MEDVEDEV, Zh. A.

Localization of protein synthesis in plant tissues. Zh. A. Medvedev and B. A. Fedorov (K. A. Timiryazev Agr. Acad., Moscow). *Fiziol. Rastenii* 5, 647-53(1958).—Pants with beans which were treated with S^{35} in sulfate and methionine forms showed that protein synthesis in the leaves as calcd. on the basis of S^{35} which enters through the roots occurs with equal intensity in plastids and in non-green cytoplasmic structures of young tissues. In young upper leaves the most active functions are: entry of sulfates and amino acids from the roots, synthesis and renewal of proteins, oxidation of org. S compds., and reduction of sulfates. Sulfates are weakly bound in the roots, but methionine introduced as above is mainly used for protein synthesis in the roots. Freely dissolved proteins in the plasma and vacuolar liquid apparently play some role in protein metabolism; it is possible that these proteins are being partly restored by movement of dissolved proteins from the roots to the upper plant parts. G. M. Kosolapoff

MEDVEDEV, ZH. A.

USSR /Microbiology. General Microbiology. F-1

Abs Jour: Referat.Zh.-Biol., No. 9, 1957, 35474

Author : Medvedev, Zh.A.

Title : Concerning the Nature of "Age" Changes in the Proteins of a Yeast Culture

Orig Pub: Uch. Zap. Kharkovsk. un-ta, 1956, 68, 65-78

Abstract: Baker's yeast was bred on a synthetic medium with the addition of radioactive Sodium Sulfate in aerobic conditions. In 7 hrs. the cells separated from the medium, and the whole mass was divided into three parts; the first was subjected to autolysis; from the second protein was isolated; and the third part was placed in a fresh medium but without the radioactive sulfate. In 161 hours of development the cells were subject to the same treatment; autolysis and the isolation of protein.

Card 1/4

USSR /Microbiology. General Microbiology. F-1

Abs Jour: Referat.Zh.-Biol., No. 9, 1957, 35474

It was established that the proteins of the 7-day yeast culture were more stable than the 7-hour, during the process of autolysis. On the basis of other research not published in the given work, the author considers that the difference in the depth of autolysis depends not on changes of the fermentive systems taking part in the autolysis but on a change in the protein's structure in the aging of the culture. A radiochromatographic analysis of the 7-hour and 7-day protein shows that the latter has a small excess of cysteine and cystine in comparison with thmethionine. Full trypsin and pepsin hydrolyzates were received from the isolated proteins. By means of calculation the median dimensions of the peptic chains was determined in the pepsin hydrolyzates which showed

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USSR /Microbiology. General Microbiology. F-1

Abs Jour: Referat.Zh.-Biol., No. 9, 1957, 35474

equal for the 'young' protein 4.6, and for the 'old' 5.2 amino acid residue. If the hydrolyzates of young and old proteins is used as the only source of nitrogen for the cultivation of the same yeast in the same synthetic medium, then after 40 hours of the culture's growth differences were also discovered in the conduct of protein in autolysis, i.e., the properties of 'age' were transmitted to the new culture with the nourishing substances. This result forced the author to set up a series of experiments utilizing the method of ballasting (Francis, Winnick, J. Biol. Chem., 1953, 202, 23) and the method of Iuila (J. Exptl. Med., 1951, 93, 539) for proof that yeast utilizes the polypeptides

Card 3/4

Abs Jour: Referat.Zh.-Biol., No. 9, 1957, 35474

of the hydrolyzate completely without segmentation or only with partial segmentation into amino acids.

MEDVEDEV, Zh.A.

Some data on the utilization of peptides in protein synthesis. Biokhimiia 21 no.2:288-292 Mr-Ap '56. (MIRA 9:8)

1. Kafedra agronomicheskoy i biologicheskoy khimii Moskovskoy sel'skokhozyaystvennoy akademii im. K.A.Timiryazeva.

(PROTEINS, metabolism,
biosynthesis by plants & fungi, utilization of peptides (Rus))

(PEPTIDES, metabolism,
biosynthesis of proteins in plants & fungi (Rus))

MEDVEDEV, Zh. A.

USSR/General Biology - Physical and Chemical Biology. B-1

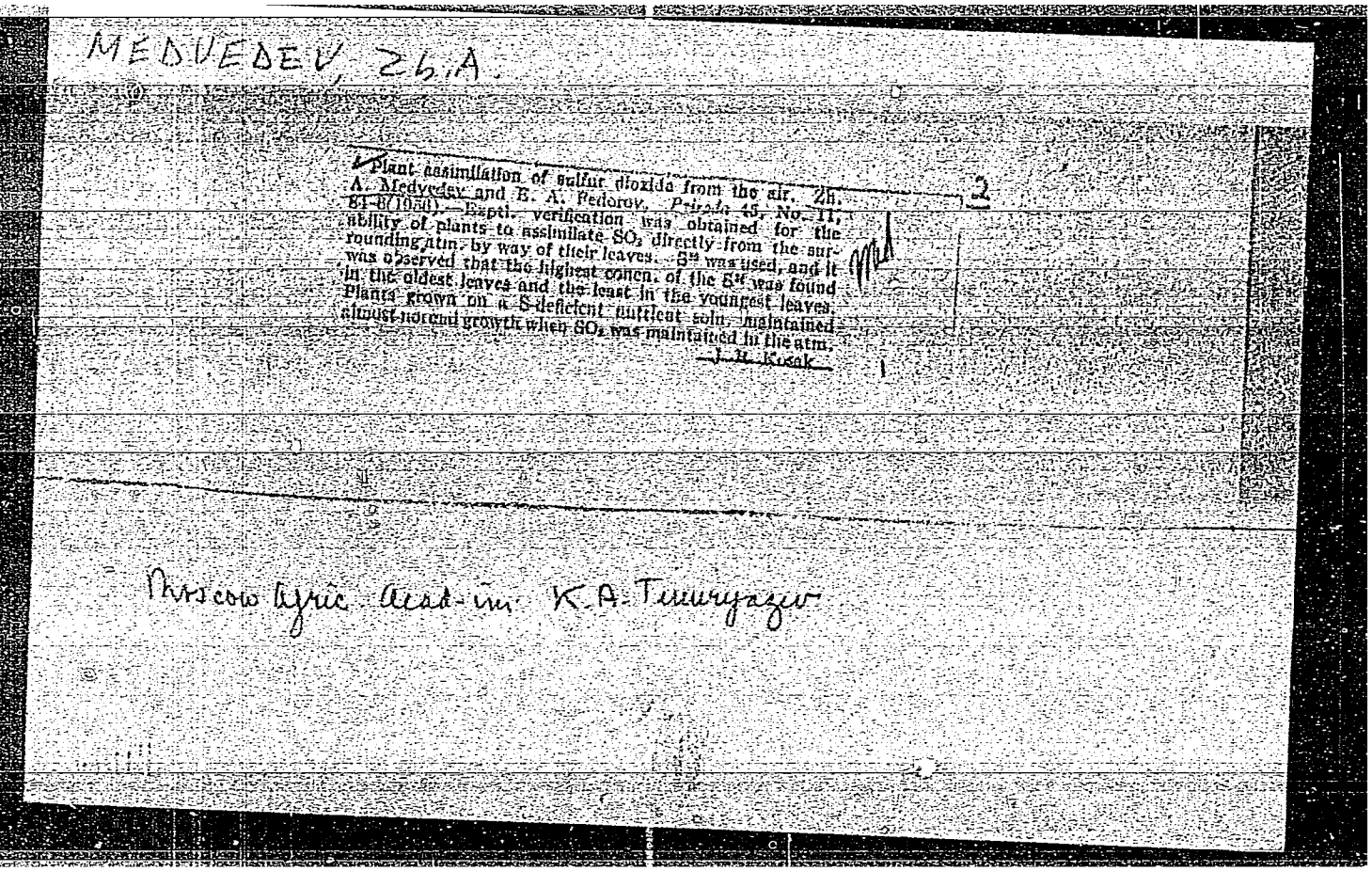
Abs Jour : Ref Zhur - Biol., No 5, 1958, 18965

Author : Medvedev, Zh.A.
Inst : -
Title : Two Forms of Protein Self-Renewal.

Orig Pub : Biokhimiya, 1956, 21, No 5, 627-632

Abstract : The question of self-reproduction of the protein molecule is critically discussed. The possibility is noted of possible errors in methods because of non-sterile experimental conditions and the presence of a denaturation factor. According to the author, the addition of aminoacids to reactive groups of the protein molecule may simulate protein renewal only externally, but such is not the fact. The author considers that no "renewal" of extra-cellular and reserve proteins takes place without disintegration or that it occurs to a very limited degree, and "self-metabolism" of proteins is not proven.

Card 1/1



MEDVEDEV, Zh.A.

Plant assimilation of sulfur dioxide from the air. Zh. A. Medvedev and B. A. Fedorov. *Priroda* 45, No. 11, 81-2(1956).—Experi. verification was obtained for the ability of plants to assimilate SO_2 directly from the surrounding atm. by way of their leaves. S^{35} was used, and it was observed that the highest concn. of the S^{35} was found in the oldest leaves and the least in the youngest leaves. Plants grown on a S-deficient nutrient soln. maintained almost normal growth when SO_2 was maintained in the atm.

—J. R. Kosak

2

1

Moscow Agric. Acad. im. K. A. Timiryazev

MEDVEDEV, Zh. A.

