zaporozhstal".

(Rolling (Metalwork))

CHEN, N.G.; TRAYGER, I.N.; SOLOV'YEV, L.L.; MIRKINA, R.Ye.; YUDIN, M.I.

Acid pickling of steel with the use of a new additive.
Stal' 24 no.5:451-452 My '64. (MIRA 17:12)

1. Dneprodzerzhinskiy metallurgicheskiy zavod-vtuz i zavod
"Zaporozhstal'".

ACC NR: AT6012089

(N)

SOURCE CODE: UR/3177/65/021/000/0038/0052

AUTHOR: Chekmarev, A. P. (Academician AN UkrSSR); Saf'yan, M. M. (Professor); Meleshko, V. I. (Candidate of technical sciences); Prokof'yev, V. I. (Candidate of technical sciences); Avramenko, I. N. (Engineer); Dotoka, V. G. (Engineer); Ksenzuk, V. A. (Engineer); Kudin, D. P. (Engineer); Lola, V. N. (Engineer); Movshovich, V. S. (Engineer); Pavlishchev, V. B. (Engineer); Soroko, L. N. (Engineer); Sukhobrus, Ye. P. (Engineer); Kholodnyy, V. P. (Engineer); Yudin, M. I. (Engineer)

ORG: none *

TITLE: Improvements in the techniques of production of Kh18Ni0T cold-rolled wide-strip steel at the Zaporozhstal' Plant

SOURCE: Dnepropetrovsk. Institut chernoy metallurgii. Trudy, v. 21, 1965. Prokatnoye proizvodstvo (Welding production), 38-52

TOPIC TAGS: stainless steel, bright stock lubricant, metal rolling, sheet metal, industrial plant / Kh18Ni0T stainless steel, P-28 bright stock lubricant

ABSTRACT: On increasing to 11.8 tons from the previous 10.3 tons the weight of the ingots

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L 41274-66

ACC NR: AT6012089

of Kh18N10T stainless steel used to produce 1000 mm wide sheets, the Zaporozhstal' Plant found it possible to reduce by 40-50 kg/mm² the wastage of metal during slabbing. Other innovations introduced in recent years at this plant include: fettling, flame scarfing and planing of ingot surfaces so as to eliminate defects of metallurgical origin prior to slabbing. These measures, along with improvements in the ingot reheating regime, have made it possible to increase the productivity of slabbing mills by 15-20%. The ingots themselves are cone-shaped in order to optimize the conditions of crystallization of the molten metal. After trimming and heating to 1050-1300°C the slabs proceed to a continuous strip mill where they are rolled into 1000 mm wide strip. By introducing the cold rolling of this strip in a reversible four-high mill with a reduction of 85% and by abandoning the practice of intermediate quenching during the production of 0.8-1.4 mm thick sheets rolled from 3.0 mm thick stock, using P-28 bright stock (highly viscous mineral oil) as the lubricant, using highly polished rolls, and increasing the convexity of the rolls to offset the increase in roll pressure, and thus streamlining the rolling techniques to an extent at which it became possible to roll in 13 passes 0.8 mm thick strip without overloading the rolls and main drive, the Zaporozhstal' Plant has found it possible to increase by 81% the productivity of its sheet mill and by 180%, the productivity of its reversible cold-rolling mill. The annual savings produced by these innovations amount to: for the slabbing-mill shop, 162,000 rubles; for the sheet-mill shop, 91,000 rubles; for the cold rolling shop, 719,000 rubles. Orig. art. has: 3 figures, 9 tables.

SUB CODE: 13, 11/ SUBM DATE: none/ ORIG REF: 015

Card 2/2 *LC*

1. YUDIN, N.
2. USSR (600)
4. Coal - Handling Machinery
7. New method of organization of the work of conveyer attendants. Mast. ugl. 1, no. 9, 1952.

9. Monthly List of Russian Accessions, Library of Congress, February 1953. Unclassified.

YUDIN, N.

IVANCHINOV, A., inzhener; YUDIN, N., inzhener.

New cutter-loaders in Karaganda. Mast. ugl. 6 no.9:20-21 S '57.
(MIRA 10:11)

(Karaganda Basin--Coal mining machinery)

YUDIN, N.A., inzh.; VORONKOVA, G.V., inzh.; YELIZAROV, N.Ye.

New lead-containing product for the manufacture of glassware
and artistic glass. Stek. i ker. 22 no.8:18-19 Ag '65.
(MIRA 18:9)

1. Gusevskoy filial Gosudarstvennogo nauchno-issledovatel'skogo
instituta stekla (for Yudin, Voronkova). 2. Glavnyy inzhener
Stekol'nogo zavoda imeni Sverdlova (for Yelizarov).

YUDIN, N.A., inzh.; SYRITSKAYA, Z.M., kand.tekhn.nauk

Synthesis and study of types of glass for dishes made with rare earth elements. Stek.i ker. 20 no.2:21-26 F '63. (MIRA 16:2)

1. Gusevskoy filial Instituta stekla (for Yudin). 2. Institut stekla.

(Rare earth metals)

(Glass, Colored)

1977, No. 1, pp. 1-10. A. A. Gusev, B. N. A. Gusev.

Transparent silicate luster colors and methods of their
for decorating glassware. Stek. i ker. 22 no. 19-

1. Gusevskoy filial Gosudarstvennogo nauchno-issledovatel'skogo
instituta stekla.

YUDIN, N.A.; NIKONOV, N.P.

Industrial founding of glass colored with rare-earth elements
in the form of concentrates and ores. Stek.i ker. 19 no.11:
37-38 N '62. (MIRA 15:12)

(Rare earths)

(Glass, Colored)

SYRITSKAYA, Z.M., kand. tekhn. nauk; YUDIN, N.A., inzh.

Glasses of the $\text{SiO}_2 - \text{CaO} - \text{Na}_2\text{O} - \text{K}_2\text{O}$ system colored with rare earth oxides. Stek. 1 ker. 20 no.8:18-20 Ag '63. (MIRA 16:11)

1. Gosudarstvennyy institut stekla (for Syrinskaya).
2. Gusevskoy filial Gosudarstvennogo instituta stekla (for Yudin).

Y. V. U. D. B

174. Hardness of Vapor-Deposited Chromium Coatings. (In Russian.) N. S. Gorbunov, N. D. Iudin, and N. A. Iskryahov. *Journal of Applied Chemistry* (U.S.S.R.), v. 20, no. 4, 1947, p. 304-308.

