SOV/5-33-1-5/25

On Pre-Cambrian and Cambrian Strata of the Sangilan (Tuva) Upland

composed of three suites partly identified by few fossils.
In general, Pre Cambrian rocks predominate in the region.
The author cites the following geologists, who also worked
in the region: A.I. Levenko, L.N. Leont'yev, A.P. Bozhins-
kiy, I.I. Belostotskiy, V.I. Serpukhov, A.V. Il'in,
V.M. Moraliyev, I.P. Rachkovskiy, A.G. Vologdin and N.V.
Pokrovskaya.

Card 2/2

IL'IN, A.V.; KUDRYAVTSEV, G.A.

Pre-Cambrian in Tuva. Sov. geol. 3 no. 9:130-133 S '60.
(MIRA 13:11)

1. Vsesoyuznyy aerogeologicheskiy trest.
(Tuva Autonomous Province--Geology)

IL'IN, A.V.; MORALEV, V.M.

Pre-Cambrian formations in the Altai-Sayan area. Sov. geol.
6 no.11:51-57 N '63.   (MIRA 17:1)

1. Vsesoyuznyy aerogeologicheskiy trest.

DZEVANSKIY, Yu.K.; DODIN, A.L.; KONIKOV, A.Z.; KRASNYY, L.I.;
MAN'KOVSKIY, V.K.; MOSHKIN, V.N.; LYATSKIY, V.B.;
NIKOL'SKAYA, I.P.; SALOP, L.I.; SALUN, S.A.; RABKIN,
M.I.; RAVICH, M.G.; POSPELOV, A.G.; NIKOLAYEV, A.A.;
IL'IN, A.V.; BUZIKOV, I.P.; MASLENNIKOV, V.A.; NEYELOV,
A.N.; NIKITINA, L.P.; NIKOLAYEV, V.A.[deceased]; OBRUCHEV,
S.V.; SAVEL'YEV, A.A.; SEDOVA, I.S.; SUDOVIKOV, N.G.;
KHIL'TOVA, V.Ya.; NAGIBINA, M.S.; SHEYNMANN, Yu.M.;
KUZNETSOV, V.A.; KUZNETSOV, YU.A.; BORUKAYEV, R.A.;
LYAPICHEV, G.F.; NALIVKIN, D.V., glav. red.; VERESHCHAGIN,
V.N., zam. glav. red.; MENNER, V.V., zam. glav. red.;
OVECHKIN, N.K., zam. glav. red.[deceased]; SOKOLOV, B.S.,
red.; SHANTSER, Ye.V., red.; MODZALEVSKAYA, Ye.A., red.;
CHUGAYEVA, M.N., red.; GROSSGEYM, V.A., red.; KELLER,B.M.,
red.; KIPARISOVA, L.D., red.; KOROBKOV, M.A., red.;
KRASNOV, I.I., red.; KRYMGOL'TS, T.Ya., red.; LIBROVICH,
L.S., red.; LIKHAREV, B.K., red.; LUPPOV, N.P., red.;
NIKIFOROVA, O.I., red.; POLKANOV, A.A., red.[deceased];
RENGARTEN, V.P., red.; STEPANOV, D.L., red.;
CHERNYSHEVA, N.Ye., red.; SHATSKIY, N.S., red.[deceased];
EBERZIN, A.G., red.; SMIRNOVA, Z.A., red.izd-va; GUROVA,
O.A., tekhn. red.

[Stratigraphy of the U.S.S.R. in fourteen volumes. Lower
Pre-Cambrian] Stratigrafiia SSSR v chetyrnadtsati tomakh.
Nizhnii Dokembrii. Moskva, Gos. nauchno-tekhn. izd-vo lit-ry po geologii i
okhrane nedr. Pt. 1 (Asiatic part of the USSR) 1963. 396p.

IL'IN, A.V.

Geomorphological structure of the botoom of the Atlantic Ocean.
Dokl. AN SSSR 157 no.6:1358-1361 Ag '64.   (MIRA 17:9)

1. Akusticheskiy institut AN SSSR. Predstavleno akademikom I.P.
Gerasimovym.

IL'IN, A.V.

Spatial interrelationship of the forms of submarine relief. Dokl. AN
SSSR 162 no.5:1130-1133 Je '65.   (MIRA 18:7)

1. Akusticheskiy institut AN SSSR, Moskva.

IL'IN, A.V.; MENEYEV, V.A. [deceased]; SHURKO, I.I.

New data on the geology of the bottom of the Brazil depression.
Iokl. AN SSSR 164 no.6:1366-1369 O '65.

(MIRA 18:10)

1. Akusticheskiy Institut AN SSSR, Moskva. Submitted January 19,
1965.

20-3-13/46

AUTHOR: Il'in, A. V.

TITLE: New Data on the Relief of the Bottom of Sea in the Region of the
             Comandors Islands (Novyye danyye o rel'yefe morskogo dna v rayone
             komandorskikh ostrovov)

PERIODICAL: Doklady AN SSSR, 1957, Vol. 116, Nr 3, pp. 397 - 400 (USSR)

ABSTRACT: The study of the subterraneous reliefs in the above-mentioned re-
             gion is of great importance for the explanation of the relations
             between the Kuril-Kamchatka Arch and the Aleutian Arch. First,
             the echometric surveys received in 1952 - 1955 by the complex
             oceanographic expedition of the Institute for Oceanology AN USSR
             (Institut okeanologii AN SSSR) on board of the ship "Vityaz" yield-
             ded firstly several data on the bottom relief of this area. The
             treatment of the collected material permitted the arrangement of
             a new batymetric chart which is reproduced her in a simplified
             form. The relief in the region of the Comandors Islands is compli-
             catedly organized; it shows great differences of height and steep
             slopes. The most important forms of this relief are enumerated
             here. The continent shelf of Eastern-Kamchatka is very narrow (at
             the most up to 15 - 20 km). The exterior border of this shelf is
             almost everywhere characterized by a sharp crack of the bottom;

Card 1/3

20-3-13/46

New Data on the Relief of the Bottom of   Sea in the Region of the Comandors
Islands

it is deep of from 110 - 160 m. The submarine slope of Eastern-
Kamchatka is much broader than the shelf (up to 120 km). The
steepness of the slopes move of from 4,5° up to 15 - 20°. At these
slopes, there submarine mountain chains and large valleys have been
observed. Details about condition and form of these chains will
be enumerated. In the investigated region the Comandors-Aleutian
submarine mountain is of from 70 - 90 km broad, and, on the average,
raises 3500 m over the bottom of the Bering Sea, and 8000 m over
the Aleutian Trench. A characteristic peculiarity of this subter-
raneous mountain chain is the different structure of its slopes.
The Kuril-Kamchatka Trench is in the southern part of the investi-
gated domain deeper than 7500 m. The depth of the Aleutian Trench
in the investigated region moves between 5600 and 7030 m. In con-
clusion the author still refers something about the problem of the
connection between the Kuril-Kamchatka Trench and the Aleutian
Trench. There are 1 figure and 3 references, 2 of which are Slavic.

Card 2/3

New Data on the Relief of the Bottom of Sea in the Region of the Comandors Is-
lands

20-3-13/46

ASSOCIATION: Institute for Oceanology AN USSR
                (Institut okeanologii Akademii nauk SSSR)

PRESENTED: June 28, 1957, by A. A. Grigor'yev, Academician

SUBMITTED: June 28, 1957

AVAILABLE: Library of Congress

Card 3/3

3 (9)
AUTHOR: Il'in, A. V.