"A new method of autoradiography for investigating the localization and rate of synthesis of proteins and nucleic acids in plants," a paper submitted at the International Conference on Radioisotopes in Scientific Research, Paris, 9-20 Sep 57.

USSR/Plant Physiology - Respiration and Metabolism. I.

Abs Jour : Ref Zhur - Biol., No 23, 1958, 104327

Author : Medvedev, Zh.A. Cand. Biol. Sci, Sr. Sci. Assoc.

Inst : Timiryazev Agricultural Academy.

Title : Study of the Synthesis and Possible translocation of Tagged Proteins in the Conducting System of Plants by Means of a New Method - The Preparative Radioautography of Leaf Impressions on Filter Paper.

Orig Pub : Izv. Timiryazevsk. S.-Kh. Akad., No 3, 186-206, 1957.

Abstract : Examination of the problem of the possibility of the translocation of the highly active soluble proteins forming in the roots through the conducting system (especially through the phloem) to the above-ground organs. This study was based on an especially adapted method of the preparative radioautography of leaf impressions on filter paper.

Card 1/2

Medvedev, Zh. A.

AUTHOR: Medvedev, Zh.A., Candidate of Biological Sciences 25-7-4/51

TITLE: The Meeting in Moscow Will Bring Us Nearer to Each Other (Vstrecha v Moskve sblizit nas)

PERIODICAL: Nauka i Zhizn', 1957, # 7, p 3 (USSR)

ABSTRACT: The author, a young biologist, who is studying the exchange of proteins and nucleic acids by means of radioactive isotopes, points out that important scientific problems can only be solved when scientists of the whole world are ready to join their skills and experience. He says that wherever a biologist may live, if he has made a discovery or written a book, all biologists in the world will be grateful to him, since their objectives are everywhere the same.
The article contains one photo.

AVAILABLE: Library of Congress

Card 1/1

Medvedev, Zh. A

USSR/Plant Physiology - Respiration and Metabolism. I.

Abs Jour : Ref Zhur - Biol., No 18, 1958, 81988

Author : Medvedev, Zh.A.

Inst : Agricultural Academy im. K.A. Timiryazev

Title : New Method of Plant Radioautography

Orig Pub : Priroda, 1957, No 8, 90-92

Abstract : Leaves of plants containing radioactive substances are put between sheets of filter paper and inserted between two steel bars. They are placed in a press and subjected to a pressure of 150-200 atm. Albumins remain on the impressions of the leaves after treatment by trichloroacetic acid. This permits the discovering of the localization of marked albumins in the leaf. Albumins, marked with S^{35}, are localized along the principal veins of the leaf, This shows, according to the author,

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USSR/Plant Physiology - Respiration and Metabolism. I.

Abs Jour : Ref Zhur - Biol., No 18, 1958, 81988

the motion of soluble albumins, synthesized in the root, This method is not suitable for studying plants which have a thick cuticle. The experiment was carried out at the Timiryazev agricultural academy. -- L.D. Prussakova

Card 2/2

USSR/Plant Physiology - Mineral Nutrition. I.

Abs Jour : Ref Zhur - Biol., No 23, 1958, 104363

Author : Medvedev, Zh.A., Lin T'ing-ang, and Wu Chun

Inst : Agricultural Academy imeni Timiryazev

Title : Studies of Plant Metabolism by the Tagged Atom Method

Orig Pub : Priroda, No 10, 97-98, 1957.

Abstract : In the Agricultural Academy imeni Timiryazev there were studied the processes of the utilization of reserve seed substances during the germination, and the reutilization of these substances in the subsequent growth of plants. The bean was grown in a nutrient medium containing inorganic S^{35} in the quantity of 1 curie per container. Radioactive seeds were germinated in a nutrient medium not containing S^{35}. The distribution of radioactivity was determined during various periods of plant ontogenesis. During the

Card 1/2

Medvedev, Zh. A.

USSR/Plant Physiology - Respiration and Metabolism. I.

Abs Jour : Ref Zhur - Biol., No 18, 1958, 81987

Author : Medvedev, Zh.A.,

Inst : Academy of Agriculture im. K.A. Timiryazev

Ttile : The Utilization of Radioactive Phosphorus for Quantitative Determination of the Content of Nucleic Acids in Various Intercelluar Leave Fractions.

Orig Pub : Dokl. Mosk. s.-kh. akad. im. K.A. Timiryazeva, 1957, vyp. 29, 55-60

Abstract : The method of quantitative determination of P compounds which takes into account the radioactive emanation of P^{32} in certain plants has been tested. These plants were grown on a nutritious mixture with constant radioactivity of P^{32}. In cytoplasmic preparations derived from sunflower leaves, ~95% of the radioactivity comes from PHK,

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USSR/Plant Physiology - Respiration and Metabolism. I.

Abs Jour : Ref Zhur - Biol., No 18, 1958, 81987

~ 4-5% of the radioactivity emanates from phosphoproteins and from DNK. A new sensitive method of determination of nucleic acids is based on a radioautographic study of leaves containing P^{32} after elimination of all forms of P, with the exception of nucleic acids. The leaf imprints, representing the inner content of leaves were pressed into filter paper under a pressure of 150-200 atm. Then, lipides and solubles of P in acid form were washed away, and the imprints were used for radioautography. -- L.K. Polishchuk

Card 2/2

I.

USSR/Plant Physiology - Mineral Nutrition.

Abs Jour : Ref Zhur - Biol., No 23, 1958, 104362

Author : Medvedev, Zh.A.

Inst : Agricultural Academy imeni Timiryazev, Chair of Agronomy - Agric. Chem

Title : The Content of Methionine, Cystine and Common Sulfur in the Proteins of Various Intracellular Fractions of Bean and Sunflower Leaves in Relation to the Age of Plants.

Orig Pub : Biokhimiya, 22, No 5, 855-864, 1957.

Abstract : The dynamics of the content of S and thiocasbamic acids (methionine and cystine) was investigated in preparations of proteins from plant leaves (sunflower Chernyanka 11 and runner bean sax) grown in a sand culture on a nutrient mixture with a stable mutual ratio of radioactive and stable isotopes of S. Proteins were separetely isolated from the vacuolar sap and vascular strands, plasm [illegible],

Card 1/3

USSR/Plant Physiology - Mineral Nutrition. I.

Abs Jour : Ref Zhur - Biol., No 23, 1958, 104362

plastids, and cystoplasmic structures. The S content was determined according to the radioactivity of proteins, and the amino acid content (after hydrolysis), by obtaining paper chromatograms and thereupon determining the radioactivity of the stains of the corresponding amino acids. The maximum S content, and also preponderance of cystine over methionine, was displayed by the proteins of the plasm fluid. In the bean proteins, the S content decreased during the flowering period and increased during the period of the maturation of pods; during that period the methionine content had also somewhat increased. In the sunflower, the S content increased during the flowering period. During that period, its cystine and methionine content was higher in the leaves of the lower tiers than in the younger leaves. It was shown that the plants are capable of assimilating from the air sulfur dioxide which is utilized in S metabolism on par with the sulfates admitted from the

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USSR/Plant Physiology - Mineral Nutrition. I.

Abs Jour : Ref Zhur - Biol., No 23, 1958, 104362

soil. The study was executed in the Agricultural Academy imeni Timiryazev. -- L.V. Romanova.

Card 3/3

MEDVEDEV, Zh.A.

MEDVEDEV, Zh.A., kand. biol. nauk.

A new method for raioautography of plants. Priroda 46 no.8:90-92 Ag '57. (MLRA 10:9)

1. Moskovskaya sel'skokhozyaystvennaya akademiya im. K.A. Timiryazeva.
(Photography of plants) (Autoradiography)

MEDVEDEV, ZH. A.

26-10-18/44

AUTHOR: Medvedev, Zh.A., Candidate of Biological Sciences, Lin' Tin-an' and U Tszyun'

TITLE: The Study of Metabolism in Plants with the Aid of Marked Atoms (Izucheniye obmena veshchestv rasteniy metodom mechenykh atomov)

PERIODICAL: Priroda, 1957, 46 No 10, pp 97-98 (USSR)

ABSTRACT: The process of manifold utilization of compounds in biological syntheses - their re-utilization - is an interesting physiological phenomenon which can be successfully studied by applying the method of marked atoms. The author used radioactive isotopes of sulfur (S^{35}) on "kidney" bean plants which were raised in pots. The marked seeds harvested from these plants were sown in pots containing nourishing mixtures without radioactive substances. Samples of plants, for measuring their radioactivity, were taken 5 times during the vegetation period. Radioactivity of the sulfur was determined separately in the leaves, reproductive organs, stalks and the root system. The results obtained showed a whole range of regularities regarding the distribution of radioactive substances originating from the seeds. In the initial stage of develop-

Card 1/2

20-2-40/60

AUTHOR: Medvedev , Zh. A.

