

RAYNES, R.L.

GORYAINOV, O.A.; RAYNES, R.L.; GINZBURG, S.A., redaktor; FRIDKIN, A.M.,
tekhnicheskiy redaktor.

[Remote control] Teleupravlenie. Moskva, Gos. energ. izd-vo,
1954. 511 p. (MLRA 7:12)
(Remote control)

RAYNES, R.L.

AID P - 2341

Subject : USSR/Electricity

Card 1/2 Pub. 27 - 5/30

Author : Raynes, R. L., Eng., Moscow

Title : Principles of a system of telecontrol with static components

Periodical : Elektrichestvo, 5, 24-26, My 1955

Abstract : The author presents a new approach to telecontrol in which most of the relay-contact components are replaced with contactless static ones. He describes an experimental installation developed at the Central Scientific Research Electrical Laboratory in which components of input signals and all the path that initiates control action are executed by static elements. The installation uses a 50 cycle current. A 30-km long overhead steel line was used as communication channel. Step-by-step line finders were used as signal distributors. All auxiliary circuits employed a total of 5 contact relays. During a 1 1/2 year period about 4000 experimental tele-transmissions were carried out with satisfactory results. Five diagrams.

Translation M-1104,
8 May 56

Elektrichestvo, 5, 24-26, My 1955

AID P - 2341

Card 2/2

Institution: No data

Submitted : Ag 24, 1954

RAYNES, R. L.

"Installation of Remote Control of TsNIEL*in Electric Power Systems"
(Ustroystva telepravleniya TsNIEL v energeticheskikh sistemakh) from the
book Telemechanization in the National Economy, pp. 189-202, Iz. AN SSSR,
Moscow, 1956

(Given at meeting held in Moscow, 29 Nov to 4 Dec⁵⁴ by Inst. of Automatics
and Telemechanics AS USSR)

Raynes identified with Central Scientific Research ~~Research Institute~~ Electrical
Engineering Laboratory of the Min. of Elec. Power Stations (TsNIEL MES)*

L 20329-66 ENT(a)/ENP(v)/ENP(k)/ENP(h)/ENP(i)

AM5013204

BOOK EXPLOITATION

UR/
621.398

Raynes, Roman Lazarevich; Goryeinov, Oleg Aleksandrovich

12
11
B+1

Remote control (Telepraveniye) 2d ed., rev. Moscow, Izd-vo "Energiya", 1965. 535 p. illus., biblio. 15,000 copies printed

TOPIC TAGS: remote control system, remote signalling system, information theory, coding, remote control, signal separation, multichannel remote control system, remote control equipment, pulse generator, distribution unit, decoding unit, coding unit, trigger unit, telemechanics

PURPOSE AND COVERAGE: This book is intended for specialists in the field of designing, construction, and operation of remote control and telemechanical equipment, as well as for students at schools of higher education taking related courses. The book contains information on the main elements and units of remote control equipment and also on industrial remote control devices. The principles of message coding and the fundamentals of information theory are discussed. The authors express their gratitude to the reviewer, Candidate of Technical Sciences N. D. Soukhoprudskiy and the editor, Candidate of Technical Sciences A. N. Yurasov. The introduction, Chapters 1-4, 6 (except for § 6-4, b and § 6-7, a and b), 7 (except for § 7-3,d), 9,10 and 8, § 8-1, 8-2, 8-6-8-9 were written by R. L. Raynes, § 6-4, b, § 6-7,

Card 1/7

L 20329-66

AM5013204

a and b, and § 8-3-8-5, by O. A. Goryaninov, and Chapter 5, by Candidate of Technical Sciences V. A. Zhozhikashvili.

TABLE OF CONTENTS:

Foreword -- 3

Introduction -- 13

Ch. I. Fundamentals of information theory -- 20

1. General information -- 20
2. Basic concepts and definitions -- 24
3. Noise. Methods of combatting it -- 46

Ch. II. Methods of Separating Electric Signals -- 51

1. General information -- 51
2. Pulse indexes -- 55
3. Circuit method of signal separation -- 63
4. Frequency method of separation -- 64
5. Time method of separation -- 66

Card 2/7

L 20329-66

AM/007086

6. Cophase motion of distributors -- 70
7. Phase separation of signals -- 76
8. Separation of signals according to level -- 76
9. Separation of signals according to shape -- 77
10. Combined separation -- 78

Ch. III. Communications coding -- 79

1. Basic concepts and arithmetic systems -- 79
2. Code classification and characteristics -- 85
3. Conversion of code combinations into an electric signal -- 115
4. Conversion of a signal by coding -- 118
5. Graphic representation of codes -- 120
6. Geometric model of a signal -- 122
7. Graphical method -- 124
8. Devising error-correcting codes -- 127
9. Nonuniform and optimum codes -- 136

Ch. IV. Signal structures and Systems of Remote Control (RC) and Remote Signalling (RS) -- 140

1. Basic terminology and definitions -- 140

Card 3/7

L 20329-66

AM4007086

0

2. General characteristic of RC systems -- 143
3. RC-RS systems of the first group (short range) -- 148
4. Multichannel class of RC-RS systems -- 149
5. Combination class of RC-RS devices -- 166
6. Mixed type of RC-RS devices -- 176

Ch. V. Reliability of RC-RS devices -- 196

1. Basic concepts and definitions -- 196
2. Exponential law of reliability -- 198
3. Dependence of the coefficients of the degree of damage to elements and parts on various factors -- 202
4. Probability of trouble-free operation of RC-RS devices -- 205

Ch. VI. Elements of equipment in RC-RS devices -- 216

1. General considerations -- 216
2. Electromagnetic d-c relays -- 220
3. Electromechanical switches used in the equipment -- 232
4. Contactless relays and devices -- 234
5. Frequency selection devices -- 267
6. Stable frequency oscillators of sinusoidal oscillations -- 283

Card 4/7

L 20329-66

AMS013204

- 7. Inertialess switch -- 283
- 8. Logical elements -- 288

Ch. VII. Basic units of RC-RS systems -- 300

- 1. Functions and structures of units in RC-RS devices -- 300
- 2. Pulse generators -- 303
- 3. Distribution units -- 319
- 4. Decoding units -- 357
- 5. Coding units -- 399
- 6. Coders and decoders of pulse indexes -- 403
- 7. Triggering units -- 409
- 8. Individual units of a remote signal system -- 417
- 9. Individual RC units -- 426

Ch. VIII. RC-RS devices for concentrated objects -- 429

- 1. General characteristics -- 429
- 2. UTS-3 type of RS device -- 436
- 3. RST-1 type of RC-RS device -- 440
- 4. UTM-1 type of RC-RS device -- 443
- 5. BTTs-1/1-0 type of RC-RS device -- 449

Card 5/7

L 20329-66

AM5013204

6. TME-1M type of RC-RS -- 455
7. BRT-F type of RC-RS device -- 464
8. BTS-1 type of calling RS device -- 470
9. UTES-62 type of RC-RS device -- 477

Ch. IX. RC-RS devices for dispersed objects -- 480

1. Basic premises -- 480
2. RS device based on the intensity method -- 482
3. Complex telemechanical device -- 484
4. BChST-1/16 type of RC-RS device -- 487
5. Circular frequency RC devices -- 493
6. Centralized traffic control (CTC) -- 514

Ch. X. Short Range RC-RS devices -- 520

1. General information -- 520
2. Principles for designing RC-RS devices with individual wires -- 521
3. Multiwire RC-RS device using separation diodes -- 524
4. RC-RS device without signal relays -- 525
5. RC device with several power supply sources -- 527
6. RC device based on the phase principle -- 528

Card 6/7

L 20329-66
AM5013204

Bibliography -- 531

SUB CODE: EL, DP

SUBMITTED: 26DEC64

NO REF SOV: 103

OTHER: 007

Card 7/7 *90*

RAYNES, R.L., kand. tekhn. nauk

Present-day status of remote control in electric power distribution
systems. Trudy VNIIE no.12:14-30 '61. (MIRA 18:4)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut elektroenergetiki.

