

BOLOTOV, I.N.; LITVINOV, N.I., aspirant; APENNIKOV, S.A., aspirant;
LUKASHOV, A.I.; PROTASOV, N., aspirant; GOLOVANYUK, V.I.,
aspirant; GUBAYDULLIN, Kh.

Combines cultivation practices with the use of herbicides. Zemledelie
27 no.6:53-59 Je '65. (MIRA 18:9)

1. Luganskiy sel'skokhozyaystvennyy institut (for Bolotov,
Litvinov). 2. Vsesoyuznyy nauchno-issledovatel'skiy institut
kormov (for Apennikov). 3. Donskaya opyt'naya stantsiya
Vsesoyuznogo nauchno-issledovatel'skogo instituta maslichnykh
i efiro-maslichnykh kul'tur (for Lukashov) 4. Belorusskaya sel'skokho-
zyaystvennaya akademiya (for Protasov). 5. Bashkirskiy nauchno-issle-
dovatel'skiy institut sel'skogo khozyaystva (for Gubaydullin).

APERYAN, A.A.

Combination of full-term uterine pregnancy with extrauterine pregnancy revealed after delivery. Akush. 1 gin. 39 no. 3: 127 My-Je'63 (MIRA 17:2)

1. Iz Nevel'skoy rayonnoy bol'nitsy (glavnyy vrach V.M. Matveyev).

APER'YAN, Vladimir Yermeyevich; POCHAYEV, N.N., red.; CHATSKAYA,
M.G., tekhn. red.

[People's Republic of Bulgaria] Narodnaia Respublika
Bolgariia. Moskva, Izd-vo IMO, 1963. 85 p.
(MIRA 17:2)

LOKTIONOVA, N.A.; RASTVOROVA, N.M.; KOVRIZHNYKH, V.G.; KOMAROVA, N.K.;
TELIS, M.Ya.; DOBATKIN, V.I., rukovoditel' raboty; Prinimali
uchastiye: VINOKUROV, N.G.; PONAGAYBO, Yu.N.; PERETYKINA, I.N.;
BULGAKOV, G.F.; PYATUNINA, V.I.; TITKOV, S.M.; KALMYKOV, K.V.;
BRASLAVSKIY, D.N.; VEYSMAN, S.Ya.; APER'YANOVA, N.N.;
PANTYUSHKOVA, N.S.; PRIVEZENTSEVA, T.V.

Ways to reduce warping of large-size parts made of the
AK4-1 alloy. Alum. splavy no.3:271-284 '64.

(MIRA 17:6)

ANDRZHEYNVSKIY, A.M., inzhener; APESTIN, V.D., inzhener.

Work of innovators at the Orekhovskoe Peat Enterprise in 1953.
Torf.prom. 31 no.4:4-5 '54. (MLRA 7:6)

1. Orekhovskoye torfopredpriyatiye. (Orekhovsk--Peat industry)
(Peat industry--Orekhovsk)

APETAUER, Milan, ins.

Examination of the effect of damper characteristics on
car springing by means of an analog computer. Automobil
Cs 6 no.5:130-136 My '62.

1. Tatra, Koprivnice.

APETAUR, J; FISCHER, J.

Work in the pediatric section in the psychiatric clinic with special reference to pediatrics. *Pediat. listy* 5 no.4:230-232 July-Aug. 1950. (CML 20:1)

1. Of the Pediatric Department of the Psychiatric Clinic of Charles University in Prague (Head--Prof. Zdenek Myslivecek, M. D.).

APETAUR, J.

"The Children's Department of the Psychiatric Clinic in Prague (A Contribution to the Child Psychiatry of the USSR, the Importance of the Child Psychiatric Department as a Clinical Section.)

SO: Neurol. a psych., Prague, Vol. 16 (1953), No. 1, pp. 62-89.

APETAUR, Jos. Dr. doc.; VOJTIK, Vj. Dr. prim

Psychoses and psychotic states in children. Neur. psychiat. cesk.
18 no.1:7-14 Feb 55.

(PSYCHOSES, in infant and child)

(SCHIZOPHRENIA, in infant and child)

APPELAUR, Josef; SKALICKOVA, Olga

Mental disturbances in Rabinski-Frohlich disease. Neur. psychiat.
chek. 18 no.1:68-77 Feb 55.

1. 2 psychiatricke kliniky prof. Myslivecka.
(FROHLICH SYNDROME, complications
diabetes mellitus, mental disord. in)
(DIABETES MELLITUS, complications
frohlich synd. with mental disord.)
(MENTAL DISORDERS, in various diseases
Frohlich synd. with diabetes mellitus)

ALTAUER, V.

Motor vehicle suspension. I. Conditions for riding comfort.

p. 160 (Automobil) Vol. 1, no. 5, May 1957 Praha, Czechoslovakia

SOL. MONTHLY INDEX OF EAST EUROPEAN ACCESSIONS (MEAI) LC, VOL. 7, NO. 1, Jan. 1958

ALTAUER, M.

Motor vehicle suspension. II Progressive rate springing.

p. 174 (Automobil) Vol. 1, no. 6, June 1957 Praha, Czechoslovakia

SO: MONTHLY INDEX OF EAST EUROPEAN ACCESSIONS (EEAI) LC. VOL. 7, NO. 1, Jan. 1958

ALBTAUR, M.

Motor vehicle suspension. III The effect of wheel spring rates and of weight distribution.

p. 229 (Automobil) Vol. 1, No. 7, July 1957, Praha, Czechoslovakia

SO: MONTHLY INDEX OF EAST EUROPEAN ACCESSIONS (BEAI) LC, VOL. 7, NO. 1, Jan. 1958

C

APETAUF, M.

Motor vehicle suspension. IV. The influences of unsprung weight and tires.

p. 269 (Automobil) Vol. 1, No. 8, Aug. 1957, Czechoslovakia

SO: MONTHLY INDEX OF EAST EUROPEAN ACCESSIONS (EEAI) LC. - VOL. 7, NO. 1, JAN. 1958

APETAUR, M.

Motor vehicle suspension. V. Hydraulic damping.

p. 300 (Automobil) Vol. 1, No. 9, Sgpt. 1957 Czechoslovakia

SO: MONTHLY INDEX OF EAST EUROPEAN ACCESSIONS (MEAI) LC. - VOL. 7, NO. 1, JAN. 1958

APBTAUER, M.; FUST, L.

"Graphic methods for calculating vibrations of motor vehicles with respect to nonlinear spring mechanisms."

P. 81 (Institute of Mathematics, Czechoslovak Academy of Sciences;) Vol. 2, no. 2, 1957

SO: Monthly Index of East European Accessions (EEAI) LC, Vol. 7, no. 5, May 1958

APETAUR, M.

TECHNOLOGY

PERIODICAL: AUTOMOBIL. VOL. 3, no. 2, Feb. 1959,

Apetaur, M. Steering geometry and the lateral flexibility of tires. p. 40.

Monthly List of East European Accessions (EEAI), LC, Vol. 8, no. 5,
May 1959, Unclass.

APETAUROVA, B.; HLADIK, M.

Pseudocysts of the pancreas in children. Rozh. chir. 42 no.12:
894-898 D'63.

1. Klinika pediatricke chirurgie fakulty detsekeho lekarstvi KU
v Praze; prednostat prof. dr. V.Kafka, DrSc.

*

FAFLOVA, Helena; APETAUROVA, Bozena; KOUTECKY, Josef

Our experiences with examination of residual urine in children.
Cas lek. cesk. 101 no.19:592-598 11 My '62.

1. Klinika detske chirurgie fakulty detskeho lekarstvi KU v Praze,
prednosta prof. dr. V.Kafka, DrSc.
(UROLOGY in inf & child) (UrINE chemistry)

Handwritten text, possibly a name or title, mostly illegible.

~~Source: (11 1961) Given Lead~~

Country: Rumania

Academic Degrees: not given-

Affiliation: not given-

Source: Bucharest, C. ~~university or journal~~ Revista de Fizica,
vol 11, No 6, 1961, pp 723-730.

Date: "The Nature of the Jeter Tables in the Dan-Enclosure of
drills -- South of the Brest between 1956 and 1958."

Co-author(s):

~~ALXANDRU, Maria.~~
GACU, Al.

[Academic degrees and affiliations
not given]

APETAUROVÁ, Marie, nasloužila lekarka; VESELSKY, Jaroslav

On anti-allergic properties of mushrooms *Agaricus hortensis* (Cooke)
Pilát. Česk. dermat. 36 no. 5:329-334 Ag '61.

1. Zavodni ustav narodniho zdravi VZKO v Ostrave-Vitkovcich, red.
dr. L. Simik, pobočne pracoviste Vyskumneho ustavu prirodnych leciiv
v Frase, dr. Z. Cekan.

(ALLERGY ther) (MUSHROOMS extracts)

"APPROVED FOR RELEASE: 06/19/2000

CIA-RDP86-00513R000101820018-0

APPROVED FOR RELEASE: 06/19/2000

CIA-RDP86-00513R000101820018-0"

APPROVED FOR RELEASE

APETOV, S. A.