TITLE: Distribution of Substances, Marked by S^{35}, of Phaseolus vulgaris in the Proteins and Organs of Plants of a New Progeny, Observed Throughout Its Period of Development (Raspredeleniye mechennykh S^{35} veshchestv semyan fasoli v belkakh i organakh rasteniy novogo pokoleniya v techeniye vsego perioda ikh razvitiya)

PERIODICAL: Doklady Akademii Nauk SSSR, 1957, Vol. 114, Nr 2, pp. 379-382 (USSR)

ABSTRACT: The normal analytical methods are not sufficient in order to clarify the fate of the reserve nutritive substances of seeds, i.e. to determine whether they are redistributed among the new leaves and the reproductive organs, or whether they remain in the same organs for the growth of which they were used at the germination. It is furthermore of interest which part of the initial proteins of the seeds is concentrated in the seeds of the new progeny. This investigation was carried out with the aid of the method of marked seeds., the parent plants of

Card 1/4

Distribution of Substances, Marked by S^{35}, of Phaseolus vulgaris in the Proteins and Organs of Plants of a New Progeny, Observed Throughout Its Period of Development

which had been grown on a nutritive substratum with the one or the other radioactive isotope, whereas the plants themselves were brought up on a normal nutritive substratum not containing radioactive elements. For the purpose of these experiments, radioactive sulphur was used, because it has a period of half life that roughly corresponds to the period of vegetation of one-year old plants. Phaseolus vulgaris was used in these experiments. The results obtained permit to draw the following conclusions with respect to the inter--organic exchange of sulphurous compounds in plants: If marked sulphates and methionins are absorbed through the roots, they accumulate mainly in the young growing leaves. The radioactive substances of the seeds are used up during the first period of growth, when the first small leaves, roots and stems are the young growing organs. The main mass of the radioactive sulphur is concentrated in them. The next stages of the growth of the leaves take place at the expense of the nutritive substratum and of the discharge of the marked substances of the first group. The constant

20-2-40/60

Distribution of Substances, Marked by S^{35}, of Phaseolus vulgaris in the Proteins and Organs of Plants of a New Progeny, Observed Throughout Its Period of Development

are 2 figures, 2 tables, and 6 references, 5 of which are Soviet.

ASSOCIATION: Moscow Agricultural Academy imeni K. A. Timiryazev (Moskovskaya sel'skokhozyaystvennaya akademiya im. K. A. Timiryazeva)

PRESENTED: March 4, 1957, by A. I. Oparin, Member of the Academy

SUBMITTED: March 1, 1957

AVAILABLE: Library of Congress

Card 4/4

20-1-37/54

AUTHOR: Medvedev, Zh. A.

TITLE: An Autoradiographical Investigation of the Phenomena of S^{35}-Methionine Adsorption by the Zytoplasm Proteins of the Leaves of Some Plants (Radioavtograficheskoye izucheniye yavleniy adsorbtsii S^{35}-metionina belkami tsitoplazmy list'yev ryada rasteniy)

PERIODICAL: Doklady AN SSSR, 1957, Vol. 117, Nr 5, pp. 860 - 863 (USSR)

ABSTRACT: In recent times the question was much discussed whether the inclusion of amino acids labelled by S^{35} and C^{14} in isolated proteins and in some protein systems represents a synthesis and selfrenewal of the protein or, however, this inclusion is a non-specific and adsorption-like process and does not represent a biological conversion form. The right exploitation of the experimental results is complicated by the fact that there can scarcely be found a control for the untreated protein forms. This should be an inactivated protein, with which, however, an aggregation and colloidal salt precipitation is connected, and thus a sudden alteration of the adsorption surface. The author succeeded in avoiding the visible coagulation phenomena and the precipitation of protein structures during the denaturation. This was carried out by means of a sudden

Card 1/4

An Autoradiographical Investigation of the Phenomena of the S^{35}-Methionine Adsorption by the Zytoplasm Proteins of the Leaves of Some Plants

high pressure (more than 200 atm), or a stroke (approximatively 50 kg/cm^2) on the leaves enclosed in several layers of chromatographic filter paper (pictures of these imprints figure 1). Here the leaf zytoplasm is imprinted into the paper as a whole, together with plastides, cores, and other components. However, one did not succeed in finding the observation conditions for synthetic processes in single plants (with the exception of lime tree). By chance, however, the proteins of the control- and experimental variants turned out to adsorb a part of the S^{35} methionine (0,1 - - 0,8 %). The leaf imprints of beans, Aristolochia clematitis , lime tree, and Sanguisorba canadensis were spattered with a 0,25 M - glucose solution which contained in 100 ml 1 m Cu of S^{35}-methionine and phosphate buffer with pH 6,8. The imprints were then spattered with trichloroacetic acid and all soluble compounds were carefully washed out. Table 1 gives the average values of the surface radioactivity of the imprints. From a part of the imprints (on radio-film X-5) autoradiographs were produced (figure 1, 2). The obtained results cannot yet prove that the leaf imprints are useless for the one or the other synthetic processes in vitro. However, the possible influence of the inhibitors of the protein synthesis has to be taken into account. By comparison of the

20-117-5-37/54

An Autoradiographical Investigation of the Phenomena of S^{35}-Methionine Adsorption by the Zytoplasm Proteins of the Leaves of Some Plants

weight of the leaf imprint to an equal piece of clean paper the weight of the protein concentration in the protoplasm of single leaves was detected. The differences of the surface radioactivity of young and old bean leaves are connected with differences in age of the adsorption power of the proteins. The results prove that in every case the relation between the real insertion of the methionine in the protein synthesis and the non-specific binding by cell structures should be taken into consideration. Here it is important that the repeated precipitation used for the protein cleaning is only to a small extent effective against joint sulphoamino acids. The described imprint method can also be used for experimental purposes. An adsorption of radioactive compounds by leaf imprints was found also during their treatment by sodium phosphate labelled with P^{32}. In contrast to this labelled sulphates can be easily and almost completely removed from the imprints by means of common washing. There are 2 figures, 1 table, and 10 references, all of which are Slavic.

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20-117-5-37/54

An Autoradiographical Investigation of the Phenomena of S^{35}-Methionine Adsorption by the Zytoplasm Proteins of the Leaves of Some Plants

ASSOCIATION: Agricultural Academy imeni K. A. Timiryazev, Moscow (Moskovskaya sel'skokhozyaystvennaya akademiya im. K. A. Timiryazeva)

PRESENTED: July 9, 1957, by A. I. Oparin, Academician

SUBMITTED: July 8, 1957

Card 4/4

KLECHKOVSKIY, V.M., akademik, otvetstvennyy red.; ANTIPOV-KARATAYEV, I.N., akademik, otvetstvennyy red.; NICHIPOROVICH, A.A., doktor biol. nauk, otvetstvennyy red.; [redacted], kand. biol. nauk, red.; OGOLEVETS, Ya.G., red.; POLYAKOV, Yu.A., kand. sel'skokhozyaystvennykh nauk, red.; SUKHOV, G.V., red.; SHIRSHOV, V.A., kand. sel'skokhozyaystvennykh nauk, red.; SHAROVATOVA, I.B., red. izd-va.

[Physiology of plants. Agricultural chemistry. Soil science; proceedings of the Conference on the Use of Radioactive and Stable Isotopes and Radiation in the National Economy and in Science] Fiziologiia rastenii. Agrokhimiia. Pochvovedenie; trudy Vsesoiuznoi nauchno-tekhnicheskoi konferentsii po primeneniiu radioaktivnykh i stabil'nykh isotopov i izlucheniia v narodnom khoziaistve i nauke. Moskva, Izd-vo Akad. nauk SSSR, 1958. 436 p. (MIRA 11:6)

1. Vsesoyuznaya nauchno-tekhnicheskaya konferentsiya po primeneniyu radioaktivnykh i stabil'nykh izotopov i izlucheniy v narodnom khozyaystve i nauke. 1957. 2. Vsesoyuznaya akademiya sel'skokhozyaystvennykh nauk im. V.I. Lenina (for Klechkovskiy). 3. Akademiya nauk Tadzhikskoy SSR (for Antipov-Karatayev).
(Botany—Physiology) (Agricultural chemistry) (Soils)

MEDVEDEV, Zh. A., kand. biol. nauk; ZABOLOTSKIY, M.N., aspirant

Application of electrophoresis and autoradiography for studying the nucleotide composition and phosphorus metabolism of nucleic acids in various organs of the bean [with summary in English]. Izv. TSKhA no. 3:207-214 '58. (MIRA 11:7)

(Beans)
(Nucleotides)
(Phosphorus metabolism)

MEDVEDEV, Zh.A., kand.biol.nauk

Using leaf imprints on filter paper for rapid microdetermination of amino nitrogen in plants. Izv. TSKhA no.4:115-120 '58. (MIRA 11:10)

(Plants--Chemical analysis) (Nitrogen)

MEDVEDEV, Zh.A.

Fast determination of the radioactivity of proteins and the ratio of various fractions of radioactive substances in plant leaves [with summary in English]. Biokhimiia 23 no.6:801-808 N-D '58 (MIRA 11:12)

1. Kafedra agronomicheskoy i biologicheskoy khimii Moskovskoy sel'skokhozyaystvennoy akademii imeni K.A. Timiryazeva.
(RADIOACTIVE TRACERS)
(PLANTS--METABOLISM)
(PROTEINS)

MEDVEDEV, Zh.A.

