L 1122-66 EWT(d) IJP(c)

ACC NR: AP5028872 SOURCE CODE: UR/0038/65/029/001/0137/0148

AUTHOR: Anfert'yeva, Ye. A. 44,55

ORG: none

TITLE: Certain power series 16,44,55 with periodic coefficients

19
B

SOURCE: AN SSSR. Izvestiya. Seriya matematicheskaya, v. 29, no. 1, 1965, 137-148

TOPIC TAGS: series, function theory

ABSTRACT: The author studies the behavior of the series $\sum_{n=1}^{\infty} a_n z^{n^m}$ (m is a positive integer; a_n is aperiodic sequence of complex numbers) in a unit circle. It is shown that in the vicinity of the roots within the circle this series approximates power functions with fractional exponents. The paper generalizes the well-known works on Θ-functions. Orig. art. has: 35 formulas. [JPRS]

SUB CODE: MA / SUBM DATE: 03Apr64 / ORIG REF: 002

Card 1/1

UDC: 517.522.2

CHERNYSHEV, M.P.; ROZHKOV, L.P.; SHUL'GINA, Ye.F.; IGNATOVICH, A.F.; LABUNSKAYA, L.S.; FOMINA, T.V.; CHERNYAKOVA, A.P.; SHPAKOVA, L.N.; TARASOVA, M.K.; ANFILATOVA, A.I.; SLAVIN, L.B.; BARYSHEVSKAYA, G.I.; DERIGLAZOVA, N.V.; MATUSHEVSKIY, G.V.; AL'TMAN, E.N.; KROPACHEV, L.N.; CHEREDILOV, B.F.; POTAPOV, A.T.; DUDCHIK, M.K.; REGENTOVSKIY, V.S.; YERMAKOVA, L.F.; SEMENOVA, Ye.A.; KULIKOVSKIY, I.I.; KIRYUKHIN, V.G.; AKSENOV, A.A., red.; NEDOSHIVINA, T.G., red.; SERGEYEV, A.N., tekhn. red.; BRAYNINA, M.I., tekhn. red.

[Hydrometeorological handbook of the Sea of Azov] Gidrometeorologicheskii spravochnik Azovskogo moria. Pod red. A.A.Aksenova. Leningrad, Gidrometeoizdat, 1962. 855 p. (MIRA 16:7)

1. Gidrometeorologicheskaya observatoriya Chernogo i Azovskogo morey.

(Azov, Sea of--Hydrometeorology)

ANFILOF'YEV, Ya.

An improved belt conveyer brake. Mast.ugl.4 no.7:17 Jl'55.
(MLRA 8:10)

1. Nachal'nik uchastka razreza no.2 "Yuzhnyy" tresta Korkinugol'
(Conveying machinery)

ANFILOGOV, A.D.; BELOSTOTSKIY, N.B.; KOVATSENKO, Ye.G.; KOZYREV, Yu.M.; KURACHENKO, Yu.P.; MAL'TSEV, V.M.

Measuring equipment in the service of technological development. Izm.tekh. no.12:48-50 D '62. (MIRA 15:12)
(Measuring instruments)

L 20983-65 EWT(d)/EWP(1) AMD(b)

ACCESSION NR: AP5003785 S/0028/64/000/008/0042/0043

AUTHOR: Anfilogov, A. D.; Belostotskiy, K. B.; Dombrovskiy, G. Ya.

TITLE: New forms of leadership in the standardization program are needed

SOURCE: Standartizatsiya, no. 8, 1964, 42-43

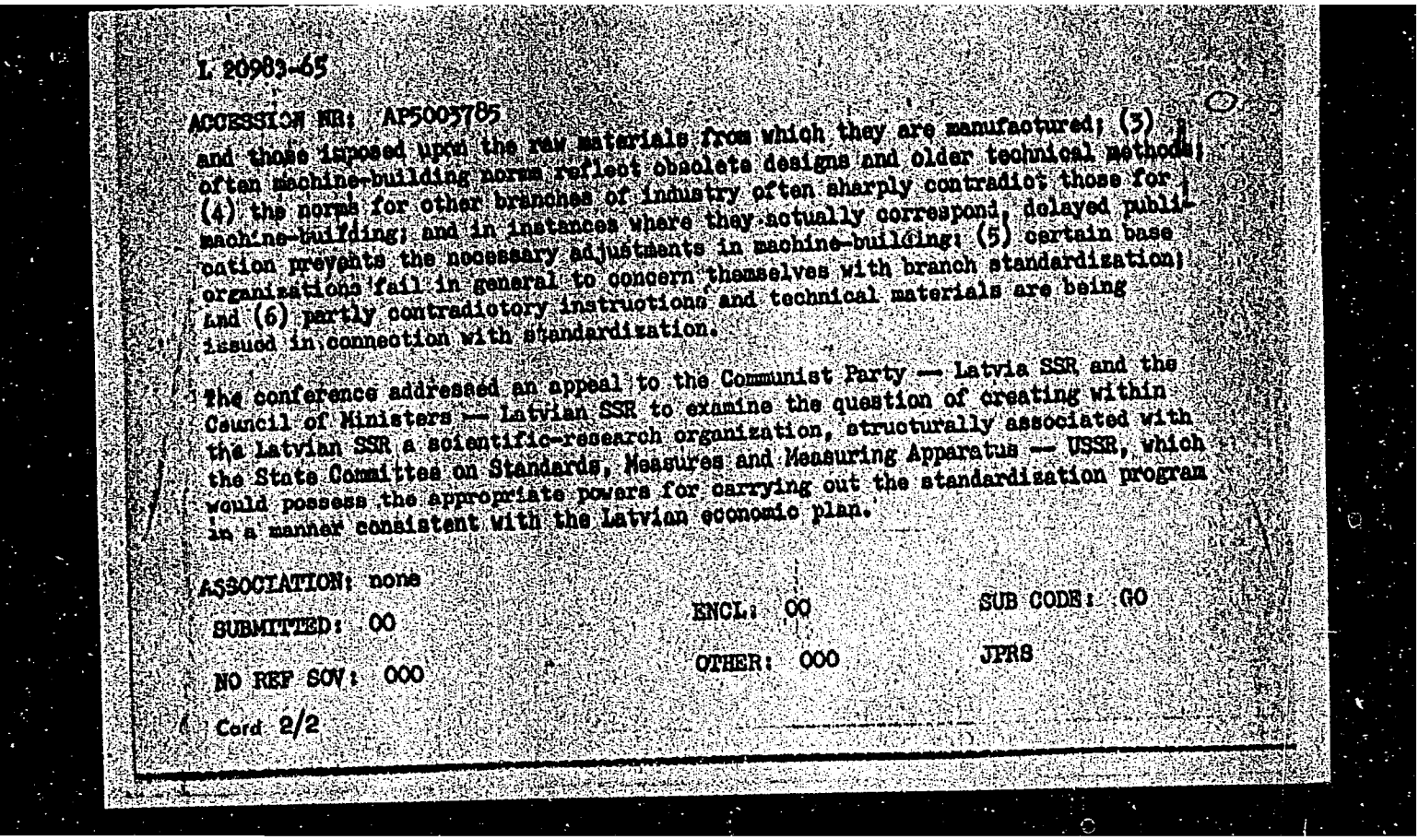
TOPIC TAGS: scientific conference, industrial management, precision instrument industry

Abstract: The article is a summary of a recent conference held by the Latvian Sovnarkhoz and the Authorized State Committee on Standards, Measures and Measuring Apparatus — USSR (under the Council of Ministers Latvian SSR). The conference dealt with the forms and methods of leadership in the area of standardization and normalization in the Latvian SSR, and the interrelationships between (1) standardization-normalization sections in industry and offices of the Sovnarkhoz, and (2) base organizations, state committees for the industrial branches, and the State Committee mentioned above.

The conference noted the following, in connection with the mechanization program in the Latvian SSR:

(1) Serious criticism is deserved by All-Union Scientific-Research Institute of Normalization in Machine-Building, notably in failing to secure realistic balances between new standards and the practical exigencies of industry; (2) there is frequently no proper correspondence between standards imposed on finished articles

Card 1/2



L 20983-65

ACCESSION NR: AP5005785

and those imposed upon the raw materials from which they are manufactured; (3) often machine-building norms reflect obsolete designs and older technical methods; (4) the norms for other branches of industry often sharply contradict those for machine-building; and in instances where they actually correspond, delayed publication prevents the necessary adjustments in machine-building; (5) certain base organizations fail in general to concern themselves with branch standardization; and (6) partly contradictory instructions and technical materials are being issued in connection with standardization.

The conference addressed an appeal to the Communist Party — Latvia SSR and the Council of Ministers — Latvian SSR to examine the question of creating within the Latvian SSR a scientific-research organization, structurally associated with the State Committee on Standards, Measures and Measuring Apparatus — USSR, which would possess the appropriate powers for carrying out the standardization program in a manner consistent with the Latvian economic plan.

ASSOCIATION: none

SUBMITTED: 00 ENCL: 00 SUB CODE: GO

NO REF SOV: 000 OTHER: 000 JPRS

Card 2/2

ANFILOGOV, A.D.; BELOSTOTSKIY, K.B.; DEMBROVSKIY, G.Ye.