Describes and diagrams the apparatus used for microhardness testing of the above coatings on soft iron, cast iron, steel, and chromansil, and gives results of the measurements. In most of the cases the content of the base metal had an effect on the hardness of the coating.

COMMON ELEMENTS

COMMON VALENCE INDEX

METALLURGICAL LITERATURE CLASSIFICATION

LIST AND REFERENCE

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YUDIN, N.I.

3(8)

p. 2

PHASE I BOOK EXPLOITATION

SOV/1575

Akademiya nauk SSSR. Sovet po izucheniyu proizvoditel'nykh sil

Ocherki osadochnykh mestorozhdeniy poleznykh iskopayemykh (Description of Sedimentary Mineral Deposits) Moscow, Izd-vo AN SSSR, 1958.
84 p. 5,000 copies printed.

Resp. Ed.: L.V. Pustovalov, Corresponding Member, USSR Academy of Sciences; Ed. of Publishing House: G. I. Nosov; Tech. Ed.: S. G. Markovich

PURPOSE: This publication is intended for mining geologists, stratigraphers, petrographers, and mineralogists.

COVERAGE: This collection of articles is devoted to a description of several minerals found in Eastern Siberia, and a discussion of the conditions of their deposition by regions. Individual articles report on the Berezovskoye iron ore deposits, the titaniferous minerals of the Bakal'skoe deposit, the iron ore deposits of the Angaro-Pitskiy basin and the Khoperskiy region. The articles are accompanied by diagrams, tables, and bibliographic references.

Card 1/3

Description of Sedimentary Mineral Deposits (Cont.) SOV/1575

TABLE OF CONTENTS:

Serdyuchenko, D.P. Devonian Iron-bauxite Oolitic Formation	3
Yeroshchev-Shak, V.A., and N.Kh. Platonov. Native Iron From Devonian Iron Ores of the Khoperskiy Region	25
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Card 2/3

YUDIN, N.I.

Phosphorite potential of Pre-Cambrian sediments in the south-eastern part of the Tuva A.S.S.R. Lit. 1 pol. iskop. no.23
28-37 Mr-Apr '65. (MIRA 18:6)

1. Laboratoriya osadochnykh poleznykh iskopayemykh Gosudarstvennogo geologicheskogo komiteta SSSR, Moskva.

YUDIN, N.M. (Tashkent)

Settlement of mynahs. Priroda 44 no.10:107-108 0'55. (MLRA 8:12)
(Mynahs)

15-57-10-14999

Translation from: Referativnyy zhurnal, Geologiya, 1957, Nr 10,
p 280 (USSR)

AUTHORS: Yudin, N. N.

TITLE: New Magnetic Starters for the Coal-Mining Industry
(Novyye magnitnyye puskateli dlya ugol'noy promyshlen-
nosti)

PERIODICAL: V sb.; Avtomatizatsiya v ugol'n. prom-sti, Moscow,
Ugletekhizdat, 1956, pp 25-28

ABSTRACT: The Kuznetsk Basin Electric Motor Factory has made known
the production of new magnetic starters of the PMV
series (at normal currents of 60, 120, and 240 amp) for
use by them in various automatic systems in extraction,
transport, and other mining operations. The starters
have been used on electric motors with power ratings
from 32 to 200 kwt and voltages of 380, 500, and 600
volts. A housing for the starter with two covers and
a panel of separate block terminals make the inner
parts of the starter easily accessible and simplify

Card 1/2

New Magnetic Starters for the Coal-Mining Industry (Cont.) 15-57-10-14999

repair work. The lead-in arrangement, in addition to a sealed lead cable, has a dry-treated armored cable, as developed by the All-Union Coal Institute. The entire working of the starter is made spark-proof for large values of direct current in the regulating circuit. The remote control circuit provides a telephone system and a signal system on the conductors of this circuit, and also provides protection from stray currents by a leakage relay of the RUV type. The starters are provided with thermal circuit breakers which are effective during large overloads, during tilting of the electric motor, during breaking of one of the circuits, and by a safeguard against loss of control during temporary shorts in the remote control circuit. The author shows the electrical design of the magnetic starters of the new series and automatic remote control of belt conveyors by using the magnetic starters. He also provides tables showing the principal parameters for the starters.

Card 2/2

R. I. Teder

SOV/112-58-2-2303

Translation from: Referativnyy zhurnal, Elektrotehnika, 1958, Nr 2, p 83 (USSR)

AUTHOR: Pankrat'yev, A. F., and Yudin, N. N.

TITLE: Automatic Explosion-Proof Electric Equipment for Underground Mechanisms (Avtomatizirovannoye vzryvobezopasnoye elektrooborudovaniye dlya podzemnykh mekhanizmov)

PERIODICAL: V sb.: Raboty M-va elektrotekhn. prom-sti SSSR po mekhaniz. i avtomatiz. nar. kh-va. I. M., 1956, pp 75-80

ABSTRACT: Explosion-proof electric equipment manufactured by the "Kuzbasselektromotor" Plant is described. A short description is presented of the construction and purpose of the squirrel-cage series KO and KOM motors, the series PMV magnetic starter, the Type AFV feeder automatic circuit breakers, type KUV push-button stations, and also a number of special motors and electric apparatus for mining machinery recommended for use in automated control schemes in underground work, particularly in an explosion-hazardous medium.

A.V.S.

Card 1/1

YUDIN, N. N.

"Low Voltage Apparatus for Mines and Factory Installations Liable to Explosions"

report presented at the All-Union Scientific and Technical Conference on the Electrical
Equipment in Buildings and Outside Installations Liable to Explosions, 14-19 April 1958,
Stalino
(Energet. Byulleten', 1958, No. 7, pp 29-33)

Yudin, N.P.

MATONIN, P.K.; YUDIN, N.P.; IVANCHINOV, A.M.

