L 6715-65
ACCESSION NR: AP4042208

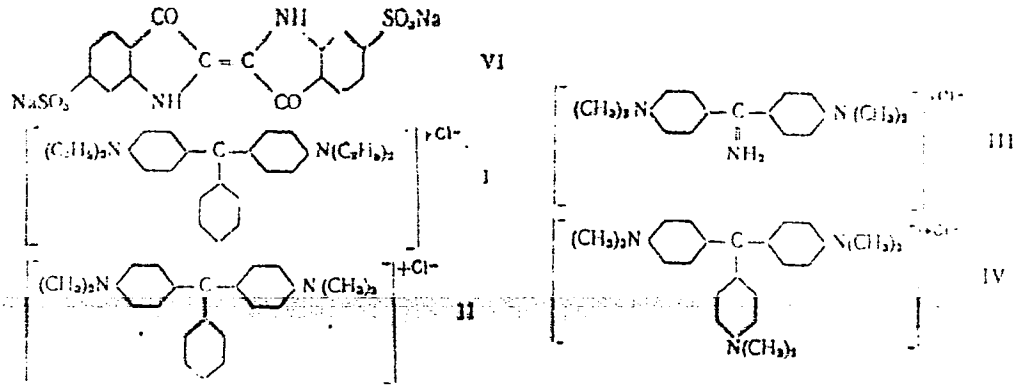
C

SUB CODE: GC,NP NO REF SOV: 003 OTHER: 001

Card 3/5

L 6715-65
ACCESSION NR: AP4042208

ENCLOSURE: 01



Card 4/5

L 6715-65
ACCESSION NR: AP4042208

ENCLOSURE: 02

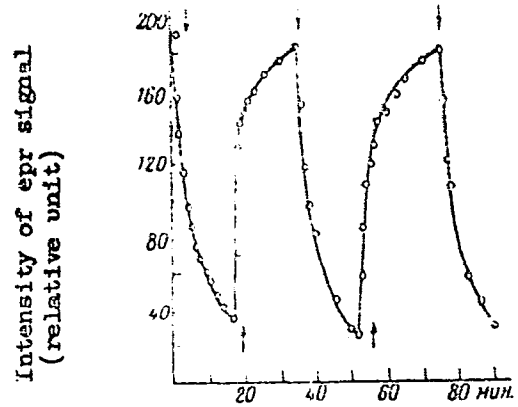


Fig. 2. Increase and decrease of intensity of the epr signal of a tablet of dye I in successive cycles of discharge and recharge. The arrows show the beginning of discharge (↓) and beginning of recharge (↑)

Card 5/5

L 59541-65 EWT(1)/EPA(s)-2/EWT(m)/EWG(m)/EWP(j)/T/EWA(h) Pz-6/Pc-4/Pt-7/Peb

AUTHOR: Chernyavskiy, F. P.; Gribanov, V. A.; Chetverikov, A. ...
L. A.

TITLE: Electrochemical mechanism of charge transfer and generation of electromotive force in certain organic semiconductors

SOURCE: Elektrokhimiya, v. 1, no. 6, 1965, 735-738

TOPIC TAGS: charge transfer, electromotive force, organic semiconductor, electrochemistry, polycrystalline complex

ABSTRACT: The charge transfer phenomenon and the origin of the electromotive force were studied in polycrystalline complex organic semiconductors: n-phenylenediamine with tetrabromoquinone (I), n-phenylenediamine with tetrachloroquinone (II), benzidine tetrachloroquinone (III), and benzidine-I_2 (IV). The complex were synthesized from acetonitrile, ethanol, bromobenzene, and water. After ... of room temperature under 10^{-2} mm Hg the complex materials were ... kg/cm^2) into tablets 10 mm in diameter and 1 mm thick. Each ...

Card 1/3

L 59541-65

ACCESSION NR: AP5016829

metal electrode. The tablets had an electrical conductance of the order of 10^{-9} $(ohm \cdot cm)^{-1}$. After passing a 10^{-5} to 10^{-7} amp current for a few minutes, ... tive forces of 30 to 35 volts were generated. For complexes I and II ... acetonitrile the electrical conductance and electromotive ... tional to the tablet thickness. There is no continuous ... between ... through the complex material. ... the energy of activation of thermo-electrical force for ... 0.01 electron volt and 0.38 ± 0.01 electron volt, respectively. When ... II tablets were exposed to vapor of acetonitrile or water and evacuated ... Hg, the mechanism of the charge transfer changed and the ... tivation ... electron volt and ... tivation ... nature of the energy of activation ... transfer mechanism is electrochemical. The electrochemical ... of electrical current involves reduction of quinones and ... of the type ... to surface of the microcrystals ... reverse reaction ... in generation of electromotive force ... water, ... complex surface, facilitate ... provides any electromotive ... II ... benzene, ethanol, and water ...

Card 2/3

L 59541-65

ACCESSION NR: AP5016829

force. Orig. art. has: 2 figures.

ASSOCIATION: Institut khimicheskoy fiziki akademii nauk SSSR (Institute of Chemical Physics, Academy of Sciences, SSSR)

SUBMITTED: 03Feb65 ENCL: 00 SUB CODE:

NO REF SOV: 003 OTHER: 000

Card 3/3

ZHOLKEVICH, V.N.; CHETVERIKOV, A.S.; ROGACHEVA, A.Y.

Respiration efficiency and concentration of free radicals. Dokl. AN SSSR 165 no.1:234-236 N '65. (MIRA 18:10)

1. Institut fiziologii rasteniy im. K.A.Timiryazeva AN SSSR i Institut khimicheskoy fiziki AN SSSR. Submitted December 31, 1964.

CHETVERIKOV, A.G.; BLYUMENFEL'D, L.A.; FOMIN, G.V.

Possible mechanisms of the appearance and destruction of free radical states in cells. Biofizika 10 no.3:476-486 '65. (MIRA 18:11)

1. Institut khimicheskoy fiziki AN SSSR, Moskva. Submitted Dec. 11, 1964.

CHETVERIKOV, A.S., inzh.

Rail defects can be prevented. Put' i put. khoz. no. 7:8-10 Jl '58. (MIRA 11:7)

1. Nachal'nik distantsii, stantsiya Krasnoarmeyskaya Donetskoy dorogi.

(Railroads--Rails)

CHETVERIKOV, A.S.

Matter of great importance. Put' i put. khoz. no.3:8-9 Mr '59.
(MIRA 12:6)

1.Nachal'nik distantsii puti stantsii Krasnoarmeyskoye Donetskoy dorogi.

(Railroads--Track)

CHETVERIKOV, A. V.

Kudra, O. K. and Chetverikov, A. V. - "On the effect of electrolytes of other ions on the electroprecipitation of metals", Ukr. khim. zhurnal, Vol. XIV, Issue 2, 1949, p. 53-68, - Bibliog: p. 67-68.

SO: U-4392, 19 August 53, (Letopis 'Zhurnal 'nykh Statey, No. 21, 1949).

AUTHOR: Chetverikov, A.V., Engineer and Livshits, S.I., Engineer (ORGRES)

TITLE: Experience of adapting a boiler type ТП-230-2 to feed water of high salt content. (Opyt prisposobleniya kotla ТП-230-2 k pitaniyu vodoy povyshennogo solesoderzhaniya)

PERIODICAL: "Teploenergetika" (Thermal Power), 1957, Vol. 4, No. 6, pp. 25 - 31 (U.S.S.R.)

ABSTRACT: Operating experience and thermal-chemical tests on boilers types ТП-170 and ТП-230 showed that they were not adapted to operation in the actual conditions of a heat and electric power station in which the quantity of purified make-up water reaches 50-80%. To improve the design of these boilers use was made of experience of constructing devices within boilers with removable salty sections in medium and high pressure boilers. Devices were worked out in principle for installation inside the boilers ТП-230, ТП-170 and ЛК-10. According to data of Teploenergoproyekt the salt content of the feed water for the station was 150 mg/l which was taken as a basis for the design. A three-stage evaporation system was designed, the manufacturer's fittings were retained in the first stage, cyclones were provided within the drum of the second stage and extraction cyclones in the third stage. Details of boiler design are given and the salt content of the boiler water in different stages of evaporation is given. The principal data relating to the operation of the cyclone are tabulated.

Experience of adapting a boiler type TP-230-2 to feed water of high salt content. (Cont.)

A detailed description is given with diagrams of the arrangement of the different parts of the boiler.

After the boiler had been started up the first series of thermal-chemical observations were made and showed that there was a considerable divergence from the design data. The salt content of the water in the first stage was much higher than it should have been. This was traced to a number of defects of erection. Further tests were then run and the boiler operated satisfactorily with three-stage evaporation. However, a serious abnormality was found in the operation of the third stage in that there was a considerable difference between the projected and actual loads on the sections of this stage. To put matters right the rate of rotation of the water in the cyclones was reduced. Data are tabulated on the composition of the boiler feed water, which contains a large quantity of iron oxides. To reduce this concentration boiler blow down was increased beyond the amount necessary to ensure the necessary quality of steam.

Further thermo-chemical testing of the boiler was carried out in two series of tests, each of seven tests. The second series allowed of more accurate determination of the salt content of the steam. The first series was run with much reduced blowdown. An interesting test in that series was one which was carried out to determine the quality of steam as a function of the steam load on the boiler and the water level

Experience of adapting a boiler type TP-230-2 to feed water of high salt content. (Cont.)

in the drum. The results of the tests are plotted on a graph, and neither increase in boiler output, nor raising the water level had any appreciable influence on the quality of the steam.

Data on the second series of tests are given in Table 6 and Fig. 4. Tests 5, 6, and 7 were particularly interesting. Test 5 was carried out with the low output of 110 tons/h. The low rate of flow of the steam-water mixture in the cyclones and the high water level in them impaired the quality of steam of the third stage. In Test No. 6, the quantity of silicic acid in the feed water was raised to 0.9 to 1.0 mg/l. This increased the silica content of the boiler. The total salt content of the steam remained satisfactory but the content of silicic acid increased somewhat and at times on the boiler side it reached 0.07 to 0.09 mg/kg SiO_3^{2-}. Test No. 7 was carried out at the high output of 234 tons/h. The content of silicic acid in the feed water was 0.4 to 0.6 mg/l SiO_3^{2-}, the quality of steam remained satisfactory. In all the tests the salt content of the superheated steam from the righthand side of the boiler was considerably higher than from the left and in some tests even exceeded the permitted limits. Thes tests have shown that when the boiler TP-230 is converted to three-stage evaporation the feed water may contain considerable quantities of chemically

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Experience of adapting a boiler type TP-230-2 to feed water of high salt content. (Cont.)

purified water desilicated by the magnesium method. It is necessary to ensure normal quality of the feed water in respect of silicic acid content. The manufacturers separation devices in the first stage of evaporation with the addition of a perforated steam receiving ceiling ensure the generation of steam of normal quality in conditions of reduced salt and silica content. A most important point in correcting the water conditions of the boiler is the reduction of iron oxide content of the feed water. Two years have passed since the boiler was started up and on the basis of this experience designs have been worked out for new devices for installation inside standard boilers types TP-230 and TP-170. The station at which the new system was first tested has since reconstructed a further three boilers.

5 figures, 2 literature references (Russian).

Card 4/4

8(5) SOV/91-59-6-5/33

AUTHOR: Chetverikov, A.V., Engineer

TITLE: A Device for Individually Flushing Steam Superheater Coils

PERIODICAL: Energetik, 1959, Nr 6, pp 8-10 (USSR)

ABSTRACT: The author describes a device as specified in the title, invented by him and by P.I. Tebyakin. It is a carriage (Figure 1) capable of flushing the steam superheater coils and blowing them through with air, in high pressure boilers, irrespective of the type of collector construction. The coils may be of standard or alternating diameter. The flushing is carried out at one run of the carriage along every row of coil pipes. It can be accomplished either by the use of two carriages, one at each end of the coil, or by one carriage applied to one end of the coil, while the other end of the coil is used as the outlet for the flushing water. The carriage is operated by 1-2 workers. Depending on the degree of the coil's contamination, the

Card 1/3

A Device for Individually Flushing Steam Superheater Coils

flushing of one coil takes from 3 to 6 minutes. If the carriage is provided with an electrical lighting device, the operator is in a position to visually control its movement and its proper installation. A cross section of the carriage is shown in Figure 1. It consists of a hull, a bellows-sealed pneumatic gasket and a mechanism for taking the carriage out of the coil. The hull carries a replaceable nose-piece with a conical rubber packing, the size of which depends on the coil's diameter. The gasket is provided with a limit stop, an adjusting screw and a protective jacket. The carriage is applied manually, with the use of a composite hollow rod, which at the same time conducts the flushing water. In the given construction of the 78.5mm diameter bellows-type thermostat, the pressure of the flushing agent may be 1.5-2 atm. The method of inserting the carriage into the collector is shown in Figure 2. The article contains a brief

A Device for Individually Flushing Steam Superheater Coils

description of the sequence of actions required for flushing. There are 2 diagrams.

Card 3/3

DELIMARSKIY, Yu.K.; CHETVERIKOV, A.V.

Determination of polarization voltage in fused salts by Drossbach's method. Ukr.khim.zhur. 28 no.2:167-171 '62. (MIRA 15:3)

1. Institut obshchey i neorganicheskoy khimii AN USSR.
(Salts) (Electrochemistry)

DELIMARSKIY, Yu.K., akademik; CHETVERIKOV, A.V., kand.tekhn.nauk;
PAVLENKO, N.A., inzh.