Children's traumas in large cities. Sovet med. No. 11, Nov. 50,
p. 37-9

1. Of Moscow First Aid Station (Head of Station -- Doctor
Medical Sciences A. S. Puzhkov).

CLM. 20, 3, March 1951

APETOV, S. A.

Muff-like sarcoma of the descending colon with metastases to the uterus in pregnancy. Khirurgia, No. 7, 1952

SO: MLRA, December 1952.

APETOV, S. A.

FD-1540

USSR/Medicine - Accidental Injuries

Card 1/1 : Pub 102-11/14

Author : Apetov, S. A., Candidate of Medical Sciences

Title : ~~Accidental Injuries~~
Accidental injuries encountered by adults, according to data supplied by the Moscow Emergency Aid Station

Periodical : Sov. zdrav., 6, 47-50, Nov-Dec 1954

Abstract : Of majority of accidental injuries in Moscow requiring emergency aid, which adults commonly meet within the course of performing their daily chores, 45.1% were due to falls while walking and 25.1% were due to fall from a height. Majority of accidental injuries were found among people 36-55 years of age (43.2%) and the age group 16-35 was a close second (35.4%). Of the total number of accidental injuries reported 40% were among men and 60% among women. Statistical data on file at the Moscow City Emergency Aid station, which serves the entire city, was used in this investigation.

Institution :

Submitted :

APETOV, S. A. - Levben

Ovarian hormones and their use in obstetrics and *gynecology*. Vop.
okh.mat. i det. 1 no.6;53-57 N-D '56. (MIRA 10:1)

1. Iz kafedry akusherstva i ginekologii (zav. - prof. A.A.Lebedev)
pediatricheskogo fakul'teta II Moskovskogo gosudarstvennogo
meditsinskogo instituta imeni I.V.Stalina.
(SEX HORMONES)

ABSTRACTA MEDICA - Sec 10 Vol 10/11 Obstetrics Nov 57

2063. APETOV S. A. * A cystic form of a Brenner tumour of the ovary (Russian text) AKUS. I GINEK. 1956, 4 (76-78) illus. 3
In this case, in the midst of connective fibres and cells, epithelial complexes were found in which cavities of various forms and sizes were present, lined with epithelial cells with round nuclei. In some of the epithelial complexes the cavities were surrounded by a layer of mucus-producing cells. Ganev - Sofia (X, 5, 16)

APETOV, S.A., dots. (Moskva)

Determination of thyroid function in guinea pigs with the aid of radioactive iodine and the effect of synestrol [with summary in English]. Probl. endok. i gorm. 3 no.6:49-52 M-D '57. (MIRA 11:3)

1. Iz kafedry akusherstva i ginekologii (zav.-prof. A.A.Lebedev) pedagogicheskogo fakul'teta II Moskovskogo meditsinskogo instituta im. N.I.Pirogova (dir.-dotsent S.I.Milovidov)

(ESTROGENS, effects,

on thyroid glands in guinea pigs (Rus)

(THYROID GLAND, effect of drugs on,

estrogens in guinea pigs (Rus)

(THYROID GLAND, function tests,

radioiodine test in guinea pigs (Rus)

(RADIOIODINE, radioiodine,

thyroid funct. test in guinea pigs (Rus)

USSR/Human and Animal Physiology - Internal Secretion.
General Problems.

T

Abs Jour : Ref Zhur Biol., No 3, 1959, 12914

Author : Apetov, S.A.

Inst : Moscow Medical Institute

Title : Influence of Castration on Function of Thyroid Gland
in Female Guinea Pigs as Determined by Radioactive
Iodine (I^{131}) in Protracted Experiment

Orig Pub : Uch. zap. 2-go Mosk. med. in-ta, 1957, 6, 83-87

Abstract : Pigs (17) ♀ weighing 500 g were injected with 1 milli-
curie of I^{131} , and the maximal uptake of I^{131} by the
thyroid gland (TG) was determined. In part of the pigs
the ovaries were removed, and after 1 month the determi-
nation of radioactive iodine uptake by TG was repeated.
In most of the pigs there was a negligible lowering

Card 1/2

- 65 -

USSR/Human and Animal Physiology - Internal Secretion.
General Problems

T

Abs Jour : Ref Zhur Biol., No 3, 1959, 12914

of the uptake by TG. A similar picture was observed
in animals subjected to laparotomy without oophorec-
tomy and formation of adhesions in the abdominal
cavity.

Card 2/2

APETOV, S.A., dotsent

Acute pancreatitis in the early puerperal period. Akush. i gin.))
no.2:109-110 Mr-Ap '57. (MIRA 10:6)

1. iz kafedry akusherstva i ginekologii (sav. - prof. A.A.Lebedev)
pediatricheskogo fakul'teta II Moskovskogo instituta imeni I.V.Stalina.
(PUERPERIUM, compl.
pancreatitis)
(PANCREATITIS, etiol. and pathogen.
puerperium)

APETOV, S.A., dots.

Acute pancreatitis coupled with toxemia during the second half
of pregnancy. Vop. okh.mat. i det. 3 no.5:89-90 8-0 '58
(MIRA 11:11)

1. Iz kafedry akusherstva i ginekologii (sav. prof. A.A.
Lebedev) pediatricheskogo fakul'teta III Moskovskogo gosudarstvennogo
meditsinskogo instituta imeni N.I. Pirogova.

(PANCREAS--DISEASES)

(PREGNANCY, COMPLICATIONS OF)

APETOV, S.S., dotsent

Relation between the thyroid gland and the ovaries; a review of literature. Akush. i gin. 40 no.5:98-104 S-0 '64. (MIRA 18:5)

1. Kafedra akusherstva i ginekologii (zav. - prof. A.A.Lebadev)
pediatricheskogo fakul'teta II Moskovskogo meditsinskogo instituta
imeni Pirogova.

APETUN, C.

Tasks of the actual research in the field of electric energy.

p. 183 (Academia Republicii Populare Romane. Institutul de Energetica. Studii Si Cercetari de Energetica. Vol. 6, no. 3, July/Sept. 1978. Bucuresti, Romania)

Monthly Index of East European Accessions (EEA) IC. Vol. 7, no. 2,
February 1978

APETREI, C.

Electrodynamic models of electric-power systems; construction of models of synchronous generators.

P.311 (Academia, Republicii Populare Romine. Institutul de Energetica. Studi Si Cercetari de Energetica. Vol. 6, no. 3, July/Sept. 1956, Bucuresti, Rumania)

Monthly Index of East European Accessions (FEAI) LC. Vol. 7, no. 2, February 1958

APETREI, C.

Quick responsiveness of direct-current machines working in the excitation systems of synchronous generators. In *Russina*, p. 227.

REVUE D' ELECTROTECHNIQUE ET D'ENERGETIQUE. JOURNAL OF ELECTROTECHNICS AND ENERGETIC (ACADEMIA Republicii Populare Romine, Institutule de Energetica)
Bucuresti, Rumania Vol. 2, no. 2, 1957.

Monthly List of East European Accessions (EEAI) IC, Vol. 8, no. 9, Sept. 1959

Uncl.

ANTEMIO, C.
ANTEMIO, C.

Achievements in the field of power in the Soviet Union.

7. 331 (STUDII SI SCURTARI DE ASPECTE DE) (Bucuresti, Romania) Vol. 7, No. 3, 1967

30: Monthly Index of East European Accessions (IEAI) Vol. 7, No. 6, 1968

APETREI, C.; CRETU, D.

Modeling exciters of synchronous machines. p. 695

STUDII SI CERCETARI DE ENERGETICA. Pucuresti, Rumania. Vol. 7, no. 4, 1957

Monthly List of East European Accession. (EIAI) LC, Vol. 8, no. 9, ^{Sept.} 1959
Uncl.

APETREI, C.: ~~OR~~.

TECHNOLOGY

PERIODICAL: STUDII SI CERCETARI DE ENERGETICA. Vol. 8, no 4, 1958

APETREI, C.: CRISTU, D. Asymmetric working conditions of synchronous generators in the case of local power-producing systems. p. 599.

Monthly List of East European Accessions (SEAI) LC. Vol. 8, No 4
April 1959, Unclass.

APETRSY, K.

The following is among dissertations of the Leningrad Polytechnic Institute imeni Kalinin:

"Automatic Control of the Voltage and Speed of rotation of Low- and Medium-Power Hydroelectric Units." 21 December 1953. Criterion is given for evaluating the quality of the operation of a control systems for generators, including asynchronous motors of the same capacity as the generators. Practical recommendations are made for the selection of most developed systems for controlling the speed and voltage of low-power hydroelectric generators.

SG: M-1048 28 Mar 56

APETREI, C.