Coal mining with a single bar cutter-loader. Mekh.trud.rab, 11 no.1:12-15
Ja '57. (MIRA 10:5)

1.Glavnyy inzhener tresta Kirovugol' (for Matonin). 2.Nauchnyye
sotrudniki Karagandinskogo nauchno-issledovatel'skogo ugol'nogo
instituta (for Yudin, Ivanchinov).
(Coal mining machinery)

22631

S/118/61/000/001/003/005
A161/A133

2.9100

AUTHORS: Yudin, N.P., Eydel'shteyn, I.A., Zeifert, V.P., Engineers

TITLE: Drifting combine "Karaganda - 1M"

PERIODICAL: Mekhanizatsiya i avtomatizatsiya proizvodstva, no. 1, 1961,
43-45

TEXT: The combine has been designed by the Karagandinskiy nauchno-issledovatel'skiy ugol'nyy institut (Karaganda Scientific Research Institute of Coal) and the first unit was built at the Temir-Tauskiy liteyno-mekhanicheskiy zavod (Temir-Tau Foundry and Machine Plant). The "Karaganda-1" is intended for the drifting of horizontal and sloping (up to $\pm 12^\circ$) preparatory workings with 4.32 m^2 cross section area in coal and rocks of moderate hardness. It cuts coal (or rocks), removes it from the face and loads it on a reloader and CWP-11 (SKR-11) scraper chain conveyers. The work tools are a drill and a crown, and two cutting disks with replaceable cutting bits. The disks are rotating about the main machine shaft and at the same time on their

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S/118/61/000/001/003/005
A161/A133

Drifting combine "Karaganda - 1M"

shafts in the opposite sense. They throw the loosened mass to the shield behind, or load it on a conveyer located on the lower part of the combine when passing the bottom side of the face. The working cut by the disks is round, 2.3 m in diameter. The berm milling cutters of the combine give the finished working and arched shape and at the same time move loose mass from the side walls to the conveyer on the combine. The work side of the conveyer is on the bottom, and its chain drives the berm milling cutters. The caterpillar, electric system and hydraulic system (slightly changed) are from the ТММ-3 (ПКГ-3) combine. A centrifugal fan on the combine sucks off the dusty air from the working space. Propping is possible only behind the combine, and the driver is protected by a special shield. The technical data of the combine are: Work disks diameter - 1000 mm; they are rotating at 47.5 - 106.48 rpm; the number of bits on one disk is 24, 12 and 6; the disk carrier operates with 2.85 rpm; the maximum diameter of the drill is 600 mm and the rotation velocity is 45.6 - 112 rpm; the maximum crown diameter is 130 mm and the rotation speed is 169.4 - 426 rpm; hourly power of the electric motor is 65 kw, the continuous power is 28.5 kw, the armature rotation speed is 1,460 rpm. The scraper conveyer is driven by a 29 kw motor, the caterpillar by two 8 kw motors with 980 rpm. The work speed is 3.34, 4.27 and 6.01

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A161/A133

Drifting combine "Karaganda - 1M"

m/h; maneuvering speed 68.4, 86.5 and 124.9 m/h. The 650 mm diameter berm cutters are rotating at 52 rpm. The loading scraper conveyer works with 1.27 m/sec chain speed. The total length of the combine is 6,800 mm, width over the caterpillar chains 1,860 mm, weight 17 ton. It has been tested in drifting the west airway in the No.120 mine of the "Saran'ugel'" coal trust, dangerous because of explosive coal dust, in the "Verkhnyaya Marianna" seam of varying thickness between 4.6 and 6.8 m. The seam is disturbed, includes many imbedded clay and shale layers and slopes 16-28°. The coal was transported by up to 13 SKR-11 conveyers to 1 km distance. The work face was sprinkled by an OH-2 (ON-2) pump through metal pipes and hoses from 1 km distance. A schematic drawing of the combine in the drift is included (Fig.2). The operating team consisted of the combine driver and 3-4 assistants installing permanent propping, working with the conveyers and bringing materials, one combine mechanic, 2-3 repair mechanics and 2-3 girls attending the conveyer lines. The highest drifting speed achieved per shift was 15 m, the average (minus downtime) was 3.2 m/h. The "Karaganda-1M" proved considerably more efficient than the PKG-3 combine with ГНЛ-30 (GNL-30) loader. The exhaust system of the combine reduced the dust content of the air to 40-88 mg/m³ (comparing to 102-130 mg/m³ without exhausting) at an airway length of

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Drifting combine "Karaganda - 1M"

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500 m. At 100-150 m ventilated section length and 0.6 m/sec air flow, without the dust exhaust, the dust content was 40-70 mg/m³, or 20-25 times less than with the ПК-3 (PK-3), ПК-2М (PK-2M) and PKG-3 combines. The test proved that the "Karaganda-1M" with the described tools is fully acceptable for the conditions in the test seam, and it is cheaper in operation than other combines. Its drawback is the large unropped space (14 square meter) because of the size of the caterpillar carriage. It managed 15° upward slope and 13° downward (comparing to a possible maximum of 5-7° with the PKG-3 with bucket loader). The combine as a whole and its individual components can be used for the development of a pilot series of larger combines for up to 7.6 m² face area single-track drifts and one for 15.7 m² double-track drift. There are 2 figures.

XX

Card 4/6

16.8300, 24.6000

76996
SOV/56-37-6-36/55

AUTHORS: Neudachin, V. G., Smirnov, Yu. F., Yudin, N. P.