Impression of leaves on filter paper as a new form of botanical documentation. Bot. zhur. 43 no.1:61-63 Ja '58. (MIRA 11:2)

1. Moskovskaya sel'skokhozyaystvennaya akademiya im. K.A. Timiryazeva.
(Leaves) (Botanical research)

26-58-2-12/48

AUTHOR: Medvedev, Zh.A., Candidate of Biological Sciences

TITLE: Radio Isotopes in Scientific Experiments (Radioizotopy v nauchnom eksperimente) At the International Conference in Paris (Na mezhdunarodnoy konferentsii v Parizhe)

PERIODICAL: Priroda, 1958, 47 Nr 2, pp 63-66 (USSR)

ABSTRACT: At the International Conference on the Use of Radio Isotopes in Scientific Experiments, convened by the General Council of the UNESCO from 9-20 September, 1957, 225 reports were read, 49 of which were from the USSR. A.V. Palladin, M.I. Prokhorova, Z.N. Tupikova, G.Ye. Vladimirov, and Ye.M. Kreps read reports on the metabolism of the brain and nervous system. V.M. Klechkovskiy and I.V. Gulyakin dealt with the behavior of microquantities of the radioactive isotopes of strontium, cesium, ruthenium and zirconium in the soil and showed that plants are able to assimilate these elements into the make up of their tissues, thereby introducing them into the food of animals or man. A.A. Nichiporovich dealt with the problems of photosynthesis. A.L. Kursanov presented experimental data on the important role played by the root system in the processing and

Radio Isotopes in Scientific Experiments. At the International Conference in Paris

transforming of nitrous substances and organic acids and of the specific role of the roots in controlling the plant's metabolism.

ASSOCIATION: Moskovskaya sel'skokhozyaystvennaya akademiya imeni K.A. Timiryazeva (Moscow Agricultural Academy imeni K.A. Timiryazev)

Card 2/2 1. Scientific research 2. Radio isotopes--Applications

MEDVEDEV, Zh.A., starshiy nauchnyy sotrudnik, kand.biol.nauk

Modern conceptions on protein synthesis in plants. Izv.TSKhA no.2:57-74 '59. (MIRA 12:8)
(Proteins) (Plants--Assimilation)

MEDVEDEV, Zh.A., kand.biolog.nauk; ZABOLOTSKIY, N.N., assistent

Simple accelerated method for determining the effect of radiation from radioactive isotopes on the synthesis of lipids and nucleic acids in plants. Izv.TSKhA no.3:183-192 '59. (MIRA 12:10)

(Lipids) (Nucleid acids) (Plants, Effect of radioactivity on)

MEDVEDEV, Zh.A.

Peptide utilization in protein biosynthesis [with summary in English]. Biokhimiia 24 no.1:94-100 Ja-F '59. (MIRA 12:4)

1. Department of Agronomical and Biological Chemistry, Agricultural Academy, Moscow.

(PROTEINS, metab.
biosynthesis from peptides (Rus))
(PEPTIDES, metab.
protein biosynthesis from peptides (Rus))

MEDVEDEV, Zh.A.; SHEN' TSZYAN-SYA [Shên Chiang-hsia]

Some data on the dynamics, localization and metabolism of peptides in plant leaves. Biokhimiia 24 no.4:709-716 Jl-Ag '59. (MIRA 12:11)

1. Kafedra agronomicheskoy i biologicheskoy khimii Sel'skokhozyaystvennoy akademii im. K.A.Timiryazeva, Moskva.
(PEPTIDES)
(PLANTS--METABOLISM)

MEDVEDEV, Zh.A. (Moskva)

Biological functions of the peptide fraction of tissues and organs.
Usp.sovr.biol. 47 no.1:3-18 Ja-F '59. (MIRA 12:2)
(PEPTIDES, metabolism,
in protein synthesis, review (Rus))
(PROTEINS, metab.
biosynthesis, funct. of peptides, review (Rus))

SOV/26-59-2-22/53

17(3)
AUTHOR: Medvedev, Zh.A., Candidate of Biological Sciences

TITLE: The Localization of the Synthesis of Amino Acids in Leaves of Plants (Lokalizatsiya sinteza aminokislot v list'yakh rasteniy)

PERIODICAL: Priroda, 1959, Nr 2, pp 93-95 (USSR)

ABSTRACT: The author describes a simple method for the observation of amino acidic metabolism in plants. Imprints of leaves to be examined are made under pressure on filter paper, then decolorized with acetone, which takes away the color but leaves free amino acids and other soluble substances. These imprints are then covered with a solution of ninhydrin, which gives a characteristic colorometric reaction with amino acids and other nitrous components of the cell. The intensity of this reaction indicates the concentration of these acids on the imprints. It was also proved by these experiments that the amino acids penetrate

Card 1/2

The Localization of the Synthesis of Amino Acids in Leaves of Plants

inside of the leaf even when applied on the surface of the leaf. There are 1 photograph and 4 Soviet references.

ASSOCIATION: Moskovskaya sel'skokhozyaystvennaya akademiya im. K.A. Timiryazeva (Moscow Agricultural Academy imeni K.A. Timiryazev)

MEDVEDEV, Zh. A., Doc Biol Sci -- (diss) "Biological synthesis of proteins and some problems of ontogenesis." Moscow, 1960. 46 pp; (Academy of Sciences USSR, Inst of Biochemistry im A. N. Bakh); 180 copies; price not given; list of author's works on pp 44-46 (51 entries); (KL, 17-60, 145)

RACHINSKIY, V.V., doktor khim.nauk, red.; YAGLOVA, L.G.; MAMUL', Ya.V.; MEDVEDEV, Zh.A.

[Practical work in the use of isotopes and radiations in agriculture] Praktikum po primeneniiu izotopov i izluchenii v sel'skom khoziaistve. Pod obshchei red. B.V.Rachinskogo. Moskva, Mosk.sel'khoz.akad. No.6. [Use of labeled atoms in plant physiology and biochemistry] Primenenie metoda mechenykh atomov v fiziologii i biokhimii rastenii. 1960. 101 p. (MIRA 14:1)

(Radioactive tracers)
(Plant physiology--Research)

MEDVEDEV, Zh.A. (Moskva)

Role of soluble ribonucleic acid in intermediate reactions of protein synthesis and its relation to enzymatic systems of amino acid activation. Usp. sovr. biol. no.2:121-135 S-O '60. (MIRA 13:11)
(NUCLEIC ACIDS) (PROTEIN METABOLISM)

MEDVEDEV, Zh.A.; ZABOLOTSKIY, N.N.; SHEN' TSZYAN'-SYA [Shên Chien-hsia]; MO SI-MU [Mo Hsi-mu]; DAVIDOVA, Ye.G.; DAVIDOV, Ye.R.

Isolation of ribonucleic acid from the plasma sap of plant leaves and studies on the nature of its metabolism. Biokhimiia 25 no.6: 1001-1011 N-D '60. (MIRA 14:5)

1. Chair of Agronomic and Biological Chemistry, Agricultural Academy, Moscow.
(NUCLEIC ACIDS) (PLANTS--METABOLISM)

MEDVEDEV, ZH. A., FEDINA, A. M. (USSR)

"A study of Certain Peptide-nucleotide Compounds in Crops and their possible role in the Synthesis of Albumins."

Report presented at the 5th International Biochemistry Congress, Moscow, 10-16 August 1961

MEDVEDEV, Zh. A.

~~SURNAME~~ (in caps); Given Names

Country: Bulgaria (Translated from the Russian)

Academic Degrees: Winner of the 1959 Nobel Prize in Medicine
Candidate for Biological Sciences, Moscow

Affiliation: not indicated

Source: Sofia, Biologiya i Khimiya, No 2, 1961, pp 19-22

Data: "Toward the Artificial Synthetizing of Protein."

MEDVEDEV, Zh.A., kand.biologicheskikh nauk

Reproduction and transfer of information in the synthesis of biological macromolecules. Zhur.VKHO 6 no.3:268-275 '61. (MIRA 14:6)

(Biosynthesis) (Macromolecular compounds)

MEDVEDEV, Zh.A.

Some data on the interaction soluble ribonucleic acid of the plasma sap of leaves and intracellular structures. Biofizika 6 no.3:279-283 '61. (MIRA 14:6)

1. Moskovskaya ordena Lenina sel'skokhozyaystvennaya akademiya
(NUCLEIC ACIDS) (PLANT CELLS AND TISSUES)

MEDVEDEV, Zh.A., kand.biol.nauk (Moskva)

Science of aging and longevity. Priroda 50 no. 3:71-72 Mr '61. (MIRA 14:2)

(Old age)

MEDVEDEV, Zh.A. (Moskva)

Aging of the organism at the molecular level. Usp.sovr.biol. 51 no.3:299-316 My-Je '61. (MIRA 14:6)
(AGING) (PROTEIN METABOLISM)

MEDVEDEV, Zh.A., kand.biologicheskikh nauk; KHAVKIN, E.Ye., aspirant

Nucleotide peptides, a new group of biologically important compounds. Izv. TSKHA no.2:188-199 '62. (MIRA 15:9)

1. Vostochno-Sibirskiy biologicheskiy institut Sibirskogo otdeleniya AN SSSR (for Khavkin).
(Nucleotides) (Peptides)

MEDVEDEV, Zh.A.

Theoretical problems of the molecular level of aging. Trudy MOIP.Otd.biol.6:84-91:62. (MIRA 16:7)

1. The Moscow Agricultural Academy named K.A.Timiryazev.
(AGING) (BIOCHEMISTRY)

MEDVEDEV, Zh. A., [Medvedev, Zh. A.]

Aging of organism on the molecular level. Analele biol 16 no 1:
112-132 Ja-F '62

MEDVEDEV, Zh.A., kand.biolog.nauk

New method of protein electrophoresis. Priroda 51 no.5:102-104 My '62. (MIRA 15:5)

1. Moskovskaya sel'skokhozyaystvennaya akademiya im. K.A. Timiryazeva.
(Paper electrophoresis) (Proteins)

MEDVEDEV, Zh. A.

Nonsensical Chaotic Slow Continuation of Morphogenesis as Contribution to process of Ageing.