New methods for the management of standardization work are needed. Standartizatsiia 28 no.8:42-43 Ag '64.
(MIRA 17:11)

ANFILOGOV, S. N. DOCENT

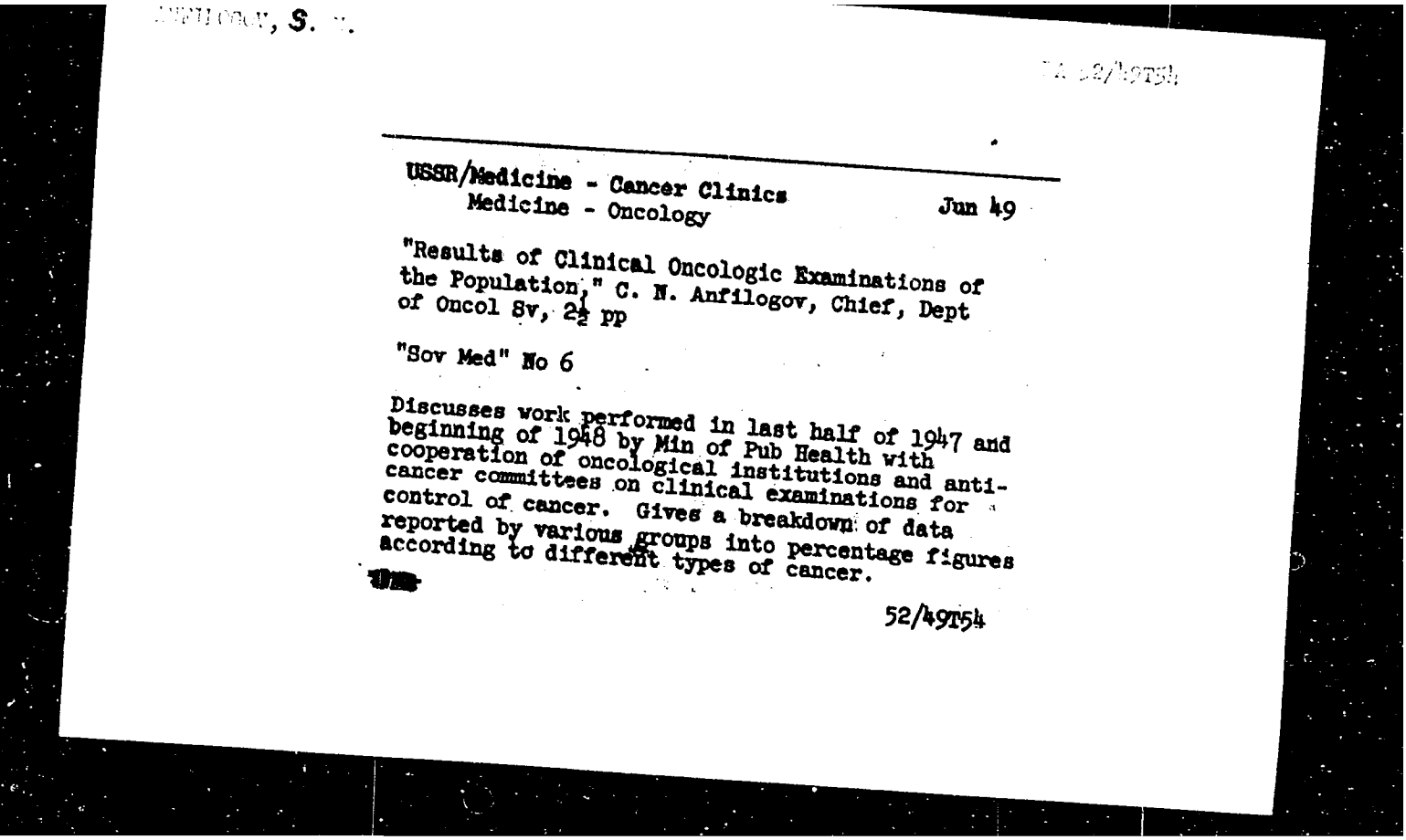
USSR/Medicine - Tumors May/Jun 48
Medicine - Public Health

"Status of Oncological Aid in the USSR," Docent S. N. Anfilogov, Chief, Oncological Aid Sec, Ministry of Pub Health USSR, 4 pp

"Sov Zdravookhran" No 3

In spite of certain successes in this field, main tasks set by Soviet of Peoples Commissars in 1945 still are not completely fulfilled. Discusses reasons and suggests remedies.

[redacted]



ANFILOGOV, S. N.

52/49T54

USSR/Medicine - Cancer Clinics
Medicine - Oncology Jun 49

"Results of Clinical Oncologic Examinations of the Population," C. N. Anfilogov, Chief, Dept of Oncol Sv, 2½ pp

"Sov Med" No 6

Discusses work performed in last half of 1947 and beginning of 1948 by Min of Pub Health with cooperation of oncological institutions and anti-cancer committees on clinical examinations for control of cancer. Gives a breakdown of data reported by various groups into percentage figures according to different types of cancer.

52/49T54

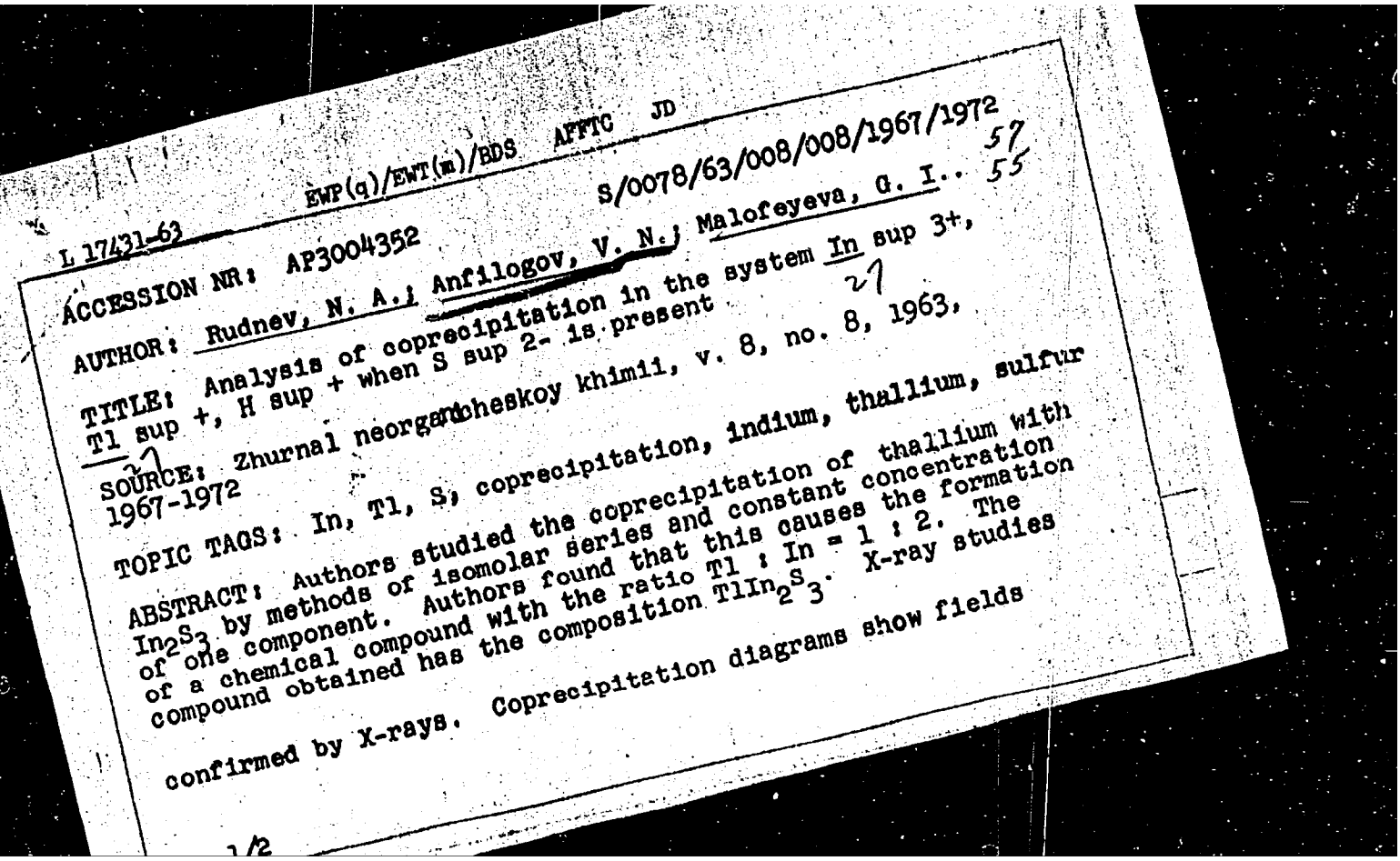
ANFILO[illegible]OV, S.N.

ANFILOGOV, S. N., POLUSHANOVA, [illegible] N.

Contrast and combination of gastroscopic and roentgenographic investigations in cancer of the stomach, Sovet. Med., No. 7, July 50. p. 7-10

1. Of the Central Oncological Institute imeni P. A. Gertsen (Director--Prof. A. I. Savitskiy).

CLML 19, 5, Nov., 1950



L 17431-63 EWP(q)/EWT(m)/BDS AFFTC JD S/0078/63/008/008/1967/1972

ACCESSION NR: AP3004352

AUTHOR: Rudnev, N. A.; Anfilogov, V. N.; Malofeyeva, G. I.

TITLE: Analysis of coprecipitation in the system In sup 3+, Tl sup +, H sup + when S sup 2- is present

SOURCE: Zhurnal neorganicheskoy khimii, v. 8, no. 8, 1963, 1967-1972

TOPIC TAGS: In, Tl, S, coprecipitation, indium, thallium, sulfur

ABSTRACT: Authors studied the coprecipitation of thallium with In_2S_3 by methods of isomolar series and constant concentration of one component. Authors found that this causes the formation of a chemical compound with the ratio Tl : In = 1 : 2. The compound obtained has the composition $TlIn_2S_3$. X-ray studies confirmed by X-rays. Coprecipitation diagrams show fields

1/2

L 17431-63

ACCESSION NR: AP3004352

2

corresponding to the phases of various nature. Their limits of existence are determined by the concentration of thallium in the solution. "Authors express their gratitude to I. P. Alimarin for his valuable suggestions." Orig. art. has: 4 figures and 3 tables.

ASSOCIATION: Institut geokhimii i analiticheskoy khimii im. V. I. Vernadskogo, Akademii nauk, SSSR (Institute of geo- and analytical chemistry, Academy of sciences, SSSR).