TITLE: Clustering of Nucleons in Light Nuclei

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki,
1959, Vol 37, Nr 6, pp 1781-1783 (USSR)

ABSTRACT: The equivalence of wave functions of the shell theory with LS-coupling for states with a higher symmetry of the orbital part and the antisymmetrized wave functions composed of wave functions of nucleon clusters, was demonstrated with the aid of the permutation group theory. The total wave function $\psi([\alpha] LST)$ for the system with whole orbital momentum L, spin S, isobaric spin T, and Young's scheme for orbital part of the wave function $[\alpha] \equiv [\alpha_1, \alpha_2, \dots, \alpha_m]$ was expressed as follows:

$$\phi([\alpha] LST) = A\Phi(L[\alpha] r) \chi(ST[\tilde{\alpha}] \tilde{r}), \quad (1)$$

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Clustering of Nucleons in Light Nuclei

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SOV/56-37-6-36/55

(where A is antisymmetrization operator; r is symbol allowed a given $[a]$; $[\tilde{a}]$ and \tilde{r} are symbols analogous to $[a]$ and r , but for conjugated concept). The above equation is equivalent to the usual expression:

$$\phi([a]LST) = \sum_r \Phi(L[a]r) \chi(ST[\tilde{a}]\tilde{r}), \quad (2)$$

(cf. H. A. Jahn, H. van Wieringen, Proc. Roy. Soc., A69, 600, 1956). The following relation was obtained for the spin-orbital functions corresponding to Young's scheme with maximal symmetry (in which only α_m can be < 4):

$$\chi(ST[\tilde{a}]\tilde{r}_0) = \chi(S_1 = 0T_1 = 0[\tilde{a}_1]1234) \chi(S_2T_2[\tilde{a}_2]5678) \dots \times \\ \times \chi(S_mT_m[\tilde{a}_m]n - \alpha_m, n - \alpha_m + 1, \dots, n) = \sum_{\tilde{r}} C_{\tilde{r}} \chi(ST[\tilde{a}]\tilde{r}). \quad (4)$$

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Clustering of Nucleons in Light Nuclei

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From these relations the following expression was obtained for the equivalence of wave functions with LS-coupling:

$$\begin{aligned} \psi([a]LST) = A\Phi(L)\chi(S_1T_1[a_1]1234)\chi(S_2T_2[a_2]5678)\dots \times \\ \times \chi(S_mT_m[a_m]n-a_m, n-a_m+1, \dots, n). \end{aligned} \quad (5)$$

This relation was applied to the calculation of the wave function of the ground states in Be^8 and B^{10} . There are 8 references, 2 Soviet, 4 U.K., 1 Swiss, 1 U.S. The U.S. and U.K. references are: J. K. Perring, T. H. Skyrme, Proc. Phys. Soc., A69, 600 (1956); K. Wildemuth, Th. Kannelopoulos, Nucl. Phys., 7, 150 (1958); 9, 449 (1959); H. Jahn, Proc. Roy. Soc., A209, 502 (1951); S. J. Biel, Proc. Phys. Soc., A70, 866 (1957); G. Raeah, Phys. Rev., 63, 367 (1943).

Card 3/4

Clustering of Nucleons in Light Nuclei

76996

SOV/56-37-6-36/55

ASSOCIATION: Institute Nuclear Physics at the Moscow State University,
USSR (Institut yadernoy fiziki Moskovskogo gosudarstven-
nogo universiteta, SSSR)

SUBMITTED: July 18, 1959

Card 4/4

Yudin, N. P.

82605

S/056/60/039/01/17/029
B006/B063

24.6200

AUTHORS: Neudachin, V. G., Shevchenko, V. G., Yudin, N. P.

TITLE: Position of the Giant Resonance in the Dipole Absorption of γ -Quanta by Atomic Nuclei

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960, Vol. 39, No.1 (7), pp. 108-111

TEXT: The shell theory has already been used by Wilkinson (Ref. 1) to calculate the dipole absorption of gamma quanta and to explain the width and area of giant resonance lines. It was, however, found that the theoretical giant resonance energy was about twice as high as the experimental energy. Attempts to avoid this difficulty by introducing an "effective mass" led to an increase in the spacing between neighboring single-particle levels (~ 14 Mev), whereas the value of 6-7 Mev was experimentally confirmed. In the present article the authors show that for nuclei with $A < 70$ a consideration of the residual pair interactions in the calculation of giant resonance according to the shell theory yields values which agree with experiments, without the necessity of introducing an "effective mass".

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82605

Position of the Giant Resonance in the Dipole
Absorption of γ -Quanta by Atomic Nuclei

S/056/60/039/01/17/029
B006/B063

These calculations were made by the authors for Ca^{40} and V^{51} for which there is sufficient spectroscopic material available. The calculations are described in detail for the E1-absorption of a γ -quantum by

V^{51} , such as the transition (1): $(\nu f_{7/2})^8 (\pi f_{7/2})^3 \rightarrow (\nu f_{7/2})^8 (\nu d_{3/2}^{-1}) (\nu f_{5/2})$ ✓

$(\pi f_{7/2})^3$. The experimental data necessary for this purpose as well as their sources are given. The energy of transition (1) was estimated to be 19 + 20 Mev. Formulas for the absorption cross section are given for a) transitions from incompletely filled shells and b) transitions from filled shells. The results (E1-absorption curves) obtained for

V^{51} and Ca^{40} are shown in the first diagram; the other three diagrams contain the curves obtained for Ni^{58} , Cu^{63} , and Cu^{65} as compared to the experimental curves determined in the papers of Refs. 13 and 15. Satisfactory agreement is found also in this case. For the three last-mentioned isotopes, however, the experimental material available is comparatively poor, so that the results are not very exact. Finally, the authors thank V. V. Balashov and Yu. F. Smirnov for their helpful advice, as well as

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Position of the Giant Resonance in the Dipole
Absorption of γ -Quanta by Atomic Nuclei

S/056/60/039/01/17/029
B006/B063

Yu. M. Shirokov for his discussions. There are 1 figure and 15 references:
3 Soviet, 8 US, 2 Canadian, 1 British, and 1 Dutch.

ASSOCIATION: Institut yadernoy fiziki Moskovskogo gosudarstvennogo
universiteta
(Institute of Nuclear Physics of Moscow State University)

SUBMITTED: January 28, 1960 (initially) and March 11, 1960
(after revision)

Card 3/3

S/056/61/041/006/039/054
B109/B102

AUTHORS: Balashov, V. V., Shevchenko, V. G., Yudin, N. P.