SOV/20-127-4-44/60

TITLE: On Some Characteristics of the Geomorphology of the Atlantic Ocean
                North-west of England

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 127, Nr 4, pp 881-883 (USSR)

ABSTRACT: The expeditionary ship "Ekvator" carried out multipurpose
                investigations in the North Atlantic in August - October 1957
                within the framework of the program of the International
                Geophysical Year. One part of this research work was the investi-
                gation of the submarine relief by means of echo-sounding (Ref 1).
                New data were obtained in the region mentioned in the title. The
                investigations of the sea bottom in this region had been
                insufficient; so, for instance, the relief of the bathymetrical
                map by M. N. Hill (Ref 2) consists mainly of hypothetic isobaths.
                According to data by the author the bottom relief has a
                complicated structure (Fig 1). The individual elevations, as the
                Rockall Sandbank, Reyk Janes, Atlantic Chain, and Irish Channel
                are described. Morphological peculiarities indicate that the
                development of the relief of the upper part of the Rokoll
                elevation took place under sub-aerial conditions over a long
                period. Contrary to some other assumptions (Ref 3) the author

Card 1/3

On Some Characteristics of the Geomorphology of the   SOV/20-127-4-44/60
Atlantic Ocean North-west of England

proves N. S. Shatskiy's assumption (Ref 4) that the Caledonian
folds in the region of the recent Atlantic was but little
developed. On account of stratigraphic investigations of the
pre-Cambrian and Lower Paleozoic rocks Ye. V. Pavlovskiy
concluded that the Caledonian folds appeared only locally in that
region. Moreover he assumed that ancient faults in great depths
existed there the direction of which caused the extension of the
folded structures created by the Caledonian orogenesis. On account
of his results and publications the author draws the relief
formation of this part of the ocean. An extensive region
including the Rockall elevation was submerged west of England.
The Reykjanes Chain must not be considered a direct continuation
of the Atlantic Chain. Reykjanes seems to be an older
formation. There are 1 figure and 6 references, 4 of which are
Soviet.

ASSOCIATION: Institut okeanologii Akademii nauk SSSR (Institute of Oceanography
               of the Academy of Sciences, USSR)

Card 2/3

IL'IN, A.V.

Geomorphological investigations in the North Atlantic on the
research ship "Mikhail Lomonosov." Trudy MGI 19:115-135 '60.
(MIRA 14:7)

(Atlantic Ocean—Submarine topography)

IL'IN, A.V.

Bottom relief of Kamchatka Gulf. Trudy Inst. okean. 50:21-28
'61.   (MIRA 15:1)

(Kamchatka Gulf—Submarine topography)

IL'IN, A.V., kand.geograf.nauk

    Rift valley in the Atlantic Ocean. Priroda 50 no. 3:93-96
Mr '61.   (MIRA 14:2)

    1. Institut okeanologii AN SSSR, Moskva.
        (Atlantic Ocean—Submarine topography)

IL'IN, A. V.

Geomorphology of the continental shelf of the northern part of the Atlantic Ocean. Trudy Inst. okean. 56:3-14 '62.
(MIRA 15:10)

(Atlantic Ocean—Continental shelf)

IL'IN, A.V.; BOGOROV, G.V.

Recent photographs of the bottom of the Atlantic Ocean.
Okeanologiia 3 no.2:346-348 '63.   (MIRA 16:4)
         (Atlantic Ocean—Ocean bottom)   (Photography, Submarine)

IL'IN, A.V.; BOGOROV, G.V.

New data on the bottom geomorphology of the abyssal Nares plain.
Dakl. AN SSSR   148   no.6:1392-1393 F '63.   (MIRA 16:3)

1. Akusticheskiy institut AN SSSR. Predstavleno akademikom D. I.
Shcherbakovym.
                    (Atlantic Ocean—Ocean bottom)

IL'IN, A.V.

Leveling processes of the bottom of a deep ocean. Dokl. AN SSSR
152 no.1:179-182 S '63.   (MIRA 16:9)

1. Akusticheskiy institut AN SSSR. Predstavleno akademikom A.L.
Yanshinym.
              (Atlantic Ocean—Submarine topography)

L 10793-67   EWT(1)__GW   SOURCE CODE: UR/0026/66/000/003/0038/0047
ACC NR: AP7003509   7

AUTHOR: Il'in, A. V. (Candidate of geographical Sciences)

ORG: none

TITLE: Outlines and submarine topography -- latest investigations of Atlantic Ocean Floor

SOURCE: Priroda, no. 3, 1966, 38-47

TOPIC TAGS: oceanography, geology

ABSTRACT:
    Much of what is known of the Mid-Atlantic Ridge is reviewed in this article, although not in detail. The history of the exploration of the ridge is followed by generalized data on its structure in its different parts and information on how it has been explored. Fig. 1 is a map showing the morphological zones of the Atlantic Ocean with 13 profile lines cutting across it and the Mid-Atlantic Ridge. Fig. 2 shows the cross section of bottom relief along these 13 profiles. The different hypotheses of the origin of the ridge are reviewed. This is followed by a discussion of the extensive level plains on the ocean floor, as well as ocean rises and volcanoes. [JPRS: 38,460]

SUB CODE: 08 / SUBM DATE: none
                                                                    UDC: 551.46
Card 1/1

IL'IN, A.V., kand.tekhn.nauk, dots.; POLYAKOV, G.M., kand.tekhn.nauk, dots.; ZMACHINSKIY, A.V., inzh.; SHCHAPOV, G.A., inzh.

Characteristics of natural gas from the Bagayevka field as a power fuel. Izv.vys.ucheb.zav.; energ. 2 no.6:93-96 Je '59.   (MIRA 13:2)

1. Saratovskiy politekhnicheskiy institut, Predstavlena kafedroy teploenergetiki.
(Bagayevka region--Gas, Natural) (Gas as fuel)

POLYAKOV, G.M., kand. tekhn. nauk; IL'IN, A.V., kand. tekhn. nauk; ZMACHINSKIY,
        A.V., insh.; SHCHAPOV, G.A., insh.

    Investigation into the performance of the TP-170 boiler operating
    on natural gas at variable feed-water temperature. Teploenergetika
    6 no.12:51-55 D '59.   (MIRA 13:3)

    1.Saratovskiy avtomobil'no-doroshnyy institut.
                    (Boilers)

ROZENFEL'D, Lev Markovich, prof., doktor tekhn.nauk; TKACHEV, Anatoliy
Georgiyevich, prof., doktor tekhn.nauk; GUREVICH, Yevgeniy
Semenovich, inzh.; ONOSOVSKIY, V.V., inzh.; SERDAKOV, G.S., inzh.;
TSYRLIN, B.L., inzh.; KALNIN', I.M., inzh.; ROMANOVSKIY, N.V., inzh.;
YATSUNOV, I.F., inzh.; DANILOVA, G.N., dotsent; MIKHAL'SKAYA, R.N.,
inzh.; KARNAUKH, M.S., inzh.; STUKALENKO, A.K., inzh.; IL'IN, A.Ya.,
inzh.; TSIPERSON, A.L., red.; BABICHEVA, V.V., tekhn.red.

[Examples and designs of refrigerating machines and apparatus]
Primery i raschety kholodil'nykh mashin i apparatov. Moskva, Gos.
izd-vo torg.lit-ry, 1960. 237 p. [__Thermodynamic diagrams of
the refrigerants used] __Termodinamicheskie diagrammy rabochikh
tel kholodil'nykh mashin.   (MIRA 13:9)
              (Refrigeration and refrigerating machinery)

MOLODTSOV, V.S., red.; IL'IN, A.Ya., red.; MAGNUS-SOMINSKIY, V.S.,
red.

[Methodological problems in contemporary science] Metodo-
logicheskie problemy sovremennoi nauki; sbornik statei.
Moskva, Izd-vo Mosk. univ., 1964. 243 p. (MIRA 17:7)

ANDRONOV, I.K., professor; BEREZANSKAYA, Ye.S.; GLAGOLEV, N.S.; DEPMAN, I.Ya., professor; ZOLOTOVITSKIY, Ye.N.; IL'IN, A.Ye., dotsent; LYAPIN, S.Ye., MULYARCHIK, M.Z., uchitel'; PETRAKOV, I.S.; CHICHIGIN, V.G.

