Methods for the regulation of technological ....

and it was observed that the ceramic mass is plasticized and an anisotropic structure obtained by the orientation of the clay particles. A structure-mechanical analysis of a palygorskite paste showed a transformation from the fifth structure-mechanical type to the third (deformation parallel to the plane of orientation) and to the fourth type (vertically to the orientation plane). Starting from the principal aspects and methods of physico-chemical mechanics a scientifically based scheme might be suggested for the regulation of properties of clay pastes and suspensions for a given technological process. A thorough change of structure and properties of clay minerals might be effected by a treatment with inorganic acids. Acid treatment of the mineral palygorskite increases the quantity of micropores with a radius 2.7 - 3 Å. This might be used for selective adsorption of gases and liquid mixtures of substances of small molecule size. Instead of an inorganic ion exchange organic ions might be exchanged with clay mineral ions and thus new materials be prepared with new properties such as hydrophobicity, swelling in organic media, etc. Corresponding investigations carried out in the authors' laboratory showed some regularities of interaction between organic substances and the surface of dispersed minerals which were used as modified fillers with a strengthening effect on rubber and

Methods for the regulation of technological ....

other polymer systems. Studies of colloid-chemical properties of minerals showed on the other hand that for instance pyrophyllite might be used better in its natural form as filler specially as dielectric filler for cable resins. There are 2 figures and 1 table.

OVCHARENKO, F.D.; KRUGLITSKIY, N.N.; NICHIPORENKO, S.P.; OROBCHENKO, V.I.

New structural and mechanical criteria of suspensions used in drilling. Ukr. khim. zhur. 29 no.4:376-382 '63. (MIRA 16:6)

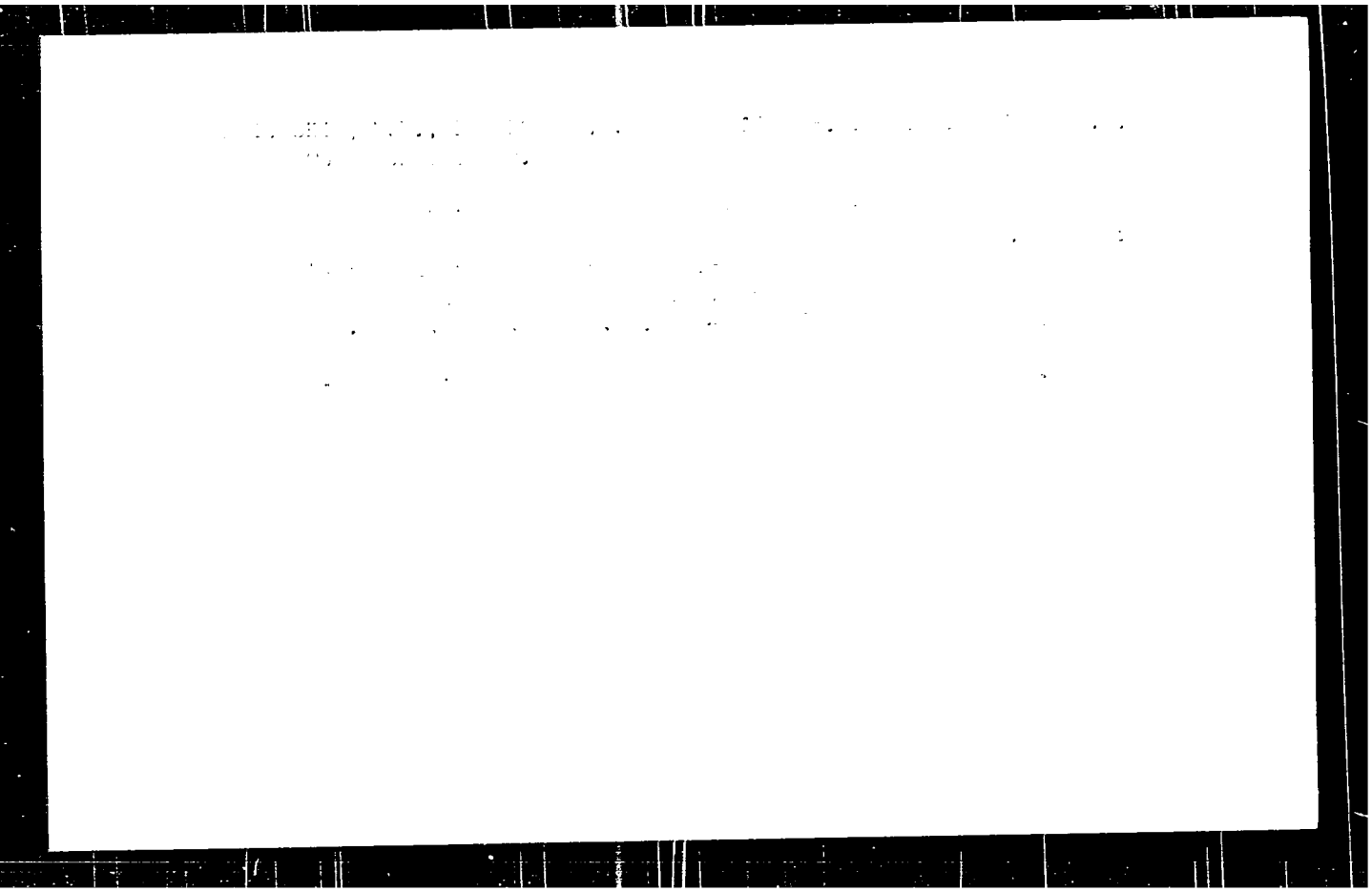
1. Institut obshchey i neorganicheskoy khimii AN UkrSSR.
(Drilling fluids)
(Suspensions (Chemistry))