RAYNES, Roman Lazarevich; GORYANOV, Oleg Aleksandrovich. Primal
uchastiye ZHOZHKASHVILI, V.A., kand. tekhn. nauk;
SUKHOPRUDSKIY, N.D., kand. tekhn. nauk, retsenzent
YURASOV, A.N., red.

[Remote control] Telepravlenie. Izd.2., perer. Moskva,
Energiia, 1965. 535 p. (MIRA 18:2)

RAYNES, R.L., inzh.

Use of remote control in electric power systems. Trudy VNIIE
no.7:7-16 '58.

Methods for increasing the speed of a time distributed code.
Ibid.:91-114 (MIRA 16:12)

3/5
663.3
.E4

RAYBOULDE, YURIY ANATOL'Y VICH

Elektricheskoye oborudovaniye portovykh pod'yemno-transportnykh mashin
(Electric equipment of harbor hoisting-conveying machinery) Leningrad,
Rechnoy transport, 1955.
356 p. diagrs., tables.

BYKHOVSKIY, Ya.L., kand. tekhn. nauk; RAYNES, R.L., inzh.; SOKOLOV, V.B.,
inzh.

Selection of telemetering equipment. Elek sta. 30 no.2:76-77
F '59. (MIRA 12:3)
(Telemetering--Equipment and supplies)

RAYNES, R. L.: Master Tech Sci (diss) -- "Analysis of time-sharing systems for remote control". Moscow, 1958. 16 pp (Min Higher Educ USSR, Moscow Order of Lenin Power Engineering Inst), 150 copies (KL, No 4, 1959, 127)

RAYNIN, B.L.

AID P - 1885

Subject : USSR/Electricity

Card 1/2 Pub. 28 - 2/5

Authors : Azimov, B. A., Mel'nikov, M. I., and Raynin, B. L.

Title : Operation characteristics of electric drive of drilling hoist

Periodical : Energ. byul., no.3, 13-21, Mr 1955

Abstract : The authors present the results of their analysis of observations of the electric drive operation of the U2-5-4 drilling hoist of the "Uralmash-4E" petroleum drilling outfit, a very late design, equipped with two 330 kw motors of MAB-138-6 type. Five diagrams and two tables accompany the text. The second table provides detailed information on lowering and hoisting drilling tools and casing, the techniques involved, and the time and power consumed by each operation.

Energ. byul., no.3, 13-21, Mr 1955

AID P - 1885

Card 2/2 Pub. 28 - 2/5

Institution : None

Submitted : No date

IONAS, B.Ya.; GIROVSKIY, V.F.; RAYNIN, S.N.; SYRISOVA, Ye.D.;
USPRNSKIY, V.V.; SHASS, M.Ye.

Basic financial problems of housing and public building construction in Moscow. Gor.khoz.Mosk. 28 no. 7:15-20 J1 '54. (MLRA 7:7)
(Moscow--Construction industry) (Construction industry--
Moscow)

RAYNIN, V.Ye., inzh.

Formation of a percolation zone under conditions of
loess-like loams. Izv. VNIIG Geomekhanika (1977, 1978)

BEDNAR, Zdenek, inz.; HOSEK, Emil, inz.; RAYNOCH, Bedrich

Contribution to the information on fir regression in the former Olomouc region. Les cas 9 no.7:649-672 JI'63.

1. Ustav pro hospodarskou upravu lesu, pracoviste Olomouc.

В. В. Козлов, канд. техн. наук; М. А. Бондарь, канд. техн.

Determining the permeability of soils to water by the method of large rings under field conditions. Gidr. i mel. 17 no. 1: 34-35, 1965. (MIRA 1844)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut gidrotekhniki i melioratsii imeni A.N.Kostyakova.

I 51708-65 EMT(1)/EWG(v) Pc-L/Pa-5/Pq-4/Pg-4 GN
ACCESSION NR: AT5014771 UR/2552/65/000/043/0083/0087

28
29
311

AUTHOR: Bagramyants, V.O.; Raynot, A. P.

TITLE: Some results of the investigation of marine gravimeters made by VNIIGeofiziki

12
10

SOURCE: Moscow. Vsesoyuznyy nauchno-issledovatel'skiy institut geofizicheskikh metodov razvedki. Prikladnaya geofizika, no. 43, 1965, 83-87

TOPIC TAGS: marine gravimeter error, overdamped ship gravimeter, universal-joint supported gravimeter gyrostabilized gravimeter, platform supported gravimeter

ABSTRACT: Earlier results of gravity measurements on surface vessels during large accelerations could not be explained by the general theory of gravitation of moving frames (A.I. Frolov, P.A. Stroyev, Opyt opredeleniya sily tyazhesti na more s zatushennymi gravimetrami, Symposium Prikladnaya geofizika, No. 37, Gostoptekhizdat, 1963). Consequently, the answer was sought in simultaneous observation of differently supported gravimeters (universal-joint and gyrostabilized platform instruments). This became possible in 1963 when the VNIIGeofiziki produced and mounted overdamped gravimeters for use at sea on a hydrographic ship (6000 t displacement).

Card 1/2

E 54708-65

ACCESSION NR: AT5014771

With 8-9 point waves, the heeling of the specially stabilized ship rarely exceeded 10-15°. The SZ-4 gravimeter was mounted on a short-period universal joint and it used a visual registration approach, while the SZ-11 and SZ-7 gravimeters mounted on the gyrostabilized N-55 platform used photographic registration. Tests showed that data from the universal-joint supported gravimeter agreed with the theory of perturbing acceleration effects on the reading (Brown corrections). However, in the gyrostabilized gravimeter readings, the systematic errors were not correlated with the amplitude of the perturbing accelerations. The use of two gravimeters at appropriate locations of the common gyrostabilized platform considerably reduces the influence of the \ddot{x}_φ acceleration component. Orig. art. has: 5 formulas and 2 figures.

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut geofizicheskikh metodov razvedki, Moscow (All-Union Scientific Research Institute of Geophysical Surveying Methods)

SUBMITTED: 00

ENCL: 00

SUB CODE: ES

NO REF SOV: 002

OTHER: 000

Card 2/2 MB.

RADIOLOGY

BULGARIA

RAYNOV, A., IVANOV, B., and KOLAROV, V., Chair of Pathophysiology (Director, Prof. St. Pisarev), Advanced Medical Institute, Sofia; Scientific Research Institute of Radiation Hygiene (Director, Docent Iv. Nikolaev); Institute of Physics, Bulgarian Academy of Sciences (Director, Academician G. Nadzhakov)

"Protein Synthesis in Protected and Unprotected White Mice with Acute Radiation Sickness"

Sofia, Eksperimentalna Meditsina i Morfologiya, Vol 5, No 1, 1966, pp 13-18

Abstract: The inclusion of methionine S^{35} into the tissue proteins of white mice irradiated with X-rays in a dose of 525 r was studied. Some of the mice were protected before irradiation by intraperitoneal injection of thiophene-2-carboxylic acid N-phenylamidine or ergamine.

1/2

Physiology

BULGARIA

RAYNOV, A., KOLAROV, V.: Chair of Pathological Physiology (Head Prof. St. Pisarev), Higher Medical Institute, Sofia

"Disturbances in the Intensity of Protein Synthesis on Multiple Exposure of the Organism to Streptococcal Infection"

Sofia, Eksperimentalna Meditsina i Morfologiya, Vol 5, No 3, 1966, pp 179-182.

Abstract: In experiments conducted on rats, the intensity of protein metabolism in the brain, heart, liver, kidneys, and adrenals was studied by injecting ^{35}S -methionine and determining the activity in these organs. For healthy, uninfected animals the rate of assimilation of methionine decreased in the order kidneys > liver > adrenals > myocardium > brain. Upon infection of rats with streptococci, the rate of assimilation of methionine decreased in comparison with control animals. The extent of the decrease reached a maximum in the brain, liver, adrenals, and myocardium after the third infection and in the kidneys after the second infection. After the fourth (last) infection, a tendency towards an increase in the intensity of protein synthesis developed, as indicated by the rates of assimilation of methionine. The initial rates of assimilation were not reached, however. The infections were carried out at intervals of 14 days. Tables, 10 references (8 USSR, 2 Western). Russian and English summaries. Manuscript received Oct 65.