Aleksandr Nikolaevich Barsukov. Mat. v shkole no.1:72-74 Ja-F '57.
(MIRA 10:2)

1. Moskovskiy oblastnoy pedagogicheskiy institut (for Andronov).
2. Zaveduyushchiy kafedroy metodiki matematiki Moskovskogo pedago-
gicheskogo instituta imeni V.I. Lenina (for Berezanskaya). 3. Metodist
Shcherbakovskogo rayona goroda Moskvy (for Glagolev). 4. Leningrad-
skiy pedagogicheskiy institut (for Depman). 5. Metodist Balashikhin-
skogo rayona Moskovskoy oblasti (for Zolotovitskiy). 6. Moskovskiy
pedagogicheskiy institut imeni V.I. Lenina (for Il'in. 7. Zaveduyu-
shchiy kafedroy metodiki matematiki Leningradskogo pedagogicheskogo
instituta imeni A.I. Gertsena (for Lyapin). 8. Shkola No.29 goroda
Moskvy (for Mulyarchik). 9. Zaveduyushchiy kabinetom matematiki Mo-
skovskogooblastnogo instituta usovershenstvovaniya uchiteley (for
Petrakov). 10. Zaveduyushchiy kafedroy metodiki matematiki Moskov-
skogo pedagogicheskogo instituta imeni V.P. Potemkina (for Chichigin).
(Barsukov, Aleksandr Nikolaevich, 1891-)

ONOSOVSKIY, V.V., kand. tekhn. nauk; IL'IN, A.Ya.

Thermodynamic analysis of the processes of a reverse cycle absorber.
Khol. tekh. 42 no.4:31-35 Jl-Ag '65.   (MIRA 18:9)

1.Leningradskiy tekhnologicheskiy institut kholodil'noy promyshlen-
nosti.

OFENGENDEN, N.Ye.; IL'IN, A.Ye.

Improving hydraulic coal dredgers and pumps for hydraulic mines.
Ugol' 39 no.9:55-59 S '64.   (MIRA 17:10)

1. Donetskiy nauchno-issledovatel'skiy ugol'nyy institut (for
Ofengenden). 2. Laptevskiy mashinostroitel'nyy zavod (for Il'in).

IL'IN, B.A., kand.tekhn.nauk. (g. Leningrad)

New method of combating swelling. Put' i put.khoz. no.10:48
O '58.   (MIRA 11:12)
                    (Railroads--Earthwork)

IL.'\#IN, B.A., Cand Geogr Sci -- (diss) "Utilization of radio engineering media for the systematic and altitudinal substantiation of geographical studies". Len, 1957. 13 pp (Len Order of Lenin State Univ im A.A.Zhdanov), 100 copies (KL, 1-58, 115)

- 16 -

IL'IN, B.A.

IL'IN, B.A.

Method of site selection for geographical survey radio stations.
Vest. LGU 12 no,2: 142-153 '57.   (MIRA 11:2)
                        (Radio--Stations)
                        (Geographical surveys)

IL'IN, B.A.

Radio methods for obtaining vertical and high-altitude data in
geographical studies. Vest.LGU 12 no.6:87-94 '57.   (MLRA 10:5)
(Geography, Aerial) (Radio measurements)

IL'IN, B.I., kand.med.nauk 'Gor'kiy)

Occupational skin diseases. Fel'd. i akush. 27 no.3:21-26 Mr '62.
(MIRA 15:4)

(SKIN—DISEASES)   (OCCUPATIONAL DISEASES)

IL'IN, B. A. FA 62T46

Feb 1946

Iron/Engineering
    Tractors, Electric
    Lumber Industry

"The Use of Electric Tractors at Electrified Lumber Camps," B. A. Il'in, Engr, 3½ pp

"Mekh" No 2

Describes advantages obtained from use of the ET-4 electric tractor, manufactured by VNIITP, at lumber camps having provisions for electrification of the various operations. Tractor is equipped with gooseneck crane. It operates on 380 volts AC, but when operating in lumber industries, this has to be lowered to 220 volts.

62T46

IL'IN, B. A.

The organization of mechanized lumbering enterprises Moskva, Goslesbumizdat, 1949. 51 p. (50-18311)

SD388.I55

1. Lumbering. 2. Lumbering - Russia

IL'IN, Boris Afanas'yevich, kandidat tekhnicheskikh nauk; DOSTAL', V.G., redaktor; NIKOLAYEVA, I.I., redaktor izdatel'stva; KARASIK, N.P., tekhnicheskiy redaktor

[Planning and organizing woodworking enterprises] Proektirovanie i organizatsiia lesozagotovitel'nykh predpriiatii. Moskva, Gosles-bumizdat, 1955. 427 p.   (MIRA 9:7)
          (Woodworking industries)

IL'IN, Boris Afanas'yevich; AFONIN, P.T., red.; NIKOLAYEVA, I.I., red.
Izd-va; SHITS, V.P., tekhn.red.

[Mechanization of lumber transportation in the U.S.A.] Mekhanizatsiia
transporta lesa v SSHA. Moskva, Goslesbumizdat, 1957. 179 p.
(MIRA 11:5)

(United States—Lumber—Transportation)

ORLOV, G.M., , ., BOVIN, A.I., BRYUKHOV, S.A., IL'IN, B.A., MAYOROV, V.F.,
    PASYUTIN, I.A., RAYEV, O.A., ROOS , L.V., NIKIFOROV, A.S., red.;
    GORYUNOVA, L.K., red. izd-va, SIDEL'NIKOVA, L.A., red. izd-va,
    SHAKHOVA,L.A., red. izd-va,; BACHURINA, A.M., tekhn. red.

[Forest industries in Canada] Lesnaia promyshlennost'Kanady.
Moskva, Goslesbumizdat, 1957. 246 p.   (MIRA 11:11)
                    (Canada--Lumbering)

IL'IN, B.A., kand.tekhn.nauk

Admission and storage of waste chips for processing. Bum.prom.
35 no.9:30-31 S '60.
(Wood waste) (Woodpulp) (MIRA 13:9)

IL'IN, Boris Afanas'yevich; SOLOV'YEVA, N.S., red.; PITERMAN, Ye.L.,
red.izd-va; LOBANKOVA, R.Ye., tekhn. red.

[Utilization of wood waste and low-grade wood in foreign
countries] Ispol'zovanie drevesnykh otkhodov i nizkotovarnoi
drevesiny za rubezhom. Moskva, Goslesbumizdat, 1961. 135 p.
(MIRA 15:1)

(Wood-using industries)

IL'IN, Boris Afanas'yevich; ALYSHEV, I.F., dots., kand. tekhn. nauk,
retsenzent; ZIGMUND, F.F., inzh., retsenzent; KORCHUNOV,N.G.,
prof.,otv.red.; MATVEYEVA,V.V.,red.; URITSKAYA, A.D., tekhn.red.

[Land transportation of timber]Sukhoputnyi transport lesa;
uchebnoe posobie dlia studentov lesokhoziaistvennogo fakul'-
teta. Leningrad, Vses. zaochnyi lesotekhn. in-t, 1961. 210 p.
(MIRA 15:11)

(Lumber--Transportation)

IL'IN, B.A.

Construction and operation of local roads in Canada. Avt.dor. 26
no.10:29-30 0. '63.
(MIRA 16:11)

IL'IN, Boris Afanas'yevich, dots., kand. tekhn. nauk; ALYSHEV,
I.F., dots., kand. tekhn. nauk, otv. red.; DMITRIYEV,
A.A., retsenzent; ZHUKOV, V.V., dots., kand. tekhn. nauk,
retsenzent; VASIL'YEVA, N.V., red.