NICHIPORENKO, S.P.; KHIL'KO, V.V.

Structural and mechanical properties of palygorskite pastes as influenced by the orientation of the particles. Dokl. AN SSSR 149 no.6:1377-1379 Ap '63. (MIRA 16:7)

1. Institut obshchey i neorganicheskoy khimii AN UkrSSR. Predstavleno akademikom P.A.Rebinderom.

(Palygorskite) (Crystallography)



OVCHARENKO, F.D.; KRUGLITSKIY, N.[illegible]; [illegible]

Effect of [illegible] rheological properties [illegible]
no.5:480-487 '[illegible].

1. Institut [illegible]

[illegible]LITSKIY, [illegible]; [illegible]; [illegible]
S.P.

Mechanism by which [illegible] structure-form[illegible]
Dokl. AN SSSR 15[illegible]

1. Institut [illegible] AN [illegible]SR. [illegible] AN UkrSSR (for [illegible]).

L 42990-65 EPF(n)-2/EPA(s)-2/EPA(w)-2/EWT(m)/EWP(i)/EWP(b)/EWP(e) Pt-7/Pu-4/
Pab-10 WH

ACCESSION NR: AP5008357 S/0021/65/000/003/0348/0350 41
40
B

AUTHOR: Nychyporenko, S. P.; Kostenko, E. A.

TITLE: Structural and mechanical characteristics of ceramic materials

SOURCE: AN UkrRSR. Dopovidi, no. 3, 1965, 348-350

TOPIC TAGS: mechanical property, ceramic material, ceramic strength, ceramic elasticity, ceramic prism

ABSTRACT: The standard methods for evaluating the mechanical properties of ceramic ware, including structural materials, involve primarily the evaluation of different types of temporary resistance during compression, bending, etc. Such standard evaluations do not simulate the actual working conditions of the ceramic ware and are consequently unsuitable for the determination of the relationship between their structure and their performance. In the present work, the deformation processes of ceramic ware were therefore investigated with prolonged loading. The deformation-time curves (Figure 1 of the Enclosure) are satisfactorily described by the Maxwell-Shvedov equation and by the Kelvin model. It was established that there exists a static yield point, a region of constant modulus of elasticity and a maximum plastic viscosity. Orig. art. has: 2 figures and 1 formula.

Card 1/3

L 42990-65

ACCESSION NR: AP5008357

ASSOCIATION: Instytyt zahal'noyi ta neorhanichnoyi khimiyi AN URSR (Institute of general and inorganic chemistry, AN URSR)

SUBMITTED: 05Feb64 ENCL: 01 SUB CODE: MT, ME

NO REF SOV: 012 OTHER: 001

Card 2/3

KRUGLITSKIY, N.N.; MARTSIN, I.I.; OVCHARENKO, F.D., akademik; NICHIPORENKO, S.P.