1/1

RAYNOV, K. K., DEREVITSKIY, P. F., SEMENENKO, N. A., SHURYGIN, A. P.,
SIDELOVSKIY, L. N. and Malets, A. M.

APPROVED FOR RELEASE: 06/15/2000

CIA-RDP86-00513R001444410019-3

Furnace for high-temperature roasting of fine-grained pyrite.

USSR patent 102,612, 25 May 1957

DURASS, G.S.; RAYNOV, K.K.

Technical development of the manufacture of sulfuric acid by the
contact process. Zhur.VKHO 6 no.1:27-38 '61. (MIRA 14:3)
(Sulfuric acid)

RAYNOV, R.

PHASE I BOOK EXPLOITATION

319

Raynov, R., Professor

Meteorologiya (Meteorology) 2d rev. ed. Sofia, Universitetska pechatnitsa, 1948. 520 p. (Universitetska biblioteka, no. 356)

PURPOSE: This is an improved (second edition) manual of meteorology for university students.

COVERAGE: The book covers the entire field of meteorology, weather forecasting, and to a certain extent the field of climatology, with special emphasis on conditions in Bulgaria. Relatively small attention is paid to the practice of long-term and short-term forecasting. The following meteorological instruments are described and illustrated by figures (photographs or drawings): three types of psychrometers; the Richard thermograph; two pyr heliometers; an actinometer; two heliographs; a soil thermometer; a katathermometer (of the Hill type); a coolometer (called here a "frigorometer"); a meteorograph (mounted on an airplane); two evaporation gauges; a hygograph; a hygrometer; a nephoscope (of the Besson type); three rain-gauges (one of them a pluviograph); a snow-gauge; an aneroid barometer; a thermo-

Card 1/20

Meteorology

319

barometer; a barograph; four wind vanes. Many of these instruments were made by R. Fuess, Berlin-Steglitz. There are 198 figures (including maps) and no references.

TABLE OF CONTENTS: Introduction. Subject, Fields and Methods. Meteorological Observations. Meteorological Stations. 1

Ch. I. Atmosphere

1. Height of atmosphere	5
2. Composition of atmosphere	8
3. Dependence of composition on elevation	13
4. Layers of atmosphere	16
5. Physical features of atmosphere	20
6. Specific heat; conductivity; light and heat absorption	20
7. Gas laws	22
8. Equation of state (for gases)	25

Card 2/20

Meteorology

9.	Barometric formula (of pressure)	27
10.	Weight of one cubic meter of air	29
11.	Adiabatic process in atmosphere	31
12.	Changes of temperature with pressure in adiabatic processes	33
13.	Poisson's equation	34
14.	Potential temperature	35
15.	Entropy and potential temperature	35
16.	Changes of temperature with elevation in adiabatic processes	36

Ch. II. Atmospheric and Terrestrial Radiation

1.	Laws of radiation	38
2.	Solar radiation	39
3.	Thermal intensity of solar radiation	40
4.	Bouger law	40
5.	Lambert's law	43
6.	Measuring of solar radiation	44
7.	Calorimetric method	44

Card 3/20

Meteorology

319

8.	Compensation (thermoelectric) method	47
9.	Bimetallic method	48
10.	Actinometer of Arago-davy type	50
11.	Heliograph	51
12.	Daily Rate of solar radiation	53
13.	Annual rate of solar radiation	55
14.	Change in intensity of solar radiation with elevation	56
15.	Daily, monthly and annual amounts of solar radiation	57
16.	Thermal spectrum of solar radiation	60
17.	Terrestrial radiation	62
18.	Results of observations	66
19.	Radiation characteristics of various soil surfaces	69
20.	Reflection of characteristics of land surfaces	70
21.	Physiological Radiation [i.e. intensity of insolation in physiological action on vegetation]	72
22.	Atmospheric radiation	73
23.	Thermal radiation in the atmosphere	73
24.	Dispersed radiation in atmosphere	74
25.	Observation results	75

Card 4/20

Meteorology

319

Ch. III. Temperature Conditions in the Earth Crust and Soils

1. Measurement of soil temperature	78
2. Warming and cooling of soil	79
3. Utilization of solar heat by various soils	81
4. Temperature variations of land surfaces	82
5. Harmonic function and analysis of simple periodic waves	82
6. Diurnal temperature rate on land surfaces	85
7. Annual temperature rate over land surfaces	86
8. Distribution of heat in soil	87
9. Temperature changes with depth	91
10. Isopleths of soil temperature	91
11. Influence of soil temperature on snow- and vegetation-covered surfaces	92
12. Influence of position of slopes on soil temperature	94
13. Temperature of water surfaces	95
14. Distribution of temperature on water surfaces	97

Card 5/20

Meteorology

319

Ch. IV. Temperature Conditions in Lower Atmospheric Layer

1. Warming and cooling of air	98
2. Measurement of air temperature	100
3. Measurement of temperature of near-surface layer of air	105
4. Diurnal rate of air temperature	106
5. Irregularities in diurnal rate of temperature	110
6. Mean daily temperature	111
7. Annual rate of air temperature	112
8. Isoleths of air temperature	116
9. Disturbances in annual rate of air temperature	117
10. Nonperiodical fluctuations in temperature	119
11. Horizontal distribution of air temperature	120
12. Displacement of isotherms	122
13. Mean temperatures along parallels	123
14. Temperature anomalies	124
15. Theoretical investigations of distribution of temperature above surface	125

Card 6/20

Meteorology

16.	Specific conditions in the near-surface layer of atmosphere	127
17.	Temperature conditions on flat and barren surface	127
18.	Temperature conditions on vegetation-covered surface	129
19.	Influence of temperature on vegetation	136
20.	Temperature of vegetation	137
21.	Problems of frosts	139
22.	Frosts forecasting	141
23.	Protective measures against frosts	144
24.	Problem of freezing	147
25.	Effective temperature	148
26.	Katathermometers and coolometers	149

Ch. V. Temperature Conditions in Upper Layer of Atmosphere

1.	Vertical distribution of temperature	151
2.	Temperature changes with elevation in mountains	154
3.	Vertical distribution of vegetation	155
4.	Temperature changes with elevation in "free atmosphere"	157

Card 7/20

Meteorology

319

5.	Temperature fall with elevation in troposphere	160
6.	Equilibrium of atmosphere in vertical direction	161
7.	Temperature inversions	164
8.	Stratosphere	165
Ch. VI. Water Vapor in Atmosphere		
1.	Evaporation	168
2.	Measurement of evaporation	169
3.	Observation results	171
4.	Daily and annual rate of evaporation	172
5.	Moisture in air	173
6.	Measurement of air moisture	176
7.	Vertical distribution of moisture in atmosphere	181
8.	Horizontal distribution of moisture at earth surface	182
9.	Daily and annual rate of moisture	183
10.	Effect of air on rate of evaporation [and relative humidity]	185
11.	Special moisture conditions of near-surface layer	185
12.	Effect of vegetation on moisture	187

Card 8/20

Meteorology

Ch. VII. Condensation of Atmospheric Moisture

1. Evaporation and condensation	189
2. Condensation nuclei in atmosphere	191
3. Conditions of air cooling	193
4. Pseudoadiabatic processes	195
5. Equilibrium of moist air in vertical direction	197
6. Adiabatic expansion of air and condensation	198
7. Hydrometeors	200
8. Types of hydrometeors	200
9. Formation of dew and sleet	201
10. Formation of fog	202
11. Formation of frost	204
12. Formation of ice on ground	205
13. Condensation of vapor and its evaporation with ascending air currents	206
14. Classification of clouds	208
15. Formation of cloud types	220
16. Formation of water and ice clouds	223
17. Height, direction, and velocity of cloud movements	224