Gerontalogy, 6th International Congress, Copenhagen, Denmark
11-16 August 1963

MEDVEDEV, Zh.A. (Moskva)

"Errors" in the reproduction of nucleic acids and proteins and their biological significance. Probl. kib. no.9:241-264 '63. (MIRA 17:10)

MEDVEDEV, Zh.A., kand. biologicheskikh nauk

Molecular mechanisms of the ontogenesis and the problem of cancer. Zhur. VKHO 8 no.4:384-394 '63. (MIRA 16:10)

(CANCER RESEARCH) (MOLECULAR BIOLOGY)

KHAVKIN, E.Ye.; MEDVEDEV, Zh.A.

Effect of etiolation and adenosine triphosphate on the inclusion of C^{14} tyrosine into the proteins of leaf chloroplasts of beans. Dokl. AN SSSR 150 no.6:1385-1388 Je '63. (MIRA 16:8)

1. Moskovskaya sel'skokhozyaystvennaya akademiya im. K.A.Timiryazeva i Vostochno-Sibirskiy biologicheskiy institut Sibirskogo otdeleniya AN SSSR. Predstavleno akademikom A.I.Oparinym.
(PROTEIN METABOLISM) (PLANTS, EFFECT OF LIGHT ON)
(ADENOSINE TRIPHOSPHATE) (TYROSINE)

MEREZHINSKIY, Mikhail Fedorovich; CHERKASOVA, Lidiya Semenovna; MEDVEDEV, Zh.A., red.

[Fundamentals of clinical biochemistry] Osnovy klinicheskoi biokhimii. Moskva, Meditsina, 1965. 358 p. (MIRA 17:12)

L 27399-66 EWT(1)/EWT(m)/T RM/JK

ACC NR: AP6017761 SOURCE CODE: UR/0221/65/059/003/0333/0353

AUTHOR: Medvedev, Zh. A. (Obninsk)

32
B

ORG: none

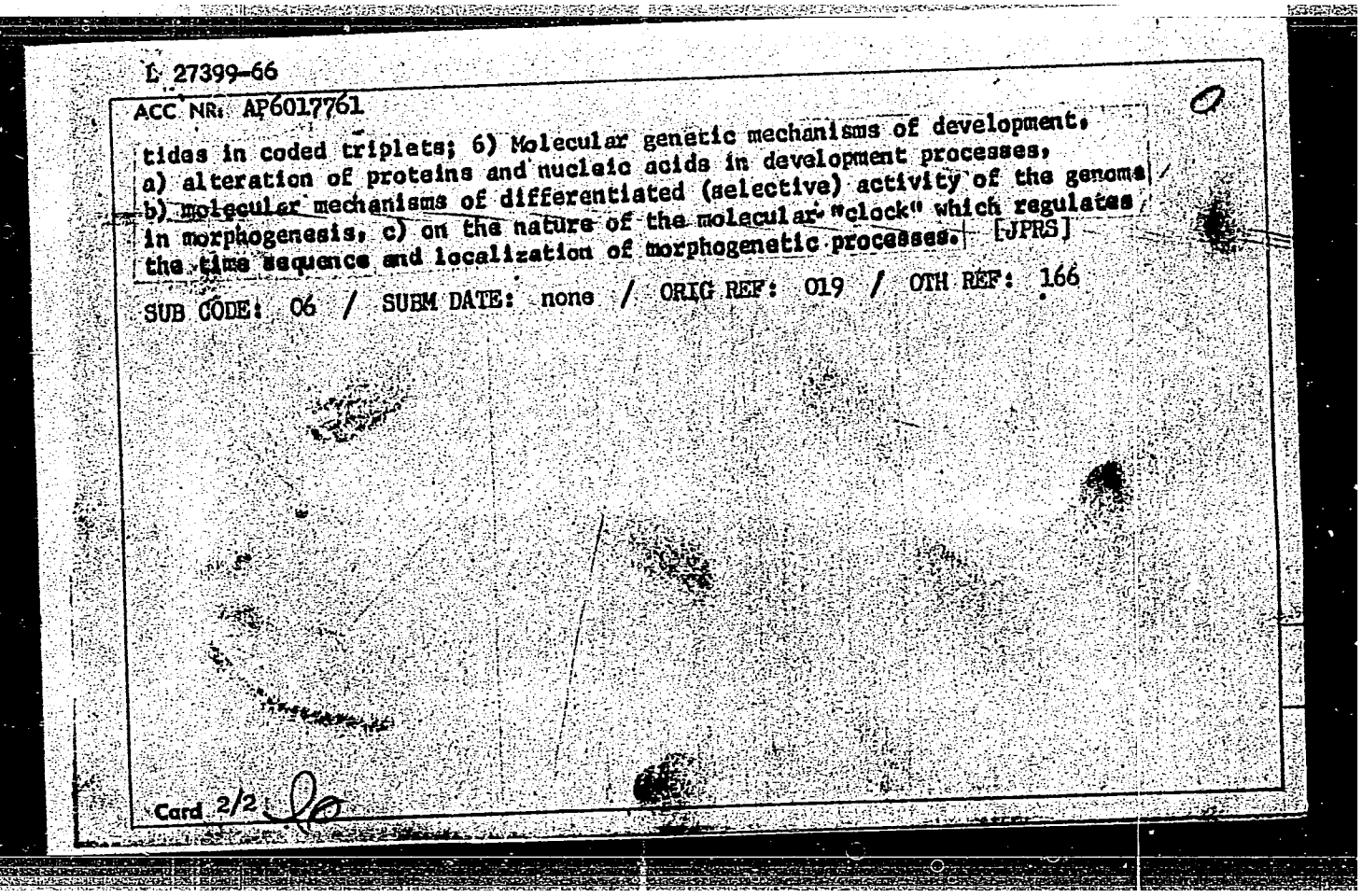
TITLE: New achievements in the study of protein biosynthesis and the molecular mechanisms of morphogenesis

SOURCE: Uspekhi sovremennoy biologii, v. 59, no. 3, 1965, 333-353

TOPIC TAGS: biosynthesis, protein, RNA, DNA, polypeptide, genetics

ABSTRACT: This review article covers Soviet and foreign literature up to 1964. The author treats the subject under the following divisions and subdivisions: 1) Study of messenger RNA and its function in protein synthesis. New models of protein synthesis, a) further research on DNA-dependent synthesis of RNA (formation of DNA-like RNA), b) the physical and chemical characteristics of messenger RNA, c) messenger RNA and protein synthesis; 2) Stimulation of protein and polypeptide synthesis with synthetic polyribonucleotides and further success in determining the nature of the nucleotide code; 3) The localization and mechanism of acceptor S-RNA and high-polymer RNA with ribose; 4) Discovery of polyribose-native complexes with messenger RNA and ribose, and construction of new models of the final stages of protein synthesis; 5) Study of the general properties and universality of the genetic code and determination of the sequences of nucleo-

Card 1/2



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ACC NR: AP6017761

tides in coded triplets; 6) Molecular genetic mechanisms of development, a) alteration of proteins and nucleic acids in development processes, b) molecular mechanisms of differentiated (selective) activity of the genome in morphogenesis, c) on the nature of the molecular "clock" which regulates the time sequence and localization of morphogenetic processes. [JPRS]

SUB CODE: 06 / SUBM DATE: none / ORIG REF: 019 / OTH REF: 166

Card 2/2

AUTHOR: Medvedeva, A. SOV/2-58-12-16/19

TITLE: A Meeting on Population Statistics, Care of Public Health and Culture at the Boards of Statistics of the Turkmen and the Kazakh Soviet Socialist Republics (Soveshchaniye po statistike naseleniya, zdravo-okhraneniya i kul'tury v statisticheskikh upravleniyakh Turkmenskoy SSR i Kazakhskoy SSR)

PERIODICAL: Vestnik statistiki, 1958, Nr 12, pp 76 - 77 (USSR)

ABSTRACT: In September and October 1958, the Boards of Statistics of the Turkmen and Kazakh SSR held a conference on vital statistics, medical care and cultural development. The conference stated among other things that the registration of causes of death is unsatisfactory, because death certificates are not issued by doctors, as it should be. Births and deaths also are not registered quickly enough. The conference laid down a program to eliminate the existing deficiencies.

Card 1/1

TARABCAK, M.; MEDVEDOVA, A.; HAVLIKOVA, M.; POSPISILOVA, M.

The microbiologic evaluation of water flows in Eastern Slovakia iron works region. Cesk. hyg. 10 no.7:417-424 Ag '65.

1. Krajska hygienicko-epidemiologicka stanica, Kosice.

MEDVEDEVA, A.A.

Distribution of paper and pulp industry in Eastern Siberia. Krat.-soob. BKNII no.3:161-169 '62. (MIRA 16:5)
(Siberia, Eastern--Paper industry)

OGIYEVSKIY, V.V.; MEDVEDEVA, A.A.

Effect of the development of grass cover in the fellings of mixed reedgrass type on the growth of pine. Izv. SO AN SSSR no.8. Ser. biol.-med.nauk no.2:68-71 '65. (MIRA 18:9)

1. Institut lesa i drevesiny Sibirskogo otdeleniya AN SSSR, Krasnoyarsk.

IOFFE, S.L.; TARTAKOVSKIY, V.A.; MEDVEDEVA, A.A.; NOVIKOV, S.S.

Reduction of oximes with diborane solution in tetrahydrofuran. Izv. AN SSSR. Ser. khim. no.8:1537-1538 Ag '64.