Criteria for the technical and economic estimation of the systems of excitation in synchronous machines. Rev electrotechn energet 5 no.1: 23-40 '60. (EEAI 10:4)

1. Comite de redaction, Revue d'electrotechnique et d'energetique, redacteur en chef adjoint.
(Electric motors, Synchronous) (Excitation equipment)

APETREI, Constantin

Testing of the insulation of high voltage electric machines. Rev
electrotechm energet 6 no.1:35-51 '61.

(Electric machines) (Electric insulators and insulation)

APETREI, C.

Some fuller particulars on the heating and cooling of high-power turbogenerators. Studii cerc energet 11 no.4:717-730 '61.

1. Membru al Comitetului de redactie si redactor responsabil adjunct, "Studii si cercetari de energetica".

APETREI, Constantin, ing., conf., candidat in stiinte tehnice;
BALA, Constantin, ing., candidat in stiinte tehnice

Calculus and experimental determination of axial forces in
power transformers. Electrotehnica 10 no.8:285-294 Ag '62.

1. Catedra de masini electrice de la Inst. Politehnic, Bucuresti
(for Apetrei). 2. Sef de lucrari la Inst. Politehnic, Bucuresti
(for Bala).

APETREI, C.

Determining the best technical and economic method for the construction and operation of power transformers by calculation. Studii cerc energet A 12 no.4:605-632 '62.

TUDORAN, Petro, ing.; LUCA, Gheorghe, ing.; APETREI, Gheorghe, ing.

Determining the adherence of some Rumanian and foreign
enamels by using a sensitive quantitative method. Industria
usocara 9 no.8:296-299 Ag '62.

BRANISTE, C.; IONESCU, Irina; APETHEI, N.

On the dielectric properties of the phosphate stratum and its application. Studii chim Iasi 13 no.2:303-309 '62.

APETREIC D.; FAUR, S.

Prospects of the development of research work in the Institute of Electric power. p. 181

STUDII SI CERCETARI DE ENERGETICA,
Bucuresti, Rumania
Vol. 9, no.2, 1959

Monthly list of European Accession Index (EEAI) IC Vol. 8, No. 11
November 1959
Uncl.

HARET, G.; APETROAIEI, Maria; GAGU, Al.

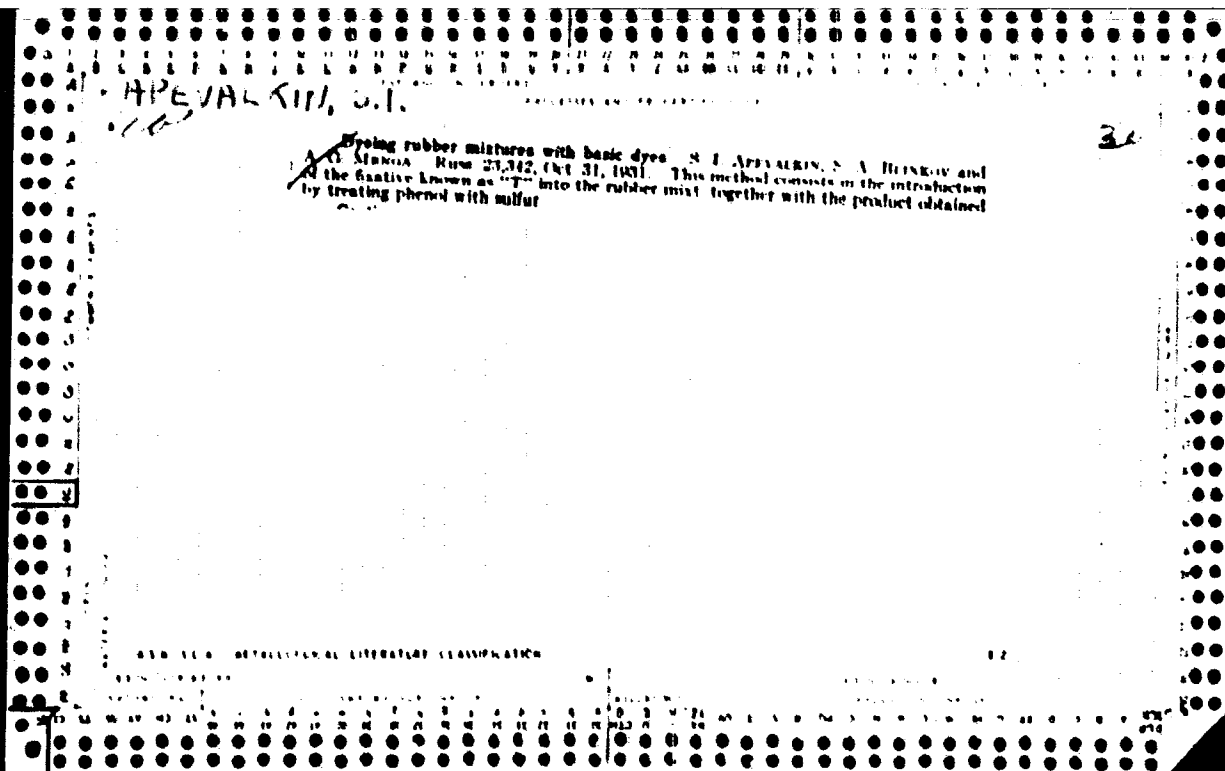
Conditions of the phreatic waters in the protective enclosure
Braila-mouth of the Siret River between 1956 and 1958. Comunicare
AR 11 no.6:723-730 Je '61.

1. Comunicare prezentata de Gr. Obrejanu, membru corespondent
al Academiei R.P.R.

AFETROALEI, S. AND OTHERS

Preliminary results of dows in the Paragan. p. 1323
COMUNICARILE. Bucuresti Vol. 5, no. 6, June 1955

SOURCE: East European Accessions Lists (EEAL) Library
of Congress Vol. 5 no. 12 December 1956



CA HHOVAKTH, S.I. 30

Improvement in the quality of synthetic rubber by thermal treatment. P. K. Polukhin, S. I. Apetakhin and I. A. Gutorvina. *J. Rubber Ind.* (U. S. S. R.) 12, K59-34 (1965).—Synthetic rubber (I) heated to 180° evolved gases and low-boiling fractions (II) (80°), and at 220° decomposed, with formation of high-boiling fractions (220-228°) (both fractions amounted to 1-4% of I). The residue was composed of a liquid tar-like mass, a hard porous layer and a soft elastic sticky and gummy layer. By heating I at 180° for 8 hrs. in the presence of its high-boiling thermal decompos. fraction or in the presence of the 140° fraction of the "high hydrocarbon layer," obtained as a by-product in the regeneration of alc., there was obtained a soft, elastic, sticky and gummy substance, and in C₂H₄ and benzene, with formation of a cement. By heating I at 90° for 3-4 hrs. in benzene (90% 650 mm.) in the presence of 80-85% of Makol (polymerized residue from the rectification of butadiene), there was obtained a product designated SKT, which resembled natural rubber. To obtain a rubber mist, of SKT from I, the latter was melted at 70° with 4% of Makol and cooled to 30-40°, other ingredients (Rublexan B, C black 60, S 4, accelerator 0.5) were added, and the mist, was cured at 140° for 14 min. (tensile strength of SKT, 138 kg. per sq. cm. and of I 90.5). Mists, with SKT had twice the adhesive power of mists, with I. A 5% soln. of SKT in C₂H₄ in the presence of a small proportion of resin gave a high-quality cement, equal to cement made with smoked sheet.

A. Pestoff

1965-11-14 DETAILING LITERATURE CLASSIFICATION

ACFEYBAM, A.

"A contribution to Khinchin's principle of transfer." Text in English. p. 119. (Casopis
Pro Pestovani Matematiky, Czechoslovak Mathematical Journal, Vol. 1, no. 3, Feb. 1952.
Praha.)

SO: Monthly List of East European Accessions, Vol. 3, No. 2, Library of Cong., Feb. 1954, Uncl.

NOVAK, B.; KOZOVA, J.; LOBL, F.; APFELHALER, R.