Card 9/20

Meteorology

319

18. Cloudiness	228
19. Cloud systems	230
20. Relationship between cloudiness and duration of solar radiation	230
21. Formation of precipitation through coagulation of water and ice particles	231
22. Clouds formed by water and ice particles	233
23. Formation of sleet and hail	234
24. Formation of rain	237
25. Composition and temperature of rain water	239

Ch. VIII. Precipitation (Rainfall)

1. Measurement and estimation of precipitation	240
2. Rain gauges	240
3. Typical precipitation and estimation of precipitation data	244
4. Nonperiodical fluctuations of precipitation	245
5. Observation of precipitation and interpolation	246
6. Daily rate of precipitation	247
7. Annual rate of precipitation	248

Card 10/20

Meteorology

319

8.	Horizontal distribution of precipitation over earth surface	253
9.	Orographic precipitations and increase in precipitation with elevation in the mountains	254
10.	Distribution of snow over earth surface	257
11.	Earth's water balance	259
12.	Influence of vegetation on precipitation	260
13.	Influence of precipitation on vegetation	263
Ch. IX.	Atmospheric Pressure	
1.	Measurement of atmospheric pressure	267
2.	Mercury barometer	268
3.	Reduction of readings of pressure in mercury barometers	269
4.	Aneroid barometer	271
5.	Thermobarometer	272
6.	Barograph	273
7.	Standard measuring units of atmospheric pressure	273
8.	Daily rate of atmospheric pressure	274

Card 11/20

Meteorology

319

9.	Annual rate of atmospheric pressure	278
10.	Nonperiodic fluctuations of atmospheric pressure	279
11.	Relationship between pressure and temperature at various levels	280
12.	Distribution of pressure on earth's surface	281
13.	Distribution of pressure by definite region	284
14.	True mean atmospheric pressure on earth's surface	285
15.	Vertical distribution of atmospheric pressure	285
16.	Atmospheric pressure and vegetation	289

Ch. X. Air Currents (Winds)

1.	Wind; its direction and velocity	290
2.	Baufort's Scale	291
3.	Wind measuring apparatus	292
4.	Measurement of wind in free atmosphere	295
5.	Observed maxima in wind velocity	296
6.	Evaluation of observation data on winds	296
7.	Structure of wind	299

Card 12/20

Meteorology	319	
8. Movement of air masses		301
9. Daily rate of wind intensity		303
10. Daily rate of wind direction		305
11. Annual rate of wind direction		307
12. Increase in wind velocity with elevation		307
13. Influence of surface irregularities on wind		308
14. Wind in near surface atmosphere		310
15. Influence of vegetation on wind		311
16. Influence of wind on vegetation		314
Ch. XI. Source of Horizontal Air Mass Movements		
1. Sprung's experiment [original spelling uncertain]		316
2. Circulation around warm center		317
3. Circulation around cold center		319
4. Slope of isobaric surface		321
5. Baric gradient		321
6. Deviating effect of earth's rotation		324
7. Friction		325
8. Equation of Guldberg and Mon [original spelling uncertain]		325
Card 13/20		

Meteorology

319

- 9. Conclusions from this equation 327
- 10. Baric law of winds 328
- 11. Stephenson's law 329
- 12. Movements around warm and cold center affected
by rotation of earth 329
- 13. Cyclonic movement 330
- 14. Anticyclonic movement 331
- 15. Centrifugal force 332

Ch. XII. Typical Air Currents

- 1. General circulation in atmosphere 332
- 2. Tradewinds 342
- 3. Monsoons 346

Ch. XIII. Synoptic Meteorology

- 1. Changes of weather 348
- 2. Synoptic method 349

Card 14/20

Meteorology

319

3.	Synoptic analysis	353
4.	Air masses	355
5.	Aerological diagrams	357
6.	Geographic types of air masses	359
7.	Fronts	360
8.	Warm fronts	362
9.	Cold fronts	364
10.	Occluded fronts	365
11.	Cyclones and anticyclones	366
12.	Convergence and divergence	368
13.	Changes in baric field with elevation and cyclogenesis	369
14.	General character of cyclone and anticyclone as frontal disturbances	371
15.	Development of a cyclone	371
16.	Horizontal and vertical cross-section of a newborn cyclone	376
17.	Isallobaric regions	378
18.	Displacement of cyclones	379
19.	Nonfrontal depressions	382
20.	Anticyclones	383

Card 15/20

Meteorology

319

- | | |
|---|-----|
| 21. Cyclone groups | 387 |
| 22. Main, secondary or partial cyclones | 390 |
| 23. Tropical cyclones | 391 |

Ch. XIV. Some Phenomena of Weather

- | | |
|---|-----|
| 1. Thunderstorms | 395 |
| 2. Windstorms (along a horizontal axis) | 400 |
| 3. Vortical storms | 402 |
| 4. Sea and continental breezes | 406 |
| 5. Mountain and valley breezes | 407 |
| 6. Foehn | 410 |
| 7. Bora | 414 |
| 8. Mistral | 415 |
| 9. Local winds (foehnlike winds) | 416 |
| 10. Dry or black winds | 417 |
| 11. Weather and vegetation | 417 |
| 12. Correlation method | 419 |
| 13. Ecological method | 426 |

Card 16/20

Meteorology

319

Ch. XV. Weather Forecast

1. Short-range forecast	427
2. Synoptic forecast	430
3. Weather forecast	430
4. Examples of forecast	431
5. Long-range forecast	434
6. Synoptic methods	435
7. Synoptic presentation of long range weather processes	436
8. Basic types of synoptic processes	437
9. Multanovskiy's method of long-range forecast	445
10. Statistical method of long-range forecast	446
11. Tendencies to steadiness	447
12. Differences between atmospheric processes for various seasons and regions	449
13. Relationship between atmospheric circulation and weather in northern hemisphere	451
14. Gulf stream and temperature conditions in Europe	452
15. Ice conditions in polar regions and European weather	453

Card 17/20

Meteorology

319

- 16. Application of correlation for monthly and seasonal weather forecast 454
- 17. Baur's method of decade forecast 455
- 18. Periodicity in long-term forecasts 456
- 19. Baric waves 457
- 20. Precipitation 460
- 21. Clayton's experiments in forecasting 460

Ch. XVI. Climatology

- 1. Climate 462
- 2. Climatic factors 462
- 3. Radiation climatic factors 463
- 4. Circulation climatic factors (advection) 465
- 5. Types of climatic circulation 466
- 6. Additional climatic factors (topography) 469
- 7. Climatic types and zones 470
- 8. Climate of equatorial zone 470
- 9. Climate of tropical monsoon zone 472

Card 18/20

Meteorology

319

10.	Climate of trade wind tropical zones	473
11.	Climate of subtropical zones	474
12.	Climate of moderate zones	476
13.	Climate of sub-arctic (and sub-antarctic) zones	480
14.	Arctic and antarctic climates	481
15.	Plateau climates	482
16.	Microclimate and macroclimate	482
17.	Mountain climate (and vegetation)	483
18.	Bioclimate	483
19.	Climate in Bulgaria	485
20.	Factors contributing to Bulgarian climate	485
21.	Mean atmospheric pressure and air currents connected with it	487
22.	Winds	490
23.	Air temperature	492
24.	Absolute humidity and correction for water vapor	497
25.	Relative humidity	497
26.	Cloudiness	498
27.	Fogs	498
28.	Precipitation in Bulgaria	498

Card 19/20

Meteorology

319

- | | |
|--------------------------------|-----|
| 29. Climatic changes | 503 |
| 30. Variations of climate | 503 |
| 31. Periodicity in vibrations | 503 |
| 32. Secular changes in climate | 505 |

AVAILABLE: Library of Congress (QC861.R34,1948)

Card 20/20

MM/vm
6-11-58

RAYNOV, R., dotsent; CHERKEZOVA, Ye.; MILKOV, G.