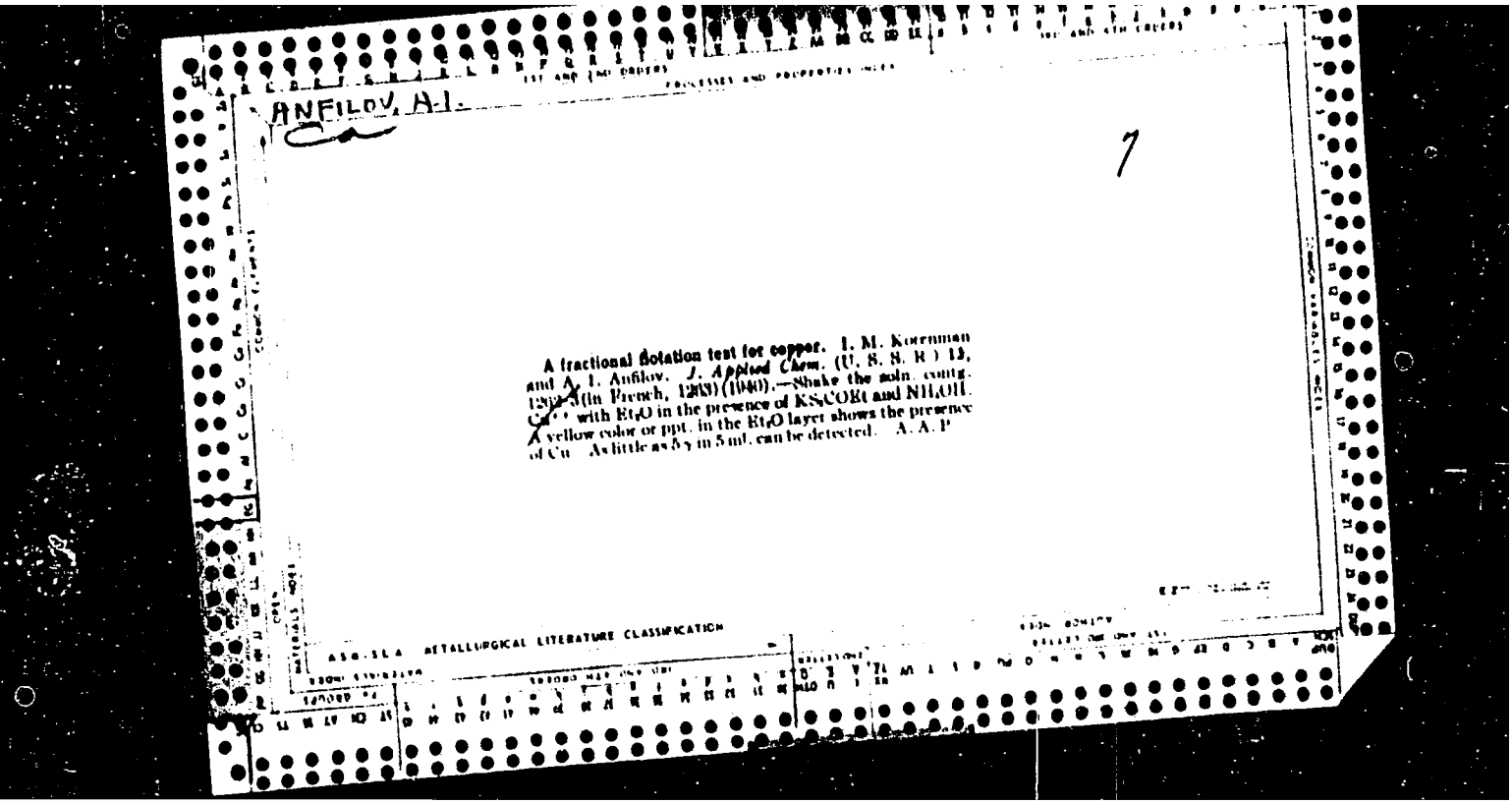
SUBMITTED: 27Sep62 DATE ACQ: 21Aug63 ENCL: 00

SUB CODE: CH NO REF SOV: 008 OTHER: 002

Card 2/2

ANFILOV, A.A., inzh.; BAKALEYNIK, Ya.M., inzh.; BIRGER, G.I., inzh.; BRUK, B.S., inzh.; BUROV, A.I., inzh.; GINZBURG, V.L., inzh.; ZABELIN, V.L., inzh.; ZAPLECHNYY, Ye.G., inzh.; ISAYEV, D.V., inzh.; KLIMOVITSKIY, A.M., inzh.; KRYUCHKOV, V.V., inzh.; KOTOV, V.A., inzh.; LEYDERMAN, A.Ye., inzh.; PODGOYETSKIY, M.L., inzh.; SAZHAYEV, V.G., inzh.; SEVAST'YANOV, V.V., inzh.; FILIPPOV, S.F., inzh.; FROMBERG, A.B., inzh.; SHNEYEROV, M.S., inzh.; ERLIKH, G.M., inzh.; VERKHOVSKIY, B.I., red.; ZUBKOV, G.A., red.; KARKLINA, T.O., red.; OVCHARENKO, Ye.Ya., red.; ANTONOV, B.I., ved. red.

[New means of automatic and centralized control for nonferrous metal mines] Novye sredstva avtomatizatsii i dispetcherskogo upravleniia dlia rudnikov tsvetnoi metallurgii. Moskva, Nedra, 1965. 93 p. (MIRA 18:4)


ANFILOV, A.I.

7

A fractional flotation test for copper. I. M. Korenman and A. I. Anfilov. *J. Applied Chem.* (U. S. S. R.) 13, 1293-3 (in French, 1283) (1940).—Shake the soln. contg. Cu^{++} with Et_2O in the presence of KSCOEt and NH_4OH. A yellow color or ppt. in the Et_2O layer shows the presence of Cu. As little as 5 γ in 5 ml. can be detected. A. A. P

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

ANFILOV, G.

In honor of the unforgettable. Znan.sila 36 no.11:15 N '61.
(MIRA 14:11)

(Lomonosov, Mikhail Vasil'evich, 1711-1765)
(Leningrad--Galleries and museums)

ANFILOV, G.

Search and "search." Znan.-sila 38 no.5:4-7 My '63. (MIRA 16:11)

ANFILOV, G.

The world of signals. Znan. sila 32 no.7:43-47 Jl '57.(MLRA 10:8)
(Telecommunication)

SOV-4-58-7-5/22

AUTHOR: Anfilov, G.

TITLE: Surgery of the Voice (Khirurgiya golosa)

PERIODICAL: Znaniye - sila, 1958, Nr 7, pp 12-14 (USSR)

ABSTRACT: In this article, the author describes methods for testing, analysing and classifying voices, mentioning the work done in this field by the Laboratoriya muzykal'noy akustiki Moskovskoy gosudarstvennoy konservatorii imeni Chaykovskogo (Laboratory of Musical Acoustics of Moscow State Conservatory imeni Tchaikovsky). In this connection, the names of Soviet scientists, such as D.D. Yurchenko and Ye.A. Rudakov (who developed the ideas advanced by Professor S.N. Rzhevkin, and Engineer B.A. Shwarts), and their work are mentioned.
There are 6 photographs, 4 caricatures and 1 diagram.

Card 1/1

ANFILOV, Gleb

Physics and music. Znan.sila 35 no.3:1[illegible] Mr '60. (MIRA 13:6)
(Music)

ANFILOV, Gleb

Palette of new sounds. Znan.sila 35 no.3:19-22 Mr '60.
(MIRA 13:6)
(Musical instrument Electronic)
(Magnetic recorders and recording)

ANFILOV, Gleb

Dr. Sholpo's dream. Znan.sila 35 no.3:23-25 Mr '60. (MIRA 13:6)
(Sound--Recording and reproducing)

ANFILOV, Gleb; ASRATYAN, E.A.; GULYAYEV, P.I., doktor biol.nauk; LIVANOV, M.N., prof.; KRAYZMER, L.P., kand.tekhn.nauk; VASIL'YEV, L.L.; KLYATSKIN, I., kand.tekhn.nauk

Is thought transference possible? Opinions of Soviet scientists. Znan. sila 35 no. 12:18-23 D '60. (MIRA 13:12)
(Thought transference)

ANFILOV, Oleb

Robot composes music. Nauka i zhizn' 28 no.11:54-59 N '61.
(MIRA 14:12)
(Composition(Music)--Mechanical aids)

ANFILOV, Gleb

Stradivari's rival. Znan. sila 36 no. 2:30-35 F '61. (MIRA 14:5)
(Violin—Construction)

ANFILOV, Gleb

Beginnings of the electronic voice. Znan. sila 36 no. 4:14-15 Ap '61.
(MIRA 14:4)

(Musical instruments, Electronic)
(Termen, Lev Sergeevich)

ANFILOV, Gleb

Why is it dark at night? Znan.sila 36 no.7:34-38 Jl '61.
(MIRA 14:9)

(Cosmology) (Night)

ANFILOV, Gleb

Omnipotent beam. Znan. sila 36 no.10:36-39 O '61. (MIRA 16:12)

ANFILOV, G.

SUBJECT: USSR/Physics 4-5-3/17

AUTHOR: Anfilov, G.

TITLE: A Sensation Exposed (Razvenchannaya sensatsiya).

PERIODICAL: Znaniye - Sila, May 1957, #5, pp 1-5 (USSR).

ABSTRACT: The article deals with the phantastic idea of creating an almost never-ceasing source of atomic energy from the "solar matter", i.e. from hydrogen and small doses of special particles of catalyzers.

The details set forth in the article are the following:
A gigantic tank filled with the liquid mixture of hydrogen isotopes is heated up by means of insignificant doses of particles of special catalyzers. The mixture retains its compactness even under a sufficiently high temperature of 100 and more degrees if kept under super-high pressure. The heat thus obtained could be used for heating and for producing electric energy. Once in a number of years the tank is supplied with "fuel" - liquid heavy hydrogen - of which only a few kilogramms are required.

Card 1/5

TITLE: **A Sensation Exposed** (Razvenchannaya sensatsiya).

The author claims that the splitting of the heavy nuclei is not the only way of releasing atomic energy. The light and heat of the sun is a result of fusion of light, not heavy nuclei, for which hydrogen is the raw material. In nature the fusion of light atomic nuclei takes place only under superhigh temperature. The author explains how the nuclear particles unite producing the reaction of the fusion, i.e. releasing energy.

Soviet physicists have already achieved some encouraging results in creating a thermo-nuclear reaction on a small scale which does not require the use of an indomitable atomic explosion. They brought matter to a state which makes the nuclear particle move at a velocity equal to one million degrees.

Several years ago, members of the USSR Academy of Sciences, Ya. B. Zel'dovich and A.D. Sakharov tried to find out independently from each other by theoretical means whether a super-high temperature is always required for the union of nuclei and whether a super-high temperature is always required for the union of nuclei and whether there is a possibility of fusing them without the thermo-nuclear process.

TITLE: A Sensation Exposed (Razvenchannaya sensatsiya).

The result of these theoretical researches was unexpected: The nuclei can be united without pushing them off their run and they are able to overcome the potential barrier if tied with a negatively charged μ-meson. The author then explains the conversion of π-mesons into μ-mesons and how the Soviet theoreticians in their researches did not go the way of photo-emulsion like Frank and Powell but studied the possibilities of a similar reaction in liquid hydrogen.