[Theory of the design of forest roads; manual for students
of the Forestry-Engineering Department] Teoriia proektiro-
vaniia lesovoznykh dorog; uchebnoe posobie dlia studentov
lesoinzhenernogo fakul'teta. Leningrad, Vses. zaochnyi
lesotekhn. in-t. Pt.2. 1964. 341 p.   (MIRA 18:7)

IL'IN, Boris Afanas'yevich; KOMAROVSKAYA, A.S., red.

[Principles underlying the choice of the parameters and the layout of logging roads] Obosnovanie parametrov i razmeshcheniia putei lesotransporta. Moskva, Lesnaia promyshlennost', 1965. 139 p.   (MIRA 18:7)

IL'IN, B.A., insh.

Foreign fire engine, automatic fire pumps and tank trucks. Infrom.
zbor. TSNIIPO no.3:85-97 '59.   (MIRA 14:3)
            (Fire departments—Equipment and supplies)

IL'IN, B.I.

A practicing physician comments on the photographic exhibit
entitled "Prevention of pustular skin diseases." Voen.-med.
zhur.   no.12:83 D '58.

(SKIN--DISEASES)   (MIRA 12:12)

IL'IN, B.I., kand.med.nauk (Omsk)

Dermatitis caused by contact with fuels and lubricants and their
prevention. Fel'd. i akush. 23 no.6:28-30 Je '58   (MIRA 11:6)
        (SKIN--DISEASES)
        (PETROLEUM PRODUCTS--HYGIENIC ASPECTS)

IL'IN, B.I., kand. med. nauk (Gor'kiy)

Prophylaxis and treatment of epithelioma of the skin. Fel'd i akush.
24 no.3:9-13 Mr '59.   (MIRA 12:4)
                        (SKIN--CANCER)

IL'IN, B.I., kand.med.nauk

"Skin reactions to ionizing radiation" by I.N.Pobedinskii, IU.K
Kudritskii. Reviewed by B.I.Il'in. Sov.med. 24 no.11:155-157
N '60.   (MIRA 14:3).

    (SKIN)   (RADIATION—PHYSIOLOGICAL EFFECT)
    (POBEDINSKII, I.N.)   (KUDRITSKII, IU.K.)

IL'IN, B.I., kand.med.nauk (Gor'kiy)

Use of nitrofungin in the treatment of epidermophytosis of the feet. Vest.derm.i ven. 34 no.10:83-84 '60. (MIRA 13:11)
(FUNGICIDES) (RINGWORM)

IL'IN, B.I., podpolkovnik meditsinskoy sluzhby, kand.med.nauk

Treating pruritic diseases of the skin with RP-2 developed by A.A. Pokrovskii; abstract. Voen.-med.zhur. no.3:78 Mr '61. (MIRA 14:7)

(PRURITIS)   (POKROVSKII, A.A.)

IL'IN, B.I., podpolkovnik meditsinskoy sluzhby, kand.med.nauk; GELLER, I.I., mayor meditsinskoy sluzhby

Preventing epidermophytosis in the military unit; abstract. Voen.-med.zhur. no.3:79 Mr '61. (MIRA 14:7)
(RINGWORM)

IL'IN, B.I., kand.med.anuk (Gor'kiy)

Some occupational skin diseases in medical workers. Sov.med. 25
no.4:113-119 Ap '61.
(MIRA 14:6)
(MEDICAL PERSONNEL—DISEASES AND HYGIENE)
(SKIN—DISEASES)

IL'IN, B.I., kand. med.nauk (Gor'kiy)

Psoriasis. Fel'd. i akush. 27 no.1:36-41 Ja '62.   (MIRA 15:3)
(PSORIASIS)

BATUNIN, M.N., prof., zasluzhennyy deyatel' nauki; IL'IN, B.I.,
    kand.med.nauk

Results of the readers' conference organized by the Gorkiy
Dermatovenereological Society on April 13, 1961 for discussing
the materials published in the journal, "Vestnik dermatologii i
venerologii" in 1960. Vest.derm.i ven. no.12:77-81 '61.
                                                    (MIRA 15:1)

1. Predsedatel' Gor'kovskogo dermato-venerologicheskogo obshchestva
(for Batunin). 2. Sekretar' Gor'kovskogo dermato-venerologicheskogo
obshchestva (for Il'in).
        (DERMATOLOGY--PERIODICALS) (VENEREOLOGY--PERIODICALS)

IL'IN, B. I., kand. med. nauk (Gor'kiy)

Some methods of treating fungal diseases of the hair of the head without using X rays. Fel'd. i akush. 27 no.6:12-15 Je '62.

(HAIR—DISEASES)   (MYCOSIS)

IL'IN, B.I., kand. med. nauk (Gor'kiy)

Comparative evaluation of the treatment of epidermophytosis of feet. Sov. med. 27 no.6:67-73 Je '64.

(MIRA 18:1)

IL'IN, B.I.; KOROLEV, V.G. (Gor'kiy)

Treatment of hyperhidrosis of the feet with an ultrahigh
frequency electric field. Vop. kur., fizioter. i lech. fiz.
kul't. 29 no.2:172 Mr-Ap '64   (MIRA 18:2)

IL'IN, B.I., kand.med.nauk (Gor'kiy)

Diagnosis of eczema of the external ear. Vest. derm. i ven. 38
no.4:77-79 Ap '64.   (MIRA 18:4)

L 04192-67   EWT(d)/EWT(m)/EWP(c)/EWP(v)/T/EWP(t)/ETI/EWP(k)/EWP(1)   IJP(c)   JD:
SOURCE CODE: UR/0129/66/000/008/0067/0068

ACC NR: AP6028591   (A)

AUTHOR: Il'in, B. I.

ORG: Kiev Institute of Civil Aviation (Kievskiy institut grazhdanskoy aviatsii)

TITLE: The increase of surface hardness of quenched alloy steel by cold working and tempering at 200°C

SOURCE: Metallovedeniye i termicheskaya obrabotka metallov, no. 8, 1966, 67-68

TOPIC TAGS: alloy steel, heat treatment, tempering, cold working, microhardness, surface hardness, surface condition, mechanical strength / 30KhGSNA steel

ABSTRACT: Surface layers of quenched 30KhGSNA steel (σ_v = 160-180 kg/mm^2) were strengthened by cold working and subsequent tempering at 200°C. Cold rolled samples of quenched steel were tempered at 200°C for 3 hr and the microhardness of the surfaces was measured. The microhardness of quenched steel decreased as a function of roll force, although it always remained higher than the original microhardness. Surface smoothness improved with rolling; profilometer readings for different rolling conditions are given. After tempering, the hardness increased to a constant value for all rolling forces, with higher hardnesses being observed for higher original strength. Tempering raised the hardness nonuniformly; for 68% deformation the microhardness relative to the cold worked condition increased by 90 after tempering, while for 84% it increased by 315.

UDC: 621.785.79.4:621.785.51.72

Card 1/2

L 04192-67

ACC NR: AP6028591 $\mathcal{3}$

Changes in microhardness after cold working and tempering at 200°C are given as a function of rolling force for quenched strength levels of 168, 178, and 182 kg/mm^2, and quenched hardnesses of 610, 662, and 715. After cold working and tempering, the hardness increased for each condition to 780, 845, and 1025, respectively, remaining constant as a function of rolling force. The deformed surface layer was studied with a magnetic defectoscope, and microsections were examined metallographically. Surface irregularities due to machining were deformed to a depth of 0.08 mm and no cracking or flaking was observed. Orig. art. has: 2 figures.