Etiopathogenesis of acute pancreatitis. Vest.khir. 83 no.10:29-31
0 '59. (MIRA 13:2)

1. Iz kafedry operativnoy khirurgii (zaveduyushchiy - dotsent Rayko Raynov) Sofiyskogo vysshego meditsinskogo instituta (Narodnaya Respublika Bolgariya). Adres avtorov: Bolgariya, Sofiya, ul. Georgi Sofiyski, 1, Vysshiy meditsinskiy institut.
(PANCREATITIS etiology)

MAKKAVEYEV, N., prof.; RAYNOV, V., inzh.; KOSARSKIY, P., inzh.

Laboratory investigation of channel forming processes at
river bends. Rech. transp. 20 no.11:29-31 N '61. (MIRA 15:1)
(Hydraulic models)
(Rivers--Models)

Bulgaria/Military

B-572

RAYNOVSKI, Dimitur, Podpolkovnik, Med Ser; author of an article entitled "Pneumomediastinum -- a Newer Method for Roentgen Diagnosis." (Voенно Meditsinsko Delo, Sofia, Mar 61, pp 51-57)

24
(1)

RAYNUS, E.S.

Building panel houses in large-scale block planning in Leningrad. Trudy MIEI no.14:345-348 '59. (MIRA 13:1)

1. Glavnyy inzhener stroytresta No.3 Glavleningradstroya.
(Leningrad--Precast concrete construction)
(Apartment houses)

RAYNUS, L.S., inzh.; SHLYAPNIKOVA, A.G., inzh.; KREYZMAN, I.N., inzh.;
ROBINSON, D.V., inzh.

Folding -type stairs. Suggested by L.S.Rainus and others. Rats.
i izobr.v stroi. no.9:8 '59. (MIRA 13:1)

1. Po materialam stroitel'nogo tresta No.3 Glavleningradstroya.
(Staircases)

RAYNUS, L.S., inzh.

large-panel construction in Czechoslovakia. Biul. tekh. inform.
po stroi. 5 no.7:29-32 JI '59. (MIRA 12:10)
(Czechoslovakia--Apartment houses) (Concrete slabs)

RAYNUS, R.N., inzh., BARANOV, I.A., red.; FREGER, D.P., tekhn.red.

[Core mixtures based on "soluble glass" binder used for non-ferrous alloy castings; practices of the "Ekonomazer" Plant] Sterzhnevye smesi na krepitele "zhidkoe steklo" dlia otlivok iz tsvetnykh splavov; opyt zavoda "Ekonomazer." Leningrad, 1955. 11 p. (Leningradskii dom nauchno-tehnicheskoi propagandy. Informatsionno-tehnicheskii listok, no.80(768)) (MIRA 10:12)
(Founding)

RAYON, A.I. Prof.

Basic principles and results of surgical treatment of cancer of the stomach. Khirurgia, Sofia 10 no.6:481-488 1957.

1. Akademia na meditsinskite nauki na SSSR-leningrad onkologichen institut.

(STOMACH NEOPLASMS, surg.

(Bul))

RAYNOV, K.K.

¹⁸ Furnace for high-temperature roasting of fine-grained
pyrites. P. P. Derevitskiy, N. A. SEMENENKO, A. P. Shurygin,
¹⁸ L. N. Sidel'kovskiy, E. E. Ralsov, and A. M. Maksta.
U.S.S.R. 105,612. May 23, 1957. M. Hosen

8
FERC

11

108

RAYNOV, R.

✓ 5.9-14

Raynov, R. *Meteorologia*. [Meteorology.] 2nd ed. rev. Sofia, Universitetska Perhat- 551.5(02) 551.58
 nitsa, 1948. 520 p. 198 figs., tables, refs., eqs., table of symbols p. 317. DLC—An ap-
 parently standard college textbook on meteorology, this edition contains a number of unusual
 features which make it especially useful for training government meteorologists as well as
 those intending to engage in university or other fields where meteorology is required. The
 theoretical aspects are not neglected in the first chapters, the structure and composition of
 the atmosphere, gas laws, equations of motion, thermodynamics laws, etc. are taken up.
 Radiation in the atmosphere is treated in all of its aspects in Chap. II, with a great deal of
 illustrative data presented to give a quantitative basis for understanding the theory and
 comprises Chap. III; Temperature of the microclimatic layer, Chap. IV; of the upper atmos-
 phere including the stratosphere, Chap. V; Water vapor, Chap. VI; Condensation and
 hydrometeorology, Chap. VII; precipitation, Chap. VIII; pressure, Chap. IX; Wind, Chap. X;
 Turbulence, Chap. XI; General Circulation and monsoons, trad. etc., Chap. XII; Synoptic
 meteorology, Chap. XIII; Storms of various types, Chap. XIV; Short range and long range
 forecasting, Chap. XV; and Climatology, Chap. XVI. The last named chapter is especially
 slanted towards the climate of Bulgaria as many of the illustrations and applications in the
 other chapters. The point of view of a synoptic dynamic meteorologist is of course mentioned
 in all of the discussion on climatology, but the particular (i.e. agricultural) applications and the
 interests of the instrumental workers are not neglected. Subject Headings: 1. Meteorology
 textbooks 2. Climatology 3. Bulgaria.—J.R.

8
0
0
0
1

geophys

NE
26

RAYNOV, R.; VASILEV, I.

Filatov's tissue therapy. Med. letopisi 42 no.5-6:509-516 May-
June 50. (CIML 20:7)

1. Dr. Rayko Raynov, Chief Assistant; Dr. Ivan Vasilev, Assistant.
2. Surgical Clinic, Medical Academy, Sofia.

1ST AND 2ND ORDERS PROCESSES AND PROPERTIES INDEX

F **e**

2625. TIN IN THE COALS OF THE KUZNETSK BASIN. Borovick S A and Raynaky V M (Comptes rend acad sci U.R.S.S. 1944, 45, 120-121). Spectrographic analysis of coal ashes prepared at 600 C. are given. Seams with a high tin content are confined to the Salair Range.

COMMON ELEMENTS

MATERIALS INDEX

ASB-31A METALLURGICAL LITERATURE CLASSIFICATION

2ND AND 1ST ORDERS

2ND LETTER

COMMON VARIANTS INDEX

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
---	---	---	---	---	---	---	---	---	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	-----

S/879/62/000/000/068/088
D234/D308

AUTHOR: Raynus, G. E. (Leningrad)

TITLE: Design of a three-dimensional cable lattice

SOURCE: Teoriya plastin i obolochek: trudy II Vsesoyuznoy konferentsii, L'vov, 15-21 sentyabrya 1961 g. Kiev, Izd-vo AN USSR, 1962, 387-390

TEXT: The author considers a shallow net consisting of flexible elastic cables fastened to a rigid frame and subjected to a vertical load. Relative elongations, horizontal displacements, flexural and torsional rigidity of cables are neglected. The equation of equilibrium is reduced to:

$$H_x \frac{\partial^2 z}{\partial x^2} + H_y \frac{\partial^2 z}{\partial y^2} = p(x,y) \quad (7)$$

Card 1/3

Design of a three- ...

S/879/62/000/000/068/088
D234/D308

Boundary conditions are formulated for the case of prestressed cables and

$$H_x(y_0) = \bar{H}_x(y_0) + \frac{1}{2} C_x(y_0) \int_{x_1}^{x_2} \left[\left(\frac{\partial z}{\partial x} \Big|_{y=y_0} \right)^2 - \left(\frac{\partial z_0}{\partial x} \Big|_{y=y_0} \right)^2 \right] dx;$$

$$H_y(x_0) = \bar{H}_y(x_0) + \frac{1}{2} C_y(x_0) \int_{y_1}^{y_2} \left[\left(\frac{\partial z}{\partial y} \Big|_{x=x_0} \right)^2 - \left(\frac{\partial z_0}{\partial y} \Big|_{x=x_0} \right)^2 \right] dy \quad (11)$$

is obtained. It is stated that the relevant equation is obtained by substituting (11) into (7). The author describes in detail a poss-

Card 2/3

S/879/62/000/000/068/088
D234/D308

Design of a three- ...

ible method of successive approximations based on the use of equations for the force in an inclined elastic string.