Characteristics of coagulation structure formation in dispersions of argillaceous minerals after autoclave treatment. Dokl. AN SSSR 164 no.6:1351-1354 O '65. (MIRA 18:10)

1. Institut obshchey i neorganicheskoy khimii AN UkrSSR. 2. AN UkrSSR (for Ovcharenko).

KRUGLITSKIY, N.N.; OVCHARENKO, F.D., akademik; NICHIPORENKO, S.P.; VAGNER, G.R.

Salt resistance of dispersed argillaceous minerals. Dokl. AN SSSR 165 no.2:380-382 N '65. (MIRA 18:11)

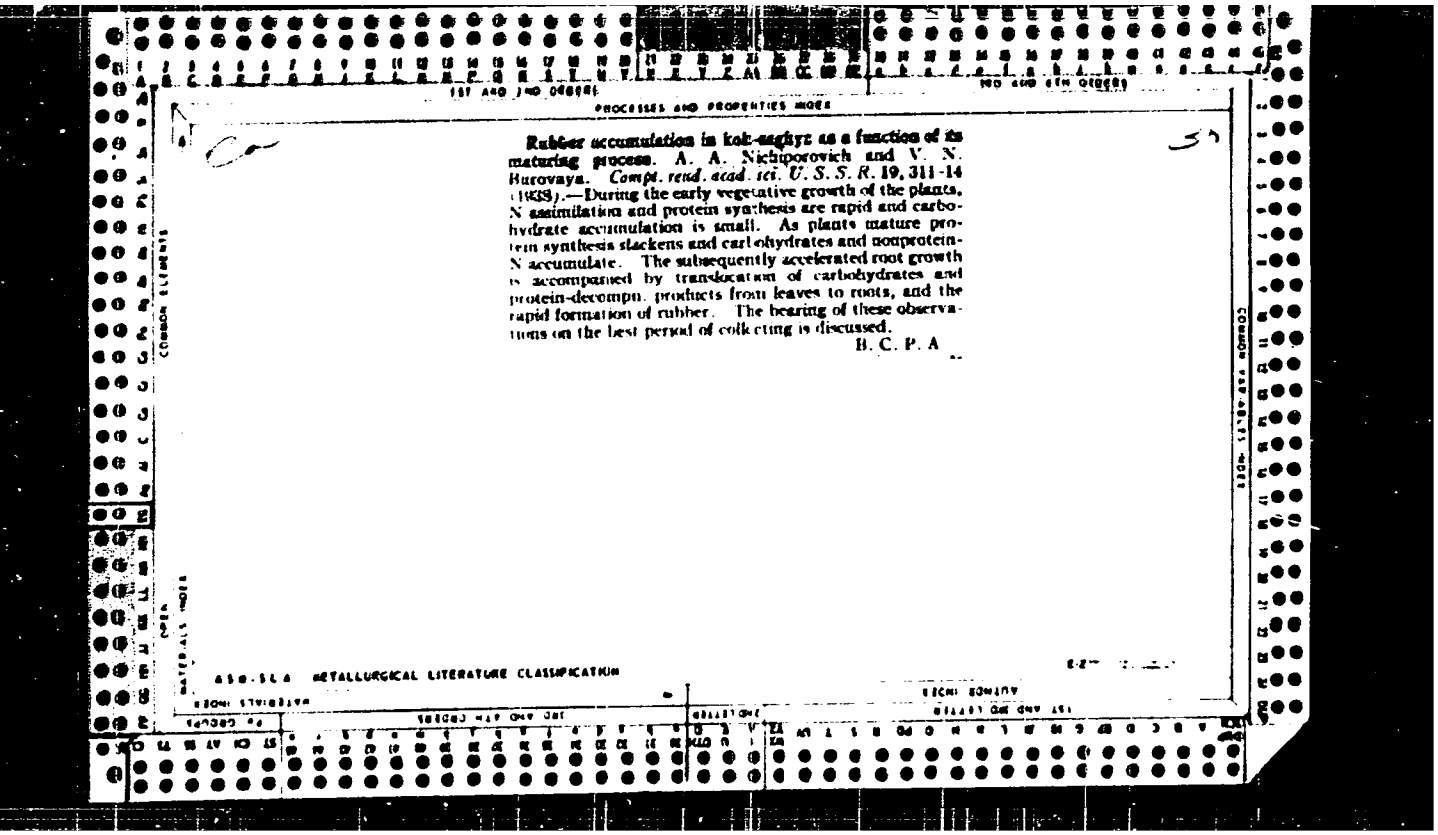
1. Institut obshchey i neorganicheskoy khimii AN UkrSSR.
2. AN UkrSSR (for Ovcharenko).