SUB CODE: 11,13,20/SUBM DATE: none

Card 2/2 $\mathcal{LC}$

ACC NR: AP6029529   (N)   SOURCE CODE: UR/0046/66/012/003/0310/0318

AUTHOR: Il'in, B. I.; Eknadiosyants, O. K.

ORG: Acoustics Institute, AN SSSR, Moscow (Akusticheskiy institut AN SSSR)

TITLE: Concerning the nature of the atomization of liquids in an ultrasonic fountain

SOURCE: Akusticheskiy zhurnal, v. 12, no. 3, 1966, 310-318

TOPIC TAGS: droplet atomization, ultrasonic effect, ultrasonic equipment, fog, liquid

ABSTRACT: The authors report experiments made with a purpose of investigating quanti-
tatively the influence of temperature and static pressure of the gas used for the
atomization of liquids in an ultrasonic fountain. Particular attention was paid to
the threshold of fog formation by ultrasonic means and to frequencies corresponding
to this threshold. The apparatus used for the investigations is briefly described.
Ten liquids with different vapor tension, surface tension coefficient, and dynamic
viscosity coefficient were tested to determine the atomization threshold as a function
of the physical and chemical properties of the liquids. The liquids tested were:
ortho-toluidine, n-caproic acid, methyl-anilin, metha-cresol, diethylene-glycol,
dimethylene-glycol, dibutyl-phthalate, isobutyl-alcohol, and benzyl alcohol. The re-
sults have shown that an increase in the temperature of the liquid and in the inten-
sity of the ultrasound increase the frequency of the fog-formation pulses in the
ultrasonic fountain, and that removal of the gas from the liquids and an increase in
the gas pressure increase the atomization threshold and lower the frequency of the

UDC: 534.29: 66.069.8

Card   1/2

ACC NR: AP6029529

ultrasonic fog-formation pulses. Special equipment was developed to determine the
effect of the gas pressure. It is shown that the experimental data and the pulsed
character of fog formation, as well as other peculiarities of the atomization of
liquids in an ultrasonic fountain, can be explained relatively simply from the point
of view of the cavitation hypothesis, but the detailed mechanism and possible influ-
ence of the oscillatory processes that accompany the ultrasonic atomization still
remain unclear and call for further research. The authors thank L. D. Rozenberg and
M. G. Sirotyuk for valuable advice and A. D. Karyugina and V. N. Kharitonov for parti-
cipating in the experiments. Orig. art. has: 8 figures and 2 tables.

SUB CODE: 20/   SUBM DATE: 28Feb65/   ORIG REF: 003/   OTH REF: 002

Card   2/2

Il'in, B.I.

65-1-10/14

AUTHORS: Kheyfets, Ye. M., Lipovskaya, K. S, Il'in, B.I., and Mukhina, A.V.

TITLE: Synthetic Ceresine, its Properties and Uses. (Sinteticheskiy tserezin yego svoystva i primeneniye).

PERIODICAL: Khimiya i Tekhnologiya Topliv i Masel,1958,No.1.pp.52-57. (USSR).

ABSTRACT: During the catalytic hydrogenation of carbon monoxide, products are obtained which contain mainly paraffin hydrocarbons e.g. methane, and also high-molecular hard paraffins (Refs.1-3). The fraction of synthetic hydrocarbons, boiling above 450°C, is called ceresine. This compound is obtained by synthesizing it over a cobalt-thorium catalyst. It consists mainly of n-paraffin hydrocarbons with a small amount of mixtures of oxygen-containing compounds (about 5%). Synthetic ceresine does not contain naphthenic or aromatic hydrocarbons but asphaltenes, resinous and sulphur contain-ing compounds which are characteristic for high-molecular products obtained from crude oil. Industrial ceresine has a molecular weight of about 900, but hydrocarbons with a molecular weight up to 23,000 have been prepared

Card 1/4

Synthetic Ceresine, its Properties and Uses.   65-1-10/14

under laboratory conditions, by using different cata-
lysts (Ref.4). The synthetic ceresine is a hard,
dark-brown substance. The colour is due to admixtures,
which can be separated by an absorption process, using
bleaching earths, or by treating it with sulphuric acid.
Data in Table 1 show that a small change in the molecu-
lar weight of synthetic ceresine causes a sharp increase
in the density and the viscosity of the material. At
20°C the density varies between 0.91 - 0.92 and the vis-
cosity between 105°C - 110°C varies between 2.80 - 6.20
centistokes. Experiments show that at low concentrations
(up to 1%) synthetic ceresine samples, when heating them
to a temperature between 60°C - 70°C, can be dissolved
in benzene, carbon tetrachloride, toluene, xylene and
in synthol fractions (boiling between 80°C - 300°C).
The diagram in Fig.1 shows the relationship between the
melting point, the molecular weight and the number of
carbon atoms in the molecule of a number of n-hydrocarbons.
The hardness of synthetic ceresine can be increased by
distilling the fraction boiling below 450°C. When syn-
thetic ceresine is added to very soft natural ceresine

Card 2/4

Synthetic Ceresine, its Properties and Uses.   65-1-10/14

or to paraffins, the hardness of the latter is consider-
ably increased. The synthetic ceresine is not hygro-
scopic and it can be used for the manufacture of mois-
ture-resistant coating compositions. The compound
can also be used for making dielectrics to be used
under very inclement meteorological conditions, at tem-
peratures varying from - 60° to + $50^\circ C$ and when the
humidity of air reaches up to 98%. The dielectric
properties of synthetic ceresine are very similar to
those of natural ceresine. The synthetic compound is
practically stable at temperatures below its melting
point. At increased temperatures ($120^\circ C - 140^\circ C$) syn-
thetic ceresine is easily oxidised by oxygen contained
in the air, its acid number increases, and therefore
it has weakened dielectric properties (Table 6). Ex-
periments were carried out to stabilise synthetic
ceresine by adding to it special inhibitors. The
influence of various inhibitors on the thermal stabi-
lity of the synthetic compound is shown in Table 7.

Card 3/4

Synthetic Ceresine, its Properties and Uses.   65-1-10/14

The frost-resisting and anti-corrosive properties
of the compound were investigated by NII and VIAM.
Synthetic ceresine is used in the form of its
alloys in various branches of industry, e.g. in
the textile industry, in the paper, timber and
leather industries. There are 7 Tables, 1 Figure
and 7 References: 4 Russian, 3 German.

ASSOCIATION: VNII NP.

AVAILABLE: Library of Congress.

Card 4/4

SOV/65-58-9-10/16

AUTHORS: Kheyfets, Ye. M; Milovidova, N. V. Zel'vyanskaya, Ye. B; Il'in, B. I; Yudakova, R. N; Rapoport, I. B.

TITLE: The Preparation of Detergents From Olefins, (Polucheniye moyushchikh veshchestv iz olefinov)

PERIODICAL: Khimiya i Tekhnologiya Topliv i Masel, 1958, Nr 9, pp 48 - 54, (USSR)

ABSTRACT: C_8 - C_{18} olefins are used as raw materials in the preparation of secondary alkyl sulphates. These compounds are marketed in the West under the trade name "Teepol". More raw materials become available when C_5 - C_8 unsaturated hydrocarbons are utilized. The latter are obtained in considerable quantities during the Fischer-Tropsch process and during the cracking of paraffin. These olefins can be polymerised to di- and trimers over Mo-and Ni- catalysts. Preliminary investigations confirmed literature data on the possibility of preparing olefins boiling between $150°$ - $300°C$ by dehydrogenation of paraffins boiling within the same limits. Thus it was possible to use paraffin obtained during the carbamide deparaffination of diesel oil for the preparation of "Teepols". Olefins obtained in this way occur in a mixture with saturated paraffins and are treated with sulphuric acid.

Card 1/4

The Preparation of Detergents From Olefins.