Card 3/3

Raynus, E.S.

007/2035

PLANE I BOOK REPRODUCTION

25(3)150(5)

Moscow, *Uchenyye zapiski* Institut Leningradskogo Otdeleniya

Voprosy razvitiya ekonomicheskoy effektivnosti kapital'naya vlozheniya... (text continues)

ADDITIONAL Sponsoring Agencies: *USSR, Gosstatrazvednyy komitet po delam...*

- List of authors and their titles, including: *Mit. I. B. Babitskiy, G. A. Dvornik, S. G. Ginzburg, S. A. Isakov, I. A. Kar...*

PURPOSE: This collection of articles is intended for staff members of construction organizations, design bureaus, and scientific research establishments... (text continues)

Table with 2 columns: Title and Page Number. Includes entries like: *Player, E. D. Accelerated Model Construction of a Blast Furnace in...* (page 339), *Mal'masi, B. D. Experience Gained in Model Construction of Industrial Items...* (page 350), etc.

RAYNUS, E.S., inzhener

Large panel cement and slag concrete walls. Sbor. mat. o nov.
tekhn. v stroi. 17 no.6:1-3'55. (MIRA 8:9)
(Walls)

RAYNUS, Grigoriy Eliozarovich; LINETSKIY, V.D., kand. tekhn. nauk,
detsent, nauchnyy red.; FREGER, D.P., red.izd-va; BELOGUROVA,
I.A., tekhn. red.

[Static analysis of cable trusses] Sticheskiy raschet ferm iz
torsov; stenogramma lektsii. Nauchn. red. V.D. Linetskiy.
Leningrad, Leningr. dom nauchno-tekhn. propagandy, 1962. 64 p.
(MIRA 16:2)

(Trusses) (Roofs, Suspension)

RAYNUS, L.S., inzh.

Local materials as a reserve source of supply for large-panel
construction. Biul. tekhn. inform. po stroi. 5 no.4:10-12 Ap '59.
(MIRA 12:8)

(Building materials) (Apartment houses)

RAYNUS, Mliazar Samuilovich; KAPLUNOV, Zinoviy Vladimirovich; KLYACHKO, A.L.,
inzhener, nauchnyy redaktor; KAPLAN, M.Ya., redaktor izdatel'stva;
PUL'KINA, Ye.A., tekhnicheskiiy redaktor

[Building of large panels without framework; experience in large
panel construction in Leningrad] Krupnopanel'nyi beskarkasnyi dom;
opyt stroitel'stva krupnopanel'nogo doma v Leningrade. Leningrad,
Gos.izd-vo lit-ry po stroit. i arkhit., 1957. 101 p. (MLRA 10:9)
(Leningrad--Apartment houses)

RAYNUS, O.S.

Cast reinforcements for reinforced concrete construction
elements. Lit. proizv. no.9:41-42 S '60. (MIRA 13:9)
(Reinforced concrete construction)
(Cast iron)

SOV/137-58-10-21583

Translation from: Referativnyy zhurnal, Metallurgiya, 1958, Nr 10, p 160 (USSR)

AUTHORS: Raynus, O.S., Demidova, N.M.

TITLE: Investigations of Cast Low-Mn Steel (Issledovaniya litoy niz-komargantsovistoy stali)

PERIODICAL: V sb.: Dokl. 16-y Nauchn. konferentsii prof.-prepodavat. sostava Leningr. inzh.-stroit. in-ta Leningrad, 1958, pp 449-452

ABSTRACT: From the results of an analysis of the composition and the properties of 1000 successive smeltings of low-Mn steel employed for profile casting of excavator components, the following factors were determined: 1) The limits of C and Mn contents in the steel; 2) the values of σ_s , σ_b , δ , ψ , a_k ; 3) σ_s / σ_b ; 4) the relationship between the a_k values of Charpy and Mesnager impact-test specimens. By processing statistical data, it was established that more than 60% of all melts contain C and Mn in amounts varying between the limits of 0.3-0.38% (0.3-0.4, according to Technical Specifications) and 1.2-1.4% (1.2-1.5%, according to Technical Specifications), respectively. Maxima of curves were observed at the following values:

Card 1/2

SOV/137-58-10-21583

Investigations of Cast Low-Mn Steel

σ_s curve, 37 kg/mm²; σ_p curve, 63 kg/mm²; δ curve, at 20%; ψ curve, at 35%; a_k curve (investigations were carried out on 12 specimens) 0.5 kgm/cm² in the case of Mesnager-type specimens, and 3.3 kgm/cm² in the case of Charpy-type specimens. The agreement between the a_k values according to Mesnager and Charpy impact tests was approximately 1.5%. Studies were also performed in order to establish the effect of cooling rate (CR) on the mechanical properties in the range of critical temperatures. The specimens were heated to 900°C and were then cooled in the 900-600° range at rates of 25, 50, 75, 100, and 200-300°/hr. CR's ranging from 25 to 300°/hr did not have any appreciable effect on mechanical properties of specimens. The CR of 100°/hr is the only exception in which the values of a_k and ψ are sharply reduced.

I.B.

1. Manganese steel castings--Properties
 2. Manganese steel castings
- Test results

Card 2/2

KUZNETSOV, K.A.; RAYNUS, O.S., kand.tekhn.nauk

Cast-iron cages for reinforcing concrete structures. Bet.i zhe'.-
bet. no.12:564-566 D '60. (MIRA 13:11)

1. Chlen-korrespondent akademii stroitel'stva i arkhitektury (for
Kuznetsov). (Reinforced concrete)

RAYNYSH, Yu.I.; VOLKOVA, R.I.

Semigraphical method of construction hyperbolic networks in
geodetic operations using radio waves. Geofiz. razved. no. 6:
124-129 '61. (MIRA 15:4)

(Caspian Sea—Gravity prospecting)

BERKOVICH, T.M.; SURMELI, D.D.; DVORETSKAYA, R.M.; RAYNYSH, Z.B.; NOVIKOVA, D.A.

Autoclave method of producing non-hygroscopic asbestos cement.
Trudy NIIAsbestsementa no.16:108-115 '63. (MIRA 16:8)
(Asbestos cement)

EDEL'MAN, I. I., kand. khim. nauk; RAYNSEN, G. B., inzh.

Method of estimating the degree of aggregation of powders
during sintering. Sbor. trud. VNIINSM no.8:146-153 '63.
(MIRA 17:9)

RAYNYSH, Z.B.; BERKOVICH, T.M.

Heat and moisture treatment and the hardening of asbestos cement
on I.A.Cherneto's unlined mechanized production-line unit. Trudy
NIIAsbesttsementa no.15:57-63 '62. (MIRA 16:7)
(Asbestos cement)

IVYANSKIY, G.B., kand. tekhn. nauk; POLYAKOV, V.I., kand. tekhn.nauk;
RAYPENBERG, S.M., inzh.; CHEREPAKHIN, N.V., inzh.;
PROSKURNINA, V.P., red.; TRUBIN, V.A., glav. red.; SOSHIN,
A.V., zam. glav. red.; GRINEVICH, G.P., red.; YEPIFANOV, S.P.,
red.; ONUFRIYEV, I.A., red.; KHOKHLOV, B.A., red.; ZIMIN, P.A.,
red.; PEREVALYUK, M.V., red. izd-va; NAUMOVA, G.D., tekhn. red.

[Erection of completely precast apartment houses]Montazh polno-
sbornykh zhilykh zdaniy; spravochnoe posobie. Pod red. V.P.
Proskurnina. Moskva, Gosstroizdat, 1962. 94 p.