NICHIPOROV, A.V., inzh.; ROMANTSEV, A.N., inzh.

Installation of the underwater cable crossings on the Abakan - Taysnet line. Transp.stroi. 15 no.10:11-1[illegible] O '65. (MIRA 18:11)

VOSKRESENSKAYA, Natal'ya Petrovna; NICHIPOROVICH, A.A., prof., otv. red.; GRISHINA, G.S., red.

[Photosynthesis and the spectral composition of light] Fotosintez i spektral'nyi sostav sveta. Moskva, Nauka, 1965. 308 p. (MIRA 18:10)



PROCESSES AND PROPERTIES INDEX

Rubber accumulation in kok-saghyz as a function of its maturing process. A. A. Nichiporovich and V. N. Burovaya. *Compt. rend. acad. sci. U. S. S. R.* 19, 311-14 (1938).—During the early vegetative growth of the plants, N assimilation and protein synthesis are rapid and carbohydrate accumulation is small. As plants mature protein synthesis slackens and carbohydrates and nonprotein-N accumulate. The subsequently accelerated root growth is accompanied by translocation of carbohydrates and protein-decompn. products from leaves to roots, and the rapid formation of rubber. The bearing of these observations on the best period of collecting is discussed.

B. C. P. A.

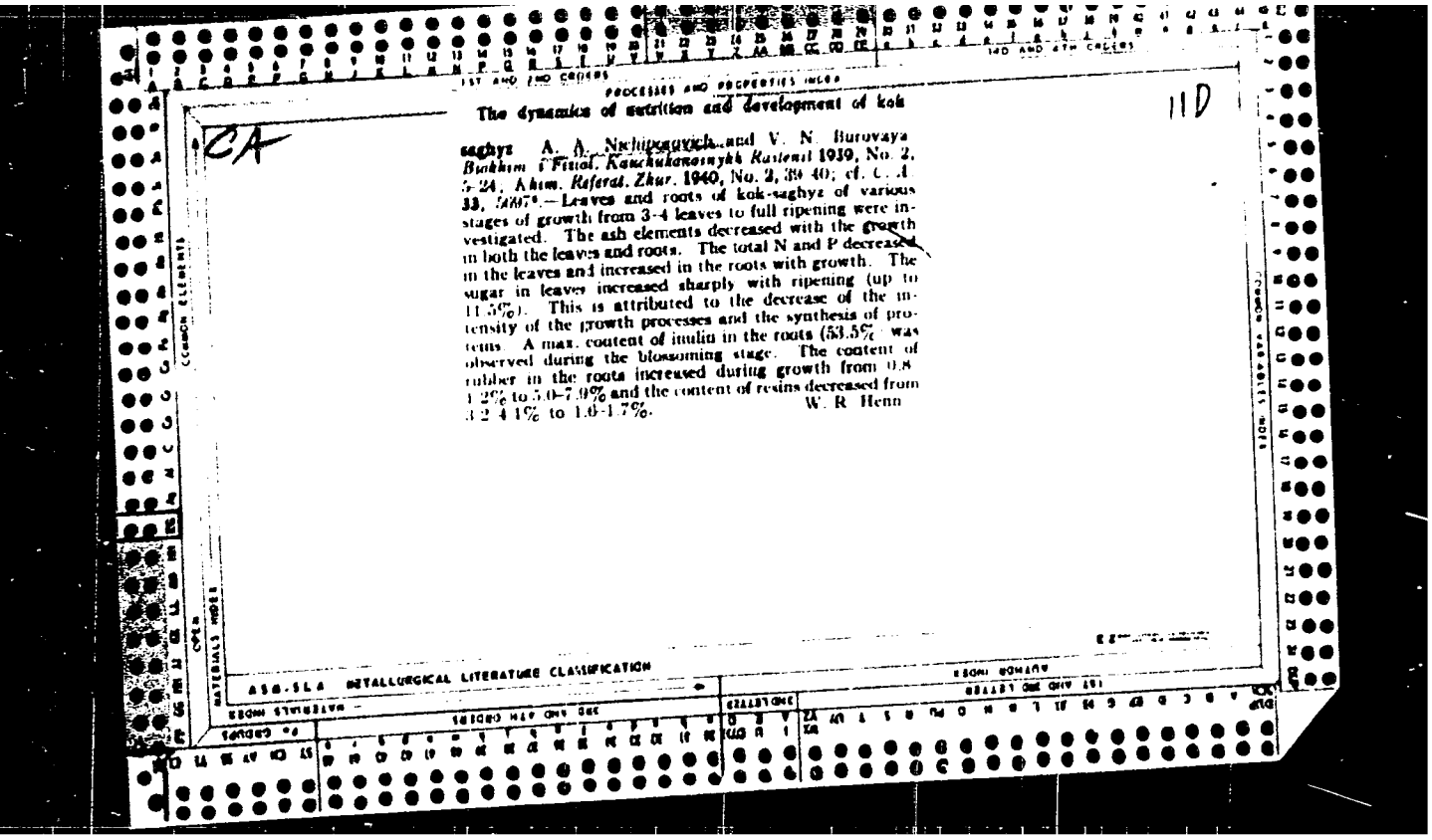
A50-51A METALLURGICAL LITERATURE CLASSIFICATION

CR

30

Industrial sources of rubber in the U. S. S. R. A. A. Nechiporovich. *VNIIKu. and the Kauchukonos Trust.* 1938. *Khim. Referat. Zhur.