TITLE: Giant resonance in Pb^{208} photodisintegration

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 41,
no. 6(12), 1961, 1929-1933

TEXT: The cross section for the dipole absorption of γ -quanta by Pb^{208} nuclei has been calculated by using the shell model. The application of the diagonal approximation (taking into account only the diagonal terms of the interaction of the particle with a "hole") to the photodisintegration of Pb^{208} does not bring about an essential change in comparison with the single-particle model of Wilkinson. In this approximation, the curve of dipole absorption is characterized by a wide maximum in the range of 5.5 - 8 Mev (experimental range 13.5 - 14 Mev). The energy levels $J = 1^-$ and the corresponding wave functions were calculated by diagonalizing the interaction matrix, using the single-particle states shown in Table 1. The position of the single-particle levels was determined in agreement
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Giant resonance in Pb²⁰⁸ ...S/056/61/041/006/039/054
B109/B102

with experimental data on the neighboring nucleus and extrapolating calculations according to the single-particle model. Assuming σ -interaction between the nucleons $V_{12} = -g [(1 - \alpha) + \alpha \vec{\sigma}_1 \cdot \vec{\sigma}_2] \delta(\vec{r}_1 - \vec{r}_2)$ and an interaction amplitude of 1220 Mev. Φ^3 (see W. W. True, W. T. Prinkston, J. C. Carter. Bull. Am. Phys. Soc., 5, 243, 1960), the values given in Table 2 and Fig. 2 will be obtained for $\alpha = 0.135$. A relevant calculation with the Wigner force resulted in values which deviated considerably from experimental data. It is concluded that a consideration of the residual interaction in Pb²⁰⁸ leads to an isolated "dipole state" whose position corresponds to the experimental energy value of giant resonance. The occurrence of this state is caused by the high density of the single-particle dipole states in the nucleus under consideration. It is pointed out that high density of single-particle levels is not a sufficient condition for the occurrence of an isolated and strongly correlated dipole state (Brown-Bolsterli effect). It is assumed that the giant resonance of photodisintegration can be explained by the use of a shell model and by taking into account the mixing of configurations. The

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Giant resonance in Pb²⁰⁸ ...

S/056/61/041/006/039/054
B109/B102

results of investigations of Pb²⁰⁸ are believed to be valid for any other nuclei. There are 3 figures, 2 tables, and 7 references; 1 Soviet and 6 non-Soviet. The four most recent references to English-language publications read as follows: G. Brown, M. Bolsterli. Phys. Rev. Lett., 3, 472, 1959; E. G. Fuller, E. Hayward. Intern. Conference on Nucl. Structure, 1960, Kingston, Ontario, Canada; J. M. Soper (to be published); G. E. Brown, L. Castillejo, J. A. Evans. Nucl. Phys., 22, 1, 1961; W. W. True, W. T. Prinkston, J. C. Carter. Bull. Am. Phys. Soc., 5, 243, 1960.

ASSOCIATION: Institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta (Institute of Nuclear Physics of Moscow State University)

SUBMITTED: July 12, 1961

Table 1. Energies of "zereth approximation". Legend: (1) single-particle proton states; (2) single-particle neutron states.

Table 2. Legend: (1) σ_{total} mb. Mev.

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The amount of residual interest in the
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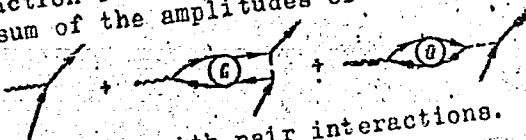
S/048/62/026/009/010/011
B125/B186

AUTHOR: Yudin, N. P.

TITLE: Effect of dipole polarization of a core on the single-particle transition probabilities

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya, v. 26, no. 9, 1962, 1215-1217

TEXT: Owing to the interaction of the nucleons, the amplitude of the E1-transition equals the sum of the amplitudes of the processes described by the Feynman graphs



Summation was made over the graphs with pair interactions.

$$iD_{12} = \langle 0 | T [\phi^*(2) \phi(1) \phi^*(0) \phi(0)] | 0 \rangle$$

is the propagation function of the interacting particle and hole. k and

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S/048/62/026/009/010/011
B125/B186

Effect of dipole polarization of a core...

i are the initial and the final states of the outer nucleon,

$$\hat{d} = \sum_i r_i Y_{1p}(i) \tau_i(i)$$

is the dipole operator, E_i is the transition energy, E_B is the excitation energy of the core. The operator \hat{d} excites a group of states with approximately equal energy. For this reason, an expression for the E1-transition amplitude is obtained below. The correlation of the ground state is neglected. Hence by taking $k = j_1 m_1$, $i = j_2 m_2$, $l = j_1 m_1$ and performing the summation over $j_1 m_1 j_2 m_2$ the spin-isotropic part is calculated:

$$\begin{aligned} \langle j' m' | f | j m \rangle &= \langle l' | r | l \rangle + \frac{2}{E - E_i} \frac{W + 2B}{E} \langle 000 | l' 0 \rangle \times \\ &\times \sum_{l_1 l_2} \langle l_1 l' | V_2(r_1, r_2) | l_2 \rangle (-1)^{l_2} \langle l_2 | r | l_1 \rangle \sqrt{(2l_1 + 1)(2l_2 + 1)} \langle 0 l_1 0 | l_2 0 \rangle \times \\ &\times \langle k 0 l_0 | l_1 0 \rangle \langle k 0 l_2 0 | l' 0 \rangle W(l_1 l_2 l' : k l) + \end{aligned}$$

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Effect of dipole polarization of a core...

S/O48/62/026/009/010/011
R125/B186

$$+ \frac{2}{E - E_1^2/E} \frac{M+2H}{3} \sum_{l_1, l_2} \langle l_1 l_1' | V_1(r_1, r_2) | l_1 l_1' \rangle \langle l_2 | r | l_2 \rangle \times \\ \times (2l_2 + 1) \langle 0 l_2 0 | l_2 0 \rangle^2 \langle j' m' | Y_{1p} r_c | j m \rangle = \beta \langle j' m' | d | j m \rangle, \quad (4)$$

l is the orbital moment and j is the total moment. Furthermore,
 $V_{12} = V(r_{12}) [W + MP^M + HP^M P^\sigma + BP^\sigma]$, $V(r_{12}) = \sum_{k=0}^{\infty} V_k(r_1, r_2) P_k(\cos \omega_{12})$.
 With δ -shaped pair interaction $V_{12} = -g\delta(r_1 - r_2) [1 - \alpha + \alpha \vec{\sigma}_1 \cdot \vec{\sigma}_2]$
 formula (4) reduces to

$$\langle j' m' | f | j m \rangle = \left\{ \langle l' | r | l \rangle + \frac{2(1+\alpha)}{(E - E_1^2/E) \cdot 3} \sum_{l_1, l_2} \langle l_1 l_1' | V_1(r_1, r_2) | l_1 l_1' \rangle \times \right. \\ \left. \times \langle l_2 | r | l_2 \rangle (2l_2 + 1) \langle 0 l_2 0 | l_2 0 \rangle^2 \right\} \langle j' m' | Y_{1p} r_c | j m \rangle.$$

With $\alpha = 0.1$ (Rosenfeld forces) and $g/4\pi^2 r_0^3 \approx 3$, $\beta = 0.7$ for $O^{17} - F^{17}$
 and $\beta = 0.5$ for $Ca^{41} - Sc^{41}$. Thus the E1-transition probabilities are

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Effect of dipole polarization of a core...