(MIRA 15:11)

1. Akademiya stroitel'stva i arkhitektury SSSR. Institut organi-
zatsii, mekhanizatsii i tekhnicheskoy pomoshchi stroitel'stvu.
(Apartment houses) (Precast concrete construction)

S/139/62/000/006/004/032
E039/E435

AUTHOR: Rays, G.B.

TITLE: The motion of dislocations in twinned crystals of calcite

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Fizika, no.6, 1962, 22-24

TEXT: Experiments are described on the etching of twinned crystals of calcite in HCL solution. It is shown that the position and motion of dislocations in the double part of the crystal is connected with the twinning process. The boundaries between the parent material and the mechanically twinned part of the crystals are always covered with etching figures, thus confirming the dislocation structure of these boundaries. Distortions and non-uniformities due to scratches, flaws and step patterns etc are also disclosed by the etching process. In the double part of the crystal the etching figures show a parallel series of divisions at the twinning boundaries. In addition the cleavage planes are shown and the transitions from one plane to another which must be connected with the twinning mechanism. There are 3 figures.
Card 1/2

The motion of dislocations ...

S/159/62/000/006/004/032
E039/E435

ASSOCIATION: Khar'kovskiy institut mekhanizatsii sel'skogo
khozyaystva (Khar'kov Institute for the Mechanization
of Agriculture)

SUBMITTED: July 21, 1961

Card 2/2

AUTHOR: Rays, G.B.

70-3-3-12/36

TITLE: The Distortion of a Crystal Lattice at the Twin Boundary of a Mechanically-twinned Crystal of Calcite (Iskazheniya kristallicheskoj reshetki na granitse razdela mekhanicheski sdvoynikovannogo kristalla kal'tsita)

PERIODICAL: Kristallografiya, 1958, Vol 3, Nr 3, pp 325 - 328
+ three plates (USSR).

ABSTRACT: It has been shown experimentally that intermediate regions exist at the boundaries of separation between the parent part of a crystal of calcite and a mechanically produced twinned part. These regions have been detected by etching in strong and weak HCl and examination with a micro-interferometer at 550 X magnification. The intermediate region has a small volume and extends for a short distance each side of the boundary of separation; in it there is a great concentration of lattice imperfections which make up the strained region extending from 5 to 50 μ each way. The existence of this disturbed region and its disclosure by etching show that the energy residing in the crystal on its plastic deformation is mainly concentrated in this region in the form of potential energy of elastic strain.

There are 10 references, 9 of which are Soviet and 1 English.
Card 1/2

The Distortion of a Crystal Lattice at the Twin Boundary of a
Mechanically-twinned Crystal of Calcite ^{70-3-3-12/36}

ASSOCIATION: Khar'kovskiy institut mekhanizatsii sel'skogo
khozyaystva (Kharkov Institute for the Mechanisation
of Agriculture)

SUBMITTED: June 3, 1957

Card 2/2

AUTHOR: Rays, G.B.

SOV/51-6-3-16/28

TITLE: Fresnel's Formulae for Incidence of an Ordinary Wave on the Twinning Plane of a Transparent Uniaxial Crystal (Formuly Frenelya dlya sluchaya padeniya oby knovennoy volny na ploskost' dvoynikovaniya odnoosnogo prozrachnogo kristalla)

PERIODICAL: Optika i Spektroskopiya, 1959, Vol 6, Nr 3, pp 384-388 (USSR)

ABSTRACT: The author derived the expressions for the reflection (R_{00} , R_{0e}) and refraction (D_{00} , D_{0e}) intensity coefficients when an ordinary wave falls on the plane of separation between twins in a transparent uniaxial crystal. These expressions are given by Eq.(16):

$$R_{00} = \frac{u^2 v^2 (p_1^2 - p_2^2)^2}{[p_1 p_2 (u^2 + v^2) + uv(p_1^2 + p_2^2)]^2},$$

$$D_{00} = \frac{p_1^2 p_2^2 (u^2 - v^2)^2}{[p_1 p_2 (u^2 + v^2) + uv(p_1^2 + p_2^2)]^2},$$

Card 1/3

SOV/51-5-5-16/26

Fresnel's Formulae for Incidence of an Ordinary Wave on the
Twinning Plane of a Transparent Uniaxial Crystal

$$R_{0e} = p_1 p_2 uv (p_1 - p_2)^2 (u - v)^2 / [p_1 p_2 (u^2 + v^2) + uv (p_1^2 + p_2^2)]^2,$$

$$D_{0e} = p_1 p_2 uv (p_1 + p_2)^2 (u + v)^2 / [p_1 p_2 (u^2 + v^2) + uv (p_1^2 + p_2^2)]^2$$

where subscripts "o" and "e" denote the ordinary and extraordinary waves respectively; p_1 and p_2 are the normal components of the wave vectors of the ordinary and extraordinary waves respectively; $v = \cos^2 \varphi_0$, $u = n_1^2 \sin^2 \varphi_0$; φ_0 is the angle between one of the optical axes and the twinning plane (Fig.1). When $p_2 = 0$, $D_{00} = R_{0e} = D_{0e} = 0$,

i.e. the incident ordinary wave is totally reflected. This is shown in Fig.2 where R_{00} and R_{0e} are plotted against the angle of incidence α_1 . The total reflection angle ($p_2 = 0$, $R_{00} = 100\%$ and $R_{0e} = 0\%$) is given by

Card 2/3

$$\sin \alpha_0 = n_e / n_o \quad (16)$$

SOV/51-6-3-16/28

Fresnel's Formulae for Incidence of an Ordinary Wave on the
Twinning Plane of a Transparent Uniaxial Crystal

At angles of incidence $\alpha > 0$, p_2 becomes imaginary and an incident ordinary wave gives rise to ordinary reflected and refracted waves only. The paper is entirely theoretical. Acknowledgment is made to R.I. Garber for suggesting this subject and advice on it. There are 2 figures and 7 references, of which 6 are Soviet and 1 English.

SUBMITTED: January 6, 1958

Card 3/3

RAYS, G.B.; BROMBERG, M.I.

Investigating the etching of twinned ionic and metallic single
crystals. Izv. vys. ucheb. zav.; Chern. met. no.2:130-134 '60.
(MIRA 15:5)

1. Khar'kovskiy institut mekhanizatsii sel'skogo khozyaystva.
(Metallography) (Metal crystals) (Ionic crystals)

RAYS , G.B.

New method for determining the refraction indices of unusual wave
of twin monoaxial negative dielectric crystals. Kristallografia
3 no.1:101-104 '58. (MIRA 11:5)

1. Khar'kovskiy institut mekhanizatsii i elektrifikatsii sel'skogo
khozyaystva.

(Crystallography) (Refraction)

SOV/70-3-1-22/26

AUTHOR: Rays, G.B.

TITLE: A New Method for the Determination of the Refractive Index of the Extraordinary Wave in Twin Uniaxial Negative Dielectric Crystals (Novyy metod opredeleniya pokazatelya prelomleniya neobyknovennoy volny dvoynikovykh odnoosnykh otritsatel'nykh dielektricheskikh kristallov)

PERIODICAL: Kristallografiya, 1958, Vol 3, Nr 1, pp 101-104 (USSR)

ABSTRACT: To explain the principle of this method, consider the reflection of light from the separation boundary of a twin uniaxial dielectric crystal. The directions of the reflected and refracted ordinary and extraordinary waves may be obtained using the geometrical construction due to MacCullagh (Ref 4). These surfaces consist of a sphere of radius n_o (refractive index of ordinary wave)

surrounding an ellipsoid of revolution with semi-axes n_o and n_e (refractive index of extraordinary wave).