Taking it for granted that the tiny mesoproton will "pierce" into the heavy hydrogen atom and draw near its nucleus, the theory asserts that the mu-meson can start circulating at once around both nuclei. Special chemical forces of attraction will arise between them. The mu-meson will draw the nuclei together and finally they will come so close to each other as in the thermo-nuclear process. And soon (on the average after a millionth part of a second) the nuclei will find a hole in the remaining potential barrier and fuse together into one more heavier nucleus - helium-3, which will lead to a discharge of energy.

Card 3/5 The author mentions the experiments of Professor Lewis Alvarez of

TITLE: A Sensation Exposed (Razvenchannaya sensatsiya).

the Californian University who was casually confronted with the fact which confirmed the idea of a fusion of light nuclei with the participation of mu-mesons at low temperatures. However, the cold fusion of mu-mesons can be observed, studied and utilized for research but it is useless for technics and practical life.

Ya. B. Zel'dovich reported to the Physical Institute of the USSR Academy of Sciences, that in 10 cases out of hundred the hypothetical long-living catalyzer-particle which binds the nuclei of hydrogen isotopes cannot break away from the helium nucleus which it fused. The long term of life will prove to be a parasitic one. This conclusion must still be checked by experiments, but there is little doubt about its correctness.

Attached to the article is a lengthy editor's note quoting cases where scientists asserted the impossibility of realizing certain ideas and yet it later proved that they had been mistaken.

The article contains 7 pictures.

Card 4/5

4-5-3/17

TITLE: A Sensation Exposed (Razvenchannaya sensatsiya)

ASSOCIATION: Physical Institute USSR Academy of Science

PRESENTED BY:

SUBMITTED:

AVAILABLE: At the Library of Congress.

Card 5/5

ANFILOV, G.

AUTHOR: [illegible] 4-9-23/25

TITLE: Fresh from the [illegible]

PERIODICAL: Znaniye - Sila, [illegible], [illegible] - 15 (USSR)

ABSTRACT: The article [illegible] four newly published books.
In "The [illegible]" by S.Ya. Alliluyev, an [illegible] and activities, covering the [illegible]
In "What [illegible]" (Chto takoye poluprovodnik) by Gleb Anfilov, published by [illegible], semiconductors and the different ways [illegible] are described.
In "The Sol[illegible] i ego sem'ya) by M. Ivanovskiy, published by [illegible] scientific account on basic astronomy is given.
"The [illegible] materik) by L. Khvat, published by [illegible] the history of antarctic exploration [illegible] achieved by the Soviet antarctic [illegible] by the USSR Academy of Sciences (Akademiya [illegible]
There [illegible]

AVAILABLE: Library of [illegible]

Card 1/1

AUTHOR: Anfilov, G. 4-1-6/19

TITLE: Substances - Antipodes (Veshchestva - antipody)

PERIODICAL: Znaniye - Sila, 1958, pp 18 - 23 (USSR)

ABSTRACT: The article deals with a theory by Paul Dirac, an English theorist, who was able to formulate a mathematical equation, combining the quantum and relative conditions of particle movements. Thus, a foundation was laid for a new area of physics - the relative quantum theory.

There are 7 sketches.

AVAILABLE: Library of Congress

Card 1/1

AUTHOR: Anfilov, G. 4-58-5-27/41

TITLE: Man Makes a Sun (Chelovek delayet solntse)

PERIODICAL: Znaniye - sila, 1958, Nr 5, pp 29-33 (USSR)

ABSTRACT: Using a passage from Academician I.V. Kurchatov's article in "Pravda" of 28 February 1958 as a motto, the author gives a brief review of the first experiments made in creating an artificial sun. Over two years ago the world saw the results of researches made at the Institut atomnoy energii Akademii nauk SSSR (Institute of Atomic Energy, USSR Academy of Sciences) by Academician M.A. Leontovich and the scientific workers S.Yu. Luk'yanov, I.N. Golovin, S.M. Osovets, N.V. Filippov, O.A. Bazilevskaya, S.I. Braginskiy, I.M. Podgornyy and A.M. Andrianov, under the direction of Academician L.A. Artsimovich. In laboratory conditions, the isotopes of hydrogen were brought to a temperature of 1 million degrees. The author refers to the big installation at Harwell (England) and states that the English physicists expect to attain a temperature of up to 15 million and eventually up to 25 million degrees. By 1960, the Americans intend to construct the "Stellarator C" chamber for obtaining a temperature of 50 million degrees. Sweden will put into use a chamber twice as large as the "Zeta" at

Card 1/3

Harwell. In 1953, the young Soviet physicist-theoretician V.D. Shafranov worked out a complete theory of stability of the discharge in gases in an installation similar to the "Zeta". A picture at the end of the article shows one of the first toroidal chambers of the Atomic Energy Institute, AS USSR. The author explains the difficulties experienced with the plasma, a substance consisting of atomic splinters - "bare" atom nuclei and electrons, and states that there is hope not only to prevent it from cooling down through the magnetic field but also to pinch it, thereby increasing the temperature. It is impossible to guess by what "fuze" the first industrial thermonuclear reaction will be ignited, but the time is not far away when the endeavors to liberate fusion energy by a controlled method will be realized. The artificial sun will not have the form of a gigantic thermonuclear lantern hovering in the sky, but will apparently look like an electric power plant. In the thermonuclear "boiler", a mixture of deuterium and tritium will "burn" at a temperature of several million degrees. The hot zone of such a reactor will emit an abundant stream of radiant energy. In 1954, the Soviet physicist G.I. Budker, Corresponding Member of the AS USSR, suggested a method of direct conversion of the energy of thermonuclear fusion into electric

current. The article contains a few details on this point. In conclusion, the author deals with the question of fuel for the coming ages, presuming that heavy hydrogen will occupy a dominating position in this regard.
There are 7 sketches and 6 photos.

1. Thermonuclear reactions--Theory 2. Fusion--Energy 3 Fusion --Theory

Card 3/3

ANFILOV, Gleb Borisovich; MAL'T, V.S., otv.red.; PUSHKOVA, S.K., tekhn.red.

[Artificial sun] Iskusstvennoe solntse. Moskva, Gos.izd-vo detskoi lit-ry M-va prosv.RSFSR, 1959. 237 p. (MIRA 12:7)
(Physics)

86167
S/004/60/000/006/002/003
A111/A026

17.2000 3212, 3512

AUTHOR: Anfilov, G.

TITLE: The Cosmos

PERIODICAL: Znaniye-Sila, 1960, No. 6, p. 4

TEXT: The author discusses the Soviet satellite launched on May 15, 1960. The heavy space ship was operated by remote controls and equipped with precision instruments and a hermetic cabin. A careful study of cosmic conditions and their effect on humans were the object of these tests. At the end of the four-day test the hermetic cabin detached itself from the satellite though no method has been devised as yet for its safe return to Earth, a difficulty which must be overcome before the first man is shot into space, stated Docent Yu. Krylov in "Izvestiya". The President of the Komitet kosmicheskoy meditsiny sektsii astronavtiki Vsesoyuznoy aviatsionnoy federatsii (Committee of Cosmic Medicine of the Astronautical Section of the All-Union Air Federation) N. Isakov published an article in the "Literaturnaya Gazeta" and stressed the steady flight of the hermetic cabin after it had detached itself from the satellite. Temperature and atmosphere regulating devices as well as reciprocal communication possibilities by telegraph and telephone were carefully tested. The question of

Card 1/2

thermoregulation was already discussed in the article "Three Questions on the Lunic and the Interplanetary Station" in No. 11 (1959) of this periodical. In an article published by "Sovetskaya Rossiya" the Candidate of Medicine A. Nikolayev discussed the question of imponderability and stated that it improves heart function but requires special exercises with regard to orientation and coordination of movements, and in order to prevent an atrophy of muscles. The type of cabin chosen for inter-planetary flights is of primary importance and the Soviet cabin was extra heavy weighing two and half tons. According to the press the planned USA rocket "Mercury" will weigh only 980 kg. The Member of the Akademiya meditsinskikh nauk SSSR (Academy of Medical Sciences of the USSR) V. Parin, wrote in "Izvestiya" that all potential space travellers should be subjected to special training to avoid physical and psychic disorders. As the supply of oxygen, food and water in a space rocket cannot be solved by any of the known methods, the space ship will have to be designed as a self-contained microcosm, ensuring the regeneration of oxygen, absorption of carbon dioxide and the creation of food by photosynthesis. Mentioned is an article by Ye. Fedorov, Corresponding Member of the Akademiya nauk SSSR (Academy of Sciences of the USSR), pointing out the difference in methods and motives attached to interplanetary research in the USA and the USSR.

ANFILOV, G.

"Essays on cybernetics" by L.P. Teplov. Znan.sila 35 no.7: 52 Jl '60. (MIRA 13:7)
(Cybernetics) (Taplov, L.P.)

ANFILOV, G.

House in outer space. Znan.sila 35 no.6:4 Je '60. (MIRA 13:7)
(Space flight)

ANFILOV, G.

Gift to the inquisitive. ("Advanced mathematics for beginners" by A.B. Zel'dovich. Reviewed by G. Anfilov. Znan.sila 35 no. 10:44 O'60. (MIRA 13:11)

(Mathematics)
(Zel'dovich, A.B.)

S/004/60/000/012/003/005
A166/A126

AUTHOR: Anfilov, Gleb

TITLE: The transmission of thought - is it possible? Meetings with the unknown

PERIODICAL: Znaniye-sila, no. 12, 1960, 18-23

TEXT: One June 15, 1960, Professor L. L. Vasil'yev gave a lecture at the Leningrad House of Scientists on "The Electromagnetic Radiation of the Brain". Vasil'yev discussed experiments on thought induction performed in the 1930's at the Bekhterovskiy institut mozga (Bekhterev Brain Institute). Considerable success was achieved with remote telepathic sleep induction and awakening. Attempts were made to test whether this phenomenon were due to radic waves from the brain. Both hypnotist and patient were enclosed in separate screened metal chambers, checked beforehand to ensure that no radio waves could penetrate. The screening, however, had no effect on sleep induction, thus indicating that radio waves were not the cause of though transference. The results were so strange that they have been withheld from publication until now. The article concludes with opinions on thought trans-

Card 1/2

The transmission of thought...

ference given by: E. A. Asratyan, Corresponding Member of the AN SSSR (AS USSR); D. A. Biryukov, Corresponding Member of the Akademiya meditsinskikh nauk (Adacemy of Medical Sciences); P. I. Gulyayev, Doctor of Biological Sciences; Professor M. I. Livanov; L. P. Krayzmer, Candidate of Technical Sciences; L. L. Vasil'yev, Corresponding Member of the Academy of Medical Sciences; and I Klyatsin, Doctor of Technical Sciences. An editorial note calls for further scientific research into the subject of thought transference. There are 2 figures.