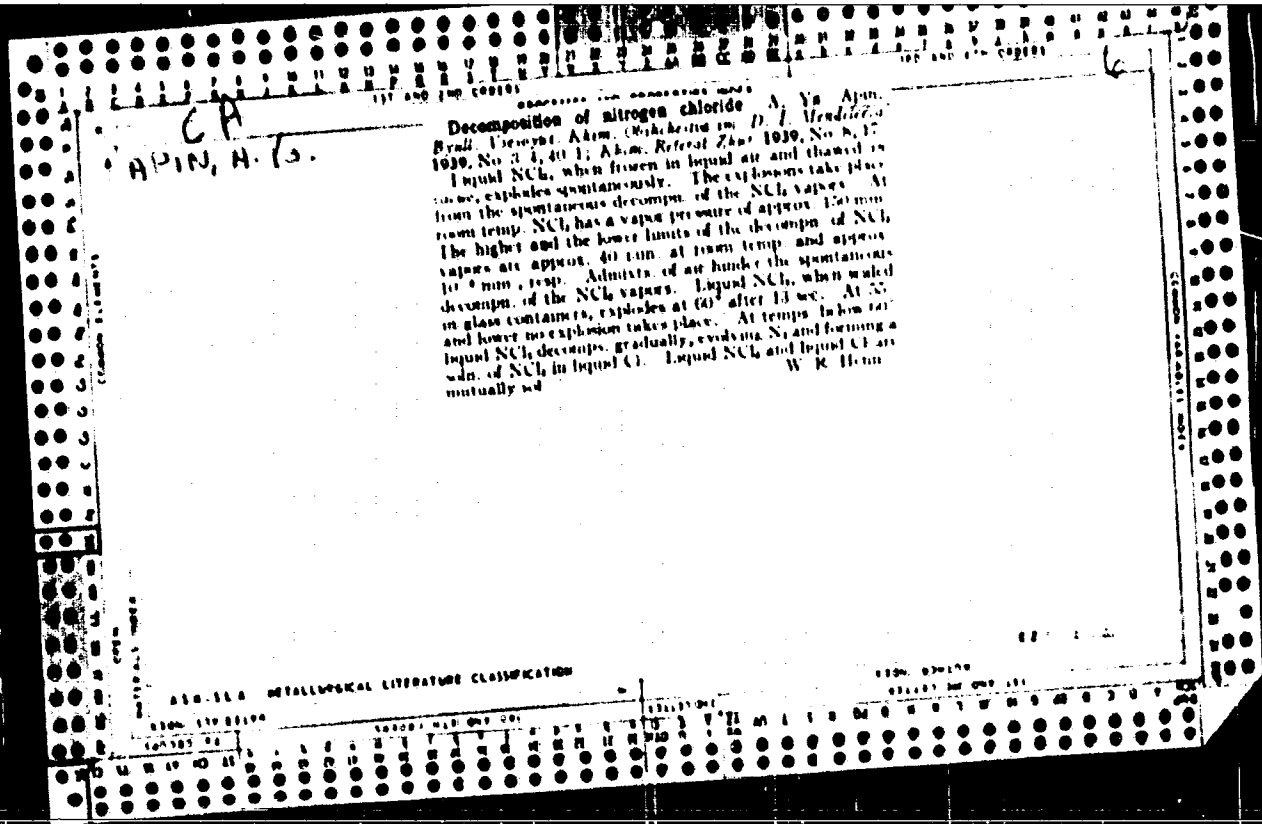
Influence of organic substances in different humification stages on microbiological and biochemical processes in soil. Rost vyroba 9 no.7/8:770-779 J1-Ag '63.

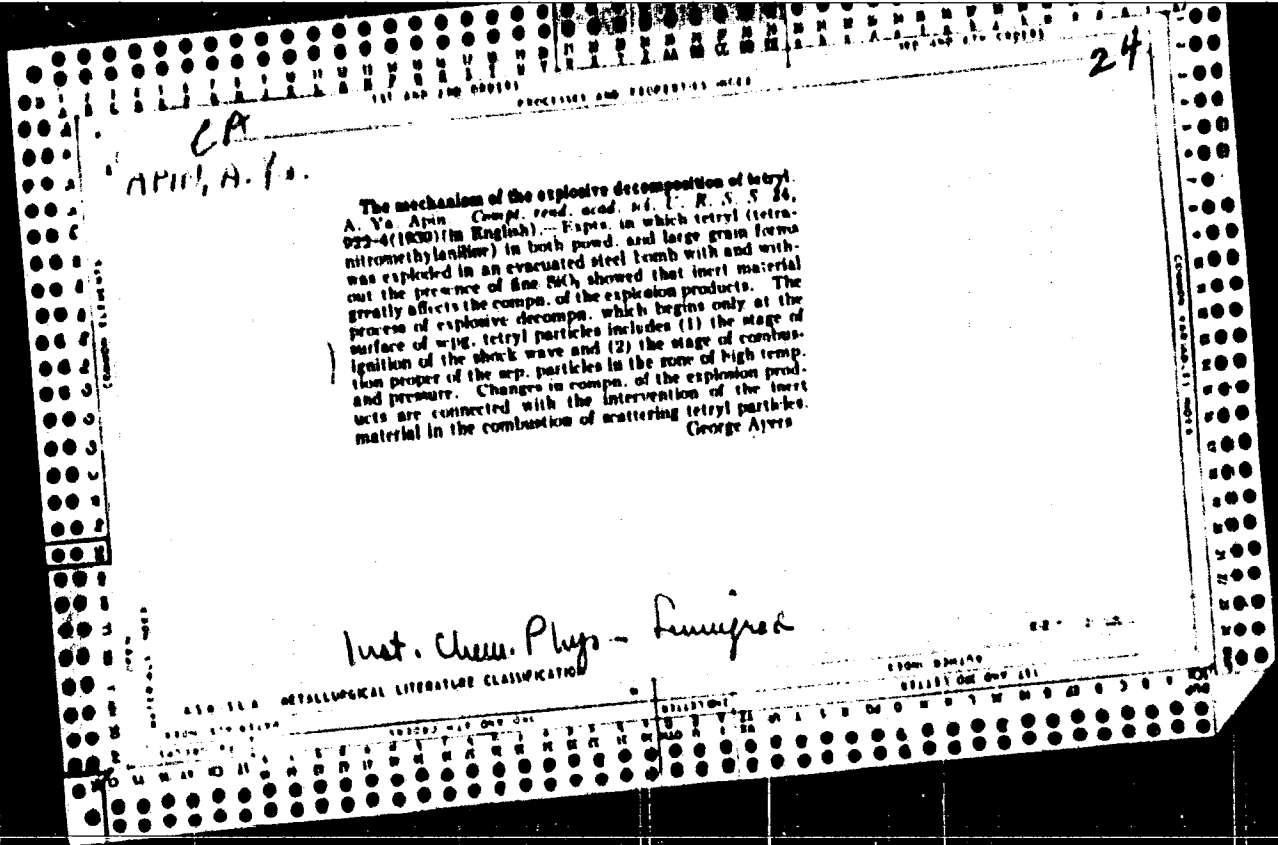
1. Ustredni vyzkumny ustav rostlinne vyroby, oddeleni mikrobiologie, Rusyne.

AIGUNOV, P. P. i YARTSEV, V. K.

26362 Iglofil' trovaya ustanovka dlya glubokogo vodoponizheniya. (s primech
red.) zlekt. Stantsii, 1949, No. 8 s. 28-31.

SO: LETOPIS' NO. 35, 1949





ca

10

PROCESSING AND PROPERTY INFO

Decomposition of methanol under high pressures. A. Apin, O. Lehtunskii and N. Kefinov. *J. Gen. Chem (U.S.S.R.)* 10, 803-5 (1940).—With the aim to investigate the influence of high pressures on simple reactions of org. compds. the behavior of MeOH has been investigated. The decompn. of MeOH was studied at 350° under pressures of 600, 2000, 6000 and 8000 atm. The reaction products were Me₂O, CH₄, CO₂, CO and H₂. Unamt. hydrocarbons could not be detected. The amt. of Me₂O increased with increasing pressure and decreased at a given pressure with prolonged reaction time. CO and H₂ were formed in small amts. and CH₄ in large amts. when high pressures were applied. The amt. of CO and H₂ decreased with prolonged reaction time while the amt. of CH₄ increased. The reaction vessel used consisted of nonrusting steel covg. about 8% CrO₂ which possibly acts as a catalyst. A series of reactions according to which the decompn. reaction is assumed to proceed is given.