Consider the case when the plane of incidence is perpendicular to the principal section of the twin crystal, since in this case the reflection of ordinary and extraordinary waves is a maximum. Figure 1 shows a section

Card1/4

SOV/70-3-1-22/26

A New Method for the Determination of the Refractive Index of the
Extraordinary Wave in Twin Uniaxial Negative Dielectric Crystals

through the refractive index surfaces by the XZ plane which is perpendicular to the principal section to the twin crystal. The spherical surface gives in this figure a circle of radius n_o while the ellipsoid of revolution gives an ellipse with a somewhat reduced major axis GG . The axis OX is a trace of the separation boundary and OZ is normal to it. I_o is the direction of the wave normal of the incident ordinary wave. The wave normal I_o of the incident ordinary wave is extended until it cuts the wave surface belonging to the given wave normal. A straight line NN parallel to the OZ axis is drawn through this point E . The lines connecting the centre point O with E, E', K, K' (points of intersection of the straight line NN with the wave surfaces) give the directions of the wave normals for the reflected and refracted ordinary and extraordinary waves. As can be seen from Figure 1, the angle of incidence α of the normal of the ordinary wave is equal to the angle of

Card2/4

SOV/70-3-1-22/26

A New Method for the Determination of the Refractive Index of the Extraordinary Wave in Twin Uniaxial Negative Dielectric Crystals

reflection and the angle of refraction of this wave. The reflection and refraction normals for the extraordinary waves are larger than α . When the angle of incidence of the normal of the ordinary wave is α_0 (in this case the line NN touches the wave surface n_e) the wave normals of the extraordinary waves graze the separation boundary, while for incidence angle greater than α_0 , the extraordinary rays disappear altogether. From Figure 2, it is clear that:

$$\sin \alpha_0 = n_e / n_o .$$

This formula may be used in the new method for the determination of the refractive index for extraordinary waves in twin uniaxial negative dielectric crystals. To determine n_e by this method a twin specimen is set up on a goniometer so that the plane of incidence is perpendicular to the principal section of the twin crystal

Card3/4

SOV/70-3-1-22/26

A New Method for the Determination of the Refractive Index of the Extraordinary Wave in Twin Uniaxial Negative Dielectric Crystals

and the angle α_0 is found at which the reflected and refracted ^{extra-}ordinary rays disappear. The value of n_e can then be calculated from the above relation since n_0 can be easily determined by other methods. There are 4 figures and 5 references, 1 of which is English and 4 Soviet.

ASSOCIATION: Khar'kovskiy institut mekhanizatsii i elektrifikatsii sel'skogo khozyaystva (Khar'kov Institute of Mechanisation and Electrification of Agriculture)

SUBMITTED: April 4, 1956

Card 4/4

RAYS, G. B.

Movement of twinning dislocations in calcite. Izv. vys. ucheb.
zav.; fiz. no.6:22-24 '62. (MIRA 16:1)

1. Khar'kovskiy institut mekhanizatsii sel'skogo khozyaystva.

(Dislocations in crystals) (Calcite)

AUTHORS: Rays, G.B. and Bromberg, M.I. SOV/70-4-4-21/34

TITLE: Thermal Etching in Vacuo of Twinned Single Crystals of Zinc

PERIODICAL: Kristallografiya, 1959, Vol 4, Nr 4, pp 594-596 (USSR)

ABSTRACT: Twinned zinc crystals were heated to 400 °C for 25 min under a vacuum of 10^{-4} mm Hg . After cooling, the surface was examined interferometrically. Etch figures due to selective evaporation were observed. The surface was covered with etch figures, the form and orientation of which were connected with the symmetry of the given crystal. The method could be applied to metals, Be and V alloys for example, where there are no suitable chemical etches. For twinned crystals of Zn preferential etching takes place in twinned regions of the crystal and begins on the twin boundaries and near to them. On heating crystals of Zn in vacuo the formation of etch figures proceeds preferentially on different surface defects, or the steps of cracks and scratches. The experiments show that the formation of etch figures on heating mechanically

Card1/2

SOV/70-4-4-21/34

Thermal Etching in Vacuo of Twinned Single Crystals of Zinc

twinned single crystals of Zn in vacuo proceeds primarily at active parts of the surface and that, together with other surface defects, places with increased energy are, in particular, the boundaries between undeformed and twinned parts of the crystal. There are 4 figures and 9 references, 8 of which are Soviet and 1 German.

ASSOCIATION: Khar'kovskiy institut mekhanizatsii sel'skogo khozyaystva (Khar'kov Institute for the Mechanisation of Agriculture)

SUBMITTED: June 18, 1958

Card2/2

RAYS, G.B.

Dislocations in calcite twins obtained by mechanical deformation.
Dokl. AN SSSR 117 no.3:419-421 N '57. (MIRA 11:3)

1. Khar'kovskiy institut mekhanizatsii sel'skogo khozyaystva, Pred-
stavleno akademikom A.V. Shubnikovym.
(Dislocations in crystals) (Calcite)

AUTHOR: Rays, G. B.

20-3-17/52

TITLE: Dislocation in Calcite Crystals Mechanically Twinned
(Dislokatsiya v mekhanicheski deformatsirovannykh kal'tsita).

PERIODICAL: Doklady AN SSSR, Vol. 117, Nr 3, pp. 419-421 (USSR)

ABSTRACT: According to the author's opinion the natural twins do not differ at all from the original crystal except by the symmetric orientation of the atoms of the crystal lattice. In the case of twins formed mechanically under the action of exterior forces, the part of energy remaining in the deformed crystal must change the state of the crystal essentially. The author here investigates the dissolubility and the production of etched figures on calcite. The carrying out of the experiments is described. From these experiments the following results were obtained:

- 1.) In the case of a plastic deformation of calcite monocrystals by the formation of twins part of the absorbed energy is distributed uniformly over the entire volume of the deformed crystal particle. A large part of the absorbed energy is concentrated on the boundaries of the twins.
- 2.) A considerable part of the dislocations is created by

Card 1/3

20-3-17/52

Dislocation in Calcite Crystals Mechanically Twinned

plastic deformation collects mainly at the dividing boundaries of the twin crystal and also in the deformed part of the crystal on the shift-lines of the process of separation.

3.) In some cases dislocations in the deformed part of the crystal occur in form of so-called negative crystals; in other cases they occur in form of continuous etching spots, the axes of which are parallel to the separating boundary.

4.) The separating boundaries are not constantly shifted by the formation of twins in plastic deformation but they are shifted discretely (shift, pause etc.). The discrete and the continuous spots may be connected with simple and spiral-shaped dislocations. The distance between the etching figures is $\sim 10^4$ cm. There are 4 figures, and 7 references, 2 of which are Slavic.

ASSOCIATION: Khar'kov Institute for the Mechanization of Agriculture
(Khar'kovskiy institut mekhanizatsii sel'skogo khosyaystva)

Card 2/3

Dislocation in Calcite Crystals Mechanically Twinned

20-3-17/52

PRESENTED: June 10, 1957, by A. V. Shubnikov, Academician

SUBMITTED: June 6, 1957

AVAILABLE: Library of Congress

Card 3/3

Category : USSR/Solid State Physics - Structure of Deformable Materials

E-8

Abs Jour : Ref Zhur - Fizika, No 1, 1957, No 1311

Author : Rays, G.B.

Title : Concerning the Question of the Existence of a Transition Layer in Mechanically-Twinned Crystals

Orig Pub : Dokl. AN SSSR, 1956, 106 No 5, 841-844

Abstract : It was established that the measured and calculated angular dependences of the intensity of light reflected from the boundary of twinned layers in calcite agree with an accuracy of 1 -- 2%. Inasmuch as it was assumed in the calculations that the layers have sharp boundaries, the Lifshits theory (Zh. eksperim. i teor. fiziki, 1948, 18, 1134), which denies the existence of macroscopically distorted layers, is more acceptable than the Kontorova theory (Zh. eksperim. i teor. fiziki, 1942, 12, 68), which leads to the conclusion that a transition layer exists with a thickness on the order of 500 interatomic distances.

Card : 1/1

RAYS, G.B.

- Twins or cracks? Izv.vys.uch.zav.; fiz. no.4:79-82 '62.
(MIRA 15:9)
1. Khar'kovskiy institut mekhanizatsii sel'skogo khozyaystva.
(Crystallography)