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twice and four times smaller than the corresponding probabilities of the single-particle model. The single-particle dipole transition is suppressed more strongly as the mass number increases. Similar considerations also hold for hole-dipole interactions. There are 2 figures.

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S/048/62/026/009/011/011
B125/B186

AUTHOR: Yudin, N. P.

TITLE: Particle-hole interaction in the shell model of the nucleus

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya, v. 26, no. 9, 1962, 1218-1221

TEXT: The most important formulas for the particle-hole interaction for the shell model are derived. From the particle-hole interaction

$$\begin{aligned} \langle j_1^{-1} j_2 J T | V | j_1^{-1} j_2' J T \rangle = & - \sum_{m, m', \tau, \tau'} (-1)^{j_1 + m_1 + j_2' + m_2' + 1 - \tau + \tau'} \times \\ & \times \langle j_1 m_1 j_2 m_2 | J M \rangle \langle j_1 m_1' j_2' m_2' | J M \rangle \langle 1/2 \tau_1 1/2 \tau_2 | T M_T \rangle \langle 1/2 \tau_1' 1/2 \tau_2' | T M_T \rangle \times \\ & \times \{ \langle j_1^{-1} m_1 j_2 m_2 | V_{12} | j_1^{-1} m_1' j_2' m_2' \rangle - \langle j_1^{-1} m_1' j_2 m_2 | V_{12} | j_2 m_2' j_1^{-1} m_1 \rangle \}. \end{aligned} \quad (2)$$

in the jj coupling, with transformation

$$\begin{aligned} \langle j_1^{-1} j_2 : J T | V | j_1^{-1} j_2' : J T \rangle = \\ = \sum_{LS} \begin{vmatrix} 1/2 & 1/2 & S \\ j_1 & j_2 & L \\ j_1 & j_2 & J \end{vmatrix} \begin{vmatrix} 1/2 & 1/2 & S \\ j_1' & j_2' & L \\ j_1' & j_2' & J \end{vmatrix} \langle l_1^{-1} l_2 : T S L | V | l_1^{-1} l_2' : T S L \rangle. \end{aligned} \quad (5)$$

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Particle-hole interaction in the...

the interaction

$$\begin{aligned} \langle l_1^{-1} l_2 : TSL | V | l_1^{-1} l_2' : TSL \rangle &= - \sum_{\tilde{T} \tilde{S} \tilde{T}} (2\tilde{L}+1) W(l_2^{-1} l_1 l_1' l_2 : \tilde{L} L) \alpha(\tilde{T} \tilde{S}; TS) \times \\ &\times \langle l_1' l_2 : \tilde{T} \tilde{S} \tilde{L} | V | l_1 l_2' : \tilde{T} \tilde{S} \tilde{L} \rangle. \end{aligned} \quad (4)$$

$$\alpha(\tilde{T} \tilde{S}; TS) = (2\tilde{T} + 1) (2\tilde{S} + 1) W(l_1^{-1} l_2^{-1} l_2 l_1 : \tilde{S} S) W(l_1^{-1} l_2^{-1} l_2 l_1 : \tilde{T} T).$$

follows in the L-S coupling. The first term in the braces in (2) corresponds to the graph a and the second term corresponds to the graph b. The phases of the matrix elements correspond to the sum $J = S+L$ of the moments. (5) formally holds also for shells not filled to l_1, l_1' .

Formula (4) can be evaluated by Slater integrals. With pure Wigner forces, at states with $T = 1$, highly excited states occur owing to the characteristic repulsion between particle and hole. In states with $T=0$, particles and hole mainly attract one another. These facts depend only slightly on the type of the forces. If the states are not classified according to the isotopic spin, then the isotopic parts in the corresponding interactions should be left out and $(-1)^{\tilde{T}+\tilde{S}+1}$ should be replaced by $(-1)^{\tilde{S}}$.

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Particle-hole interaction in the...

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The interaction between equal particles is mainly negative with the ordinary forces; the interaction of different particles mainly depends on the type of forces and on the ratio (direct term/exchange term). Formulas are also derived for the δ -type particle-hole interaction and for interaction

$$V(r_{12}) = \sum_p (-1)^p V_{-p}^x(r_1) V_p^x(r_2), \quad (11).$$

$$V_{12} = V(r_{12}) [W + MP^M + HP^M P^0 + BP^0] = V(r_{12}) P_{12}$$

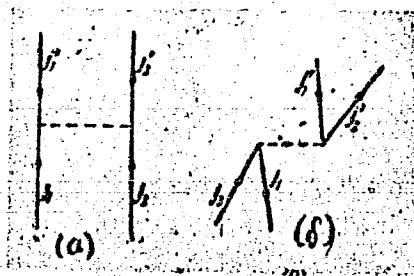
✓

Quadrupole forces cause two collective states. Similar considerations also hold for lacking spin. The existence of such states in real nuclei has not yet been proved; the necessary calculations are being done. There is 1 figure.

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Particle-hole interaction in the...

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Card 4/4

YUDIN, N.P.; SULIMOV, K.G.; ZEYFERT, V.P.

Breaking of coal by shallow shearing. Nauch. trudy KNIUI no.
11:20-25 '62. (MIRA 17:7)

YUDIN, N.P.; EYDEL'SHTEYN, I.A.; ZEYFERT, V.P.