Effect of iron chloride on current efficiency during electrolysis in fused $SnCl_2$ - KCl with the use of liquid tin electrodes.
Sbor. trud. TSNIICHM no.34:40-44 '63. (MIRA 17:4)

CHETVERIKOV, A.V., kand.tekhn.nauk; PAVLENKO, N.A., inzh.; TYUTYUNIK, O.A., inzh.

Using a protective atmosphere in electrolytic tinning from fused electrolytes. Sbor. trud. TSNIICHM no.34:45-50 '63. (MIRA 17:4)

CHETVERIKOV, A.V., kand.tekhn.nauk; PAVLENKO, N.A., inzh.; MAKOGON, V.F.

Effect of a protective atmosphere on current efficiency and the quality of the coating in sheet steel tinning from fused salts. Sbor. trud. TSNIICHM no.34:51-57 '63. (MIRA 17:4)

DYUBIN, N.P.; DYUBINA, A.V.; SVIRIDENKO, F.F.; KARPUNIN, A.M.; Prinimali uchastiye: LEVCHENKO, N.D.; POPOVA, N.N.; TROFIMOV, V.V.; SHUBENKO, G.L.; CHETVERIKOV, A.V.; RYABININ, N.G.; ZEMLYANSKAYA, L.I.; FRADINA, M.G.; ORGIYAN, V.S.; SABUTSKIY, F.M.; MOMGELI, A.V.; BUL'SKIY, M.T.; FRADIN, M.D.; VALENKO, N.S.; KUCHERYAVYY, Yu.P.; CHEPELEV, P.M.; SABUROV, T.A.; POLYAKOV, P.M.; MALASHENKO, R.B.

Effect of the temperature of rail rolling on their quality. Sbor. trud. UNIIM no.11:344-353 '65. (MIRA 18:11)

L 22440-66 EWT(m)/EWP(t) IJP(c) JD

ACC NR: AP6006404 SOURCE CODE: UR/0413/66/000/002/0146/0146

AUTHOR: Delimarskiy, Yu. K.; Chetverikov, A. V.; Makogon, V. F.

ORG: none

TITLE: Electrochemical method of aluminizing metals. Class 48, No. 178257

SOURCE: Izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, no. 2, 1966, 146

TOPIC TAGS: electrolysis, electrochemistry, aluminum plating, aluminum chloride, sodium chloride

ABSTRACT: An electrochemical method of aluminizing metals from aluminum chloride- and sodium chloride-base melts is described. In order to produce high-quality plating and raise the operational stability of the electroltye, the process is conducted in the presence of ions of other metals (lead, tin, iron, and manganese) introduced by auxiliary anodes with differential current supply and a protective inert atmosphere above the electrolyte surface. The electrolysis is conducted with a current density of 3--5 amps/dm^2 and temperatures ranging from 150 to 200C. [LD]

UDC: 621.793.52:669.718:621.357.77

SUB CODE: 11,07 SUBM DATE: 21Sep54/

Card 1/1

FILIPPOV, I.N.; GUNIN, I.V.; Prinimali uchastiye: DABAGYAN, N.P.; CHETVERIKOV, A.V.; MIROSHNICHENKO, V.G.; FRADIN, M.D.; PAVLOVSKIY, V.Ya.; FIL'CHAKOVA, V.A.; ALEKSANDROVA, L.A.; DUBROVIN, F.S.

Investigating the buckling of webs on lightweight I-beams. Stal' 23 no.10:915-918 O '63. (MIRA 16:11)

1. Ukrainskiy institut metallov. 2. Ukrainskiy institut metallov (for Dabagyan, Chetverikov, Miroshnichenko). 3. Zavod "Azovstal'" (for Fradin, Pavlovskiy, Fil'chakova, Aleksandrova, Dubrovin).

CA

11A

PROCESSES AND PROPERTIES INDEX

The mitogenetic behavior of unimolecular films of stearanilide. D. A. Chetverikov. *J. Physiol.* (U. S. S. R.) 27, 618-22(1939).—Films of castor and cedar oils, triolein and lecithin do not transmit mitogenetic rays. A film of cholesterol transmits the lypolytic spectrum and that of the fermentative splitting of urea. A film of stearanilide does not transmit mitogenetic rays nor does it emit secondary radiation. The film is not destroyed by irradiation. S. A. Karjala

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

CA

11 F

Carbonic anhydrase in eye tissues in ontogenesis. A. Chetverikov. *Izvest. Akad. Nauk S.S.S.R., Ser. biol.* 1948, 101.—Detn. of carbonic anhydrase levels in eye tissues of guinea pigs, rabbits, hens, and rooks indicated a direct dependence on the position of the animal in the general scheme of biol. advancement. Studies of the enzyme in embryos and in new-born specimens show that the guinea pig and the hen show the highest rate of enzyme increase at the end of embryonic period and at birth the adult level is achieved. In rabbit and rook (which are born blind) this step is shifted to postembryonic period; in the rabbit this occurs in a smooth curve, in the rook it jumps over the 1st month. The function of the enzyme appears to be mainly connected with the glycolytic processes (Tamiya, *C.A.* 22, 4005). G. M. Kosolapoff

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

CA

11A

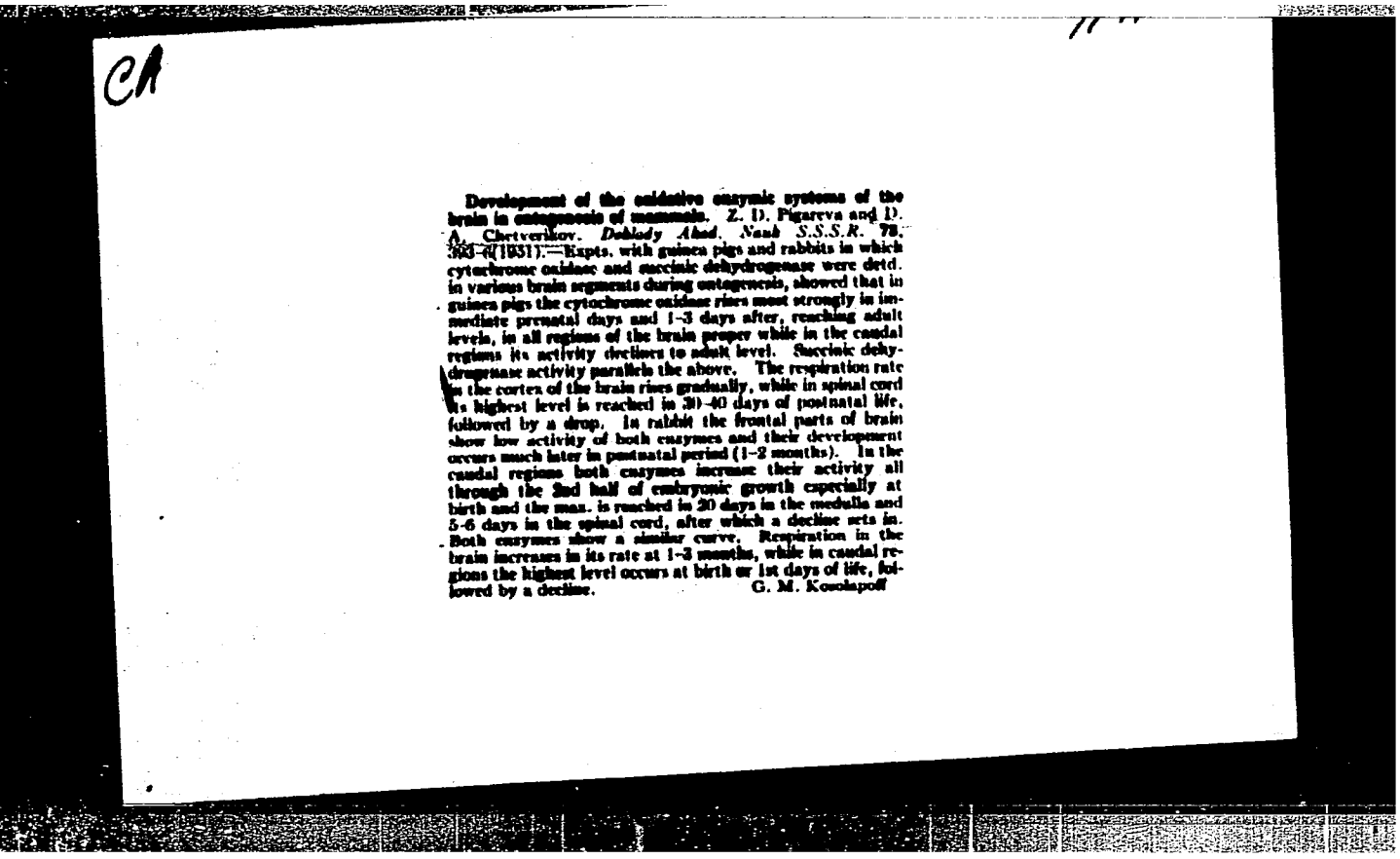
Cytochrome oxidase and succinic dehydrogenase of the brain in ontogenesis. Z. D. Pigareva and D. A. Chetverikov (Pavlov Inst., Acad. Med. Sci., Koltushi). *Biokhimiya* 15, 517-22(1950); cf. *C.A.* 42, 6388g.—The various parts of the brain of rooks were analyzed for cytochrome oxidase and succinic dehydrogenase during the embryonic and post-embryonic period. The enzyme content of the brain embryo was low, const., and alike for all parts of the brain. The enzyme activity increased sharply about 40 days after birth. The phylogenetically oldest portions of the brain showed the earliest increase in enzymic activity.
H. Priestley

1951

U.S.S.R.
1951

Biological Chemistry
II F Physiology

Development of the oxidative enzymic systems of the brain in bone in ontogenesis. Z. D. Pigareva and D. A. Chetverikov. *Doklady Akad. Nauk S.S.S.R.* 78, 169-72 (1951); cf. C.A. 45, 3440h.—In cerebral cortex cytochrome oxidase (I) shows a very great rise upon birth and levels off near the adult stage after a max. at 50-60 days of age; succinic dehydrogenase (II) shows a more gradual rise at birth and continues to increase gradually with age; the cytochrome system behaves similarly; in mid-brain the birth rise of I is less pronounced and shows a clear min. at 70-80 days, after the 50-60-day max.; II shows a max. at 20-30 days, then declines rapidly, while the cytochrome system shows a mild rise at birth and remains nearly const. thereafter; in medulla oblongata the I and II show a max. at 10-30 days, and a steady decline afterward. In the spinal cord I rises at birth, then declines, while II shows a max. at 30 days, and the cytochrome system rises at birth, then declines steadily. G. M. Kosolapoff



CA

Development of the oxidative enzymic systems of the brain in ontogenesis of mammals. Z. D. Pigareva and D. A. Chetverikov. *Doklady Akad. Nauk S.S.S.R.* 78, 963–6 (1951).—Expts. with guinea pigs and rabbits in which cytochrome oxidase and succinic dehydrogenase were detd. in various brain segments during ontogenesis, showed that in guinea pigs the cytochrome oxidase rises most strongly in immediate prenatal days and 1–3 days after, reaching adult levels, in all regions of the brain proper while in the caudal regions its activity declines to adult level. Succinic dehydrogenase activity parallels the above. The respiration rate in the cortex of the brain rises gradually, while in spinal cord its highest level is reached in 30–40 days of postnatal life, followed by a drop. In rabbit the frontal parts of brain show low activity of both enzymes and their development occurs much later in postnatal period (1–2 months). In the caudal regions both enzymes increase their activity all through the 2nd half of embryonic growth especially at birth and the max. is reached in 20 days in the medulla and 5–6 days in the spinal cord, after which a decline sets in. Both enzymes show a similar curve. Respiration in the brain increases in its rate at 1–3 months, while in caudal regions the highest level occurs at birth or 1st days of life, followed by a decline.

G. M. Kosolapoff

CHETVERIKOV D.A

USSR

Study of the rate of exchange of phosphorus in the brain of rabbit in various stages of ontogenesis with the aid of radioactive phosphorus. A. A. Smirnov and D. A. Chetverikov. (I. P. Pavlov Inst. Physiol., Acad. Sci. U.S.S.R., Moscow). *Doklady Akad. Nauk S.S.S.R.* 90, 631-2(1953).—P exchange was studied by intraperitoneal introduction of P^{32} after which in 12 hrs. the brain was exmd. after trepaning and freezing the specimens in Dry Ice. It was shown that P^{32} enters most rapidly the less complex acid-sol. org. compds. of brain tissue, less rapidly it enters the P-contg. proteins, while the least rate is found for phospholipides. The radioactivity of all fractions declines rapidly in the 1st weeks of postembryonic period of the animals. After 2 months of age the value remains nearly const. with age. Thus intrabrain P exchange appears to decline with age. This is mainly caused by lesser exchange between the phosphates of blood and brain. The highest uptake of P^{32} occurs in medulla oblongata, other brain parts are similar to each other in this respect, in the acid-sol. and protein fractions. The medulla also shows the most rapid exchange of phosphates with the blood. G. M. K.