During this process dialkyl sulphates and polymerised olefins are formed (Ref.18). The yield and quality of the products is influenced by the concentration of H_2SO_4, by the molar ratio H_2SO_4-olefins, the temperature and length of the reaction, by the conditions of mixing the raw material and the reagents, and by the conditions of neutralisation and hydrolysis. This method was used for the preparation of detergents from different starting materials containing varying amounts of unsaturated hydrocarbons.   Synthesis gas, cracked paraffin and dehydrogenated paraffins were used as starting materials. Their content in unsaturated hydrocarbons varied between 7 and 68% (Table 1). Process conditions were such that minimal side reactions of polymerisation and formation of dialkyl sulphates were achieved. These products were sulphonated in a glass apparatus (Fig.1), and contacted with H_2SO_4 for 20 - 70 seconds. The reaction products were neutralised with a 35% solution of NaOH and the formed dialkyl sulphates hydrolised for two hours at 70°. The unreacted hydrocarbons and formed polymers were separated from the aqueous alkyl sulphate solution by settling and extraction. They were treated with

Card 2/4

SOV/65-58-9-10/16

The Preparation of Detergents From Olefins.

Na_2CO_3 and concentrated over a water bath. The final product, depending on the concentration of the active substance, appeared as a powder (containing about 20% of active substance) or as a paste (approximately 50% of active substance). Aqueous alkyl sulphate solutions of given concentration were also prepared (Ref.10) Results of tests carried out on the sulphonation of narrow fractions containing mainly C_{10}, C_{12}, C_{13} and C_{15}-C_{17} fractions are tabulated (Table 2). Table 3: data on the preparation of detergents from olefins contained in the 180° - 320°C fraction made by synthesising the same over Fe-Cu catalyst. The largest rate of conversion was achieved when the molar ration of C_nH_{2n} - H_2SO_4 = 1:2. Sulphonation experiments on various raw materials (Table 4) proved that the depth of conversion in one operation amounted to 73 - 81%. The remaining 19 - 27% of olefins can be used for a second sulphonation operation. Further experiments were carried out on the $180 - 320^\circ$ fractions containing 32% olefins in order to separate the excess H_2SO_4 and re-use of the same in the cycle. According to the conclusions of A. Yu. Rabinovich and M. S. Il'in of the Moscow Branch of VNIIZh

Card 3/4

The Preparation of Detergents From Olefins.   SOV/65-58-9-10/16

the prepared detergents showed good surface-active proper-
ties. The most satisfactory results were obtained with
solutions prepared from narrow fractions containing mostly
C_{12} and $C_{15} - C_{17}$ hydrocarbons and from the 230 - 320°C
fraction. The detergent action of aqueous solutions can
be further improved by the addition of carboxymethyl-
cellulose. There are 4 Tables, 1 Figure and 19 Referen-
ces: 5 English, 1 French and 13 Soviet.

ASSOCIATION: VNII NP

1. Detergents--Preparation   2. Detergents--Materials
3. Ethylenes--Polymerization   4. Methanes--Fractionation

Card 4/4

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.

L 01516-66 | EWT(1)/FCC   GW

ACCESSION NR: AT5017067   UR/2531/65/000/168/0021/0026

AUTHOR: Dubov, A. S.; Il'in, B. M.
              44,55   44,55
TITLE: Accounting for deviations of the wind from geostrophic in the boundary layer
in numerical forecasting

SOURCE: Leningrad. Glavnaya geofizicheskaya observatoriya. Trudy, no. 168, 1965.
Chislennyy analiz i prognoz pogody (Numerical analysis and weather forecasting),
21-26

TOPIC TAGS: geostrophic wind, weather forecasting, wind velocity
                                    44,55

ABSTRACT: A model for the coefficient of turbulent interchange is used in calcula-
tions of the wind in the boundary layer. According to this model, the coefficient
increases linearly up to a certain altitude and then remains constant. The parame-
ters of the model are determined from data on the geostrophic wind and the roughness
of the underlying surface (Laykhtman, D. L., "Physics of the Atmospheric Boundary
Layer," Gidrometeoizdat, Leningrad, 1961) using the equation for balance of turbu-
lent energy and the relationship between wind velocity and the coefficient of inter-
change at a height of one meter. Calculated values for the wind at the vane level

Card 1/2

L 01516-66   3

ACCESSION NR: AT5017067

are compared with weather map data. Geostrophic vorticity and temperature advec-
tions are compared with the advections of these same factors with regard to wind
variations in the boundary layer. A preliminary conclusions is made that the pro-
posed method of calculation is most effective for stable wind conditions and high
wind velocities. Orig. art. has: 1 figure, 1 table, 9 formulas.

ASSOCIATION: Glavnaya geofizicheskaya observatoriya, Leningrad (Main Geophysical
Observatory)

SUBMITTED: 00   ENCL: 00   SUB CODE: ES

                                     OTHER: 000
NO REF SOV: 008

Card 2/2

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.168:113-122 '65. (MIRA 18:8)

SOLOGUB, Nikolay Avramovich, inzh.; IL'IN, Boris Nikolayevich, kand.
tekhn. nauk, dotsent; IPATOV, Konstantin Aleksandrovich, inzh.;
MOYSIK, M.R., kand. tekhn. nauk, retsenzent; TIRANSKAYA, S.M.,
kand. tekhn. nauk, retsenzent; KHMELEVSKIY, S.A., kand. tekhn.
nauk, retsenzent; PREYS, G.A., kand. tekhn. nauk, dots., red.;
FURER, P.Ya., red.; GORNOSTAYPOL'SKAYA, M.S., tekhn. red.

[Laboratory research on the technology of metals] Laborator-
nye raboty po tekhnologii metallov. Moskva, Mashgiz, 1961. 294 p.
   (Metallurgical research)   (Metalwork--Testing) (MIRA 15:2)

DYATLOV, I.G., kand.tekhn.nauk; IL'IN, B.P., inzh.

High-precision sugar beet planter. Trakt.i sel'khozmash.
no.8:23-25 Ag '59.   (MIRA 12:11)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut sel'skokhozyay-
stvennogo mashinostroyeniya (VISKhOM).
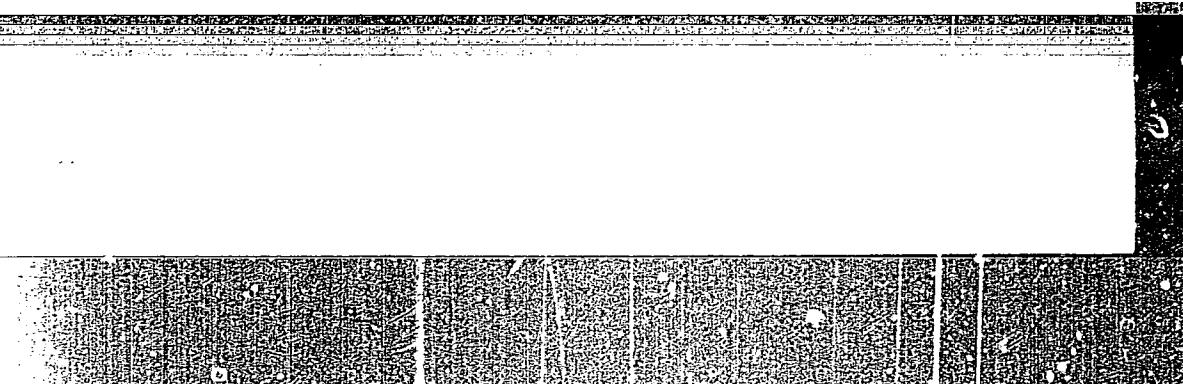   (Planters(Agricultural machinery)

IL'IN, B.P.; KUZNETSOV, B.F.