Card 2/2

SOV/77-4-1-4/22

AUTHORS: Anfilov, I.V., and Fridkin, V.M.

TITLE: The Theory of the Development of the Latent Electrophotographic Image (K teorii proyavleniya skrytogo elektrofotograficheskogo izobrazheniya)

PERIODICAL: Zhurnal nauchnoy i prikladnoy fotografii i kinematografii, 1959, Vol 4, Nr 1, pp 32-34 (USSR)

ABSTRACT: The authors devide former theories of the development of the latent electrophotographic image into two groups: 1) the "dry-development method", 2) the "wet method." The authors hold that the phenomenon behind the development of the latent electrophotographic image is a recombination of electric charges and present mathematical formulae to support their opinion. They conclude that the full development of all parts of the latent image, which carry a different charge with respect to density, occurs simultaneously (the simultaneous development of all half-tones of the latent electrophoto-

Card 1/2

The Theory of the Development of the Latent Electrophotographic Image

graphic image). The authors admit that the results of experimental investigations are not contrary to the possibility of a formation of double electrical layers. There are 5 references, 2 of which are American and 3 Soviet.

ASSOCIATION: Nauchno-issledovatel'skiy institut poligraficheskogo mashinostroyeniya (The Scientific Research Institute of Polygraphic Machine Building)

SUBMITTED: March 28, 1958

ANFILOV, I.V.; FRIDKIN, V.M.

Kinetics of the development of the electro-photographic latent image. Zhur.nauch. i prikl.fot i kin. 5 no.5:367-368 S-O '60. (MIRA 13:12)

1. Nauchno-issledovatel'skiy institut Poligrafmash.
(Photography--Developing and developers)

ANFILOV, I.V.

Studying kinetics of the development of the latent image in xerography. Zhur. nauch. i prikl. fot. i kin. 6 no. 3:220-224 My '61. (MIRA 14:5)

1. Nauchno-issledovatel'skiy institut poligraficheskogo mashinostroyeniya.
(Xerography) (Photography—Developing and developers)

ANFILOV, I. V., FRIDKIN, V. M.,

"The present state of development in the electrophotographic field"

report to be submitted for the 1st Intl. Congress on Reprography, Cologne, West Germany, 14-19 Oct 1963

ANFILOV, I.V.

Nature of the edge effect in electrophotography. Zhur.nauch. i prikl. fot. i kin. 8 no.2:105-109 Mr-Ap '63. (MIRA 16:3)

1. Nauchno-issledovatel'skiy institut poligraficheskogo mashinostroyeniya.
(Xerography)

ANFILOV, N.F.

Providing landscape gardening with things to plant. Gor.khoz.Mosk. 35 no.6:17-18 Je '61. (MIRA 14:7)

1. Upravleniye blagoustroystva g. Moskvy.
(Moscow--Nurseries (Horticulture))

ANFILOV, V., podpolkovnik.

Heroic feat of seven combat engineers. Voen.-inzh. zhur. 101 no.5: 33-34 My '57. (MLRA 10:6)

(Military engineers)

ANFILOV, Ye.A., inzhener.

New wide-band shunt-fed antenna mast. Vest.sviazi 16 no.4:4-6 Ap '56. (Radio--Antennas) (MLRA 9:9)

SOV/106-59-10-4/11

AUTHOR: Anfilov, Ye. A

TITLE: A Broad ~~Wave Band~~ Antenna-Mast with Reduced Wave Impedance

PERIODICAL: Elektrosvyaz', 1959, Nr 10, pp 30-37 (USSR)

ABSTRACT: The article describes an experimental version of the broad wave band antenna (200 to 2000 m) of the type proposed by G. Z. Ayzenberg (Radiotekhnika, Nr 1, 1946). The experimental and operational results of such antennae have shown that the electrical parameters accord with the theory and that good anti-fading polar diagrams can be obtained by suitable choice of the height of the screen. Experience also showed that at some frequencies the antenna has a very small resistance-component of the input impedance (several ohms) which led to mismatching. The Author investigates the reasons for this small resistance by considering the mast and its screen as a coaxial feeder (Fig 1) and using the equivalent diagram (Fig 2). It is shown that the wave impedance can be reduced by reducing the wave impedance of the unscreened part of the antenna. Reduction of the wave impedance enables the pass-band of the antenna to be increased, improves the matching of the feeder, reduces the

Card 1/3

A Broad Wave Band Antenna-Mast with Reduced Wave Impedance

antenna potential for the same power. These advantages can be obtained by the use of retarders. The layout of the antenna is shown in Fig 3. The retarders on the upper part of the mast are not broken by insulators and are connected to the mast by inclined conductors, the insulators being connected below the inclined wires. The current distribution, and hence the directional properties of the antenna depend on the height of the screen. The antenna used was a typical trihedral mast with four layers of retarders. The antenna has a vertical member formed by the freely-standing part of the mast located above the uppermost retarder. For the 200 to 2000 m band, the height of the mast $H = 260$ m. The antenna has a screen of $N = 8$ conductors; the height of the screen is $h = 0.3\ H$; the diameter of the screen $D = (0.04 - 0.05)H$; the height of the vertical member $l_k = (0.11 - 0.12)H$. The experimental results are given and illustrated in Figs 4 to 8. Fig 4 shows the relation between the bandwidth and the ratio H/λ; Fig 5 shows the input impedance versus H/λ;
Card 2/3 Fig 6 shows polar diagrams obtained from decimetric

A Broad Wave Band Antenna-Mast with Reduced Wave Impedance

models; Fig 7 shows the ratio of the maximum to minimum field strengths against distance from the antenna (in the dark hours); Fig 8 shows the antenna gain versus H/λ, (curve 1 is the actual antenna gain, curve 2 is the gain from a model, curve 3 is the calculated gain of a usual antenna). The formulae used in the design are developed in the Appendix. There are 8 figures.

SUBMITTED: June 8, 1959

Card 3/3

В. М. Певзнер

Эффективность и помехоустойчивость некоторых методов [illegible] передачи сигналов

Н. М. Тепляков

Помехоустойчивость приемника по схеме Шоу

2. СЕКЦИЯ АНТЕННЫХ УСТРОЙСТВ

Руководитель А. Р. Вольперт

9 июня

(с 10 до 16 часов)

В. Д. Кузнецов

Вопросы проектирования передающих антенн для телевидения и УКВ вещания

А. М. Модель,
Е. А. Анфилов

Антенно-волноводный тракт для радиорелейных линий, использующих рассеяние радиоволн в тропосфере

В. К. Парамонов

Антенна для линий связи с использованием ионосферного рассеяния

Л. К. Олифин

[illegible] синфазная антенна бегущей волны

А. А. Метрикин

Исследование волноводов круглого сечения для радиорелейных линий

9 июня

(с 18 до 22 часов)

В. И. Андрианов,
Л. Д. Бахрах,
М. Е. [illegible]

К вопросу о влиянии [illegible] поверхности на диаграмму направленности излучателя, расположенного [illegible] поверхности

В. А. [illegible]

О влиянии [illegible] диэлектрического клина на диаграмму направленности антенны

В. П. [illegible]

Некоторые случаи рассеяния [illegible] пластинами

В. В. [illegible]

Дифракция электромагнитных волн на плоскости с переменным поверхностным импедансом

М. Д. Хаскинд

Возбуждение поверхностных волн [illegible]

report submitted for the Centennial Meeting of the Scientific Technological Society of Radio Engineering and Electrical Communications im. A. S. Popov (VNORIE), Moscow, 8-12 June. 1959

ACC NR: AP7005608 SOURCE CODE: UR/0413/67/000/002/0048/0048

INVENTOR: Anfilov, Ye. A.; Govorkov, I. T.; Gurevich, R. V.; Zhuchkin, I. A.; Kuznetsov, V. D.; Olifin, L. K.

ORG: None

TITLE: A cophased antenna array with electrical scanning. Class 21, No. 190433

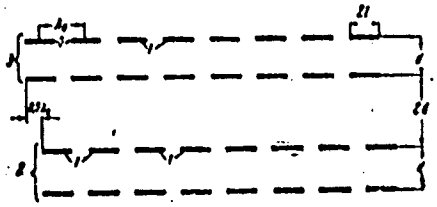
SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 2, 1967, 48

TOPIC TAGS: dipole antenna, antenna array, antenna directivity

ABSTRACT: This Author's Certificate introduces a cophased antenna array with electrical scanning. The installation is made in the form of center-fed dipoles arranged in groups and equipped with an aperiodic or tuned reflector. In order to reduce the level of side lobes of the directional pattern in the horizontal plane, the lower group of dipoles is shifted horizontally with respect to the upper group in the plane of the array by one-half the distance between the adjacent dipoles in the group.

Card 1/2 UDC: 621.396.677.32

ACC NR: AP7005608



1—center-fed dipoles; 2—lower group of dipoles; 3—upper group

SUB CODE: 09/ SUBM DATE: 27Aug65

ANFIMOV, A.M., kand.istor.nauk

Symposium on the agrarian history of Eastern Europe. Vest. AN SSSR 31 no.12:113 D '61. (MIRA 14:12)
(History--Congresses)

ANFIMOV, A. M., kand. istor. nauk

Symposium on the Agrarian History of Eastern Europe. Vest. AN SSSR 33 no.1:127-128 Ja '63. (MIRA 16:1)

(Europe, Eastern—Agriculture—Congresses)

ANFIMOV, A. N. DECEASED 1963/3

AGRICULTURE (1959)

ANFIMOV, A.S., inzh.; MANEVICH, I.V., inzh.

Band cantilever dumper. Bezop.truda v prom. 3 no.10:33 O '59. (MIRA 13:2)

1. Trest Volchanskugol'.
(Coal mining machinery)

DOGADKIN, B.A.; GUL', V.Ye.; ANFIMOV, B.N.; LUSHCHEYKIN, G.A.