CHETVERIKOV, D. A. S

Phosphorus exchange in the brain under hypoxia with the aid of radioactive phosphorus. A. A. Smirnov and D. A. Chetverikov (I. P. Pavlov Inst. Physiol., Moscow). *Doklady Akad. Nauk S.S.S.R.* 90, 833-5(1953); cf. *C.A.* 49, 12849i.—Expts. on rabbits with the aid of P^{32}-labeled phosphate under conditions of deficiency of O_2, produced in an exptl. chamber contg. atm. with but 7-8% O_2, showed that the rate of introduction of phosphate into the various parts of the brain tissue increases under conditions of such hypoxia over a period of 1-2 days. The phenomenon is caused mainly by enhanced passage of phosphate from the blood into the brain tissue. A slight increase of P exchange appears to take place in the lipide fraction of the brain matter.
G. M. Kosolapoff

(1) AML PM

CHETVERIKOV, D. A.

USSR/ Medicine - Central nervous system

Card 1/1 Pub. 86 - 3/36

Authors : Smirnov, A. A., and Chetverikov, D. A.

Title : Radioactive isotopes for the studying of the metabolism of the brain

Periodical : Priroda 2, 23-29, Feb 1954

Abstract : A brief review is presented for the purpose of acquainting the reader with the principles of employing radioactive isotopes for the study of the metabolism of the central nervous system and to explain the possibilities the isotope method will open to researchers working on the chemistry of the brain.

Institution : .....

Submitted : .....

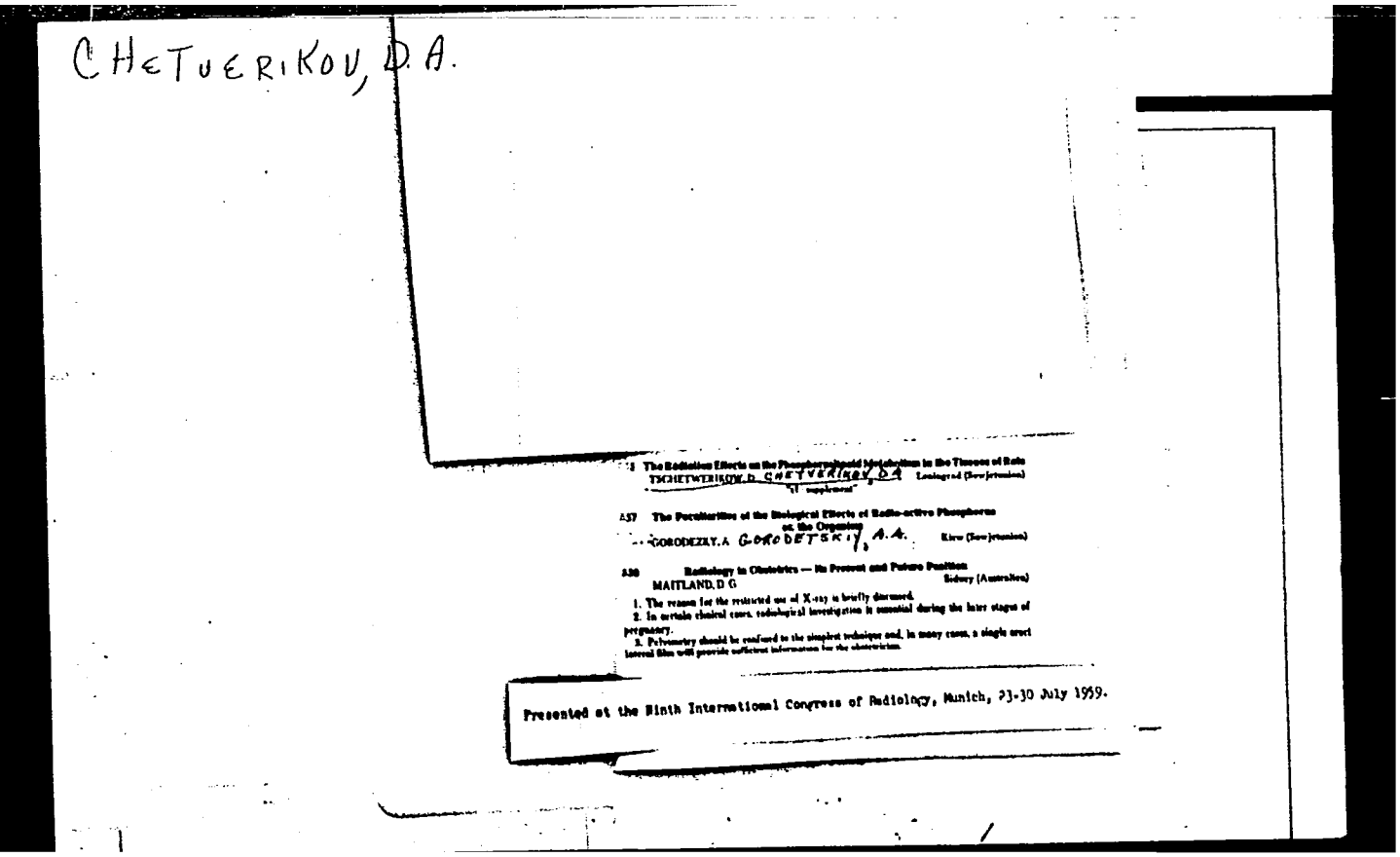
Translation M-200, 1 Mar 55

Chetverikov, D.A.

Phosphorus metabolism of the brain in oxygen deficiency.

D. A. Chetverikov. *Doklady Akad. Nauk S.S.S.R.* 105, 1300-2(1955).—The rate of exchange of P compds. of white rat brain was studied by means of subcutaneous injection of $Na_2HP^{32}O_4$ and the animals after the injection were subjected to low O content by means of either fairly rapid evacuation to simulated altitude of 12,000 m. or to 9000 m. for 2 hrs. Under conditions of severe hypoxia the rate of P exchange drops severely. Under moderate hypoxia there is a decided decline in the rate of exchange of phospholipides, while the change in ribonucleic acid exchange declines slightly, exptl. error, and phosphoprotein exchange declines slightly. Thus phospholipides are most sensitive to hypoxia.

G. M. Kosolapoff



CHETVERIKOV, D.A.

A56 The Radiation Effects on the Phosphorus-Calcium Metabolism in the Tissues of Rats
TSCHETWERIKOW, D. CHETVERIKOV, D.A. Leningrad (Sowjetunion)
"1 supplement"

A57 The Peculiarities of the Biological Effects of Radio-active Phosphorus on the Organism
GORODEZKY, A. GORODETSKY, A.A. Kiew (Sowjetunion)

A58 Radiology in Obstetrics — Its Present and Future Position
MAITLAND, D G Sidney (Australien)

1. The reason for the restricted use of X-ray is briefly discussed.
2. In certain clinical cases, radiological investigation is essential during the later stages of pregnancy.
3. Pelvimetry should be confined to the simplest technique and, in many cases, a single erect lateral film will provide sufficient information for the obstetrician.

Presented at the Ninth International Congress of Radiology, Munich, 23-30 July 1959.

CHETVERIKOV, D.A.

600

Early Changes in Phospholipid Metabolism in Some Tissues of White Rats Induced by Action of Ionizing Radiation

TSCHETVERIKOW, D.A. CHETVERIKOV — Leningrad (Sowjetunion)
GASTEWA, S.W. GASTEVA, S.V. — Leningrad (Sowjetunion)
MALINOWSKY, O.W. MALINOVSKIY, O.V — Leningrad (Sowjetunion)

The rate of radioactive phosphorus into the lipid fraction of liver, spleen, brain, spinal cord and skeletal muscle of white rats was investigated during the irradiation and during six hours after the end of the X- and gamma irradiation.

Total-body irradiation of rats with doses of 100, 1000 and 6400 r. causes a marked increase of the relative specific radioactivity of the phospholipid phosphorus in liver and spleen, reaching its maximum during the first two hours after the irradiation. The degree of this increase in both these tissues, as well as its duration in the spleen, is directly dependent on the dose employed. An increase rate of incorporation of the P^{32} in phospholipids is also observed in the brain and the spinal cord. However, in these cases the effect is not so distinct, and its dependence on dosage is not known. No essential changes are found in the phospholipid metabolism of the skeletal muscle.

The irradiation of the trunk only leads to a more pronounced increase in the P^{32} rate of incorporation in the spleen phospholipids as compared to the local irradiation of the head. This difference is less expressed in the liver. In the brain and the spinal cord the irradiation of both the head and the trunk causes approximately the same effect. This temporary increase in the phospholipid change in the central nervous system may be considered as a reactive one.

It may be concluded that the relative value of the direct or the distance influences of the ionizing radiation on the phospholipid metabolism in various tissues is different.

Presented at the Ninth International Congress of Radiology, Munich, 23-30 July 1959.

CHETVERIKOV, D. A., GASTEVA, S. V., (USSR)

"The Effect of Whole-Body X-Irradiation on the Rate of ^{32}P Incorporation in the Phospholipid Fraction of Certain Rat Tissues."

Report presented at the 5th Int'l. Biochemistry Congress, Moscow, 10-16 Aug 1961.

CHETVERIKOV, D.A.

(c)

The Permeability of the Blood-Brain Barrier and the Intensity of Phospholipid [illegible]olism in the Central Nervous System of Rats During Acute Radiation Sickness

3

D. A. Chetverikov and S. V. Gastera

The purpose of this work was the comparison of the changes of blood-brain barrier permeability for the orthophosphate with those of phospholipid turnover intensity in the tissues of rat central nervous system in the course of acute radiation sickness.

Adult male rats (Wistar strain) received 750 r total-body X-irradiation. The penetration rate of orthophosphate from the blood plasma into brain and spinal cord and the incorporation rate of tissue inorganic phosphate into the phospholipid fraction was studied by means of $Na_2H^{32}PO_4$ injected subcutaneously to the animals 2 hr before decapitation. Both aspects of phosphorus metabolism were studied in the course of irradiation and 2, 4, 6, 12, 48, 72 and 96 hr after.

Both in brain and spinal cord during the first 2 hr after irradiation, there was some increase of the ^{32}P penetration rate from blood into the tissues and of the phospholipid turnover rate. Apparently, this transitory reaction is non-specific and is conditioned by the influence of the general regulatory systems of the organism.

In the later part of the radiation disease, the rate of ^{32}P penetration into the central nervous system tissues decreases in comparison with control values. The intensity of phospholipid metabolism also decreases, but remains near the control level. A marked decrease of both processes studied is observed at the terminal stage of acute radiation sickness (72-96 hr after irradiation).

The similarity of the patterns of changes of blood-barrier permeability for orthophosphate and of phospholipid turnover intensity revealed during the course of radiation sickness is probably not accidental, but indicates the existence of some close linkage between these two aspects of the nervous tissue phosphorus metabolism.

Radiobiological Laboratory, I. P. Pavlov Institute of Physiology, Academy of Sciences, Leningrad, USSR

report presented at the 2nd Intl. Congress of Radiation Research, Harrogate/Yorkshire, Gt. Brit. 5-11 Aug 1962

34830

S/020/62/142/005/022/022
B144/B138

27.1220

AUTHORS: Gasteva, S. V., and Chetverikov, D. A.

TITLE: Intensity of phospholipid metabolism (PLM) in the central nervous system (CNS) of rats in acute radiation disease

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 142, no. 5, 1962, 1180 - 1183

TEXT: PLM was studied in brain, spinal chord, liver, and spleen of rats after 750 r whole-body x-irradiation with a РУМ-11 (RUM-11) apparatus. This dose caused ~70% of deaths within 4 days. PLM was judged from the rate of $Na_2HP^{32}O_4$ incorporation into PL fractions (introduction 0.5 μcu/1 g of weight). The rats were decapitated 120 min after P^{32} application; irradiation time was 100 min. The rats were in nine groups (112 rats) with P^{32} application 10 min before, and 2, 4, 6, 12, 24, 48, 72, and 96 hrs after, irradiation, with a nonirradiated control group of 57 rats. The specific radioactivity (s.r.) of anorganic P (AP), the s.r. of the total PL fraction (imp/min·μg P), and the relative s.r. (r.s.r.) of

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PL phosphorus ($\frac{s.r.PL}{s.r.AP} \cdot 100$) were calculated, and from this the rate of P^{32} incorporation into this fraction and the PLM intensity could be ascertained. Fig. 1 shows the PL r.s.r. in different tissues. Previous investigations had led the authors to assume a remote mechanism controlling PLM intensity alone (CNS) or in conjunction with direct effects (spleen, liver) in the first stage of radiation disease. The initial temporary PLM increase observed in all the tissues studied is apparently an unspecific metabolic reaction which is followed by widely differing specific reactions, depending on morphological and physiological features. No direct noxious effect was found on the biochemical systems responsible for PL synthesis in CNS, liver, and spleen. There are 1 figure and 15 references: 8 Soviet and 7 non-Soviet. The four most recent references to English-language publications read as follows: R. M. C Dawson, D. Richter, Proc. Roy. Soc., London, 137, 252 (1950); F. G. Sherman, A. B. Almeida, Adv. in Radiobiol., Stockholm, 49 (1957); W. E. Cornatzer, J. P. Davison et al., Radiation Res., 1, 546 (1954); H. Harrington, P. S. Lavik, J. Cell. Comp. Physiol., 46, no. 1, 503 (1955).

S/020/62/142/005/022/022
B144/B138

Intensity of phospholipid metabolism ...