Studying the parameters of the actuating mechanism of the
"Karaganda-lm" mining cutter-loader. Nauch. trudy KNIUI
no. 11:81-94 '62. (MIRA 17:7)

YUDIN, N.P.

Effect of nucleon-surface interaction on the photodisintegration
of the O^{16} nucleus. Izv. AN SSSR. Ser. fiz. 26 no.9:1222-1224
S '62. (MIRA 15:9)

(Quantum theory) (Oxygen)

SHEVCHENKO, V.G.; YUDIN, N.P.; YUR'YEV, B.A.

Quadrupole excitations of atomic nuclei. Izv. AN SSSR. Ser. fiz.
27 no.10:1313-1318 0 '63. (MIRA 16:10)

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ZELENSKAYA, N. S.; SMIRNOV, Yu. F.; YUDIN, N. P.

"The Stopping Absorption of π^- Mesons in C^{12} ."

report submitted for All-Union Conf on Nuclear Spectroscopy, Tbilisi, 14-22
Feb 64.

MSU (Moscow State Univ)

YUDIN, N.P.; TOLSTYKH, B.N.

Studying the actuating mechanism of the "Karaganda-07"
cutter-loader. Nauch. trudy KNIUI no. 11:11-15 '62.
(MIRA 17:7)

YUDIN, N.P.; TOLSTYKH, B.N.

Determining parameters of the actuating mechanism of the
"Karaganda-07" mining cutter-loader. Nauch. trudy KHIUI
no.13:181-187 '64 (MIKA 18:1)

Results of testing and studying the "Karaganda-07" cutter
loader. Ibid.:187-200

YUDIN, N.P.; EYDEL'SHTEYN, I.A.

Investigating the breaking properties of Karaganda Basin
rocks. Nauch. trudy KNIUI no.13:200-213 '64 (MIRA 18:1)

ZELENSKAYA, N.S.; SMIRNOV, Yu.F.; YUDIN, N.P.

Absorption of stopped \bar{K} -mesons by a C^{12} nucleus. Izv. AN SSSR
Ser. fiz. 29 no.1:186-190 Ja '65. (MIRA 18:2)

1. Nauchno-issledovatel'skiy institut yadernoy fiziki Moskovskogo
gosudarstvennogo universiteta.

ISHKHANOV, B.S.; YUDIN, N.P.; YUR'YEV, B.A.

Electric quadrupole transitions in Ca^{40} . Izv. AN SSSR. Ser. fiz. 29 no.7:
1212-1216 J1 '65. (MIRA 18:7)

1. Nauchno-issledovatel'skiy institut yadernoy fiziki Moskovskogo
gosudarstvennogo universiteta im. M.V.Lomonosova.

BRENNER, V.A., kand. tekhn. nauk; VAS'KIN, N.I., gornyy inzh.; DANDZBERG, L.Y.,
brigadir; ZAKON, Ya.A., inzh.; SHVETS, I.A., inzh.; YUDIN, N.P., kand.
tekhn. nauk

New record for mining development workings in coal with the "Karaganda
7/15" cutter-loader. Ugol' 40 no.6:7-11 Je '65. (MIRA 18:7)

1. Giprouglegormash (for Brenner, Yudin).
2. Kombinat Karabandaugol' (for
Vas'kin).
3. Shakhta No.122 tresta Sarar'ugol' (for Dandzberg, Zakon).
4. Trest Sarar'ugol' (for Shvets).

L 41301-66 ENT(m)

ACC NR: AP 6019623

(A,N)

SOURCE CODE: UR/0048/66/030/002/0306/0311

AUTHOR: Zhivopistsev, F.A.; Moskovkin, V.M.; Yudin, N.P.

ORG: Scientific Research Institute of Nuclear Physics, Moscow State University im.
M.V. Lomonosov (Nauchno-issledovatel'skiy institut yadornoj fiziki Moskovskogo
gosudarstvennogo universiteta)TITLE: On the nature of the width of the dipole resonance in ¹⁹photonuclear reactions
/Report, Fifteenth Annual Conference on Nuclear Spectroscopy and Nuclear Structure,
held at Minsk, 25 January to 2 February 1965/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 30, no. 2., 1966, 306-311

TOPIC TAGS: nuclear reaction, nuclear structure, nuclear shell model, dipole
interaction

ABSTRACT: The authors ascribe the anomalous width of the dipole resonance in heavy nuclei to the interaction of the dipole level with nuclear configurations whose energies are near that of the dipole level but which themselves do not, or practically do not, carry dipole transitions, and in particular, to interaction with configurations consisting of two particle-hole pairs of which one arises from promotion of a nucleon from a filled state with $j = \ell + 1/2$ to a free state with $j = \ell - 1/2$ and the other is a particle-hole pair of the type considered in the usual treatment of the dipole resonance. The matrix elements coupling the two particle-hole pair configurations to

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L 41301-86

ACC NR: AP6019623

the single particle-hole configurations are written for the case of a delta-function Wigner interaction. The density of the two particle-hole states in Pb^{208} , their distribution with respect to the angular momenta of the two pairs, and their contribution to the width of the dipole resonance under the assumption that they interact incoherently with it were calculated. The results of those calculations, but not the calculations themselves, are presented. It is concluded that interaction with the two particle-hole pair states increases the width of the dipole resonance in Pb^{208} from the standard R-matrix theory value of some 200 keV to approximately 3 MeV (which may be compared with the experimental value of about 4 MeV), and that all the two particle-hole pair states of the type considered, with arbitrary allowed values of the angular momentum of the secondary pair, contribute significantly to the width of the dipole resonance. Most of the discussion is limited to the case of magic nuclei; it is concluded, however, that in nonmagic nuclei the dipole resonance should be even broader. Orig.art. has: 4 formulas, 2 figures, and 1 table.