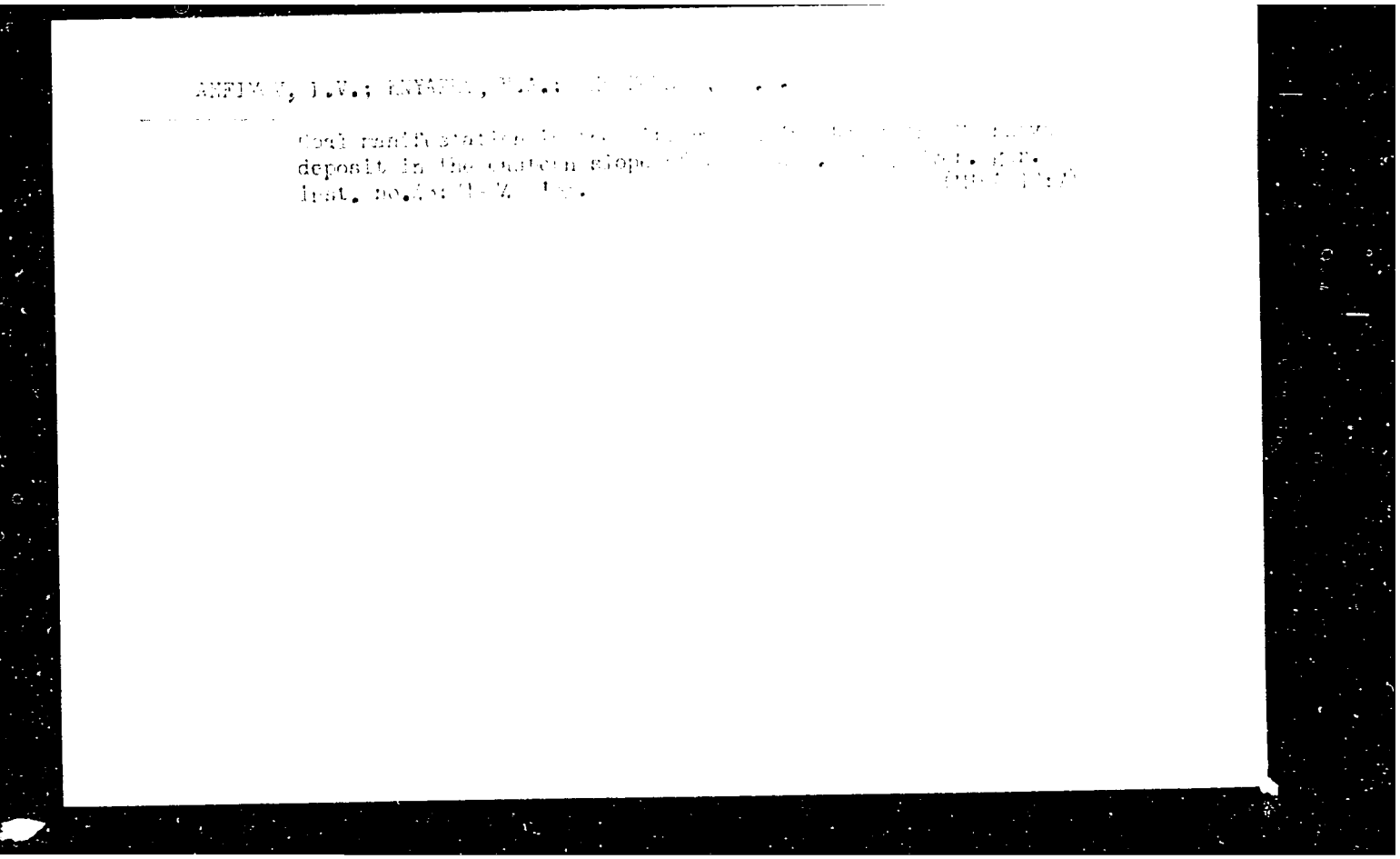
Dielectric properties of unfilled vulcanizates of various structure. Koll.zhur. 25 no.5:515-519 S-O '63. (MIRA 16:10)

1. Moskovskiy institut tonkoy khimicheskoy tekhnologii im. M.V.Lomonosova.

CHERNOUSOV, Ya.M., prof.; KNYAZEV, V.A., dotsent;
ANFIMOV, L.V., assistent

Synonymy of coal seams in the Makhenevo deposit. Izv. vys. ucheb. zav.; gor. zhur. no. 4:3-8 '61. (MIRA 14:6)

1. Sverdlovskiy gornyy institut imeni V.V.Vakhrusheva. Rekomendovana kafedroy geologii mestorozhdeniy goryuchikh poleznykh iskopayemykh Sverdlovskogo gornogo instituta.
(Makhnevo region--Coal geology)



A[illegible], [illegible].V.; CHERNOUSOV, Ya.M.

Basic stages of Carbonifer[illegible]
[illegible] of the Urals. Trudy [illegible] 43:[illegible]

ANFIMOV, M. A.

Accompilation of electric projects; a reference manual Moskva, Gos. izd-vo obor. promyshl., 1949. 216 p. (50-22971)

TK3226.A6

ANFIMOV, Mikhail Ivanovich; PARNITSKIY, A.B., kandidat tekhnicheskikh nauk, retsenzent; ZVORYKIN, S.V., inzhener, redaktor; YERMAKOV, N.P., tekhnicheskiy redaktor

[Designs of reducing gear] Konstruktsii reduktorov. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1956. 219 p. (MLRA 9:12)
(Gearing)

AMFIMOV, M. I., Eng.

"Structural Improvements in Reduction Gears" p. 478-492 in book Increasing the Quality and Efficiency of Machinery, Moscow, Mashgiz, 1957, 626pp.

Anfimov, M.I.

122-3-1/30

AUTHOR: Anfimov, M.I., Zelenkov, S.N., Kutilin, N.D., and Khripunov, P.I., Engineers.

TITLE: The Design of Cast Gear Wheels (Konstruktsii litykh zubchatykh koles) Vol 37,

PERIODICAL: Vestnik Mashinostroyeniya, 1957, No.3, pp. 3 - 12 (USSR).

ABSTRACT: Recommendations found in Russian and foreign technical literature on the dimensioning of gear wheels are conflicting. A cast gear wheel is a statically-indeterminate system. Methods found in literature for calculating the stresses in elements of the gear wheel are so complex as to be rarely usable in design offices. A "unit-wheel system" is proposed, based on a wheel for a centre distance of unity. It is claimed that the proportions of such a wheel depend only on the sum of the tooth numbers and on the width factor. For any other centre distance the "unit-wheel" proportions have to be multiplied by the centre distance. Straight and helical spur gears and herringbone gears are considered, in the range of width factors between 0.2 and 0.6, total numbers of teeth between 99 and 300 and normal modules up to 24 mm. The range of cast gears extends from 500 to 2 500 mm outside diameter and up to 800 mm width. A chart shows five different designs of wheel cross-

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sections. The basic design has channel profile rim and hub cross-sections with I beam spokes. Narrow wheels or wheels of small diameter are of single I cross-section; very wide wheels have a central stiffening web at the rim. The choice of design depends on the wheel width and the wheel diameter. A table gives rough guidance. Four graphs, each for a different width factor, plotting the pitch diameter against the centre distance have a straight line for each constant total tooth number and are divided into regions for the different wheel designs. Having determined the type of design, Table 2 charts formulae for each of the dimensions in terms of the basic variables. To facilitate computation, Table 3 gives the numerical results, based on Table 2, for the unit wheel for several representative values of the total tooth number and of the width factor. A discussion with numerical comparisons given in Table 4 concludes that the results of Tables 2 and 3 based on A.I. Petrusevich [Ref.3] are subject to an insignificant variation only within the whole practical range of rim to spoke stiffness ratios. Their effect is examined by an analysis given in "Biezeno and Grammel". The main bending stresses in the rim and spokes are then computed after the development of an

 expression for the torque transmitted by the gear and the bending

The Design of Cast Gear Wheels. 122-3-1/30

resistances of the rim and spoke cross-sections. The latter are tabulated for the unit wheel in Table 5. Table 6 shows that the bending stresses so obtained are within a narrow band and thus justify the conception of the unit wheel. The practice of dimensioning the rim thickness by the tooth module alone is incorrect. A graph shows that the ratio of rim thickness to tooth module changes with the total number of teeth. The relation recommended in this paper is compared with a number of wheels manufactured by Soviet, German and U.S. plants and is shown to be more consistent than these manufactured wheels. In Table 7, the rim thickness recommendations of the present paper are compared with those of a number of other Soviet sources and standards. There are 7 illustrations, including 2 graphs, 7 tables and 9 references, 8 of which are Slavic.

ASSOCIATION: Uralmashzavod

AVAILABLE: Library of Congress

Card 3/3

ANFIMOV, M.I.

PHASE I BOOK EXPLOITATION 1177

Ural'skiy zavod tyazhelogo mashinostroyeniya, Sverdlovsk

Konstruirovaniye gornoobogatitel'nogo oborudovaniya (Design of Ore Beneficiation Equipment), Moscow, Mashgiz, 1958. 234 p. (Series: Its: Sbornik statey, vyp. 2) 5,000 copies printed.

Ed.: Kubachek, V. R., Engineer; Tech. Ed.: Dugina, N.A.; Ed. (Ural-Siberian Division, Mashgiz): Sustavov, M. I., Engineer.

PURPOSE: This collection of articles is intended for engineers, technicians, and scientific personnel.

COVERAGE: The articles describe improvements in the design of mining equipment which have taken place during the last 25 years at the Uralmashzavod (Ural Heavy Machinery Plant) in Sverdlovsk. Designs are given for the booms of heavy-duty and super-duty excavators, for new oil-drilling machines, and for planetary gear trains for heavy machinery drives. The authors present methods of making design calculations for crushers, mechanisms for excavators and other machines,

Card 1/3

and for fabricated metal structures. Fianlly, results are given of model and strain-gauge testing of machine components.

TABLE OF CONTENTS:

ANFIMOV, M.I., inzh., laureat Leninskoy premii

Experimental determination of the efficiency of reducing gears.
Konstr.krup.mash. no.1:3-50 '62. (MIRA 16:2)
(Gearing)

ANFINOV, M[illegible]ll Ivanovich; CHASOVNIKOV, L.P., kand. tekhn. nauk, ..t.., retsenzent; KHRIPUNOV, P.I., inzh., red.