ASSOCIATION: Institut fiziologii im. I. P. Pavlova Akademii nauk SSSR (Institute of Physiology imeni I. P. Pavlov of the Academy of Sciences USSR)

PRESENTED: September 4, 1961, by V. N. Chernigovskiy, Academician

SUBMITTED: August 29, 1961

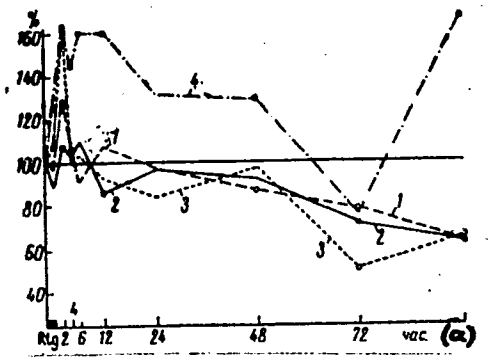

Fig. 1. Change in PL r.s.r. in cerebral hemispheres (1), spinal chord (2), liver (3), and spleen (4) of rats in the course of radiation disease. The statistical deviation of the points plotted from the control average (= 100 %) is significant ($P < 0.05$). Legend: (a) hours.

Fig. 1

Card 3/3

CHETVERIKOV, D. A.; ULYBINA, I. N.

"The influence of hypoxia on the histochemical distribution of lipids in nervous cells of rats."

report submitted for 2nd Intl Cong, Histochemistry & Cytochemistry, Frankfurt, 16-21 Aug 64.

Pavlov's Inst of Physiology, AS USSR, Nab. Makarova 6, Leningrad

ACCESSION NR: AT3013148 S/3018/63/000/000/0597/0606

AUTHOR: Gasteva, S. V.; Chetverikov, D. A.

TITLE: Phosphate group phospholipide metabolism in brains of rats during acute radiation sickness

SOURCE: Tret'ya Vsesoyuznaya konferentsiya po biokhimii nervnoy sistemy. Sbornik dokladov. Yerevan, 1963, 597-606

TOPIC TAGS: phosphate group phospholipide metabolism, brain metabolism, phospholipide metabolism, CNS functional level, acute radiation sickness, X-irradiation, radioactive phosphorus, hematoencephalitic barrier permeability, lipid fraction, inorganic phosphate fraction, specific radioactivity, brain large hemispheres, spinal cord

ABSTRACT: Experimental white male rats were X-irradiated with a single total 750 r dose (RUM-11 unit, 176 kv, 20 ma, focal length 91 cm). Radioactive phosphorus (P^{32}) in the form of $Na_2HP^{32}O_4$ was injected subcutaneously (5 mc/kg) into animals to determine phosphate group phospholipide metabolism intensity and to determine change in hematoencephalitic barrier permeability for inorganic

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ACCESSION NR: AT3013148

phosphate in the blood plasma passing into brain tissue. Animals were decapitated 2 hrs after P^{32} injection and blood and brain samples were taken. Brain large hemispheres and spinal cord were carefully removed and lipids extracted by Folch's chloroform-methanol method. Inorganic phosphate fractions were precipitated by Delori's method. Specific radioactivity of lipid and inorganic phosphate fractions and blood plasma served as indices of phospholipide metabolism intensity and hematoencephalitic barrier permeability. Experimental data of this study were compared with literature data on CNS changes in irradiated animals. A striking correlation was found between CNS functional level and phospholipide metabolism. With increase in CNS functional level in the first hours after irradiation, the activity of certain metabolic systems in the brain, including phospholipide metabolism, become more intense. Hematoencephalitic barrier permeability increases for substances necessary for more intense metabolism and this is reflected by the change in inorganic phosphate specific radioactivity of the brain. Despite a close correlation there is not sufficient evidence to claim that phospholipide metabolism is more directly related to CNS vital functions than other types. The problem of which metabolic processes are of prime chemical importance in brain activity and

ACCESSION NR: AT3013148

which processes play supplementary roles is a key question of functional biochemistry and requires further study. Orig. art. has: 2 figures.

ASSOCIATION: Institut fiziologii im. I. P. Pavlova, AN SSSR, Leningrad (Physiology Institute, AN SSSR)

SUBMITTED: 00 DATE ACQ: 28Oct63 ENCL: 00

SUB CODE: AM NO REF SOV: 033 OTHER: 007

Card 3/3

CHETVERIKOV, D.A.; GASTEVA, S.V.

Permeability of the hematoencephalic barrier to inorganic phosphate in acute radiation sickness. Dokl. AN SSSR 151 no.3:718-721 Jl '63. (MIRA 16:9)

1. Institut fiziologii im. I.P.Pavlova AN SSSR. Predstavleno akademikom V.N.Chernigovskim.
(HEMATOENCEPHALIC BARRIER) (RADIATION SICKNESS)
(PHOSPHORUS IN THE BODY)

DVORKIN, V.Ya.; CHETVERIKOV, D.A.; SHMELEV, A.A.

Chromatographic fractionation of the phospholipides of the rat brain on a silica gel column. Biokhimiia 28 no.3:475-481 My-Je '63. (MIRA 17:2)

1. Institute of Physiology, Academy of Sciences of the U.S.S.R., Leningrad.

CHETVERIKOV, D.A.; GASTEVA, Svjetlana V.; IVANOV, K.P.; VACEK, A.; POSPISIL, M.

Mechanism of raised resistance of rats to hypoxia in acute radiation injury. Folia biol. (Praha) 10 no.5:386-391 '64.

1. Pavlov Institut of Physiology, Academy of Sciences of the U.S.S.R., Leningrad, and Institute of Biophysics, Czechoslovak Academy of Sciences, Brno.

L 16070-65 EWG(j)/EWG(r)/EWT(l)/FS(v)-3/EWG(v)/EWG(a)/EWG(c) Pb-4/Pe-5/
Pb-4/Pa-4 AEDC(a)/ASD(a)-5/AMD/AFMDC/AFTC(b) DD

ACCESSION NR: AP4049493 S/0020/64/159/002/0469/0472

AUTHOR: Chetverikov, D. A.; Gasteva, S. V.

TITLE: The metabolism of phosphate groups in phospholipids of the brain and liver of rats during hypoxia and posthypoxia

SOURCE: AN SSSR. Doklady*, v. 159, no. 2, 1964, 469-472

TOPIC TAGS: hypoxia, pressure chamber, phosphate metabolism, phospholipid, brain, liver

ABSTRACT: In this study, three goups of rats were placed in pressure chambers with the atmospheric pressure lowered as follows: [illegible] 240 mm Hg; group 2 - 180 mm Hg; group 3 - 240 mm Hg [illegible] to recuce hypothermia). Periodically the animals received [illegible] containing P^{32}, the inclusion rate of which indicated [illegible] and in group 3 particularly, the metabolism of phosphatides was depressed. Group 3 showed a 50% mortality rate, with [illegible] rates not deviating significantly from those of a [illegible] all instances, the metabolism of phospholipids was inhibited [illegible]

Card 1/2

L 16070-65
ACCESSION NR: AP4049493

acutely in the brain than in the liver. It is concluded that the inhibition of phospholipid metabolism during hypoxia was to a certain extent determined by a concomitant onset of hypothermia. Orig. art. has: 1 table.

ASSOCIATION: Institut fiziologii imeni I. P. Pavlova Akademii nauk SSSR (Institute of Physiology of the Academy of Sciences, SSSR)

SUBMITTED: 07Apr64 ENCL: 00 SUB CODE: [illegible]

NO REF SOV: 005 OTHER: 009 ATD PRESS: 3145

Card 2/2

GASTEVA, S.V.; IVANOV, K.P.; CHETVERIKOV, D.A.

Resistance of rats to an acute oxygen deficiency following radiation sickness. Probl. kosm. biol. 4:437-444 '65. (MIRA 18:9)

L 1337-66 EWT(1)/FS(v)-3 DD

ACCESSION NR: AP5021236 UR/0300/65/037/004/0529/0537

30
29
B

AUTHOR: Dvorkin, V. Ya.; Chetvarikov, D. A.; Shmelev, A. A.

TITLE: Study of the content and renewal rate of various phospholipid fractions of the rat brain in a normal state and during hypoxia

SOURCE: Ukrayins'kyy biokhimichnyy zhurnal, v. 37, no. 4, 1965, 529-537

TOPIC TAGS: animal physiology, biologic metabolism, brain, cerebellum, hypoxia, phospholipid, rat

ABSTRACT: An improved method is presented for fractionating phospholipids of rat brain tissue on a battery of small silica gel columns. Elution in stages with chloroform-methanol mixtures is employed. This method permits study of the content and renewal rate of various phospholipid fractions under normal and hypoxic conditions. Male white rats weighing 180—240 g were subcutaneously injected with radioactive phosphate ($Na_2HP^{32}O_4$) in a dose of 5 μcu per g. Immediately afterwards, the rats were placed in a pressure chamber, where they "ascended to 9000 m" (240 mm Hg). They were decapitated two hours after the beginning of the experiment, and lipids were extracted from their cerebral hemispheres. One ml of concentrated extract was used for fractionation. An index of "relative specific radioactivity"

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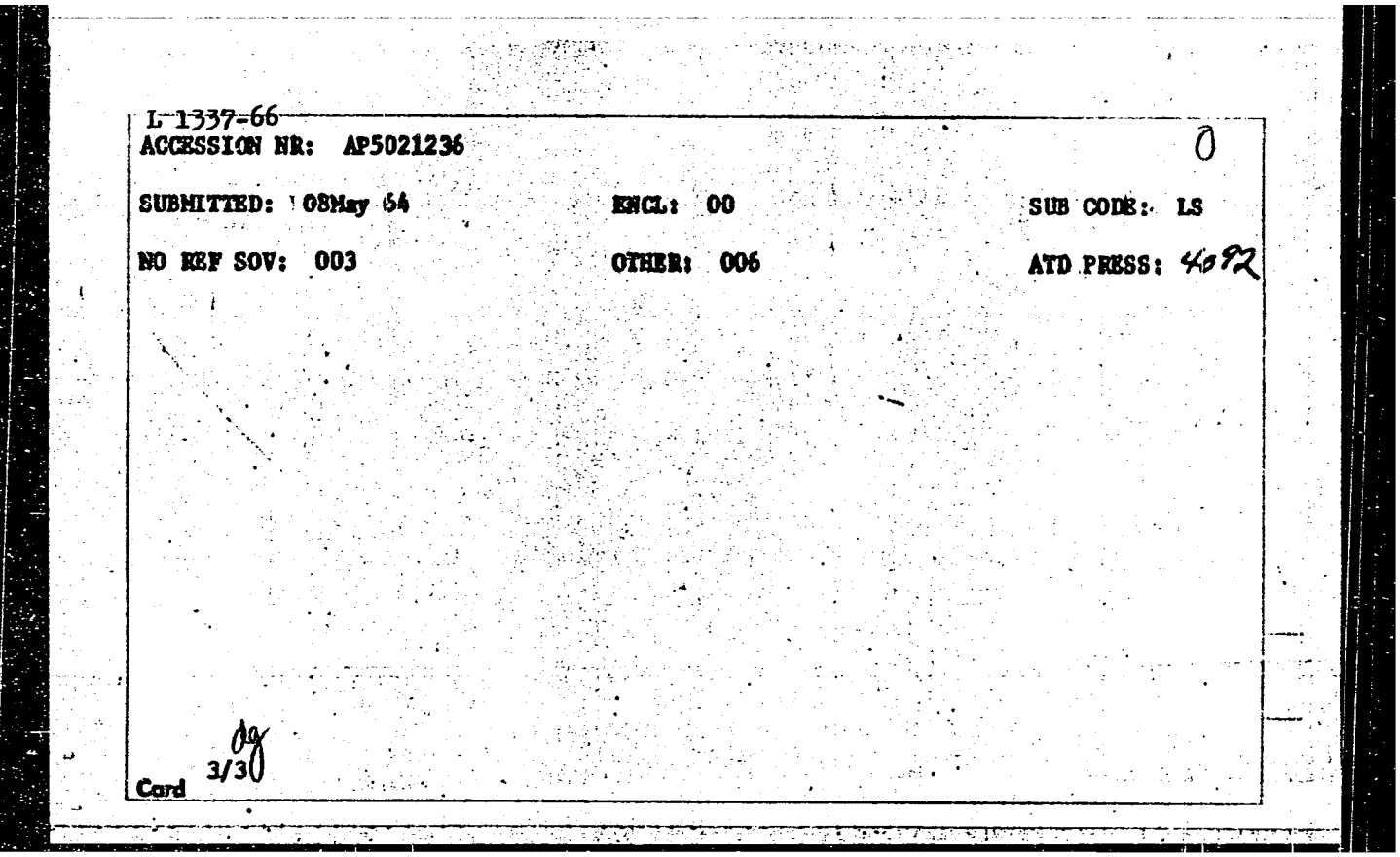
was used to determine the renewal rate of phospholipids and phospholipid fractions. Experimental results showed that, under normal conditions, fractions of phosphatide acids and phosphoinositides (phosphatidyl inositols) are renewed significantly faster than the remaining fractions (lecithins, sphingomyelins, and amine-containing phospholipids [phosphatidylethanolamine and lysophosphatidylethanolamine]). This difference is apparently connected with the chemical structure of different phospholipid groups, and with differences in their biosynthesis. It was found that hypoxia does not change the content of the phospholipid fractions studied, but it definitely lowers the metabolic intensity of the phosphate groups in all fractions. A clear difference was established in the degree of lowering of the metabolic intensity of different fractions under hypoxic conditions. It was concluded that different enzyme systems catalyzing different biosynthetic reactions of various phospholipids are depressed to a different degree under hypoxic conditions. The greatest decrease in metabolism was observed in amine-containing phospholipids and in lecithin fractions, and the least in phosphatide acid fractions. Orig. art. has: 3 figures. [JS]

ASSOCIATION: Institut fiziologii im. I. P. Pavlova AN SSSR, Leningrad (Institute of Physiology, AN SSSR)



L 1337-66
ACCESSION NR: AP5021236 0

SUBMITTED: 08May 64 ENCL: 00 SUB CODE: LS

NO REF SOV: 003 OTHER: 006 ATD PRESS: 4092

Card 3/3 dg

DVORKIN, V.Ya.; CHETVERIKOV, D.A.; SHMELEV, A.A. [Shmel'ov, A.A.]