METALLURGICAL LITERATURE CLASSIFICATION

CITATION

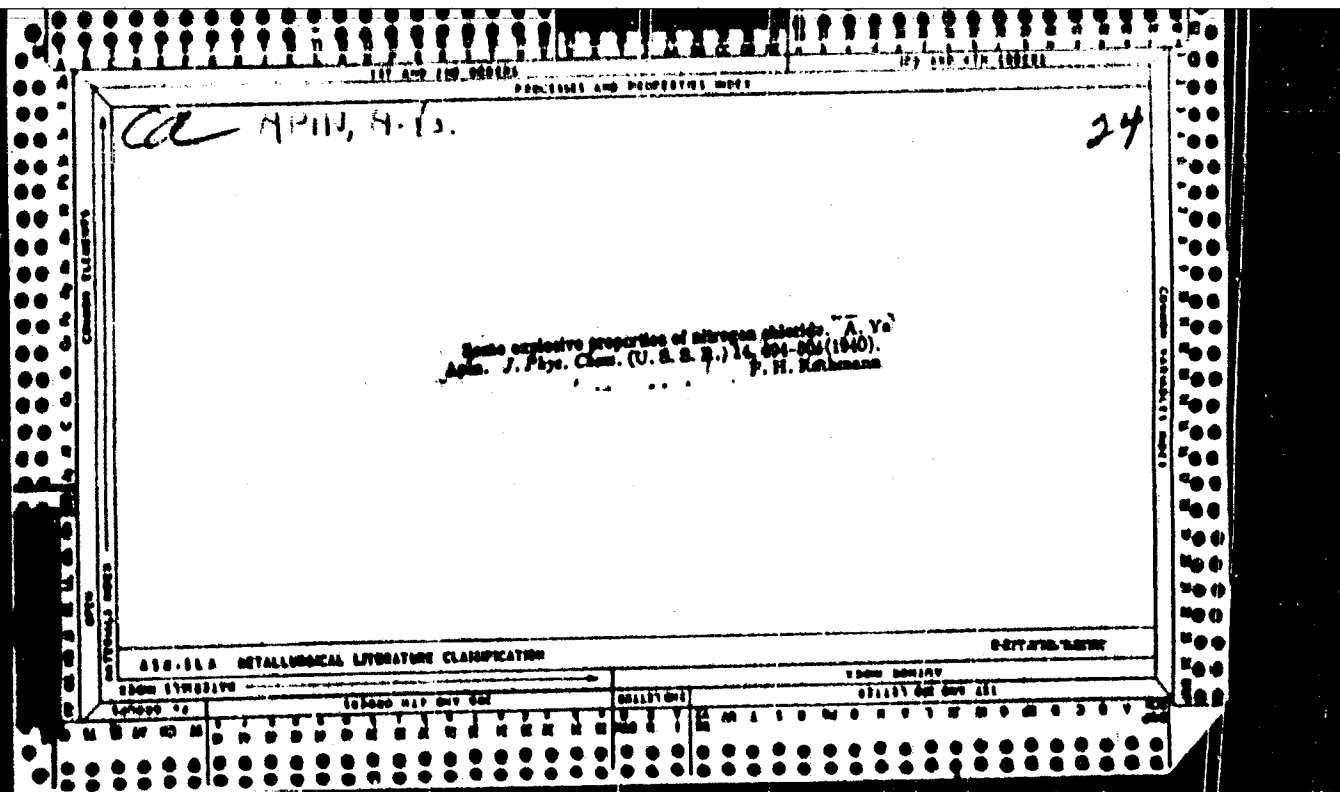
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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RC

A-1

Explosive properties of nitrogen trichloride. A. J. Aptin (*J. Am. Physicist. U.S.S.R.*, 1949, 14, 608-123).—In the absence of air NCl_3 undergoes spontaneous decomp. with the evolution of light at all pressures < a definite upper limit (50, 70, and 118 mm. at 50°, 60°, and 65°, respectively). The decomp. is propagated by local explosions. The reaction is accelerated by an unstable active intermediate compound, some of which remains in the vessel after decomp. is apparently complete. Liquid NCl_3 in fused glass bulbs heated at 60° explodes after an average time of 13 sec., but at 55° no explosion occurs. Dilution with the decomp. products raises the temp. of the explosion. Below the explosive temp. liquid NCl_3 decomposes slowly. The mechanism of the explosion of NCl_3 and of NH_4NO_3 is discussed. J. W. S.

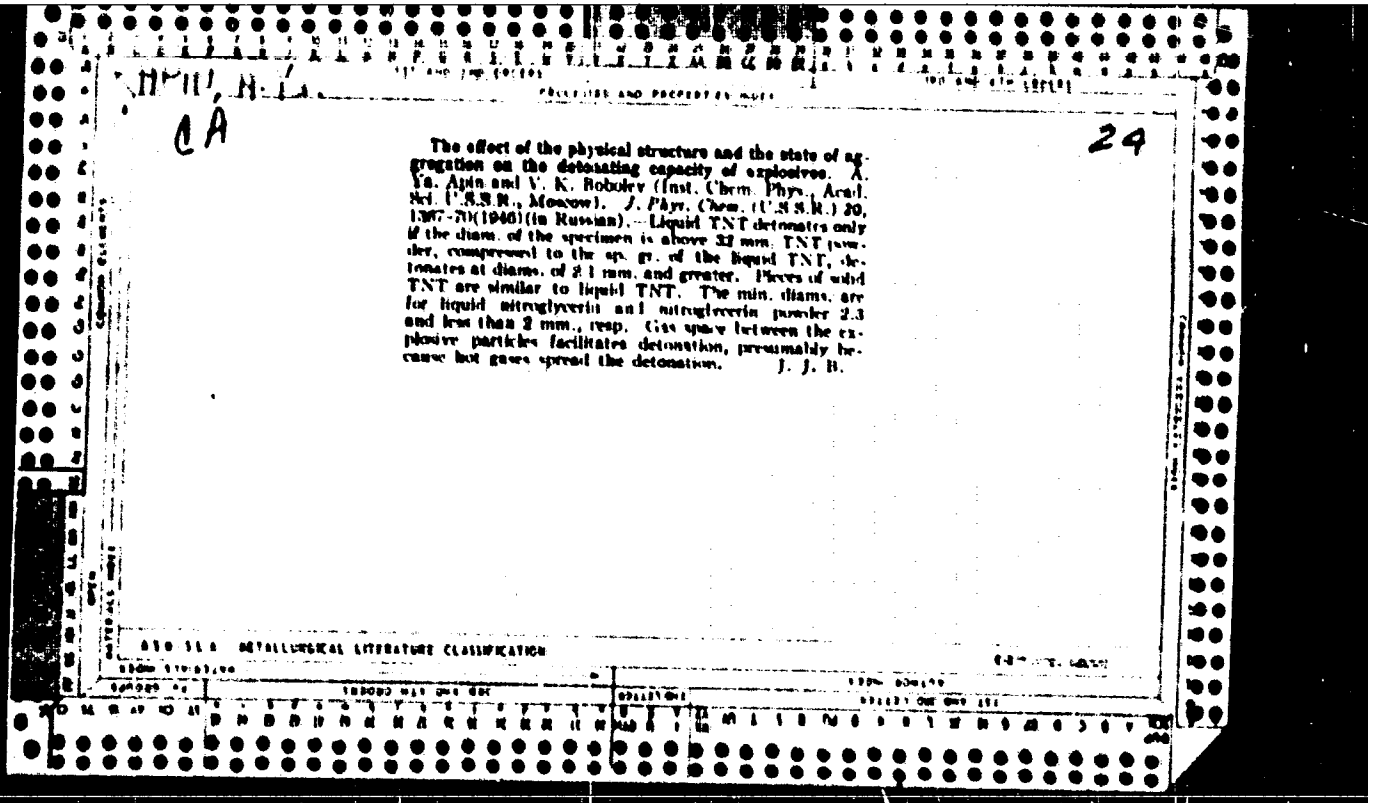
Inst. Chem. Physics, Moscow - AS USSR



CA
April, 1946.

24

A. Detonation and combustion of explosives. A. Ya. Apin. *Doklady Akad. Nauk S.S.S.R.* 10, 286-9 (1946).
The hydrodynamic theory of the mechanism of propagation of detonation by the impact of the shock wave on neighboring particles of the explosive, while theoretically correct, cannot be reconciled in practice with a no. of facts. The initial velocity of the hot products of the explosion into the atm. is greater than the speed of the detonation. The presence of irregular pores filled with gas or liquid produces irregular thrusts on the transverse front of the detonation wave. Besides, the crushing effect of the detonation on the particles of the explosion results in irregular granulation and consequent variation in the velocity of the reaction. Any original lack of uniformity in the structure and d. of the explosive produces a similar effect, i.e., the relief of the explosion front is "lumpy."
O. W. Wilcox



ANN A. YA

PA 49796

USSR/Physics
Powders, Explosive
Detonation - Nitrocell

Oct 1947

"Nature of Damping the Detonation in Powdered Explosives," A. Ya. Apin, V. I. Bobolev, Inst Phys Chem, Acad Sci USSR, 3 1/2 pp

"Dok Akad Nauk SSSR, Kova Ser" Vol LVIII, No 2

B. Batner and Yu. Khariton were able to determine with the aid of photographs that explosions of nitroglycerine or nitroglycol enclosed in glass tube of small diameter, start off very rapidly, but slow up and eventually die out altogether. Authors report results of experiments they conducted to determine if this

49796

USSR/Physics (Contd)

Oct 1947

phenomenon of damping exists only in the case of liquid explosives or if also present for powdered explosives. Submitted by Academician N. N. Semenov, 21 Mar 1947.

49796

7/15/11 7:18 PM
YAREMENKO, Nataliya Yevgen'yevna, SVETLOV, Boris Yakovlevich; ~~APIN, A.Ya.~~
nauchnyy redaktor; FEDOROVA, T.N., redaktor; GILKINSON, P.G., tekhnicheskii redaktor.

[Theory and technology of industrial explosives] Teoriia i
tehnologiya promyshlennykh vsryvchatykh veshchestv. Moskva,
Gos.isd-vo lit-ry po stroit.materialam, 1957. 239 p. (MIRA 10:11)
(Explosives)

AUTHORS: Apin, A. Ya., Lebedev, Yu. A.