[Reducing gears; design and construction] Reduktory; konstruktsii i raschet. Moskva, Mashinostroenie, 1965. 286 p. (MIRA 18:10)

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S/179/60/000/04/021/027
E191/E181

AUTHORS: Anfimov, N.A., and Shevtsov, A.P. (Moscow)

TITLE: Capacity Method for Measuring Non-Stationary Heat Flows of Short Duration

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Mekhanika i mashinostroyeniye, 1960 No 4, pp 163-165

TEXT: Modern installations for experiments at high supersonic speeds often have very short testing periods, for example 0.1 milliseconds in shock tubes and 10 milliseconds in impulse equipment. Referring to Rose, P., and Stark, W., (Ref 3), the method of measuring heat flows of short duration using a film type temperature detector, is stated to be confined to the case of steady state heat flow. A method of measuring non-steady state heat flows of short duration is described, based on the properties of a flat electrical condenser consisting of a layer of dielectric material covered with metal films on its two faces, in which the dielectric constant of the dielectric is a function solely of its temperature. It is assumed that the reciprocal of the dielectric constant is a linear function of the temperature. A formula is derived analytically which shows that the difference in the heat flows

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Capacity Method for Measuring Non-Stationary Heat Flows of Short Duration

entering and leaving the condenser element is at each instant proportional to the derivative of the electrical capacity in respect of time and inversely proportional to the square of the instantaneous capacity. The factor of proportionality is a combination of constants of the material, namely its density, its specific heat, and the temperature coefficient of its dielectric constant, apart from the thickness of the dielectric layer and the capacity at the reference temperature. Under certain conditions, this formula applies to the heat flow entering the condenser element. Experiments were carried out to examine different dielectric materials for high values of the above temperature coefficient. "SVT" ceramics developed at the Laboratory for Physics of Dielectrics of the Institute of Physics of AS USSR imeni P.N. Lebedev, on the basis of strontium and bismuth titanates, were found to be the best materials. A composition of 96.5% strontium titanate and 3.5% bismuth titanate has a temperature coefficient of 0.00451. The coefficient remains constant up to a temperature of about 200 °C.

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E191/E181

Capacity Method for Measuring Non-Stationary Heat Flows of Short Duration

The surface temperature can be measured by a resistance thermometer. The limiting thickness of the exposed face of the condenser element is given, up to which the heat stored in this film can be neglected. A typical value for a silver film is 0.3 microns, on condition that the heat losses do not exceed 3% after 10 microseconds. There are 1 figure and 4 references: 3 Soviet and 1 English.

SUBMITTED: January 18, 1960

Card 3/3

3(1)

AUTHOR: Anfimov, N.A.

SOV/33-36-1-18/31

TITLE: Some Regularities in the Motion of Meteoric Bodies in the Atmosphere

PERIODICAL: Astronomicheskiy zhurnal, 1959, Vol 36, Nr 1, pp 137-140 (USSR)

ABSTRACT: The author uses the data of Jacchia [Ref 4,5] in order to find the form of the relation

$$\Lambda = \Lambda(\mathrm{Re}, \frac{M}{\sqrt{\mathrm{Re}}}),$$

where Λ is the coefficient of the heat transfer of a meteor. For the magnitude $\sigma = \frac{\Lambda}{2\Gamma\zeta}$, where Γ is the resistant coefficient and ζ is the energy which is necessary to remove 1g of the matter, in this connection the author proposes the empirical formula

$$\sigma \mathrm{Re} = 10^{-8} \left(\frac{\sqrt{\mathrm{Re}}}{M}\right)^{1.4}.$$

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Some Regularities in the Motion of Meteoric Bodies in the Atmosphere SOV/33-36-1-18/31

The author thanks B.Yu.Levin and M.Ya.Yudelovich for discussions. There are 2 figures, and 8 references, 3 of which are Soviet, 4 American, and 1 Czecho-Slovakian.

ASSOCIATION: Moskovskiy fiziko-tekhnicheskiy institut (Moscow Physico-Technical Institute)

SUBMITTED: May 5, 1957 (initially)
and September 20, 1958 (after revision)

37135
S/179/62/000/001/003/027
E191/E435

10.1300

AUTHOR: Anfimov, N.A. (Moscow)

TITLE: Laminar boundary layer in a multi-component gas mixture

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye tekhnicheskikh nauk. Mekhanika i mashinostroyeniye. no.1, 1962, 25-31

TEXT: The solution is presented of the equations of the laminar multi-component boundary layer in the vicinity of the critical point of a blunt body in a stream of dissociated air. It is assumed that the chemical reactions inside the boundary layer are frozen and that the state of the gas at the wall of the body and the outer limit of the layer is in equilibrium. Two different methods are used to derive the transfer coefficients of the atomic components. The results so obtained are compared with each other and with the results of a simplified conception of the air as a binary mixture. In analysing the processes associated with the dissociation, chemical reactions, mass exchange and others, it is necessary to examine a boundary layer containing components with

Card 1/3

Laminar boundary layer ...

different physical properties. The viscosity and thermal conductivity of such a mixture can be determined from the properties of the components but diffusion processes are more difficult to assess. A simplification is adopted wherein a multi-component mixture is considered binary. J.Fey and F.Riddell used the similarity of properties between oxygen and nitrogen and determined the viscosity taking temperature into account, whilst the Prandtl and Lewis numbers were assumed constant across the layer. This approach falsifies the diffusion problems. In the present paper, the attempt is made to take into account the diffusion in a multi-component mixture of gases as a contribution to heat exchange and also to study certain special problems associated with diffusion, for example the similarity of the concentration and enthalpy problems. In the case of the frozen boundary layer, diffusion has the greatest effect on the flow in the boundary layer since diffusion largely determines the concentration profile. In the analysis, use is made of several American references including that of C.R.Wilke (Chemical Engineering Progress, no.2, 1960, 95-104). The computations are

carried out within the range of wall temperatures between 300 and 3000°K and approach flow temperatures between 30 and 600°K and in a pressure range between 0.1 and 10 atm. The results of the present work show that, in the range examined, the relative derivatives of enthalpy and concentration differ from each other by no more than 10%. There are 3 figures.

SUBMITTED: November 4, 1961

Card 3/3

11.7200
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39805
S/179/62/000/003/005/015
E031/E335

AUTHOR: Anfimov, N.A. (Moscow)

TITLE: The laminar boundary layer on a chemically-active surface

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye tekhnicheskikh nauk. Mekhanika i mashinostroyeniye, no. 3, 1962, 46 - 52

TEXT: The steady flow of air at high temperature past the stagnation point of a blunt-nosed semi-infinite body is considered. It is assumed that the body consists of substances which contain different mixtures of carbon, hydrogen and oxygen, and that there is thermodynamic equilibrium on the surface. At surface temperatures of 2 500 - 3 500 °K and pressures near to atmospheric only four components of dissociated air: N_2, CO, H and H_2 need be considered at the wall, and only five components: O, O_2, N, N_2 and NO at the outer edge of the boundary layer.

Card 1/4

The laminar boundary ....

If it is assumed that the velocity of the chemical reactions in the boundary layer is zero, then the equations of a laminar boundary layer near the stagnation point of a blunt-nosed body are:

$$\frac{\partial}{\partial x}(\rho u r) + \frac{\partial}{\partial y}(\rho v r) = 0 \qquad (2.1)$$

$$\rho u \frac{\partial u}{\partial x} + \rho v \frac{\partial u}{\partial y} = -\frac{dp}{dx} + \frac{\partial}{\partial y}\left(\mu \frac{\partial u}{\partial y}\right) \qquad (2.2)$$

$$\rho u c_p \frac{\partial T}{\partial x} + \rho v c_p \frac{\partial T}{\partial y} = \frac{\partial}{\partial y}\left(\lambda \frac{\partial T}{\partial y}\right) - \sum \rho c_i c_{pi} V_i \frac{\partial T}{\partial y} \qquad (2.3)$$

$$\rho u \frac{\partial c_i}{\partial x} + \rho v \frac{\partial c_i}{\partial y} = -\frac{\partial}{\partial y}(\rho c_i V_i) \quad (i = 1, 2, \ldots, 8) \qquad (2.4)$$

where x and y are coordinates along and normal to the surface,
u and v are the velocity components in these directions,
r is the distance from the axis of symmetry,
c_i is the concentration by weight of the i-th component, and

Card 2/4

V_i is the velocity of diffusion of the i-th component.

The boundary conditions are for

$$y = 0, \quad u = 0 \tag{2.5}$$

and for $y \to \infty$:

$$u \to u_e = \frac{du_e}{dx}, \quad T \to T_e, \quad c_i \to c_{i_e} \tag{2.6}$$

and

$$c_{H_e} = c_{H_{2e}} = c_{CO_e} = 0 .$$

The boundary conditions on the surface must be supplemented by the law of reacting masses for the dissociation of hydrogen, the law of conservation of mass for the remaining components and the equation of energy balance at the wall. The diffusion velocities are calculated by the method of Wilke (Chem. Eng. Progr., v.46,

no. 2, 95-104). The viscosity coefficients can either be calculated on the basis of a model consisting of solid spheres for the atomic components and the Lennard-Jones potential for the molecular components, or by using the Lennard-Jones potential for all components. The initial partial differential equations are transformed to ordinary differential equations by the introduction of the Dorodnitz-Stepanov variables, and the solution was obtained numerically on a computer. The results were analyzed to determine the effect of various parameters on the velocity of combustion and the surface temperature. There are 4 figures.

SUBMITTED: February 6, 1962

ANFIMOV, N.A. (Moskva)

Some effects related to the multicomponent character of gas mixtures. Izv.AN SSSR.Mekh. i mashinostr. no.5:117-123 S-O '63. (MIRA 16:12)

ANFIMOV, N.A. (Moscow)

"Heat and Mass transfer in a multi-component laminar boundary layer".