SUB CODE: 20 SUBM DATE: 00 ORIG. REF: 006 OTH REF: 003

Card 2/2 hs

L 41300-66 EWT(m)

ACC NR: AP6019624

A, N

SOURCE CODE: UR/0048/66/030/002/0312/0318

AUTHOR: Zhivopistsev, P.A.; Yudin, N.P.39
BORG: Scientific Research Institute of Nuclear Physics, Moscow State University im. M.V. Lomonosov (Nauchno-issledovatel'skiy institut yadernoy fiziki Moskovskogo gosudarstvennogo universiteta)TITLE: Effect of correlations in the ground state on nuclear reactions /Report, Fifteenth Annual Conference on Nuclear Spectroscopy and Nuclear Structure, held at Minsk, 25 January to 2 February 1965/

SOURCE: AN SSSR: Izvestiya. Seriya fizicheskaya, no.2, v. 30, 1966, 312-318

TOPIC TAGS: nuclear reaction, mathematic method, Green function, many body problem

ABSTRACT: The authors discuss the effect on ¹⁸nuclear reactions of correlations in the ground state (backward Feynman diagrams), particularly with regard to excitation of 1^- , $T = 1$ or 3^- , $T = 0$ vibrational levels. The calculations are based on the Lippman-Schwinger formalism and the Green's function treatment of the nuclear many-body problem as presented by A. Klein and C. Zemach (Phys. Rev., 108, 126 (1957)). Formulas are written for the T-matrix elements for the (p, p') , (d, p) , and (d, pc) reactions (here c indicates excitation of a vibrational level of the final nucleus) in terms of the corresponding wave functions and vertex functions. An expression including the effect of ground state correlations is derived for the Fourier transform of the product

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L 41300-66

ACC NR: AP6019624

of two single-particle Green's functions, with the aid of which the two-particle Green's function can be calculated. The three-particle Green's function, required to calculate the matrix element for the (d,p) reaction, is calculated in the pole approximation from the two-particle Green's function. The matrix elements for the reactions, calculated with and without taking into account the ground state correlations, are compared, and it is concluded that the contribution of backward Feynman diagrams is particularly important in the case of excitation of particle-hole type collective states, especially of 3^- , $T = 0$ states in light nuclei and 1^- states in heavy ones. An advantage claimed for the presented calculation technique is that it enables one to judge the relative importance of the ground state correlations without performing detailed numerical computations. Orig. art. has: 41 formulas, 1 figure and 1 table.

SUB CODE: 20 DATE SUBM: 00 ORIG. REF: 000 OTH REF: 006

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L. 1. 200-00 ENI(M)/T/ENP(11/011 IJP(0) JL

ACC NR: AP6019625

(A,N)

SOURCE CODE: UR/0048/66/030/002/0319/0321

44
13

AUTHOR: Korotkikh, V.L.; Moskovkin, V.M.; Yudin, N.P.

ORG: Scientific Research Institute of Nuclear Physics, Moscow State University im.
V.M. Lomonosov (Nauchno-issledovatel'skiy institut yadernoy fiziki Moskovskogo
gosudarstvennogo universiteta)

TITLE: Quasi-stationary single-particle states in $Pb-208$ /Report, Fifteenth Annual
Conference on Nuclear Spectroscopy and Nuclear Structure, held at Minsk, 25 January to
2 February 1965/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 30, no. 2, 1966, 319-321

TOPIC TAGS: nuclear structure, nuclear energy level, lead, nuclear shell model,
continuous spectrum

ABSTRACT: The authors have calculated the energies of 25 quasi-stationary neutron
states and 25 quasi-stationary proton states in Pb^{208} , using the same parameters to
describe the interaction potential well as did J. Blomqvist and S. Wahlborn (Arkiv
fys., 16, No. 46, 545 (1959)), and present them diagrammatically. Somewhat over half
of the calculated levels lie in the continuous spectrum, in the $7h_{11/2}$ and $8h_{9/2}$ neutron
shells and the $6h_{11/2}$ and $7h_{9/2}$ proton shells. The energy of a quasi-stationary level
was regarded as that at which the derivative of the scattering phase was maximum.

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ACC NR: AP6019625

The calculations were undertaken to provide data for calculating the perturbations of the giant dipole and quadrupole resonances. Calculations of the distribution of dipole transitions with the continuous spectrum levels taken into account are now under way. The authors thank V.V. Balashov for his interest in the work. Orig. art. has: 2 formulas and 1 figure.

SUB CODE: 20

DATE SUBM: 00

ORIG. REF:

001 OTH REF: 002

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2/2 *add*

ZHIVOFISTSEV, P.A.; YUDIN, N.P.

Ground state correlation effects in nuclear reactions. Vest.Mosk.
un. Ser. 3: Fiz., astron. 20 no.2:30-34 Mr-Apr '65.

(MIRA 18:5)

1. Nauchno-issledovatel'skiy institut yadernoy fiziki Moskovskogo
universiteta.

YUDIN, N.P.; EYDEL'SHTEIN, I.A.; TSOY, P.M.

Some facts about the physical and mechanical properties of
Karaganda Basin rocks. Nauch. trudy KNIUI no.13:226-235 '64
(MIRA 18:1)

LITVINENKO, D.L.; SHCHASTNYI, P.M.; YAKUSHIN, V.I.; VASIL'YEV, A.N.;
PODYNOGIN, I.Ye.; YUDIN, N.S.; YEVSTAF'YEV, Ye.I.; RUBINSKIY, P.S.;
ELIMELAKH, R.Z.; MERSHCHII, N.P.

Greater use in industry of semikilled steel. Metallurg 8 no.3:10-19
Mr '63. (MIRA 16:3)

(Steel—Metallurgy)

IVYANSKIY, S.I., kand.tekhn.nauk; YUDIN, N.S., inzh.

Conditions for the displacement of air by water in collector systems
with dropping and raising and dropping motion. Energomashinostroenie
7 no.6:15-18 Je '61. (MIRA 14:7)
(Fluid dynamics)

PODYNOGIN, I.Ye.; YUDIN, N.S.

Technology of production and the quality of chemically capped
St.3 steel, Stal' 21 no.10:889-894 0 '61. (MIRA 14:10)

1. Kuznetskiy metallurgicheskii kombinat.
(Steel--Metallurgy)

PONOMAREV, B.V., red.; YUDIN, N.Ye., red.; SHOMKO, P.M., tekhn.red.

[Mechanization of accounting and computing work in Soviet commerce]
Mekhanizatsiia ucheta i vychislitel'nykh rabot v predpriatiakh
sovetskoi torgovli. Moskva, Gostorgisdat, 1952. 60 p. (MIRA 12:2)
(Machine accounting)