20-114-4-38/63

TITLE: Explosion Decomposition of Hexogen (O vzryvchatom razlozhenii geksogena)

PERIODICAL: Doklady Akademii Nauk SSSR, 1957, Vol. 114, Nr 4, pp. 819-821 (USSR)

ABSTRACT: In a number of investigations it has been pointed out that the explosive decomposition reaction is dependent on the compactness of the charge, the power of the initiator, the strength of the cover, the quantity and kind of charge. The action of these factors is to a considerable extent ascribed to the pressure change in the front of the detonation wave and to the influence of pressure upon the equilibrium reactions: $2CO \rightleftharpoons CO_2 + C + 41,2 \text{ kcal.}$; $Co + H_2 \rightleftharpoons C + H_2O + 31,4 \text{ kcal.}$ $H_2O + CO \rightleftharpoons CO_2 + 9,7 \text{ kcal.}$ The change in explosion heat and volume of the gaseous explosion products has been determined with a negative oxygen balance for trotyl, tetryl, picric acid and a number of other explosives. For hexogen (cyclo trimethylene trinitramine), however, the explosion heat is cited with the assumption that it is independent of the explosion conditions, especially of the compactness of the charge. At a total explosion the maintenance of the constant charge solidity is of essential importance. The

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. Explosion Decomposition of Hexogen

20-114-4-38/63

Thus the experimental determination of the explosion heats, the composition and the volume of the explosion products makes it possible to obtain data which reflect more or less a true picture of the course of the detonation wave. Further investigations will make it possible to form a correct opinion of the reaction procedure in the detonation wave, as well as on the degree of pressure drop in it and the amount of losses. There are 1 figure, 2 tables, and 7 references, 1 of which is Soviet.

PRESENTED: December 26, 1956 by V. N. Kondrat'yev, Member, Academy of Sciences, USSR

SUBMITTED: December 21, 1956

Card 3/3

76-32-4-14/43

AUTHORS: Apin, A. Ya., Lebedev, Yu. A. Nefedova, O.I.

TITLE: The Nitrogen Reactions in Explosions (Reaktsii azota pri vzryve)

PERIODICAL: Zhurnal Fizicheskoy Khimii, 1958, Vol. 32, Nr 4, pp. 819 - 824 (USSR)

ABSTRACT: Since nitrogen is a constituent of the most important explosives, and in the explosion enters reactions with other elements, these are investigated calorimetrically according to the explosion heats. The investigations were carried out with hexogene, plumbic acid, hydrazide and mixtures of these with Al, Be, B, Mg and Zn; here investigations already carried out showed analogous results to those by A. R. Ringbom (Reference 1), K.K. Andreyev and P. L. Gyunter. An addition of metals strongly increases the explosion heat as the formed nitrogen reacts with the metal under formation of the nitride, in which case the explosion heat increases linearly with the increase of the amount of metal till to a certain point in order then to

Card 1/3

The Nitrogen Reactions in Explosions

76-32-4-14/43

decrease again. In the experiments with aluminum the dependence on the degree of dispersion and the number of aluminum particles was observed. From the results of the formation heats given in a table, compared to the data of references can be seen that in accordance to the coincidence, the formation heats can be determined in explosions of nitrides as a linear function between the heat formation and the content of metal partly exists. It is noticed that the metal addition increases the capacity for performing work of the explosives only to a certain limit, as the latter depends on the specific volume of the explosion gas products. The experiments carried out with explosion mixtures of hexogene with aluminum or beryllium in the calorimetric cylinder, the results of which are graphically shown, indicate that the metal enters a chemical reaction with all gas products of the explosion, as there are carbon monoxide and nitrogen, and that in consequence of this an additional heat formation is observed. In the case of hydrazinic acid a strong change of the maximal explosion heat was measured, in which case hydrogen and nitrogen are predominant in the explosion product at the lower value, and ammonia

Card 2/3

The Nitrogen Reactions in Explosions

76-32-4-14/43

and nitrogen at the higher value. There are 4 figures,
2 tables and 7 references, 5 of which are Soviet.

ASSOCIATION: Akademiya nauk SSSR, Institut khimicheskoy fiziki Moskva
(Moscow Institute for Chemical Physics, AS USSR)

SUBMITTED: December 15, 1956

AVAILABLE: Library of Congress

1. Explosives--Calorimetric analysis 2. Nitrogen--Chemical
reactions

Card 3/3

PSHEZHETSKIY, S.Ya.; KAMENETSKAYA, S.A.; GRIBOVA, Ye.I.; PANKRATOV, A.V.;
MOROZOV, N.M.; POSPELOVA, I.N.; APIN, A.Ya.; SIRYATSKAYA, V.N.;
SLAVINSKAYA, N.A.; CHEREDNICHENKO, V.M.

Kinetics of the decomposition and explosion of ozone.
Probl.fiz.khim. no.2:27-38 '59. (MIRA 13:7)

1. Laboratoriya kinetiki gazovykh reaktsiy Nauchno-issledovatel'-
skogo fiziko-khimicheskogo instituta im. L.Ya.Karpova.
(Ozone) (Explosions)

2(5),11(8)

AUTHORS:

Apin, A. Ya., Bolkhovitinov, L. G. SOV/20-124-2-27/71

TITLE:

Measurement of the Rate of the Burning of Powder Under the Conditions of a Detonation Wave (Izmereniye skorosti goreniya porokha v usloviyakh detonatsionnoy volny)

PERIODICAL:

Doklady Akademii nauk SSSR, 1959, Vol 124, Nr 2, pp 338-339 (USSR)

ABSTRACT:

As neither the heating of the gunpowder nor the temperature coefficients of the burning rate at excessively high pressures are known, direct measurements of the burning rate are of interest. By the method of the ionization probe (which permits measurements of short time intervals) it was possible to measure the burning rate of a powder granule immediately in a detonation wave. In order to measure the burning rate a plate of NB powder was mounted on a wooden listel of 20 mm width, and below the plate a pick-up (datchik) was fitted. A cardboard box (cross section 20.20 mm) was glued on to the wooden listel, and into this box a pulverulent solution of trotyl and hexogen TC 50/50 was filled. The particles of this alloy had a size of only about 0.02 mm. The detonation of this charge determined the nature of burning. Burning of the

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Measurement of the Rate of the Burning of Powder
Under the Conditions of a Detonation Wave

SOV/20-124-2-27/71

plate apparently occurs behind the Zhuge-point without any considerable change of pressure being caused. In this case it is possible, by varying the density of the charge, to vary the pressure prevailing during burning. Underneath the powder plate there always remains a certain quantity of air. This air basis was compressed and heated by the action of a shock wave and was able to set alight the powder plate. In this case the powder plate is set alight from two sides. The results obtained by the measurements are given by a diagram, which shows the dependence of the burning rate of the powder plate on the pressure in the detonation front of the aforementioned charge of TG 50/50. With growing pressure the rate of burning increases linearly. The experimental points furnish two straight lines, the mean values of which differ by the factor ~ 2 . At the here investigated conditions of the detonation wave NB powder burns at a rate of about 200-300 m/sec (at 60,000 kg/cm²). There are 2 figures and 1 reference.

Card 2/3

Measurement of the Rate of the Burning of Powder
Under the Conditions of a Detonation Wave

SOV/20-124-2-27/71

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Institute
for Chemical Physics of the Academy of Sciences, USSR)

PRESENTED: August 16, 1958, by V. N. Kondrat'yev, Academician

SUBMITTED: August 23, 1958

Card 3/3

APIN, A.Ya. (Moskva); VCSKCBOYNIKOV, I.M. (Moskva)

Calculating the parameters of the detonation wave for condensed
explosives. FMTF no.4:54-55 N-D '60. (MIRA 14:7)
(Shock waves)
(Explosives)

31254

S/207/61/000/005/014/015
D237/D303

also 3108, 3008

H. 8700

AUTHORS: Apin, A. Ya., Voskoboynikov, I. N., Kartashiv, Yu. A.,
and Lyutov, V. D. (Moscow)

TITLE: Determining polytropic indices of products of the
explosion of condensed explosives

PERIODICAL: Zhurnal prikladnoy mekhaniki i tekhnicheskoy fiziki,
no. 5, 1961, 117 - 118

TEXT: Adiabatic of the explosion products in the front of blast
wave can be described by

$$p = A r^{-n}, \tag{1}$$

where n depends on the composition of products, their pressure and
temperature. Using the data of A. N. Dremin and P. F. Pokhil (Ref. 1:
DAN SSSR, 1959, v. 128, no. 5), A. Ya. Apin and I. M. Voskoboynikov
(Ref. 2: PMTF, 1960, no. 4) and A. N. Dremin and G. A. Adadurov in
(Ref. 3: Izv. AN SSSR, OKHN, 1960, no. 6) the authors show that in
a wide interval of temperature and pressure, polytropic index of

Card 1/2

X

Determining polytropic indices ...

31254
S/207/61/000/005/014/015
D237/D303

explosion products can be represented as a sum of polytropic indices of components of the products of explosion, i.e.

$$n^{-1} = \sum \beta_i n_i^{-1} \quad (3)$$

where β_i - molar fraction of the component. There are 1 figure and 4 Soviet-bloc references.