(MIRA 17:9)

1. Institut organicheskoy khimii im. N.D. Zelinskogo AN SSSR.

MEDVEDEVA, A.F., assistent; DMITRIYEV, V.S., prof., nauchnyy rukovoditel'

Acute odontogenic osteomyelitis of the jaws. Vop. obshchei stom. 17:57-59 '64.

Chronic odontogenic osteomyelitis of the jaws. Ibid.:60-63 (MIRA 18:11)

MEDVEDEVA, A.I.

15 8

Cementing vulcanized rubber to metal. S. K. Zherebkov, [illegible] Mamzova, A. I. Medvedeva, I. B. Shapiro, and E. L. Ragalier. U.S.S.R. 100,60[illegible], June 25, 1957. For cementing rubber to metal a dichloroethane soln. of 4,4',4''-triisocyanatotriphenylmethane (leuconate) is used. The cementing is carried out under compression at 60-80° for 4-8 hrs. Nonflat metal surfaces are first treated thermally at [illegible]° for 60 min., and then cementing is done as above. M. Hosch

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2 may

MEDVEDEVA, A. I.

Medvedeva, A. I. "Investigations of the therapeutic effect of transplanting chemically treated tissues, in contractures of the maxillae, according to Krause," Trudy Kazansk gos. stomatol. in-ta, Issue 2, 1949, p. 161-166, - Bibliogr: 7 items

SO: U-5210, 17 Dec. 53, (letopis 'Zhurnal 'nykh Statey, No. 25, 1949).

PANISYAK, V.I., professor; MEDVEDEVA, A.I.

Quick method for quantitative determination of sugar in urine.
Lab.delo no.3:25 My-Je '55. (MLRA 8:3)

(URINE,
sugar, determ.)
(CARBOHYDRATES, in urine,
determ.)

MEDVEDEVA, A.I.

Role of an examination room in the prevention of gynecological diseases. Zdrav. Ros. Feder. 6 no.4:26-28 Ap '62. (MIRA 15:4)

1. Iz zhenskoy konsul'tatsii No.3 Verkhisetskogo rayona.
(MEDICAL SCREENING) (GYNECOLOGY)

MEDVEDEVA, A.M.; ZIMA, G.G., zaveduyushchiy.

Experiment of spraying buildings in Stalingrad Province with DDT instead of practicing larva control. Med.paraz.i paraz.bol. no.2:133-135 Mr-Ap '53. (MLRA 6:6)

1. Stalingradskaya oblastnaya protivomalyariynaya stantsiya.
(Stalingrad Province--Malarial Fever--Prevention) (DDT (Insecticide)

MEDVEDEVA, A.M.

Result of fly control in Kirov District, Stalingrad, during 1955-1956. Med.paraz. i paraz.bol. 27 no.3:361 My-Je '58 (MIRA 11:7)

1. Iz Stalingradskoy gorodskoy sanitarno-epidemiologicheskoy stantsii.
(FLIES,
eradication in Russia (Rus))

[illegible], [illegible]

[illegible], [illegible]: "[illegible]pore-pollen complexes in the lower strata of the Tungus series, and their stratigraphic significance". [illegible], [illegible]. Inst of Geological Sciences, Acad Sci [illegible]. (Dissertation for the Degree of Candidate of [illegible] Sciences)

SO: Knizhnaya Letopis' No. 51, 1[illegible] December 19[illegible]

APPROVED FOR RELEASE: 07/12/2001 CIA-RDP86-00513R001033310009-1"

MEDVEDEVA, A.M.

Spore-pollen complexes in lower horizons of the Tunguska series and their stratigraphic importance. Trudy Inst. geol. i razrab. gor. iskop. 1:162-179 '60. (MIRA 14:1)
(Tunguska Valley--Geology, Stratigraphic)

MEDVEDEVA, A.M.; CHERIKOVA, I.K.

Protoleiosphaeridium sorediforme Tim. and Pr. conglutinatum Tim. from petroleums and rocks of the Volga-Ural region. Dokl. AN SSSR 139 no.2:461-462 Jl '61. (MIRA 14:7)

1. Predstavleno akademikom Yu.A. Orlovym.
(Volga-Ural region--Paleobotany)

CHEPIKOV, K.R.; MEDVEDEVA, A.M.

Organic remains of ancient appearance in petroleums from Tertiary, Mesozoic, and Paleozoic deposits. Dokl. AN SSSR 140 no.2:439-440 S '61. (MIRA 14:9)

1. Institut geologii i razrabotki goryuchikh iskopayemykh AN SSSR. 2. Chlen-korrespondent AN SSSR (for Chepikov).
(Petroleum geology)

ARTAMONOVA, S.V.; MEDVEDEVA, A.M.

Methods for the isolation of spores and pollens from oils and oil-field waters. Paleont.zhur. no.1:157-158 '62. (MIRA 15:3)

1. Institut geologii i razrabotki goryuchikh iskopayemykh AN SSSR, Moskva.
(Palynology) (Petroleum--Analysis)

CHEPIKOV, K.R.; MEDVEDEVA, A.M.

Recent data on organic microfossils in the oils of the European part of the U.S.S.R. Dokl. AN SSSR 153 no.2:444-446 N '63. (MIRA 16:12)

1. Chlen-korrespondent AN SSSR (for Chepikov).

L 29100-65 EWT(m)/EPF(c)/EWR(v)/EPR/EWP(j)/T/EWP(t)/EWP(b) Pc-4/Pr-4/Ps-4
WW/JD/RM

ACCESSION NR: AP5004741 S/0069/65/027/001/0035/0041

AUTHORS: Deryagin, B. V.; Karasev, V. V.; Medvedev, A. M.; Zherebkov, S. K.

TITLE: Electron emission during peeling of different vulcanized rubbers from metal and glass in vacuum

SOURCE: Kolloidnyy zhurnal, v. 27, no. 1, 1965, 35-41

TOPIC TAGS: electron emission, vulcanized rubber, rubber, adhesion, polar polymer/TsVL 100 high vacuum pump

ABSTRACT: Electron emission during the peeling of rubber substrates in various states and their adhesion properties to metallic surfaces were investigated. The first phase was a study of adhesive properties of filled and pure channel black vulcanized rubber (on six different rubber bases) to steel. Vulcanizates with rubber bases containing polar groups (Cl, CN) adhere to metals better than vulcanized rubber with nonpolar rubber bases. In addition, the adhesive power of vulcanizates filled with channel black is greater than that of the pure specimens. Electron emission measurements during peeling registered emission currents only in the case of pure vulcanized rubber on a nonpolar rubber base. Analysis of these results shows that if one of the two surfaces in contact does not possess bulk conductivity,

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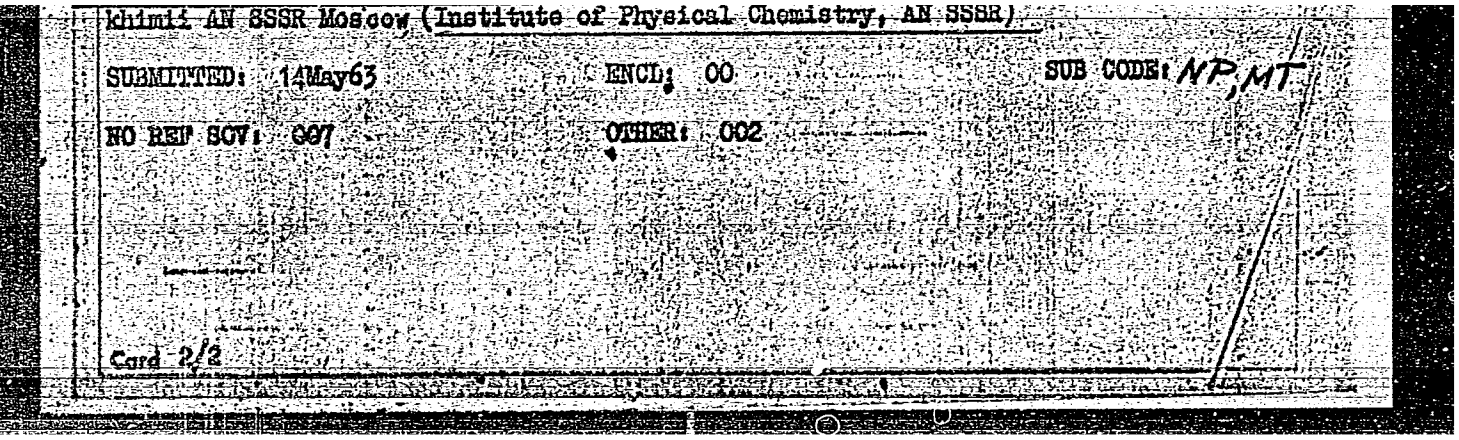
ACCESSION NR: AP5004741

electron emission and gaseous discharge can be observed during the peeling process in vacuum. If both surfaces possess bulk conductivity properties, a charge leakage will inhibit electron emission as well as the gas discharge. However, the work of peeling the film from the metallic or glass substrate may be larger in the latter case than in the former, if the charge density diminishes slowly with increasing gap width. Orig. art. has: 4 figures, 3 tables, and 3 formulas.

ASSOCIATION: Nauchno-issledovatel'skiy institut rezinovoy promyshlennosti (Scientific Research Institute for the Rubber Industry); Institut fizicheskoy khimii AN SSSR Moscow (Institute of Physical Chemistry, AN SSSR)



Khimii AN SSSR Moskva (Institute of Physical Chemistry, AN SSSR)

SUBMITTED: 14May63 ENCL: 00 SUB CODE: NP,MT

NO REF SOV: 007 OTHER: 002

Card 2/2

SOV/81-59-9-33450

Translation from: Referativnyy zhurnal. Khimiya, 1959, Nr 9, p 562 (USSR)

AUTHORS: Kaluzhenina, K.F., Skuba, I.A., Zherebkov, S.K., Medvedeva, A.M.