Study of the content and regeneration rate of individual phospholipid fractions in the brain of healthy rats and those with hypoxia. Ukr. biokhim. zhur. 37 no.4:529-537 '65. (MIRA 18:9)

1. Institut fiziologii im. I.P.Pavlova AN SSSR, Leningrad.

L 9511-66 EWT(1)/FS(v)-3 DD

ACC NR: AP5028918 SOURCE CODE: UR/0020/65/165/003/0714/0716

AUTHOR: Gasteva, S. V.; Chetverikov, D. A.

ORG: Institute of Physiology im. I. P. Pavlov, Academy of Sciences SSSR (Institut fiziologii, Akademii nauk SSSR)

TITLE: Reasons for the decrease in metabolic intensity of brain phospholipids during oxygen starvation of the organism

SOURCE: AN SSSR. Doklady, v. 165, no. 3, 1965, 714-716

TOPIC TAGS: animal physiology, biologic metabolism, brain, phospholipid, rat

ABSTRACT: Previous experiments had suggested that the suppression of phospholipid synthesis observed in brain tissue during hypoxia is less the result of oxygen starvation of the organism than of the hypothermia which accompanies this state. To verify this hypothesis, phospholipid synthesis in animals during intensified hypothermia and "normal" hypoxia was compared. Male white rats were immersed in water (8—10C), injected with radioactive phosphate (dose 0.5 μ Cu/g), and then placed, while in restraint cages, in a pressure chamber at 240 mm Hg for 110 min. The relative specific radioactivity (RSR) of the phosphorus in the phospholipids was used as an index of the intensity of phospholipid metabolism. Experimental results showed that in artificially cooled animals (whose rectal temperature was 13.3C below normal), the RSR was 35.5% of the control value. For animals not subjected to additional cooling (rectal temperature 5.2C below normal), the RSR of brain phospholipids was 69% of the

Card 1/2 UDC: 577.1:547.953

L 9541-66
ACC NR: AP5028918

control. An explanation of the complex relationship between decreased body temperature and depressed phospholipid synthesis is proposed. It is suggested that hypothermia of brain tissue inhibits the activity of enzyme systems involved in cellular synthesis processes. Hypothermia accompanying oxygen starvation of the organism seems to have a protective, adaptive character. When the normal body temperature of experimental animals was artificially maintained during hypoxia, a higher mortality rate was observed. Orig. art. has: 2 figures. [JS]

SUB CODE: LS/ SUBM DATE: 25Nov64/ ORIG REF: 005/ OTH REF: 001/ ATD PRESS: 4157

Card 2/2

L 14293-66 EWT(m)/EPF(n)-2 DIAAP GG/RD

ACC NR: AT6003877 SOURCE CODE: UR/2865/65/004/000/0437/0444

AUTHOR: Gasteva, S. V.; Ivanov, K. P.; Chetverikov, D. A.

ORG: none

TITLE: Resistance of rats to severe oxygen deficiency during radiation sickness

SOURCE: AN SSSR. Otdeleniye biologicheskikh nauk. Problemy kosmicheskoy biologii, v. 4, 1965, 437-444

TOPIC TAGS: radiation sickness, hypoxia, rat, biologic metabolism, test chamber, ionizing radiation, x ray irradiation, tissue physiology

ABSTRACT: Experiments were conducted to determine the effect of ionizing radiation on oxidizing systems in living tissues by showing whether the resistance of rats to acute hypoxia changes in the course of severe radiation sickness. Male white rats weighing 200—250 g were subjected to a dose of x-rays (750 r) sufficient to cause mass death 80 hours after irradiation. Immediately after irradiation, and then at intervals of 3, 6, 12, 24, 48, 72, and 96 hours, groups of experimental and control rats were placed in an altitude chamber and subjected to rarefied atmosphere

Card 1/3

(140 mm Hg). The resistance of irradiated rats to hypoxia, evident 6 hours after irradiation, was most pronounced after 72 hours. In order to determine whether a decrease in the intensity of metabolic processes is the chief cause of resistance to hypoxia, the rectal temperature and oxygen consumption of irradiated rats were measured in the designated time intervals. The absence of essential changes in these indices showed that the decrease in the intensity of metabolic processes in irradiated rats is not the sole cause of increased resistance to hypoxia.

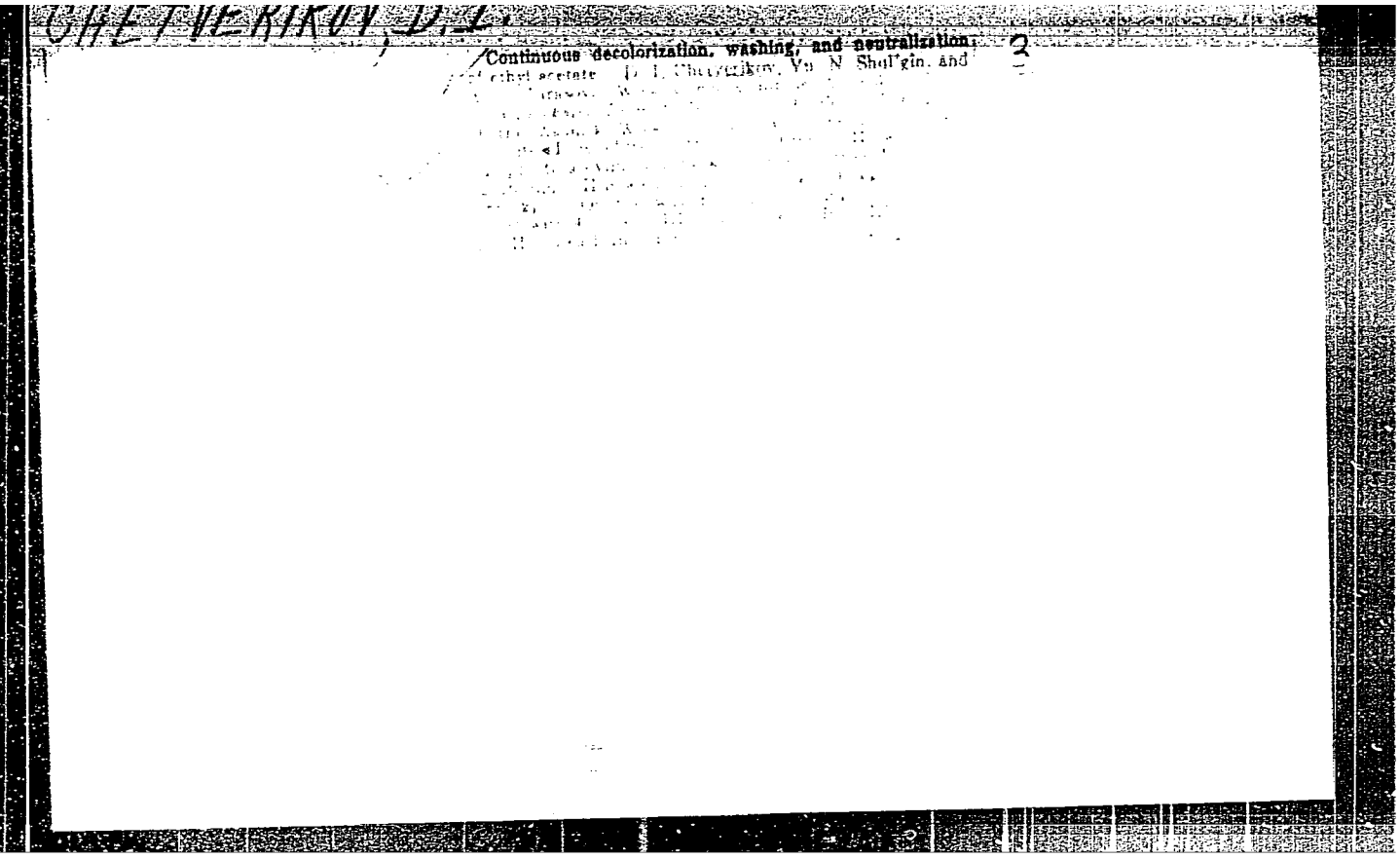
Another series of experiments tested oxygen consumption of animals directly under hypoxic conditions. Gas-exchange studies under normal atmospheric and hypoxic conditions were compared, and it was concluded that the mechanism of increased resistance to hypoxia is different at different stages of radiation sickness. Further research is needed to determine the exact causes of increased resistance at different times, which may include hypothermia, disturbances of normal vital activity such as anemia or circulatory disruption, and disturbances in temperature regulation. The observed resistance of rats to acute oxygen deficiency (from 6 hours after irradiation to the terminal stage of acute radiation sickness),

L 14293-66
ACC NR: AT6003877

and also the absence of a significant change in the intensity of metabolic processes, indicate that ionizing radiation, in the dose used, does not damage oxidizing systems in the tissues. Orig. art. has: 3 figures.
[ATD PRESS: 4091-F]

SUB CODE: 06 / SUBM DATE: none / ORIG REF: 008 / OTH REF: 008

Card 3/3



Continuous decolorization, washing, and neutralization.

CHETVERIKOV, D.I.

SHUL'GIN, Yu.N.; CHETVERIKOV, D.I.; TARASOVA, A.G.

Continuous black acid apparatus. Gidrolis. i lesokhim.prom. 10 no.1:27-28 '57. (MLRA 10:4)

1. Ashinskiy lesokhimicheskiy kombinat.
(Acids) (Distillation apparatus)

CHETVERIKOV, D.I.

Operation of the Grum-Grshimailo furnace. Gidroliz. i lesokhim. prom. 11 no.5:17-20 '58. (MIRA 11:9)

1. Ashinskiy lesokhimicheskiy kombinat.
(Furnaces)

CHETVERIKOV, D.I.

Answer of the chief engineer of the Verkhnyaya-Sinyachikha Wood Chemistry Combine to N.P.Kozhevnikov. Gidroliz.i lesokhim.prom. 12 no.2:27-28 '59. (MIRA 12:3)

1. Nachal'nik nauchno-issledovatel'skoy laboratorii Ashinskogo lesokhimicheskogo kombinata.
(Kilns)

LYAMIN, V.A.; CHETVERIKOV, D.I.

Recovery of chemicals from the cooled gas of periodically operating retorts. Gidrolis i lesokhim.prom. 12 no.4:7-9 '59.
(MIRA 12:8)

1. Leningradskaya lesotekhnicheskaya akademiya (for Lyamin).
2. Ashinskiy lesokhimicheskiy kombinat (for Chetverikov).
(Wood distillation)

CHETVERIKOV, D.I.

Apparatus for the continuous production of a specific. Gidroliz i lesokhim. prom. 12 no.5:24-25 '59. (MIRA 12:10)

1.Ashinskiy lesokhimicheskiy kombinat.
(Tar) (Distillation apparatus)

CHETVERIKOV, D.I.; TARASOVA, A.G.; SEMENOV, A.A.

Continuous recovery of ethyl acetate and ethyl alcohol from waste waters of ethyl acetate manufacture. Gidroliz. i lesokhim.prom. 13 no.7:15-17 '60. (MIRA 13:10)

1. Ashinskiy lesokhimicheskiy kombinat.
(Asha--Ethyl acetate) (Asha--Ethyl alcohol)

CHETVERIKOV, D.I.; PLEKHANOVA, Ye.A.

Technology of the preparation of raw wood tar for processing. Gidroliz. i lesokhim. prom. 17 no.4:25-27 '64 (MIRA 17:7)

1. TSentral'nyy nauchno-issledovatel'skiy lesokhimicheskiy institut.

CHETVERIKOV, D.I.

Purification of phenolic waste waters. Gidroliz. i lesokhim.prom. 17 no.8:17-19 '64. (MIRA 18:1)

1. TSentral'nyy nauchno-issledovatel'skiy i proyektnyy institut leskhimicheskoy promyshlennosti.

CHETVERIKOV, D.I.

Technology of the continuous fractionation of wood tar and of oil pyrolysis. Gidroliz. i lesokhim. prom. 17 no.6:8-11 '64. (MIRA 17:12)

1. TSentral'nyy nauchno-issledovatel'skiy i proyektnyy institut lesokhimicheskoy promyshlennosti.

L 14346-63 EWT(l)/EWT(m)/ES(b)/BDS AFFTC/ASD AR/K

ACCESSION NR: AP3003866 S/0020/63/151/003/0718/0721

AUTHORS: Chetverikov, E. A.; Gasteva, S. V.