SUBMITTED: June 15, 1961

Card 2/2

X

20742

S/020/61/137/002/016/020
B103/B215

118200

AUTHORS: Stesik, L. N., Akinova, L. N., and Apin, A. Ya.

TITLE: Determination of the width of the reaction zone, and the parameters of the detonation wave of a compact explosive

PERIODICAL: Doklady Akademii nauk SSSR, v. 137, no. 2, 1961, 369-371

TEXT: The authors measured the width of zone a of the chemical reaction and detonation wave of a compact explosive with practically optimum density (1.58 g/cm^3), namely H (N) ballistite powder with a nitroglycerin content of approximately 27%. The charges had a diameter of 40 mm and a height of 60 mm. The powder was fired by a lensshaped charge guaranteeing a plain detonation front. The detonation velocity was 7010 m/sec. The zone width is the distance between the front of the shock wave and the Chapman-Jouguet plane. The authors determined the zone width by the methods of R. Duff, E. Houston (Ref. 1: J. Chem. Phys., 23, 1263 (1955)) and A. N. Dremin, P. F. Pokhil. (Ref. 2: DAN, 127, no. 6, 1245 (1959)), in which first the shape of mass velocity u is determined by an aluminum plate moved by the

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S/020/61/137/002/016/020
B103/B215

Determination of the width...

explosion. If the shock adiabat of the metal, and the detonation velocity are known, a can be calculated from the formula

$$a = b \frac{(D - V)(u + c - D_1)}{D_1(u + c - V)} \quad (1),$$

where b denotes the thickness of the metal plate, at which a discontinuity on the curve $u = \varphi(\delta)$ occurs; D is the detonation velocity, D_1 the average velocity of the shock wave in section b of the metal, V the average velocity of the moving boundary between explosive and metal, u and c velocities of mass and sound in the metal with a depth of b . The discontinuity of curve $u = \varphi(\delta)$ (δ - thickness of the metal) has been experimentally proved. The mass velocity of the metal at this point is determined by pressure and mass velocity of the detonation products in the Chapman-Jouguet plane of the detonation wave. The authors used 0.3-5 mm aluminum plates, whose shock adiabat was known. Table 1 and Fig. 1 give the experimental results. The values of mass velocity of the aluminum adjacent to the powder was

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Determination of the width...

S/020/61/137/002/016/020
B103/B215

calculated from the known shock adiabatics. The authors found the discontinuity of the curve $u = \varphi(\delta)$ to occur at a plate thickness of 0.85 mm. $D_1 = 7520$ m/sec, $V = 1730$ m/sec, $u = 1360$ m/sec, $c = 7590$ m/sec.

Hence, a reaction zone width of 0.12 ± 0.4 mm was obtained. In formula (1), however, the rebound of the detonation wave on the boundary between explosive and metal is not taken into account. The authors determined the width of the non-disturbed reaction zone of powder N on the basis of the function of Ref. 2 which gives the relation between the measured value of a and the dynamic rigidity of explosive and metal (the dynamic rigidity is the product of initial density and velocity of the shock wave ($\rho_0 D$)). The

above width is 0.15 ± 0.5 mm. On the basis of their experiments, the authors determined the polytropic curves of the detonation products (for method of calculation see Ref. 6: A. N. Drëmin et al, DAN, 128, no. 5, 989, 1959):

$P = 2.4 \cdot 10^{10} \rho^{2.80}$ bar (2). The values characterizing the state of the substance in the Chapman-Jouguet plane are: $P = 204 \cdot 10^9$ bar, $\rho = 2.14$ g/cm³, $c = 5160$ m/sec, $u = 1840$ m/sec. Since the average value \bar{u} in the reaction zone is 1.25 times as high as u in the above plane, the authors calculated

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B103/B215

Determination of the width...

the duration of the chemical reaction of powder N in the detonation wave as follows: $t = a/(D - \bar{u}) = 3.3 \cdot 10^{-8}$ sec. According to their calculations, the critical diameter d_{cr} of the powder N is 28 mm. They proved d_{cr}/a to be approximately 200. Since the detonation velocity of compact powder does not depend on the diameter of the charge, critical and ideal velocities practically do not differ. Hence, the authors conclude that the detonation vanishes without ejecting the incompletely reacting substance from the reaction zone. This vanishing is caused by radial expansion of the detonation products occurring along the edges of the charge. It is known (Ref. 8, H. Eyring, R. Powell et al., Chem. Rev., 45, 69, 1949) that the detonation front is bent due to this expansion, i.e., the smaller the radius of the charge, the more it is bent. The current of substance is diverged when passing the bent front. This means that the radial expansion of the substance behind the front of the convex detonation wave covers the whole cross section of the charge, irrespective of the distance covered by the dispersion wave. A certain curvature of the front causes the pressure to decrease to an extent which stops further expansion of the detonation.

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Determination of the width...

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S/020/61/137/006/016/020
B103/B215

There are 1 figure, 1 table and 10 references: 8 Soviet-bloc.

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Institute of Chemical Physics of the Academy of Sciences)

PRESENTED: October 29, 1960 by V. N. Kondrat'yev, Academician

SUBMITTED: October 26, 1960

X

Card 5/5

21573

S/020/61/137/003/027/030
B103/B208

11.8000

AUTHORS: Apin, A. Ya., Kostin, I. D., and Stezik, L. N.

TITLE: Detonation of ballistite powders

PERIODICAL: Doklady Akademii nauk SSSR, v. 137, no. 3, 1961, 652-653

TEXT: The authors studied the detonation velocity (D , m/sec) as a function of the charge diameter of a compact explosive on two samples of KB (NB) ballistite powder containing 40% nitroglycerin. Their density was 1.62 g/cm^3 . The critical diameters of the samples were different, probably owing to some deviations from the nominal composition. D was measured on the $C\Phi P$ (SFR) device by the optical method. A cast charge of the composition $TT 50/50$ (TC 50/50) with the same diameter as the charge in question was used as auxiliary detonator. Experiments with sample no. 1 disclosed that D is practically independent of the charge diameter. D was assumed to vary in a very narrow range of diameters (of about 1 mm) which are near the critical diameter. To check this assumption, experiments were made with sample no. 2, and the same results were obtained. This indicates

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S/020/61/137/003/027/030
B103/B208

Detonation of ballistite powders

that the critical D differs from ideal D by a value not exceeding the experimental error, i.e., by 1% at most. Photographs of detonations of charges with a diameter smaller than the critical one have shown that the detonation initiated by means of a detonator in the ballistic powder abruptly stops after having propagated over a certain distance without preceding change of its velocity. The dependence of D on the charge diameter in powdery explosives is due to a) incomplete chemical conversion, and b) radial expansion of detonation products in the reaction sphere of the detonation wave. The expenditure of energy for radial expansion becomes comparatively low only at a charge diameter that is a multiple of the critical diameter, and D approaches the ideal value. The experiments of the authors showed that in NB powder, D is not changed. They conclude therefrom that the pressure in the detonation wave remains constant, at least along the axis of the charge. The front of the detonation wave thus becomes instable at a certain charge diameter, and detonation stops. The authors are not able to explain this observation. In detonations of liquid and powdery explosives, D is small near the critical diameter. No similar phenomenon could be observed in compact explosives. In liquid explosives, a slow detonation is caused by a weak

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S/020/61/137/003/027/030
B103/B208

Detonation of ballistite powders

initiation. Such an initiation takes place particularly if the detonator does not touch the surface of the charge, but is at some distance from it. The authors confirmed in experiments of this kind that 1) detonation is either initiated by a high D (at a certain depth of the charge), or 2) the charge does not detonate. These experiments have shown that NB powder is very little sensitive for the transmittance of a detonation over an air interval. Its 20-mm charge does not detonate any more by a charge of cast TG 50/50 of the same diameter if the interval is 4 mm. Under the same conditions, TG 50/50 does not detonate at a distance of 25 mm. There are 1 table and 5 references: 3 Soviet-bloc and 2 non-Soviet-bloc. The reference to the English-language publication reads as follows: M. A. Cook, R. Keyes et al., J. Am. Chem. Soc., 79, 32 (1957).

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Institute of Chemical Physics of the Academy of Sciences USSR)

PRESENTED: October 29, 1960; by V. N. Kondrat'yev, Academician

SUBMITTED: October 26, 1960

Card 3/3

21503

S/020/61/137/004/028/031
B103/B208

118200

AUTHORS: Apin, A.Ya., Stesik, L.N., and Shvedova, N.S.