TITLE: The Increase in the Adhesiveness of Rubber Mixtures and Glues Based on Synthetic Rubbers

PERIODICAL: Tr. N.-i. in-ta rezin. prom-sti, 1956, Nr 3, pp 47 - 55

ABSTRACT: The possibilities of increasing the adhesiveness of mixtures and glues based on butadiene-styrene (BS), butadiene-nitrile (BN) rubbers and glues based on neoprene (N) by means of condensation resins: rubrezina B (I), yarrezina A (II), yarrezina B (III) have been studied. The optimum dosis of these resins for raw mixtures of BS and BN is 10 weight parts per 100 weight parts of rubber. According to the capacity of increasing the adhesiveness of the raw mixtures of BN, I, II, III are equivalent. The introduction of these resins into the rubber mixture does not affect the physical-mechanical properties of the vulcanizates.

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SOV/81-59-9-33450

The Increase in the Adhesiveness of Rubber Mixtures and Glues Based on Synthetic Rubbers

I, II and corezin, being introduced into glues of BS and N, increase their confection adhesiveness considerably, as well as the stability of the adhesion of the parts after vulcanization. The properties of the glues of SKB rubber do not improve by the introduction of the resins indicated.

B. Glagolev

Card 2/2

MEDVEDEVA A.M.

F

USSR/Chemistry of High Molecular Substances.

Abs Jour : Referat. Zhurnal Khimiya, No 6, 1957, 19423.

Author : B.V. Deryagin, S.K. Zherebkov A.M. Medvedeva

Inst : -

Title : Concerning the Part of Diffusion of Polymer Chains in the Mechanism of Adhesion and Autohesion (Sticking Together) of Rubbers.

Orig Pub : Kollod. Zh., 1956, 18, No 4, 404-412.

Abstract : With a view to study the influence of relaxation or diffusion processes on autohesion, the autohesion of HK and SKB was investigated, using the method of crossed quartz threads covered with rubber films (Kolloid. zh., 1950, 12, 431; RZhKhim, 1956, 32140). It was shown that the energy of autohesion sharply increased in case of films from 0 to 0.1 and above 0.5 thick, which was connected with the increase of van der Waal's forces in the first case, and with the facilitation of formation of platforms at easily de-

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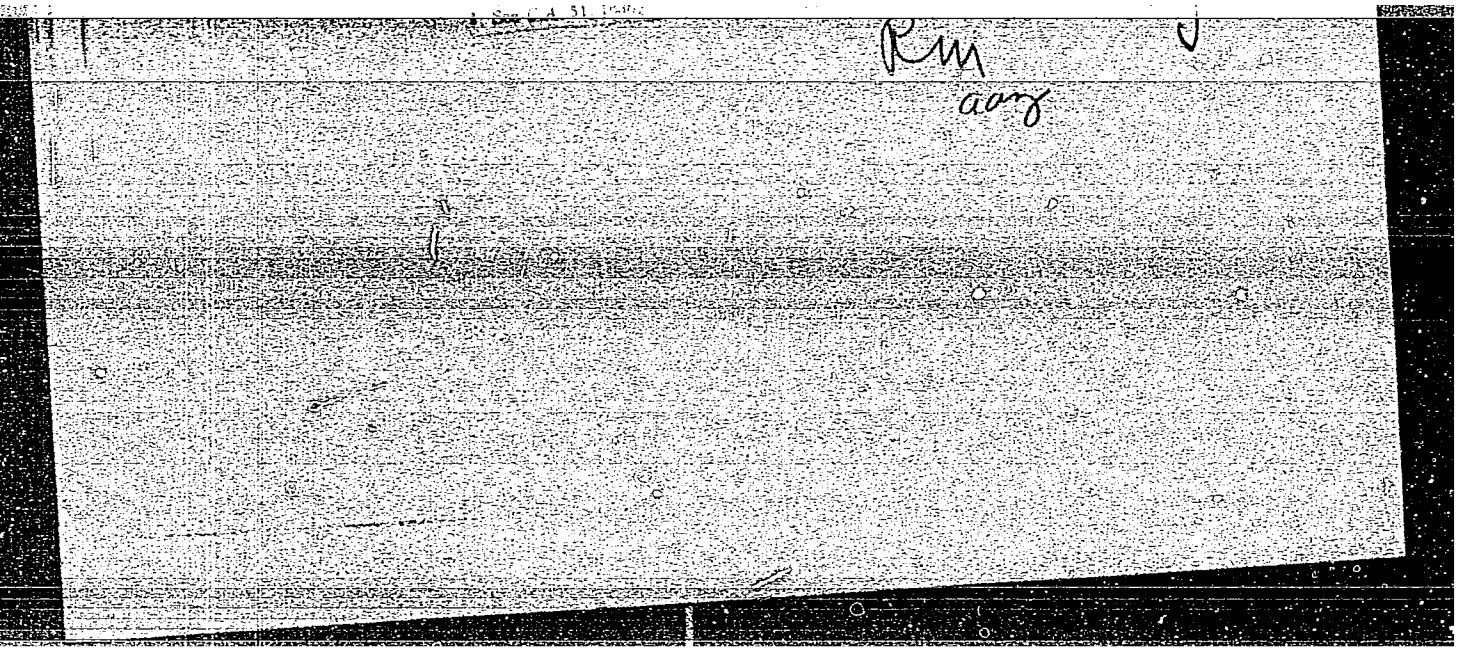
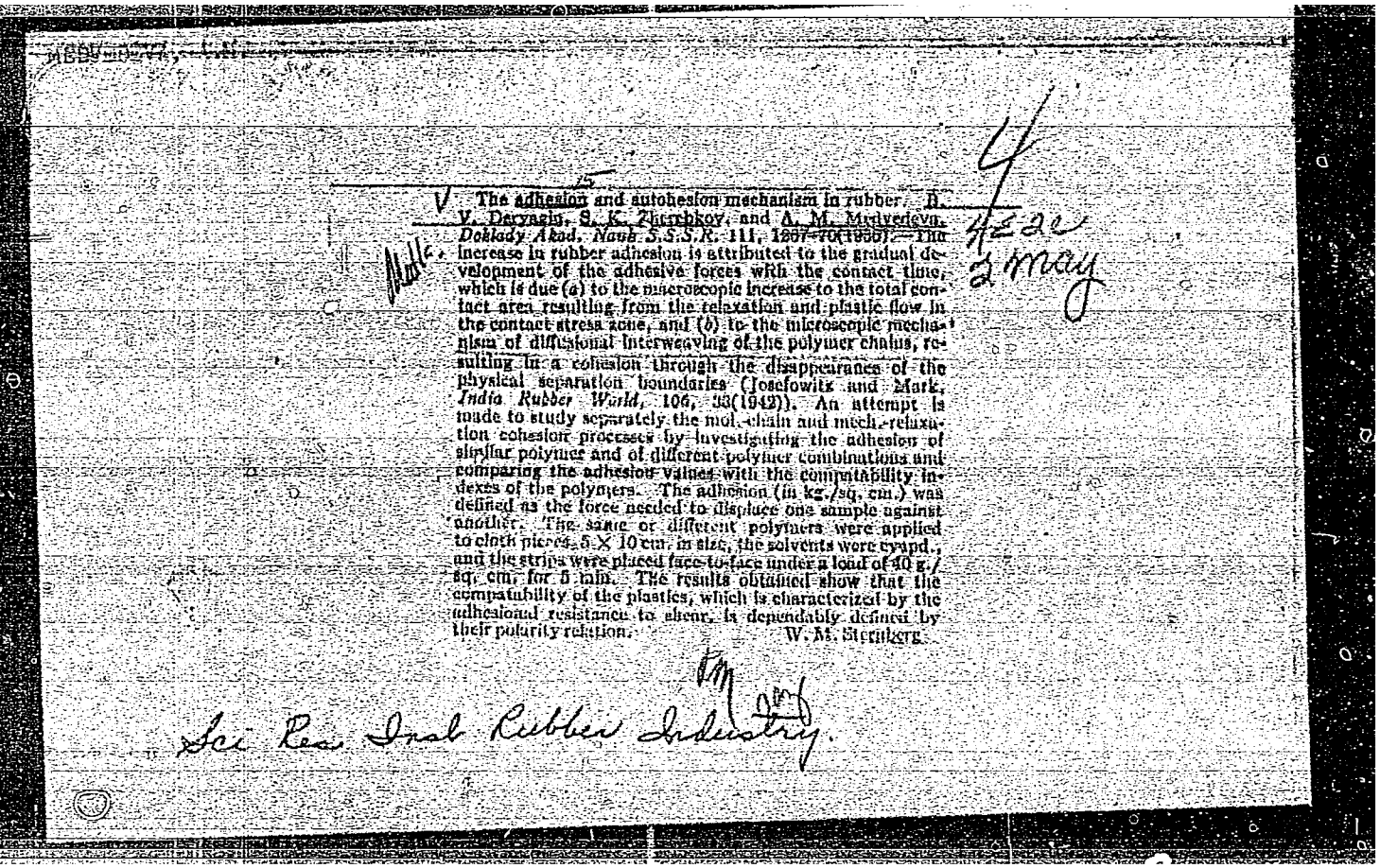
formed thick films in the second case. In the thickness interval from 0.1 to 0.5μ, the autohesion energy did not depend on the film thickness. The increase of the contact duration increased the autohesion energy only if the film thickness was >0.5μ from which it followed that the diffusion processes did not play any part in the autohesion of thin films. During the study of the correlation of the combinability of various rubbers and their adhesion one to another and autohesion, the measurement of the shearing strength of rubber adhesion was carried out and it was shown that in case of butyl rubber, the diffusion processes did not play a great part and that its adhesion strength was determined by the area of the true contact depending on the mechanical properties and by the influence of forces connected with the double electrical layer, which played an essential part at the measurement of the work of tearing by the method of exfoliation. In case of NK, SKS-30, SKS-26,