TITLE: Permeability of the blood-brain barrier to inorganic phosphate in acute radiation sickness 19

SOURCE: AN SSSR. Doklady*, v. 151, no. 3, 1963, 718-721

TOPIC TAGS: permeability, blood-brain barrier, inorganic phosphate, radiation sickness, phospholipid metabolism

ABSTRACT: Having previously studied the rate of incorporation of radioactive phosphate into brain phospholipids, the authors wished to study the effect of irradiation on the rate of synthesis. Permeability was assessed in terms of the rate of uptake of labelled inorganic phosphate from the blood plasma by the tissue of the cerebral hemispheres, using relative specific radioactivity of cerebral and cerebrospinal tissue (ratio of specific brain to plasma radioactivity) as the measure. White rats were subjected to whole-body irradiation in a dosage which produces acute radiation sickness and is fatal to 70% of the animals in 4 days (750 r in 10 minutes). Radioactive phosphate ($Na_2HP^{32}O_4$) was injected s.c. in the amount of 0.5 micrograms Cu/g, and 2 hours afterwards the animals were decapitated and blood samples collected. Determinations were made

Card 1/2

L 14346-63
ACCESSION NR: AP3003866

immediately after irradiation and 2-96 hours later. Relative radioactivity of the plasma was appreciably decreased immediately after irradiation and in the first 6 hours, then rose sharply and was considerably above the normal level at 24, 72, and 96 hours. The findings in cerebrospinal and hemispheric tissue were very similar: no change for the first 6 hours after irradiation, and a slight reduction beginning at 12 hours. Changes in the relative specific radioactivity of hemispheric and cerebrospinal radioactivity were triphasic: there was a distinct increase in permeability in the first 2 hours, a levelling off at values close to those in controls in the first 2 days, and finally, on the 3rd to 4th day a statistically significant decrease. The initial decrease in the specific radioactivity of plasma inorganic phosphate is due to its dilution with less active tissue phosphate, the high level in the terminal stage of radiation sickness to the decreased permeability of the blood-brain barrier. The latter phenomenon is explained by the increased capacity of the brain cell cytoplasm to absorb inorganic phosphate resulting from the irradiation-induced lowering of the rate of phospholipid metabolism in the brain tissue. Thus the rate of metabolic processes in the brain and the permeability of the blood-brain barrier are intimately related. Orig. art. has: 2 figures.

Card 2/2 Inst. of Physiology of the Academy of Sciences

CHETVERIKOV, G.N.

Effect of carbohydrate-phosphorus metabolism inhibitors on tonic activity of the skeletal muscles. [with summary in English]. Fiziol.zhur. 44 no.7:674-679 Jl'58 (MIRA 11:7)

1. Kafedra obshchey biologii Meditsinskogo instituta, Kalinin.
(CARBOHYDRATES, metabolism
carbohydrate-phosphorus metab. inhibitors, eff. on musc. tonus (Rus))
(PHOSPHATES, metabolism,
same (Rus))
(MUSCLES, effects of drugs on,
carbohydrate-phosphorus metab. inhibitors on tonus (Rus))

313. THE SPECIALIZED MUSCULAR FIBRES IN MAMMALS (Russian text) - Chetverikov G. N., Kalinin State Med. Inst., Kalinin - BYULL. EKSPER. BIOL. I MED. 1958, 45/3 (107-109) Graphs 3

Single muscle fibres of the rat were isolated and 3 groups of fibres could be discerned, i. e. tonically contracting fibres, tetanically contracting fibres and fibres of a transitional type combining both properties. Boeles - Amsterdam

Chair of General Biology.

CHETVERIKOV, G.N.

Effect of certain inhibitors of carbohydrate-phosphorus metabolism on tonic and tetanic reactions of isolated muscle fibers of bertebrates [with summary in English]. Biul.eksp.biol. i med. 46 no.8:18-22 Ag '58 (MIRA 11:10)

1. Iz kafedry biologii (rukovoditel' - prof. Ye.K. Zhukov) Kalininskogo gosudarstvennogo meditsinskogo instituta. Predstavlena deystvitel'nym chlenom AMN SSSR V.V. Parinym.

(MUSCLES, eff. of drugs on
dinitrophenol, sodium fluoride & sodium monoiodoacetate on tonic & tetanic reactions of isolated musc. fibers of frogs & rates. (Rus))
(NITROPHENOLS, eff.
dinitrophenol on tonic & tetanic reactions of isolated musc. fibers of frogs & rats (Rus))
(FLUORIDES, eff.
sodium fluoride on tonic & tetanic reactions of isolated musc. fibers of frogs & rats (Rus))
(IODOACETATES, eff.
sodium monoiodoacetate on tonic & tetanic reactions of isolated musc. fibers of frogs & rats (Rus))

CHETVERIKOV, G. N.: Master Med Sci (diss) -- "The effect of inhibitors of carbohydrate-phosphorus metabolism on the tonic reactions of the skeletal muscles of vertebrates". Kalinin, 1958. 10 pp (Min Health RSFSR, Leningrad Sanitary-Hygiene Med Inst) (KL, No 6, 1959, 147)

CHETVERIKOV, G.N.

Effect of strophanthin on the heart following the action of carbohydrate metabolism inhibitors. Farm. i toks. 26 no.1: 58-63 Ja-F '63. (MIRA 17:7)

1. Kafedra farmakologii (zav. - dotsent M.M. Desnitskaya) Kalininskogo meditsinskogo instituta.

CHETVERIKOV, G.N., kand.med.nauk

Effect of strophanthin on the action of neutral red in the heart. Trudy KGMI no.10:195-197 '63. (MIRA 18:1)

1. Iz kafedry farmakologii (zav. kafedroy - doktor med. nauk M.M.Desnitskaya) Kalininskogo gosudarstvennogo meditsinskogo instituta.

CHETVERIKOV, I.A.

Defining more precisely the geopotential fields obtained in the results of objective analynis by means of optimum interpolation. Trudy MMTS no.4:39-43 '64 (MIRA 18:2)

NIKIFOROV, I.; MAKAROV, A.; SMOLYAKOV, N.; SIPER, E.; MOGILA, V.; LARIN, M.; FILIPPOV, K.; TOKMAKOV, V.; BARANOVSKIY, V.; CHETVERIKOV, K.; POZNANSKIY, A.; SHUTOV, M.; ROZENFEL'D, L.; RUD', A.

Mechanization of waterproofing operations. Stroitel' 8 no.11: 15-20 N '62. (MIRA 16:1)

(Waterproofing--Equipment and supplies)

CHETVERIKOV, L.

Structural characteristics of lava beds in the Nidym Basin (central part of the Tunguska Basin). Izv.vys.ucheb.zav.; geol.i razv. 2 no.3:65-79 Mr '59. (MIRA 12:12)

1. Voroneshskiy gosudarstvennyy universitet.
(Nidym Valley--Lava)

CHETVERIKOV, L.I.

Characteristics of the structure and formation of the lower layers of the lava formation in the Nidym Basin. Izv.vys. ucheb.zav.; geol.i razv. 2 no.5:29-37 My '59. (MIRA 12:12)

1. Voronezhskiy gosudarstvennyy universitet.
(Nidym Valley--Volcanic ash, tuff, etc.)

CHETVERIKOV, L.I.

Preservation of Iceland spar crystals in loose deposits. Trudy VNIIP [MS] 3 no.2:123-124 '60. (MIRA 14:4)
(Iceland spar)

CHETVERIKOV, L.I.

Principles of applying the theory of probabilities for processing prospecting data. Izv.vys.ucheb.zav.; geol.i razv. 5 no.9:73-83 S '62. (MIRA 16:1)

1. Voronezhskiy gosudarstvennyy universitet.
(Prospecting)

CHETVERIKOV, L.I., dotsent

Relation between the coefficient of variation in the content of minerals and the size of the sample. Izv.vys.ucheb.zav.;gor.zhur. 6 no.11:3-6 '63. (MIRA 17:4)

1. Voronezhskiy gosudarstvennyy universitet.

CHETVERIKOV, L.I.

Geometrical elements of minerals. Sov.geol. 6 no.2:118-129 F '63.
(MIRA 16:4)

1. Voronezhskiy gosudarstvennyy universitet.
(Geology)

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Law of the distribution of frequencies of the content of the mineral component in a mineral body. Sov. geol. 7 no.7:92-102 Jl '64. (MIRA 17:11)

1. Voronezhskiy gosudarstvennyy universitet.

CHETVERIKOV, N.I.

Chistyakov, Nikolay Iosafovich Call Nr: None given

Poluprovodniki i ikh primeneniye (Semiconductors and Their Use) Moscow, Trudrezervizdat, 1957, 62 p. (Novaya tekhnika i peredovyye metody truda)

Ed.: Serebrennikova, L. A.; Scientific Ed.: Chetverikov, N. I.; Tech. Ed.: Matusevich, M. L.

PURPOSE: The booklet is intended for teachers and technical instructors at the schools of the labor reserve. It could be of use to the technical engineering personnel and the qualified workers of industrial enterprises.

COVERAGE: The booklet describes in a popular form the properties of semiconductors and the physical principles of operation of various semiconductor devices, including rectifiers and amplifiers. Recent Soviet and non-Soviet achievements in the field of semiconductor technique are mentioned. Soviet scientists: Ioffe, A. F., Davydov, B. I., Lashkarev, V. Ye., Kolomiyets, B. T., Frenkel', Ya. I., Tamm, I. Ye., and Vul, B. M., are mentioned as having carried out extensive investigations of semiconductor materials. There are 10 references, all of them Soviet.

Card 1/3

Semiconductors and Their Use (Cont.) Call Nr: None given

AVAILABLE: Library of Congress

Card 3/3

ABDULLAYEV, G.B.; ALIYEV, G.M.; CHETVERIKOV, N.I.

Influence of Ga and Fe impurities on the thermal conductivity of germanium. Zhur. tekh. fiz. 28 no.11:2368-2371 N '58. (MIRA 12:1)

(Germanium--Thermal properties)

CHETVERIKOV, N.I.

Restoration of parameters in germanium subjected to thermal treatment by annealing in antimony and arsenic vapors. Fiz. tver. tela 1 no.4: 553-555 '59. (MIRA 12:6)
(Germanium)

L 02347-67 EWT(m)/EWP(t)/ETI IJP(c) WW/JD/JG

ACC NR: AR6025739 SOURCE CODE: UR/0058/66/000/004/A069/A069

AUTHOR: Chetverikov, N. I.

TITLE: Thermodynamics of precipitation of germanium from the gas phase in the systems GeI_4-H_2 and $GeCl_4$-H_2

SOURCE: Ref. zh. Fizika, Abs. 4A587

REF SOURCE: Sb. Simpozium. Protsessy sinteza i rosta kristallov i plenok poluprovodnik. materialov, 1965. Tezisy dokl. Novosibirsk, 1965, 43

TOPIC TAGS: germanium compound, epitaxial growing, semiconducting film, chemical precipitation

ABSTRACT: The most probable reactions in the chloride method are selected on the basis of the calculated free energies of the possible reactions. The "effective pressure" of Ge, which is proportional to the growth rate of Ge layers, is calculated. It is shown that precipitation is the result of mutually opposing processes of precipitation and etching. The relations $P_{Ge} = f(T)$ are calculated for constant pressures of the initial germanium tetrachloride. The obtained relations agree with the experimental data. Similar calculations, made to determine the dependence of the Ge yield on the initial pressure of the tetraiodide, demonstrate that prior formation of germanium diiodide is essential. Experiments on precipitation of germanium in the H_2-GeI_4 system were set up and their results agree with the theoretical calculations. [Translation of abstract]

SUB CODE: 20

Card 1/1

ACC NR: AR6030482 SOURCE CODE: UR/0275/66/000/006/B007/B007

AUTHOR: Chetverikov, N. I.

TITLE: Thermodynamics of Ge deposition from the gas phase in GeI_4--H_2 and $GeCl_4$-- H_2 systems

SOURCE: Ref. zh. Elektronika i yeye primeneniye, Abs. 6B44

REF SOURCE: Sb. Simpozium. Protsessy sinteza i rosta kristallov i plenok poluprovodnik. materialov, 1965. Tezisy dokl. Novosibirsk, 1965, 43

TOPIC TAGS: germanium semiconductor, germanium refining, metal deposition, metal phase system