The SSN-12 mounted twelve-row beet planter. Biul.tekh.-ekon.inform.
no.6:51-53 '60.
(MIRA 13:7)
(Sugar beets)
(Planters (Agricultural machinery)

IL'IN, B. S.

Blood - Agglutination

Agglutination reaction with a drop of fresh blood in the diagnosis of brucellosis of sheep and its diagnostic significance. Veterinariia 29 no. 3:29 Mr '52.

9. **Monthly List of Russian Accessions**, Library of Congress, July 1953, Unclassified.
2

STERNZAT, M.S.; SHADRINA, Ye.N.; IL'IN, B.V.; SOLODKOV, A.G.

Ship anemovane. Trudy NIIGMP no.7:155-167 '59.   (MIRA 13:5)
(Anemometer)

IL'IN, B.V., Cand Tech Sci -- (diss) "On the selection of
a rational *scheme* of autonomous *control*. " L*'*n, 19*5*8, 22 pp
(Min of Higher Education USSR. Len Electrical Engineering
Inst im V.I. Ul'yanov (Lenin)) 100 copies (KL, 27-58,109)

- 105 -

Translation from: Referativnyy zhurnal, Mekhanika, 1958, Nr 9, p 10 (USSR)

124-58-9-9525

AUTHOR: Il'in, B. V.

TITLE: On Interconnected Control Systems With Partial Autonomy (O sistemakh vzaimosvyazannogo regulirovaniya s chastichnoy avtonomnost'yu)

PERIODICAL: Tr. Leningr. tekhnol. in-ta im. Lensoveta, 1957, Nr 38, pp 216-227

ABSTRACT: An examination of linear systems with several control units and controlled variables, wherein one group of controlled variables exerts an influence on a second group, whereas the second group of controlled variables does not exert any influence on the first group. Such interconnected control system are referred to as system with partial autonomy, distinguishing them from interconnected systems with full autonomy in which the controlled variables do not influence one another at all. Mathematically speaking, a partially autonomous system is characterized by the fact that all the terms (transfer functions) of its matrix situated to the right of the principal diagonal are identically equal to zero (in fully autonomous systems only the

Card 1/2

On Interconnected Control Systems With Partial Autonomy   124-58-9-9525

terms lying on the principal diagonal itself of the matrix are not equal to zero.

1. Control systems--Mathematical analysis   2. Mathematics   N. T. Kuzovkov
--Applications

Card 2/2

IL'IN, Boris Vladimirovich, assistent.

Dependence of the static precision of self-contained control systems on the insensitiveness of governors. Isv. vys. ucheb. zav.; elektromekh. 1 no3;90-101 '58.

(MIRA 11:9)

1. Kafedra elektrotekhniki Leningradskogo tekhnologicheskogo instituta imeni Lensoveta.

(Automatic control)

AUTHOR: Il'in, B. V. (Candidate Technical Sciences, Assistant)

SOV/144-58-11-6/17

TITLE: Two Methods of Realising the Principle of Independent Control and Their General Evaluation (Dva metoda realizatsii printsipa avtonomnogo regulirovaniya i ikh obshchaya otsenka)

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Elektromekhanika, 1958, Nr 11, pp 57-73 (USSR)

ABSTRACT: In the automation of production processes it is often necessary to devise systems for the inter-related control of several magnitudes. One of the main ways of doing this is based on the principle of independent control originally suggested by I. N. Voznesenskiy (Refs 1, 2), in which a complicated automatic control system with several controlled magnitudes is resolved into a number of simpler separate systems, each with one controlled magnitude, which are not inter-related through the control process. The principle of independent control has been developed for a quarter of a century and has been applied to automatic control systems of many kinds. Several methods have been proposed to resolve the complicated control systems into separate simpler ones. Further development of the theory and practice of independent control depends on successful solution of a number of problems of which the most important are: comparative evaluation of

Card 1/9

Two Methods of Realising the Principle of Independent Control and
Their General Evaluation

SOV/144-58-11-6/17

existing methods of independent control so that the best
system may be selected for each particular case; rational
determination of the field of application of the independent
control principles. This article considers a number of quest-
ions related to these problems and investigates and compares
two methods of realising the principle of independent control
and shows that there is a common condition for which the prin-
ciple cannot be applied. Originally two different methods of
sub-dividing complicated automatic control systems were
developed for the purely formal reason that there are two
forms in which the equations representing the dynamics of
the object and the control system can be written down: these
are the differential form and expression as transmission
functions. However, the simultaneous existence of the two
methods is justified in that they can be used to derive
separate systems of different dynamic properties so that the
prospects and field of application of independent control
are extended. The article considers linear automatic control

Card 2/9

Two Methods of Realising the Principle of Independent Control and
Their General Evaluation

SOV/144-58-11-6/17

systems in which the number of controlled magnitudes is the
same as the number of control organs. It is assumed that
transient processes in the system occur with zero initial
conditions but there are no other limitations on the charac-
teristics of the object or the control systems. Laplace
transforms of differential equations of a linear object with
n controlled magnitudes, assuming zero initial conditions
are then given, see Eq (1). A structural diagram of the
object represented by the system of equations (1) is given
in Fig 1. Equations of the dynamics of the object are often
also expressed in terms of transmission functions as shown in
expression (2). A structural diagram of an object correspond-
ing to this form of expression is given in Fig 2. This method
of presentation does not give so much information about the
structure and nature of inter-relations as can be obtained
from the first system, which is accordingly to be preferred
as a starting point in designing independent control systems.
However, derivation of the system of differential equations
(1) usually requires analytic investigation of the internal
properties of the object which is often impractical. In most
Card 3/9 complicated industrial objects a reliable and often the only

Two Methods of Realising the Principle of Independent Control and
Their General Evaluation

SOV/144-58-11-6/17

available method of investigating the dynamic properties is
experimental determination of temporal or frequency charact-
eristics from which it is usually possible to derive trans-
mission functions, but only rarely the system of differential
equation (1). For the sake of uniformity and convenience of
further calculations the system (1) is then converted to an
expression in terms of transmission functions, as shown in
expression (3) which are somewhat different from the ordin-
ary transmission functions of the object. A structural dia-
gram of the object represented by this system of equations
is given in Fig 3. A system of controllers is then defined
as an automatic device that controls processes in the object.
The article considers the most general properties of automatic
control systems and, therefore, synthesis of systems of con-
trollers is limited to definition of the relationship between
the input and the output coordinates. When the problem is
formulated in this way the dynamic equations of a system of
regulators is best expressed in terms of transmission funct-
ions as in expression (7). The problem of synthesizing a

Card 4/9

Two Methods of Realising the Principle of Independent Control and
Their General Evaluation

SOV/144-58-11-6/17

system of regulators is considered solved if a matrix of the
form of expression (8) is defined. Investigation of practical
methods of realising elements of matrices of systems of regu-
lators is not considered in this article. By applying a sys-
tem of regulators to the object in an appropriate way we ob-
tain a new closed dynamic automatic control system the
structure of which is illustrated diagrammatically in Fig 5,
in which the structural diagram of the object might be either
Fig 1 or Fig 3. The equations of the dynamics of the auto-
matic control system are found by excluding from the equat-
ions of the object and of the system of regulators all
coordinates except the controlled magnitudes. These equations
are then expressed in terms of transmission functions of the
object and of the system of regulators. In this way express-
ions (9) and (11) are obtained and the corresponding matrices
are given in expressions (13) and (14) respectively. The
elements of the main diagonals of these matrices define the
free oscillations of the controlled magnitudes in certain
particular dynamic systems sub-divided from the general auto-
matic control system. It is important to note that the sep-
aration of the particular systems is carried out differently