* 2, No. 1, 102-3 (1939). *Sel'khozgiz* (Moscow). Sources of rubber and the evaluation of different types of rubber and gutta-percha plants are described. The characteristics of the most important rubber plants, the physiology of the formation and accumulation of rubber in these plants, methods of discovery and the detn. of rubber in the plants are given. Improved methods for different grades of rubber, and diseases are discussed. W. R. Henn

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



CA

11D

The dynamics of nutrition and development of kok saghyz. A. A. Nichiporovich and V. N. Burovaya. *Bukhum i Fitiol. Kauchukonosnykh Rastenii* 1939, No. 2, 5-24; *Khim. Referat. Zhur.* 1940, No. 2, 39-40; cf. C. A. 33, 2407⁹.—Leaves and roots of kok-saghyz of various stages of growth from 3-4 leaves to full ripening were investigated. The ash elements decreased with the growth in both the leaves and roots. The total N and P decreased in the leaves and increased in the roots with growth. The sugar in leaves increased sharply with ripening (up to 11.5%). This is attributed to the decrease of the intensity of the growth processes and the synthesis of proteins. A max. content of inulin in the roots (53.5% was observed during the blossoming stage. The content of rubber in the roots increased during growth from 0.8-1.2% to 5.0-7.9% and the content of resins decreased from 3.2-4.1% to 1.0-1.7%.

W. R. Henn

NICHIPOROVICH, A. A.

"Latex System in Kok-Saghyz as a System for Controlling Water Economy of the Plant," Dok. AN 42, No. 4, 1943.

K. A. Timiryazev Inst. of Plant Physiology; Mbr., Acad. S [illegible].

NICHIPOROVICH, A. A.