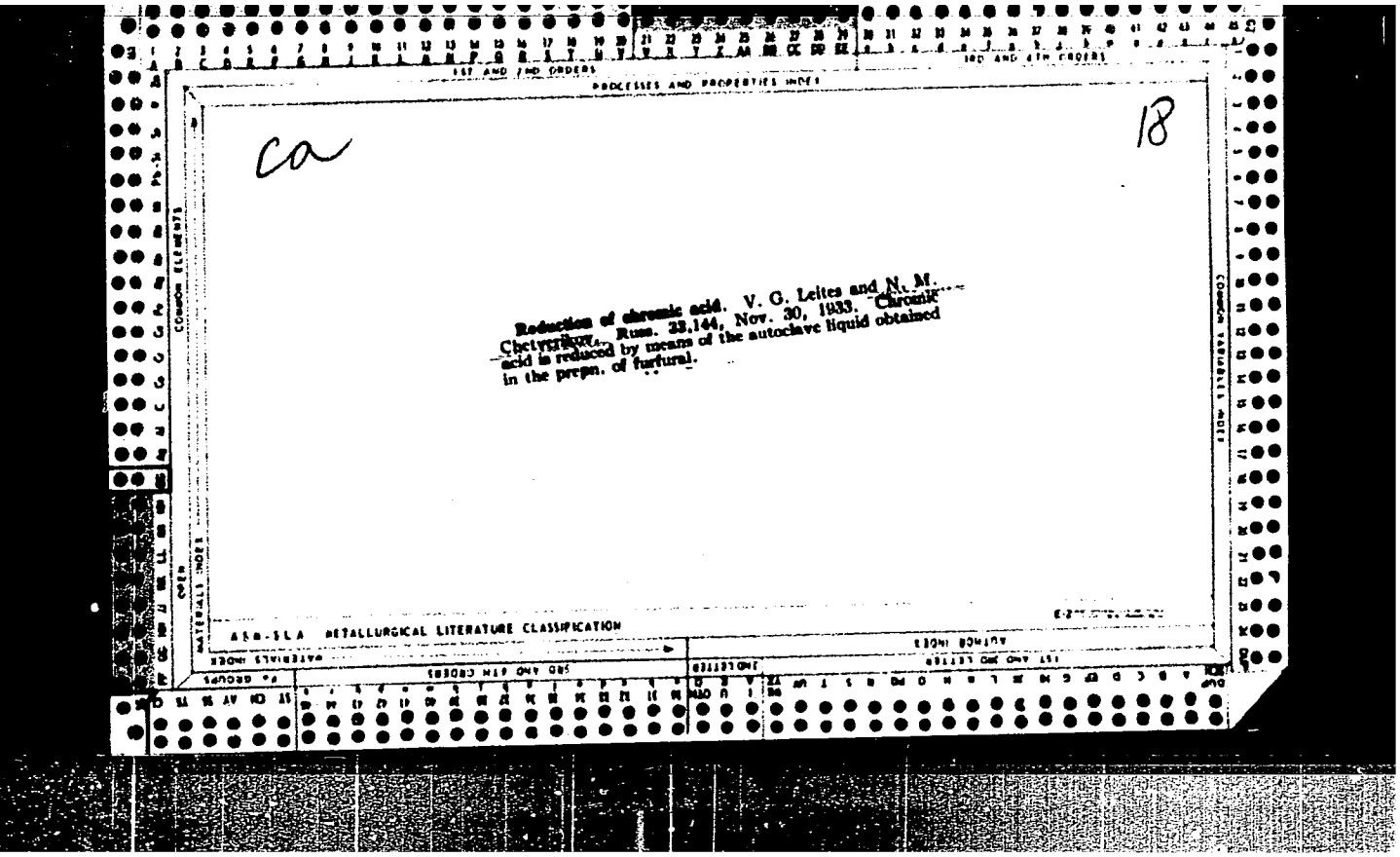
ABSTRACT: The most probable reactions, in the chloride method, have been selected according to estimated free energies of possible reactions. The "effective pressure" of Ge proportional to the rate of growth of Ge layers has been estimated. The deposition is a result of opposite processes of deposition and etching. The "pressure" $P_{Ge} = f(T)$ at constant pressures of the source germanium tetrachloride have been calculated. They are in good agreement with experimental data. To determine the effect of initial tetraiodide pressure on Ge yield, similar calculations have been made; they have shown the necessity for preliminary (before Ge deposition) formation of germanium di-iodide. Ge deposition in a GeI_4 -- H_2 system was studied experimentally; the results are in good agreement with theoretical estimates. From the author's abstract [Translation of abstract]

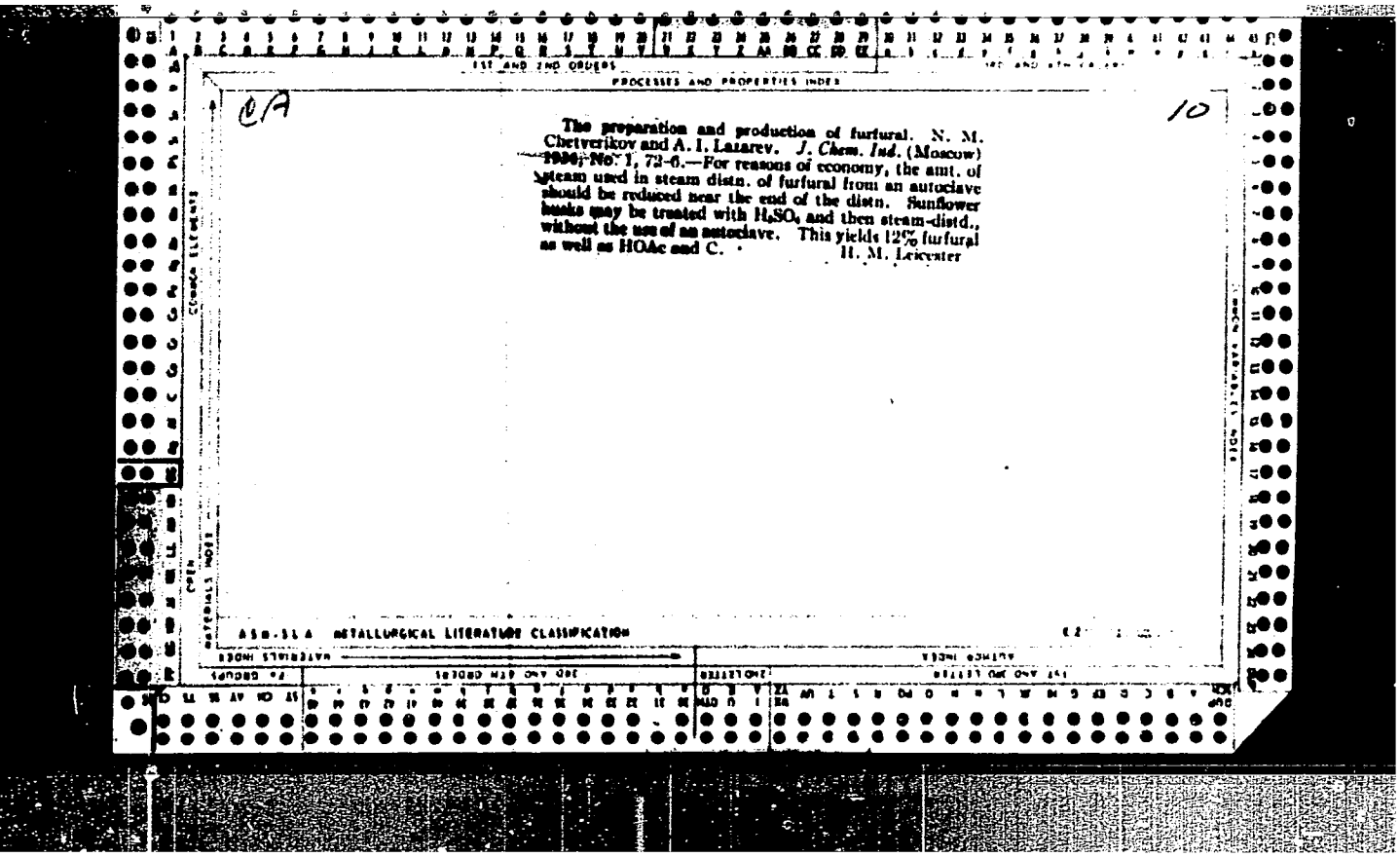
Card 1/1 SUB CODE: 20, 11 UDC: 621.315.592:548.552:546.289

IVANOV, V.I., akademik; CHETVERIKOV, N.M.; DZHUNDUBAYEV, K.D.

Mutarotation kinetics of aqueous solutions of monosaccharides. Dokl. AN SSSR 160 no.1:112-114 Ja '65. (MIRA 18:2)

1. AN KirgSSR (for Ivanov).

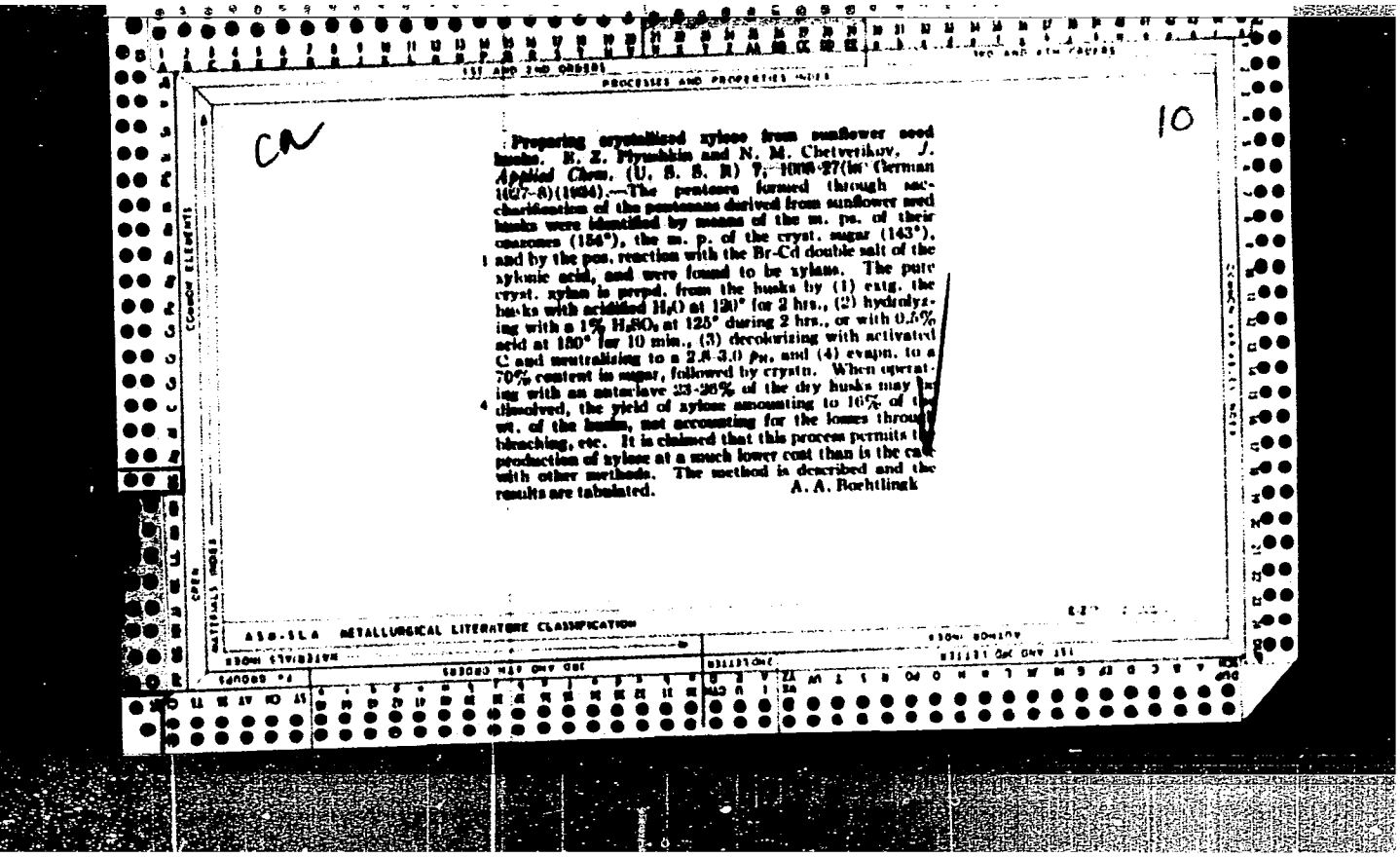




CA 10

The preparation and production of furfural. N. M. Chetverikov and A. I. Lazarev. *J. Chem. Ind.* (Moscow) 1936, No. 1, 72–6.—For reasons of economy, the amt. of steam used in steam distn. of furfural from an autoclave should be reduced near the end of the distn. Sunflower husks may be treated with H_2SO_4 and then steam-distd., without the use of an autoclave. This yields 12% furfural as well as HOAc and C.

H. M. Leicester



CA

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Preparing crystallized xylose from sunflower seed husks. E. Z. Plyushkin and N. M. Chetverikov. *J. Applied Chem.* (U. S. S. R.) 7, 1008-27(in German 1027-8)(1934).—The pentosans formed through saccharification of the pentosans derived from sunflower seed husks were identified by means of the m. ps. of their osazones (156°), the m. p. of the cryst. sugar (143°), and by the pos. reaction with the Br-Cd double salt of the xylonic acid, and were found to be xylans. The pure cryst. xylan is prepd. from the husks by (1) extg. the husks with acidified H_2O at 120° for 2 hrs., (2) hydrolyzing with a 1% H_2SO_4 at 125° during 2 hrs., or with 0.5% acid at 150° for 10 min., (3) decolorizing with activated C and neutralizing to a 2.8-3.0 p_H, and (4) evapn. to a 70% content in sugar, followed by crystn. When operating with an autoclave 33-36% of the dry husks may be dissolved, the yield of xylose amounting to 16% of the wt. of the husks, not accounting for the losses through bleaching, etc. It is claimed that this process permits the production of xylose at a much lower cost than is the case with other methods. The method is described and the results are tabulated.