Card 5/9

SOV/144-58-11-6/17

Two Methods of Realising the Principle of Independent Control and
Their General Evaluation

in the two cases, the difference occurring in the object.
In the first case, illustrated in Fig 6, all possible inter-
relationships between the controlled magnitude are external
and in the second, represented in Fig 7 the only external
inter-relationships are those which are transmitted through
the channels external to the object as a whole, that is through
the system of regulators. The non-diagonal elements of the
matrices define the inter-relationship between the controlled
magnitudes through channels external to their particular sys-
tems. In an independently controlled system these elements
should be zero. For the practical realisation of independent
control, artificial channels are set up between some points in
the automatic control system between which interaction is to
be prevented, so as to compensate for the influence of the
natural channels. The parameters of these artificial compen-
sating channels are defined from the requirement that all
non-diagonal elements of the matrices of the automatic control
system should be zero; this requirement is expressed in

Card 6/9

Two Methods of Realising the Principle of Independent Control and
Their General Evaluation

expression (15). This expression is called the condition of
internal independence. The condition given in expression
(16) is called the condition of external independence. Thus,
the formal difference between automatic control systems with
internal and external independence is that the first is based
on the differential form of expression of the dynamic equat-
ions of the control system and the second on their express-
ion in terms of transmission functions. The theory and syn-
thesis of automatic control systems with internal and ex-
ternal independence are then considered in turn and the
necessary equations are derived. Some special features of
and differences between automatic control systems with in-
ternal and external independence are then considered by com-
paring the dynamic equations of the two systems (see ex-
pressions (21) and (32) respectively. It is shown that sep-
arate systems with internal independence differ considerably
in their dynamic properties from systems with external in-
dependence. There are differences both in the internal dyn-
amic properties of the systems and in their response to ex-
ternal disturbances. Either kind of system may be the more
suitable in any particular case. Systems with internal

Card 7/9

Two Methods of Realising the Principle of Independent Control and
Their General Evaluation

independence are advantageous when the main disturbances of
the object directly influence the controlled magnitudes.
Systems with external independence are to be preferred for
programme control systems in which the major disturbances
to the control system are control signals. Very often the
most serious disturbances to an automatic control system
are transmitted through uncontrolled coordinates of the ob-
ject and influence a number of the controlled magnitudes
simultaneously. In such cases rational choice of the method
of realising the principle of independence requires more de-
tailed study than can be given in the present article. So
far the examination has not revealed any conditions that
limit the applicability of the principle of independent
control in constructing linear inter-related control systems.
However, condition (33) is now derived which shows when the
principle is inapplicable because any input signal should

Card 8/9

SOV/144-58-11-6/17

Two Methods of Realising the Principle of Independent Control and
Their General Evaluation

give an infinitely large output signal. The physical mean-
ing of condition (33) is discussed and it is shown to define
a class of objects with several controlled magnitudes for
which independent control systems are not applicable. There
are 9 figures and 15 references, of which 14 are Soviet and
1 English.

ASSOCIATION: Kafedra elektrotekhniki Leningradskogo tekhnologicheskogo
instituta(Electrical Engineering Chair, Leningrad Technological
Institute)

SUBMITTED: November 10, 1958.

Card 9/9

Boris Vladimirovich

AUTHOR: Il'in, B.V., Candidate of Technical Sciences, Junior Instructor

SOV/144-59-6-9/15

TITLE: Two Methods of Realising the Compensating Coupling in Autonomous Control Systems

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Elektromekhanika, 1959, Nr 6, pp 71 - 84 (USSR)

ABSTRACT: In an earlier article (Ref 1), the author considered two methods suitable for the realisation of the principle of autonomous control and gave their evaluation. One of the methods leads to the automatic-control systems having an internal autonomy, while the second method assumes the existence of the conditions of external autonomy. The design of such automatic-control systems was based (Ref 1) on the determination of the transfer functions of a generalised network of a system of controllers (Figure 1); the systems had to satisfy the conditions of autonomy and the performance requirements. In the following, the results of the earlier work are applied to particular controllers. It is assumed that a general system of controllers consists of a set of controllers which are interconnected by means of dynamic couplings. These are

Card1/5

SOV/144-59-6-9/15

Two Methods of Realising the Compensating Coupling in Autonomous
Control Systems

> referred to as the compensating couplings since they are
> introduced for the purpose of transferring the compensating
> pulses.Two basic systems of realising the compensating
> couplings are considered. The analysis is based on the
> formulae derived in the earlier work and the same notation
> is preserved. The realisation of the compensating couplings
> is illustrated in Figures 2 and 3, where the rectangles
> denote the elements of the controllers and the circles
> represent the couplings between them. Figure 2 shows a
> system with direct compensating couplings, while Figure 3
> illustrates a system with reverse couplings. Every
> direct compensating coupling can effect the inputs of other
> couplings only through an object. This is impossible in
> controller systems. Conversely, in the networks with
> reverse compensating couplings, the interaction can be
> achieved also in controller systems. Another distinction
> between the direct compensating couplings and reverse
> compensating couplings is due to the fact that the former
> nearly always increase the energy level of the signals

Card2/5

SOV/144-59-6-9/15

Two Methods of Realising the Compensating Coupling in Autonomous
Control Systems

transmitted, while the latter attenuate the signals. On
the basis of the formulae and equations of the earlier
work (Ref 1), the transfer function of a system of con-
trollers (Figure 1) is expressed by the transfer functions
of the controllers and the compensating couplings
(Figures 2, 3). The analysis is carried out for the
automatic-control systems with direct compensating
couplings and reverse compensating couplings; in both
cases, the control systems with internal and external
autonomy are considered. Two methods of the design of
autonomous control systems are considered. The first
method assumes that all the elements of the automatic-
control system are given; the non-diagonal elements are
equated to zero (condition of autonomy) and the elements
of the main diagonal are chosen on the basis of the
requirements to be met by the autonomous-control systems.
Afterwards, the transfer functions of the controllers
and the compensating couplings are evaluated simultaneously.
The second method is based on the equations of the dynamics

Card3/5

Two Methods of Realising the Compensating Coupling in Autonomous
Control Systems

SOV/144-59-6-9/15

   of separate systems. The transfer functions of the
controllers are used to express these dynamic equations,
while the transfer functions of the compensating networks
are eliminated (from the equations). The transfer
functions of the controllers are, therefore, evaluated from
the dynamics of the separate systems and, later, the
transfer functions of the compensating couplings are deter-
mined by means of the formulae expressing their dependence
on the transfer functions of the controllers. The systems
with direct compensating couplings and reverse compensating
couplings are briefly compared (qualitatively). One of
the advantages of the systems with direct compensating
couplings, as compared with the systems having reverse
compensating couplings, lies in the fact that the design
of the former can be carried out by both the above methods,
while the design of the latter can be based on the second
method only, when the system possesses an internal
autonomy.

Card4/5

Two Methods of Realising the Compensating Coupling in Autonomous Control Systems $SOV/144-59-6-9/15$

Control Systems

There are 10 figures and 11 Soviet references.

ASSOCIATION: Kafedra elektrotekhniki, Leningradskiy tekhnologicheskiy institut (Chair of Electrical Engineering, Leningrad Technological Institute)

SUBMITTED: April 28, 1959

Card 5/5

IL'IN, B.V.

Block diagrams, design, and adjustment of independent control systems. Trudy LTI no.50:32-45 '59. (MIRA 14:3)
(Automatic control)

IL'IN, Boris Vladimirovich, kand.tekhn.nauk

Selection of autonomous control networks with simple compensating
links. Izv.vys. ucheb. zav; elektromekh. 3 no.8:27-43 '60.
(MIRA 13:9)

1. Ispoln. obyaz. dotsenta kafedry avtomatizataii khimicheskikh
proizvodstv Leningradskogo tekhnologicheskogo instituta.
(Automatic control)