TITLE: Shock adiabat of Balliatite powder

PERIODICAL: Doklady Akademii nauk SSSR, v. 137, no. 4, 1961, 908 - 909

TEXT: The shock adiabat represents the relationship between pressure and density of the substance in the shock wave. The laws of conservation of mass and momentum $\rho_0 D = \rho (D - U)$, $P = \rho_0 DU$ (1) relate the pressure P and the density ρ with the propagation velocity D of the shock wave and with the flow velocity U of the substance behind the front of the shock wave. The shock adiabat is determined from the measured values D and U . Shock adiabats of both inert and non-detonating explosives were determined in several recent papers. A knowledge of the shock adiabat of a non-detonating explosive is useful when studying the mechanisms of dissolution and the course of the chemical reaction in the detonation wave. Compact explosives are most interesting from this point of view, as their density deviates only slightly from the maximum. The authors have now

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S/020/61/137/004/028/031
B103/B208

Shock adiabat of ...

determined the shock adiabat of $H(N)$ Ballistite powder which contains 27% nitroglycerin, and has a density of 1.58 g/cm^3 . The experimental methods were previously described (Ref. 3, A.N. Dremin, G.A. Adadurov, DAN, 128, no. 2, 261, 1959). D was measured in the powder (thickness of the layer : 5 mm). The shock wave penetrated a 5-mm copper plate. The shock adiabat of copper is known. The moment when the shock wave passed through the powder layer was recorded by an OK-15M (OK-15M) cathode oscillograph. The relation between the depth where the detonation is released and the pressure in the shock wave entering into the powder was first determined. It was concluded from Fig. 1 that D in the powder N may be determined up to a pressure of about $150 \cdot 10^9$ bar. Table 1 contains experimental data. It is expressed in the coordinates D, U as follows: $D = 1.760 + 1.86 U$ (km/sec) (2). By substituting this value in Eq. (1) one obtains a formula that interrelates pressure and density in the shock wave:

$$P = (1.76)^2 \cdot 10^{10} \cdot \rho_0 \frac{\rho/\rho_0 (\rho/\rho_0 - 1)}{[\rho/\rho_0 - 1.86(\rho/\rho_0 - 1)]^2} \quad (3).$$

The limiting compression $(\rho/\rho_0)_{\max}$ of the powder in the shock wave is determined there-

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S/020/60/137/004/020/031
B103/B208

Shock adiabat of ...

from, if the pressure approaches infinity. $(\rho/\rho_0)_{\max}$ was found to be 2.16. In the pressure range of $35 \cdot 10^9$ - $127 \cdot 10^9$ bar the shock adiabat of the powder N is well described by the exponential formula

$P = 5.31 \cdot 10^9 \left[(\rho/\rho_0)^{7.7} - 1 \right]$ (4). The resultant value of the shock adiabat may be used for estimating pressure and density of the powder in the peak of the reaction zone of the shock wave. For this purpose, the shock adiabat has to be extrapolated up to the point of intersection with the Michelson straight line: $D^2 = v_0^2 \frac{P}{v_0 - v}$, (5). To construct

this straight line, the detonation velocity of the powder N must be known; it was found to be 7010 m/sec. Extrapolation gave a pressure of $312 \cdot 10^9$ bar, a density of 2.64 g/cm^3 , and a mass velocity in this zone of 2820 m/sec. The pressure of the explosion products in the Chapman-Jouguet plane of the detonation wave of the powder N was $204 \cdot 10^9$ bar. The ratio of the pressure in the chemical peak to the pressure in the Chapman-Jouguet plane is 1.53, which agrees with data obtained by other

Card 3/6/

21503

B/020/64/157/004/020/031
B403/B208

Shock adiabate of ...

authera. There are: 1 figure, 1 table, and 7 references. 6 Soviet bloc
and 1 non-Soviet bloc. The reference to the English language publication
reads as follows: Ref. 7: R. E. Duff, E. Houston, J. Chem. Phys., 23,
no. 7, (1956).

ASSOCIATION: Institut khimicheskoy Fiziki Akademii nauk SSSR
(Institute of Chemical Physics of the Academy of
Sciences USSR)

PRESENTED: October 29, 1960 by V. N. Kondrat'yev, Academician

SUBMITTED: October 26, 1960.

Card 4/6

SOSNOVA, G.S.; VOSKOBOYNIKOV, I.M.; BRUSNIKINA, V.M.; NOVIKOV, S.S.;
APIN, A.Ya.; LAPSHINA, Z. Ya.

Comparative data on the physicochemical properties of some
liquid explosives. Izv. AN SSSR Otd.khim.nauk no.2:351-
352 F '62. (MIRA 15:2)

1. Institut khimicheskoy fiziki AN SSSR i Institut organicheskoy
khimii im. N.D.Zelinskogo AN SSSR.
(Explosives)

APIN, A.Ya. (Moskva); VELINA, N.F. (Moskva); LEBEDEV, Yu.A. (Moskva)

The efficiency of explosions. PMTF no.5:96-106 S-0 '62.
(MIRA 16:1)

(Explosions)

APIN, A.Ya.; AFANASENKOV, A.N.; DIMZA, G.V.; STAFKEYEV, V.N.

Sympathetic detonation. Dokl. AN SSSR 147 no.5:1141-1143 D '62.
(MIRA 16:2)

1. Institut khimicheskoy fiziki AN SSSR. Predstavleno akademikom
V.N. Kondrat'yevym.

(Detonation)

S/062/63/000/003/013/018
B101/B186

AUTHORS: Lebedev, Yu. A., and Apin, A. Ya.

TITLE: Calculation of the explosion heat

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniyo khimicheskikh nauk, no. 3, 1963, 555 - 556

TEXT: A simple method for calculating the explosion heat of explosives is suggested. (a) If the oxidant and the fuel in the explosive are in a stoichiometric ratio rendering possible the formation of H_2O and the oxidation of C to CO_2 the relation holds: $Q_{expl} = (110n + 95p + 94m) 1000/M$ kcal/kg, where n is the number of the nitrate groups, p is the number of the nitro groups, m is the number of the nitro amino groups, M is the molecular weight. (b) If the oxidant content of the explosive is smaller: $Q_{expl} = [(61.5 + 23.7 \rho) n + (81. + 12.8 \rho)m + (42 + 22.9 \rho)p] 1000/M$, where ρ is the density of the explosive in g/cm^3 . Comparison of the Q values thus calculated shows good agreement with reference data for well-known explosives such as nitroglycerin, erythritol tetranitrate, mannitol hexa-

Card 1/2

Calculation of the ...

S/062/63/000/003/013/018
B101/B186

nitrate, trinitrobenzene, tetryl, dipentaerythritol hexanitrate, tri-nitrophenol, dinitrobenzene and others. There is 1 table.

ASSOCIATION: Institut khimicheskoy fiziki Akademii nauk SSSR (Institute of Chemical Physics of the Academy of Sciences USSR)

SUBMITTED: October 2, 1962

Card 2/2

LEBEDEV, Yu.A.; LIPANIN, G.G.; PEPEKIN, V.I.; APIN, A.Ya.

Thermochemical study of individual explosives and their compositions. Vzryv. delo no.52/9:80-90 '63.

(MIRA 17:12)

1. Institut khimicheskoy fiziki AN SSSR.

APIN, A.Ya.; BARDIN, Ye.P.; VELINA, N.F.

Effect of the density and the composition of explosives on
the detonation impulse. Varyv. delo no.52/9:90-102 '63.

(MIRA 17:12)

1. Institut khimicheskoy fiziki AN SSSR.

PARFENOV, A.K.; APIN, A.Ya.

Effect of charge shells on the relative detonation impulse.
Vzryv. delo no.52/9:103-108 '63. (MIRA 17:12)

1. Institut khimicheskoy fiziki AN SSSR.

ACCESSION NR: AT4002169

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TITLE: Influence of the explosive charge casing on the relative blast momentum

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ABSTRACT: A qualitative explanation is undertaken of the influence of the casing material on the relative impulse of an explosive charge and of the possibility of the existence of additional heat release behind the front of the detonation wave of an encased charge. The testing apparatus of Kast's type has been described in detail by Apin, Bardin and Vyelina. The

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following equation is used to calculate the relative impulse from the measured impulse J:

$$J_{rel.} = \frac{J}{J_{st.}} \quad 100\% = \sqrt{\frac{B}{B_{st}}} \quad 100\%$$

where the subscript "st" refers to a standard 50/50 hexogen-TNT mixture ($\rho_0 = 1.68$ g/cc, $D = 7.65$ km/sec) whose impulse is taken as 100% and B is the brisance according to Haid and Zelle (Z. fur das gesamte Schliess-und Sprengstoffwesen, v. 29, No. 11, 1934). Experimental data is shown in Figure 1 of the Enclosure. It is concluded that the casing acts as a compressible fluid in the sense that the smaller the velocity of the shockwave in the casing, the later casing starts to accelerate, bringing the values of pressure and temperature of the detonation products closer to those obtained in the zone of chemical reaction. Thus, the relative impulse of TNT for any given casing thickness becomes larger for those materials in which the shock wave velocity is small. The effect of casing also causes an additional heat release behind the front of the detonation wave of TNT because the drop in temperature and pressure is slowed down and the pressure-sensitive heterogeneous chemical reactions such as $2CO \rightleftharpoons CO_2 + C$ are more thorough and release more heat. Orig. art. has: 8

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