The adhesion and autohesion mechanism in rubber. B. V. Deryagin, S. K. Zhurkhov, and A. M. Medvedeva. *Doklady Akad. Nauk S.S.S.R.* 111, 1287–70(1956).—The increase in rubber adhesion is attributed to the gradual development of the adhesive forces with the contact time, which is due (*a*) to the microscopic increase in the total contact area resulting from the relaxation and plastic flow in the contact stress zone, and (*b*) to the microscopic mechanism of diffusional interweaving of the polymer chains, resulting in a cohesion through the disappearance of the physical separation boundaries (Josefowitz and Mark, *India Rubber World*, 106, 33(1942)). An attempt is made to study separately the mol.-chain and mech.-relaxation cohesion processes by investigating the adhesion of similar polymers and of different-polymer combinations and comparing the adhesion values with the compatibility indexes of the polymers. The adhesion (in kg./sq. cm.) was defined as the force needed to displace one sample against another. The same or different polymers were applied to cloth pieces 5 × 10 cm. in size, the solvents were evapd., and the strips were placed face-to-face under a load of 40 g./sq. cm. for 5 min. The results obtained show that the compatibility of the plastics, which is characterized by the adhesional resistance to shear, is dependably defined by their polarity relation. W. M. Stirnberg.

Sci Res Inst Rubber Industry.

Medvedeva, A.M.

1-42 2c (7)

816. Investigation into adhesion effects in the bonding of rubber to metal with Lelkonat bonding agent. A. M. Medvedeva, B. V. Deryagin and S. N. Zhurkov. Kolloid. zh., 1957, 19, 413-20. The study relates to the bonding of SKN-26 natural and SKS-30 rubber to metal with the Soviet bonding agent Lelkonat. It was established that the nature of the fillers contained in the rubber composition greatly affects the rubber to metal adhesion. The introduction of active fillers (channel black) to the rubber increases the degree of interaction between the rubber and the film of adhesive. The experiments give rise to the assumption that in the bonding process the bonding agent interacts chemically with the active filler of the rubber mixture. There are 13 references. 0547

1. Institut rezinovoy promyshlennosti, Institut fizicheskoy khimii AN SSSR. Laboratoriya poverkhnostnykh yavleniy, Moskva.

66200

SOV/69-21-5-10/23

~~5(4)~~ 15.9300, 15.1124

AUTHORS: Deryagin, B.V., Zherebkov, S.K. and Medvedeva, A.M.

TITLE: A Study of Adhesion Phenomena in Rubber to Metal Bonding With Leykonat Cement. 2. Bonding of Metal and Unfilled Rubbers

TITLE: Kolloidnyy zhurnal, 1959, Vol 21, Nr 5, pp 558-563 (USSR)

ABSTRACT: This is a study of the adhesion phenomena observed in the bonding of unfilled rubbers to metals with the aid of the isocyanate cement: Leykonat. Table 1 gives a survey of the rubbers and their ingredients. The rubbers were bonded to metal plates (cleaned with emery paper Nr 100) during the vulcanization process. The bonding strength was characterized by the resistance to the separation of the rubber from the metal, and was expressed in kilograms per centimeter of the width of the specimen (erg/cm^2). The results of preliminary experiments showed that in a number of

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A Study of Adhesion Phenomena in Rubber to Metal Bonding with Leykonat Cement. 2. Bonding of Metal and Unfilled Rubbers

cases the bonding strength exceeds the strength of the rubbers themselves, and the rupture has a cohesional character. In order to obtain in all cases an adhesional character of rubber-metal separation, the authors reduced the thickness of the cement film. The experiments revealed however, that this reduction in thickness affects differently the bonding strength of rubbers prepared on the basis of different natural rubbers. The data given in table 2 and graph 1 shows that with the aid of leykonat cement (on the basis of triisocyanate triphenyl methane) it is possible to bond to metal rubbers prepared on the basis of polar as well as non-polar natural rubbers. In proportion to the growing of the chemical activity and polarity of the natural rubbers, a growth in the intensity of interaction of the cement film can be observed with rubbers prepared on the basis of these natural rubbers, whereas the intensity of interaction of the cement film with the metal remains constant.

A Study of Adhesion Phenomena in Rubber to Metal Bonding with Leynat Cement. 2. Bonding of Metal and Unfilled Rubbers

The experimental results however, show that in the given case the bonding strength does not grow monotonously in proportion to the increase in chemical activity and polarity of the natural rubbers. After an initial growth it passes through a maximum, and subsequently drops. The authors have shown that the bonding strength of rubber to metal will be high only in the case of an approximate equality of the intensities of interaction at the cement-metal and cement-rubber interfaces. If when one of the surfaces is in contact with the cement film the intensity of interaction is considerably higher, the bonding strength of rubber to metal will be low. The authors already showed in a previous publication [Ref 1] that there is an increase in intensity in the interaction of a cement film with a sandblast-treated metal surface. Bonding of the mentioned rubbers to such surfaces therefore, will bring about a change. The authors

A Study of Adhesion Phenomena in Rubber to Metal Bonding with Leykonat Cement. 2. Bonding of Metal and Unfilled Rubbers

ascertained this phenomenon on the basis of two characteristic examples: bonding of unfilled rubbers prepared from butyl rubber and SKN-40. Whereas the bonding strength of the first rubber did not change, the bonding strength of the second rubber was increased by approximately ten times. On the whole, the experiments have shown that the strength of the rubber to metal bonding, due to the cement film, is controlled by the ratio of intensities of interaction of the latter with the contacting surfaces at the cement-rubber and cement-metal interfaces. In the case of an approximate equality of both intensities, the bonding strength will be low. One of the factors affecting the intensity of interaction of the cement film with the rubber is the reduction in thickness of the cement film. Such a reduction results in a drop in the intensity of interaction of film and rubber, which differently reflects on the strength

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66200

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A Study of Adhesion Phenomena in Rubber to Metal Bonding with Leykonat Cement. 2. Bonding of Metal and Unfilled Rubbers

of the rubbers to metal bonding, this strength increasing in some cases and decreasing in others. Use of the isocyanate cement leykonat makes possible a solid bonding to metal of unfilled resins prepared on the basis of most of the existing polar and nonpolar natural rubbers. It was ascertained that an increase of polar groups in natural rubber results in an increase in the intensity of interaction of the film with the rubber containing this natural rubber. There are 2 tables, 2 graphs and 2 Soviet references.

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SUBMITTED: Oct. 2, 1958

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TITLE: Studies of Adhesion Phenomena in Rubber to Metal Bonding With "Leykonat" Glue. 3. Interaction Between Sodium Butadiene Rubber and Triphenylmethane Triisocyanate

PERIODICAL: Kolloidnyy zhurnal, 1960, Vol XXII, Nr 2, pp 217-222 (USSR)

ABSTRACT: The authors report on a study of the interaction between rubber and triphenylmethane triisocyanate in solutions and the effect of the isocyanate on rubber as a vulcanizing agent. The study was intended to verify the assumption that the cause of adhesion at the boundary rubber - "Leykonat" film ("Leykonat" is a glue representing a 20% solution of triphenylmethane triisocyanate in dichloroethane) consists in chemical interaction between the rubber and the

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isocyanate. Triphenylmethane triisocyanate can simultaneously interact with several rubber molecules, which necessarily must result in the formation of a structure similar to the network obtained by vulcanization. For their investigation the authors used sodium butadiene rubber of the type RShch. For the study of the formation of three-dimensional structures in the solutions a viscometer of the type PV-7 [Ref 3,4] was used, which permits investigation of the properties of highly viscous liquids and concentrated disperse systems. This device makes possible to reveal anomalous structural viscosity of the systems and to determine simultaneously the ultimate deformation stress. The design of the device

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and the way to use it for experiments are minutely described by M.P. Volarovich and L.Ya. Ginzburg [Refs 4-6]. The authors' experiments have shown that the reaction of rubber solutions with a solution of isocyanate develops in dependence on the rubber and isocyanate content. The viscosity of 1-2% rubber solutions, to which during storage isocyanate was added, shows only little changes. The viscosity of 3-5% rubber solutions increases by several magnitudes after introduction of the additive. After a certain time three-dimensional structures can be observed in these solutions. The study further revealed that isocyanate-containing rubber films which were heated at 143°C assume the properties of vulcanizates as

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can be seen from their behavior on swelling. On the whole the investigation confirmed the assumption of chemical interaction between rubber and isocyanate even at usual temperatures. A similar chemical interaction can be assumed, therefore, also in the rubber to metal bonding process during vulcanization at 143-151° C. The authors express their gratitude for help to M.P. Volarovich. There are 7 graphs and 11 references, 10 of which are Soviet and 1 English.

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SUBMITTED: September 30, 1959

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