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

L 10799-65 EWT(1)/EWP(m)/FCS(k)/EWA(1) Pd-4/Pi-4 AEDC(a)/AFETR/AFWL/
ESD(dp)/SSD/BSD/ASD(d)/AFTC(a)/ESD(gs)/ASD(f)-2/ESD(t)
ACCESSION NR: AP4022649 S/0207/64/000/001/0047/0052

AUTHOR: Anfimov, N. A. (Moscow) B

TITLE: Representation of dissociated air as a binary gas mixture for solving boundary layer problems

SOURCE: Zhurnal prikład. mekhan. i tekhn. fiz., no. 1, 1964, 47-52

TOPIC TAGS: dissociated air, binary gas mixture, boundary layer, heat exchange, friction, approximation, error estimation, precise solution

ABSTRACT: The solution of the boundary layer equations is greatly simplified for a binary mixture of gases because the diffusion of each component is determined solely by the derivative of the concentration of this component. The author studies heat exchange and friction on the surfaces of bodies moving in the earth's atmosphere at great supersonic velocities, by considering the dissociated air in the laminar boundary layer to be a mixture of atoms and molecules: O, O_2, N, N_2, NO. He estimates the error by comparing the precise solution in a dissociated mixture with the corresponding "binary mixture approximation" solution. In a table he gives results for friction temperature from 300K to 6000K, two values of surface temperature, 300K and 3000K, and two values, 0.1 and 10 atm, of friction pressure following

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the shock wave. These indicate that for computation of heat exchange the error in such an approximation does not exceed 3 percent. This error is not significant, due to the uncertainty in the determination of the coefficients of passage of air at high temperature. An error of 4 to 7 percent is made in approximating the numerical solution by the J. A. Fay-F. R. Riddell formula (J. Aeronaut. Sci., v. 25, no. 2, 1958, 73-85) where the binary diffusion of atomic oxygen is replaced by the Lewis number corresponding to the conditions on the wall. This latter value corresponds to cases where the heat flow is directed from the surface toward the gas, and also to lower pressure where the degree of dissociation of nitrogen is high. In the given range of computation, error in computing friction for the binary representation does not exceed .5 percent. The author draws the following conclusions for diffusional separation of air: 1) If the temperature of frictional action exceeds the temperature of the surface, then the concentration of oxygen at the wall is higher than the concentration in the external flow and vice-versa. 2) If the degree of dissociation of nitrogen is small, the effect of diffusional separation increases as the degree of dissociation outside the boundary layer increases. 3) Dissociation of nitrogen, which always begins after dissociation of oxygen, leads to decrease of the effect of dissociational separation. 4) When the temperature of frictional action exceeds the wall temperature, the effect of diffusional separation depends very weakly on the surface temperature if the degree of dissociation at the wall is small. The author computes the "additional" drop in

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atom concentration in the boundary layer, where thermodiffusion is compensated by concentration diffusion. Thus, thermodiffusion in air is completely compensated by "additional" fall of concentration, which is of lower order than the given effect of separation for concentration diffusion, and consequently the role of thermodiffusion in the process of diffusion separation of air is small. One can expect that the correction, in computing thermodiffusion, to the magnitude of heat flow will also be insignificant. Orig. art. has: 1 table and 26 formulas.

ASSOCIATION: none

SUBMITTED: 18Jul63 ENCL: 00

SUB CODE: ME NO REF SOV: 003 OTHER: 003

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L 22168-65 EWG(j)/EWT(l)/EWP(e)/EWT(m)/EWP(m)/EPF(c)/FCS/EWG(v)/EPR/EWP(j)/FCS(k)/EWP(b)/EWA(l) Pc-4/Pd-1/Pe-5/Pr-4/Pa-4/Pl-4 AFWL/SSD/AEDC(a)/ASD(f)-3/AFETR/AFTC(p)/APGC(f)/ESD(t) WW/JW/RM/WH

ACCESSION NR: AP5002585 S/0179/64/000/005/0003/0011

AUTHOR: Anfimov, N. A. (Moscow) 12

TITLE: Burning of graphite in an air stream at a high temperature 12

SOURCE: AN SSSR. Izvestiya. Mekhanika i mashinostroyeniye, no. 5, 1964, 3-11

TOPIC TAGS: ablation, ablative heat transfer, sublimation, nonequilibrium gas flow, nonequilibrium dissociative flow, diffusion boundary layer, mass transfer

ABSTRACT: Graphite ablation in dissociated air at elevated temperatures was studied analytically. The study included graphite sublimation according to the Knudsen-Langmuir expression for rate of evaporation of graphite and the set of chemical reactions $C + O \rightleftarrows CO$, $C + N \rightleftarrows CN$, $C + 2O \rightleftarrows CO_2$, $2C + 2N \rightleftarrows C_2N_2$. A set of six boundary conditions is given at the graphite surface. These are: continuity conditions for carbon and nitrogen, nonequilibrium sublimation equation, equilibrium equations for the above chemical reactions, saturated vapor pressure curve of carbon, and energy balance on the graphite surface. The laminar boundary layer equations are written in nondimensional form for a multicomponent gaseous mixture in the vicinity of the stagnation point. The problem is completed by adding to these a set of concentration equations

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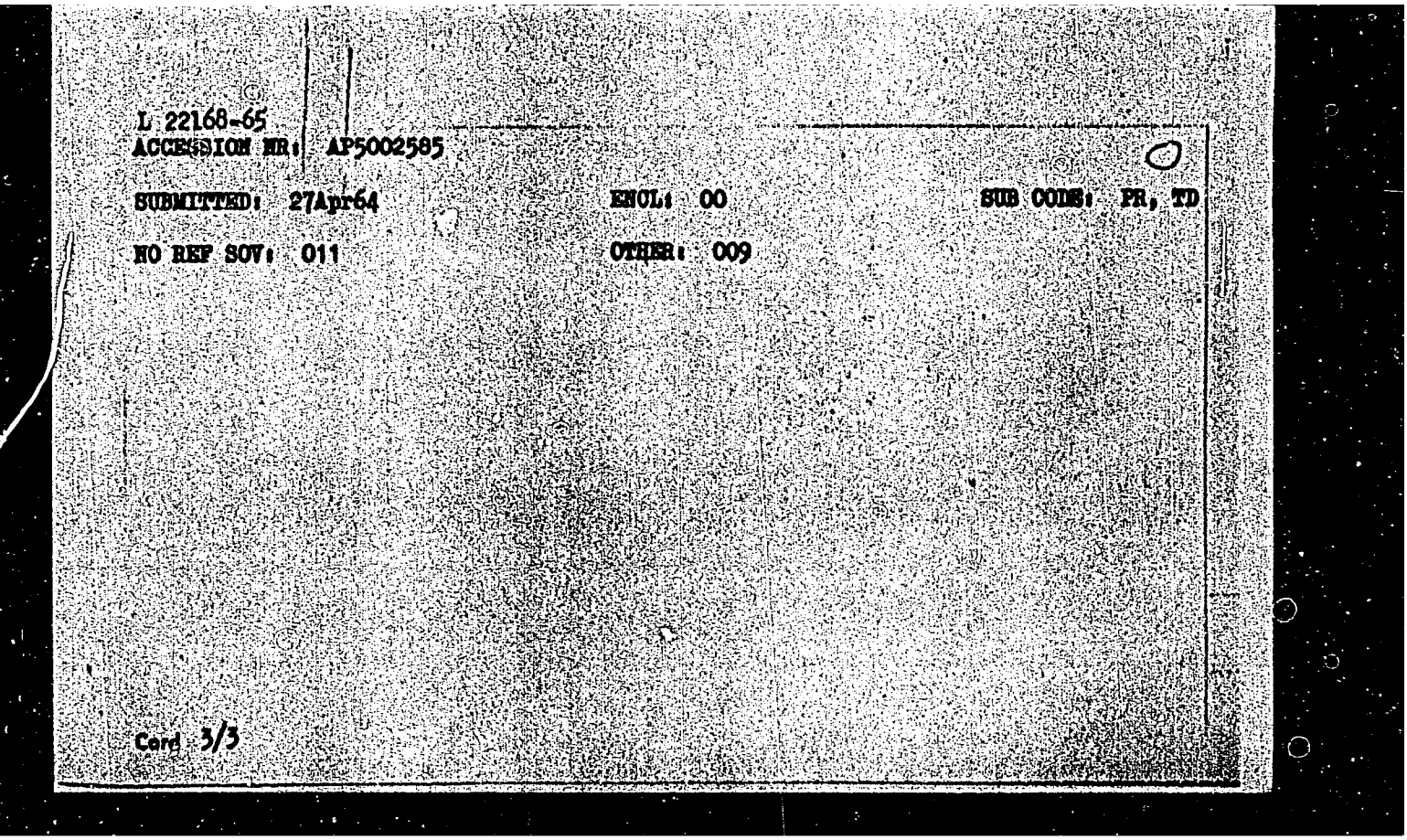
for the gas mixture. The numerical solution of those equations and boundary conditions is carried out in the following steps: (1) as zeroth approximation, arbitrary values are assumed for the stream function and species concentrations at the wall (f_w, T_w, c_{i_w}) and the surface temperature; (2) initial profiles are assumed for the velocity, temperature, and species concentration inside the boundary layer; (3) differentiating the concentration profiles and using the species concentration equations, the diffusion current is found; (4) the boundary layer equations are solved; (5) from the boundary layer solution the coefficient of mass transfer is obtained, and (6) using these results, the values of f_a, T_w, and c_{i_w} are estimated as inputs to the first approximation. This successive approximation method is repeated several times, starting from the third step outlined above and repeated until the error between two successive approximations becomes less than a small number δ. A numerical example is given for the following conditions: T_e = 3000-6000K, p = 5 atm and a cylindrical geometry. Orig. art. has: 19 equations and 4 figures.

ASSOCIATION: none



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SUBMITTED: 27Apr64 ENCL: 00 SUB CODE: PR, TD

NO REF SOV: 011 OTHER: 009

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ACCESSION NR: AP4041396 S/0020/64/156/006/1316/1319

AUTHOR: Anfimov, N. A.; Petrov, G. I.

TITLE: Diffusion separation of a gas mixture in the presence of dissociation

SOURCE: AN SSSR. Doklady*, v. 156, no. 6, 1964, 1316-1319

TOPIC TAGS: diffusion gas separation, gas dissociation, gas boundary layer, diffusion coefficient, gas temperature gradient, hydromechanics

ABSTRACT: The gas composition in the mixture of dissociating gases differs in the boundary layer from that in the outer flux, if there is a temperature gradient at the surface. The separation is caused by differences in the diffusion coefficients of different components. This phenomenon was discussed in an earlier paper (Izv. AN SSSR, Mekh i mashinostz. #5, 117 (1963)). The present work deals with the effect of various factors, such as the degree of dissociation of the gas in the outer flux

$$\alpha = \left(\frac{c_A}{c_A + c_{A_2}} \right)$$

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concentration of the other (inert) gas, and the ratio of diffusion coefficients of atoms and molecules of the dissociating gas. The assumptions are made in computations, that the rate of the chemical reaction $A_2 \rightleftharpoons 2A$ is zero in the boundary layer, and is infinitely high at the body surface, and that thermal diffusion inside the boundary layer is absent. The following cases are considered: O-O_2-N_2; O-O_2-He; O-O_2-Kr; H-H_2-He; H-H_2-N_2; J-J_2-Kr. Orig. art. has: 2 figures and 5 equations.

ASSOCIATION: None

SUBMITTED: 15Jan64 DATE ACQ: 00 ENCL: 00

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

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