A. A. Boehtlingk

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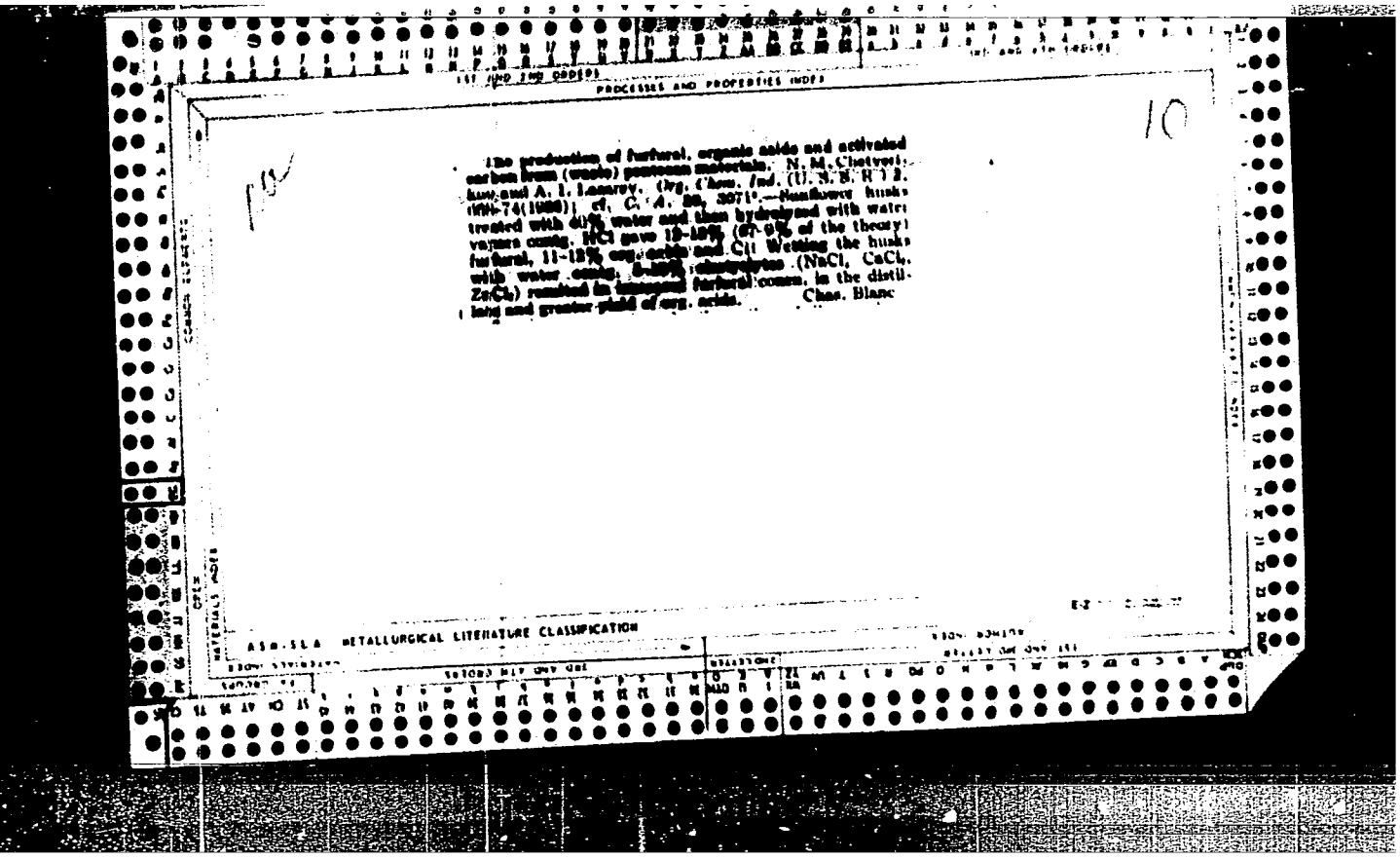
PROCESSES AND PROPERTIES INDEX

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The production of furfurol, organic acids and activated carbon from (waste) pentosan materials. N. M. Chetverikov and A. I. Lamarov. (Ivz. Khim. Ind. (U. S. S. R.) 3, 1926-74(1930)); cf. C. A. 20, 3071.—Sunflower husks treated with dil. water and then hydrolyzed with water vapors contg. HCl gave 13-18% (67-9% of the theory) furfurol, 11-13% org. acids and C. Wetting the husks with water contg. 5-10% chlorides (NaCl, CaCl$_2$, ZnCl$_2$) resulted in improved furfurol comm. in the distilling and greater yield of org. acids. Chas. Blanc

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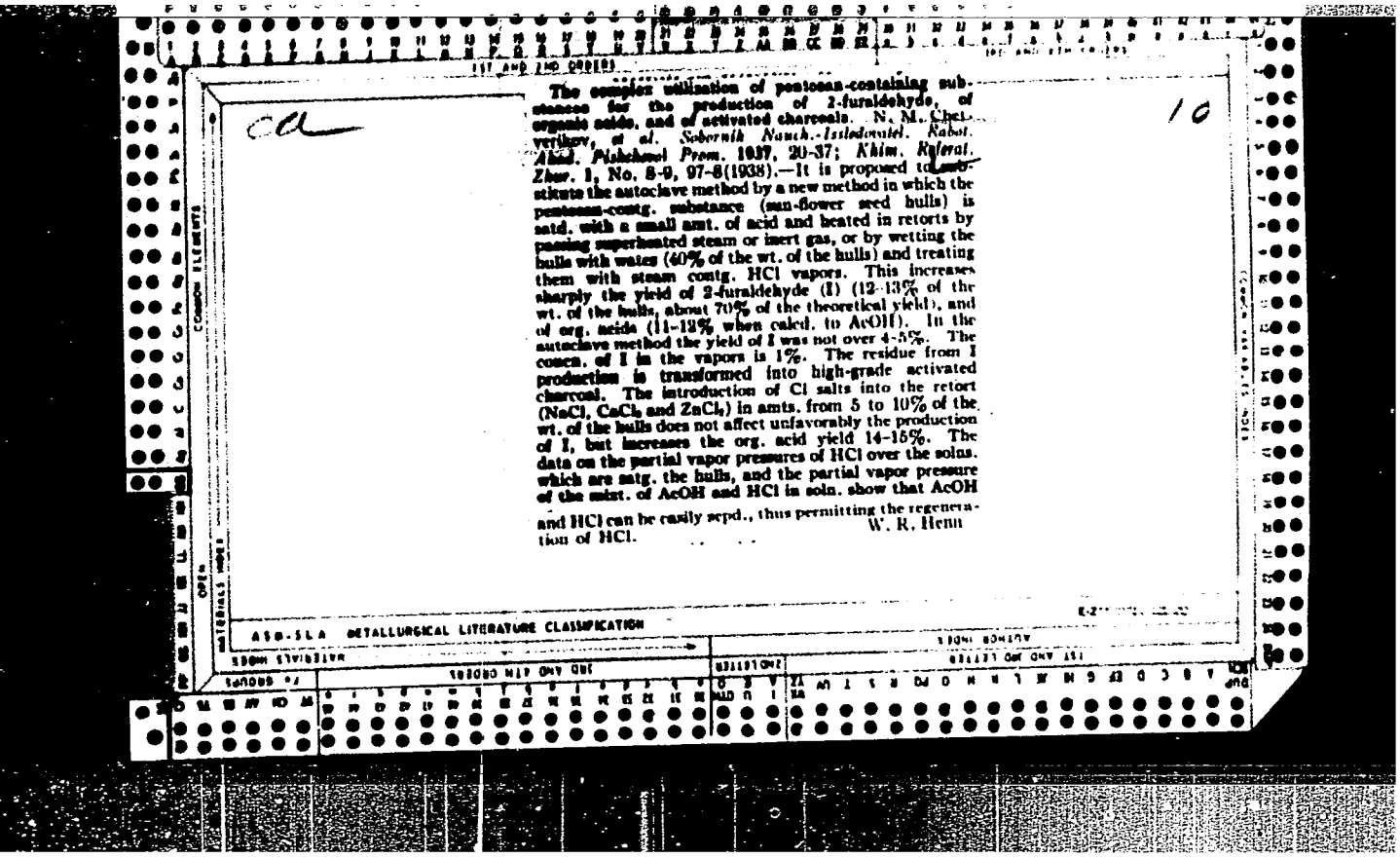
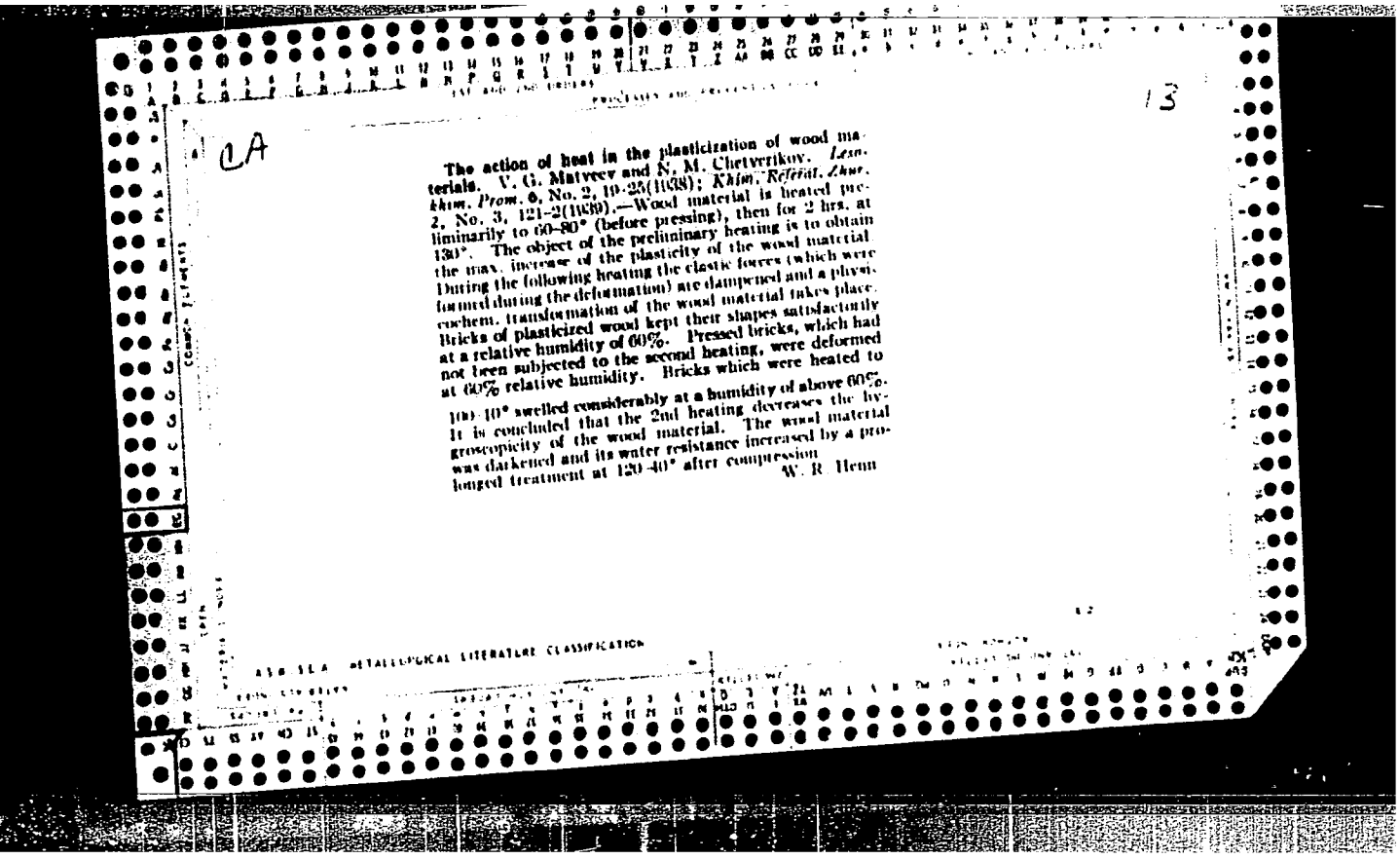


The complex utilization of pentosan-containing substances for the production of 2-furaldehyde, of organic acids, and of activated charcoals. N. M. Chertkov, *et al.* *Sobornik Nauch.-Issledovatel. Rabot. Khim. Plishchevol Prom.* 1937, 20-37; *Khim. Referat. Zhur.* 1, No. 8-9, 97-8(1938).—It is proposed to substitute the autoclave method by a new method in which the pentosan-contg. substance (sun-flower seed hulls) is satd. with a small amt. of acid and heated in retorts by passing superheated steam or inert gas, or by wetting the hulls with water (40% of the wt. of the hulls) and treating them with steam contg. HCl vapors. This increases sharply the yield of 2-furaldehyde (I) (12–13% of the wt. of the hulls, about 70% of the theoretical yield), and of org. acids (11–12% when calcd. to AcOH). In the autoclave method the yield of I was not over 4–5%. The concn. of I in the vapors is 1%. The residue from I production is transformed into high-grade activated charcoal. The introduction of Cl salts into the retort (NaCl, $CaCl_2$ and $ZnCl_2$) in amts. from 5 to 10% of the wt. of the hulls does not affect unfavorably the production of I, but increases the org. acid yield 14–15%. The data on the partial vapor pressures of HCl over the solns. which are satg. the hulls, and the partial vapor pressure of the mixt. of AcOH and HCl in soln. show that AcOH and HCl can be easily sepd., thus permitting the regeneration of HCl.

W. R. Henn



1A

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The action of heat in the plasticization of wood materials. V. G. Matveev and N. M. Chetverikov. *Lesokhim. Prom.* 6, No. 2, 19-25(1938); *Khim. Referat. Zhur.* 2, No. 3, 121-2(1939).—Wood material is heated preliminarily to 60–80° (before pressing), then for 2 hrs. at 130°. The object of the preliminary heating is to obtain the max. increase of the plasticity of the wood material. During the following heating the elastic forces (which were formed during the deformation) are dampened and a physicochem. transformation of the wood material takes place. Bricks of plasticized wood kept their shapes satisfactorily at a relative humidity of 60%. Pressed bricks, which had not been subjected to the second heating, were deformed at 60% relative humidity. Bricks which were heated to 100–10° swelled considerably at a humidity of above 60%. It is concluded that the 2nd heating decreases the hygroscopicity of the wood material. The wood material was darkened and its water resistance increased by a prolonged treatment at 120–40° after compression.

W. R. Henn

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