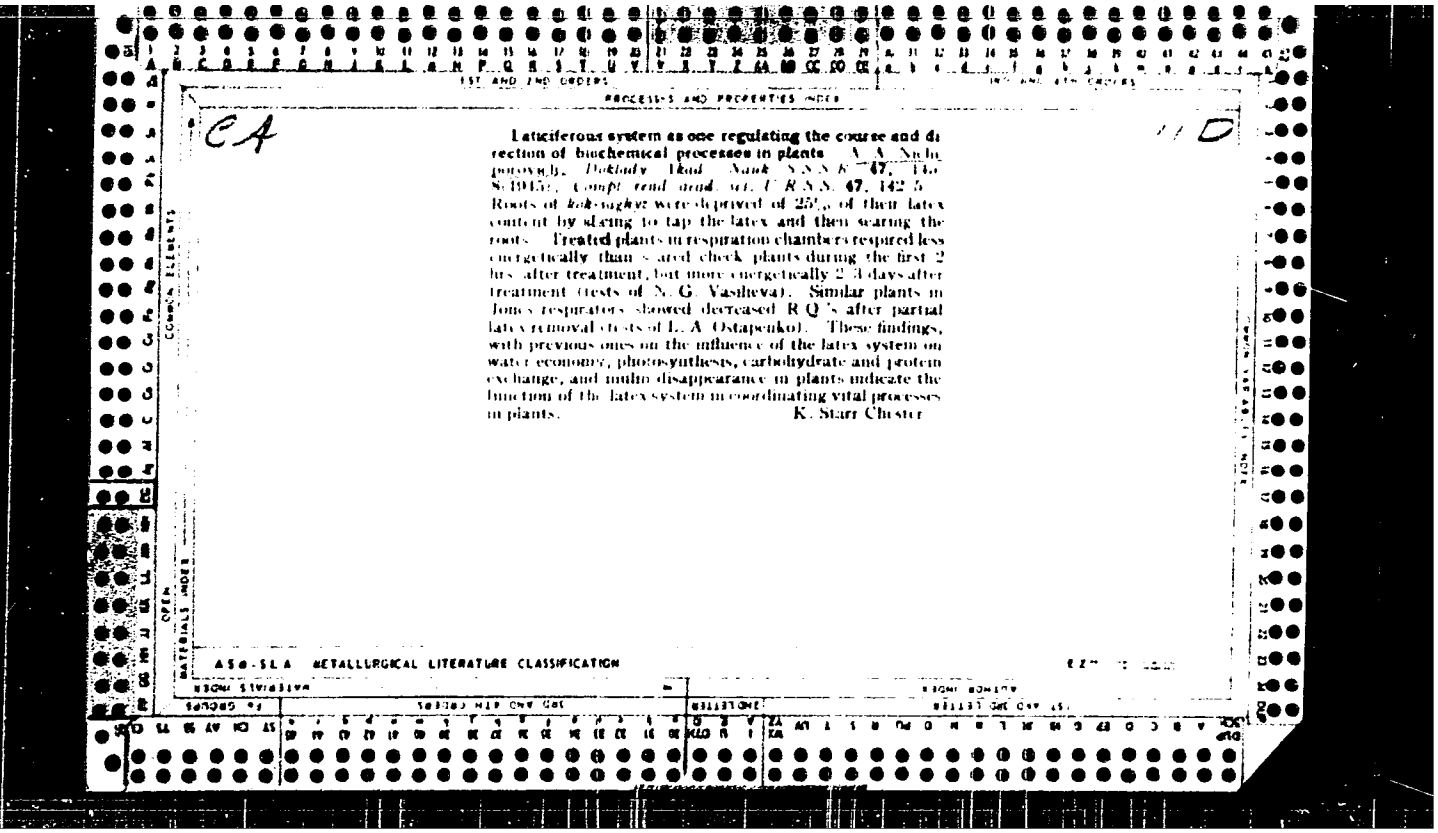
"On the Relation Between Leaf Development and Formation of Laticiferous Vessels in Roots of Koksaghyz and Krym-Saghyz," Dok. AN 44, No. 1, 1944.

K. A. Timiryazev Inst. Plant Phys.; Acad. Sci.

NICHIPOROVICH, A. A.; IVANITSKAYA, E. F.

"On the Working Conditions of the Foliage as a Factor of Differentiation of Laticiferous Vessels in Kok-Saghyz Roots," Dok. AN 46, No. 1, 1945.

K. A. Timiryazev Inst. Plant Phys.; Acad. Sci.



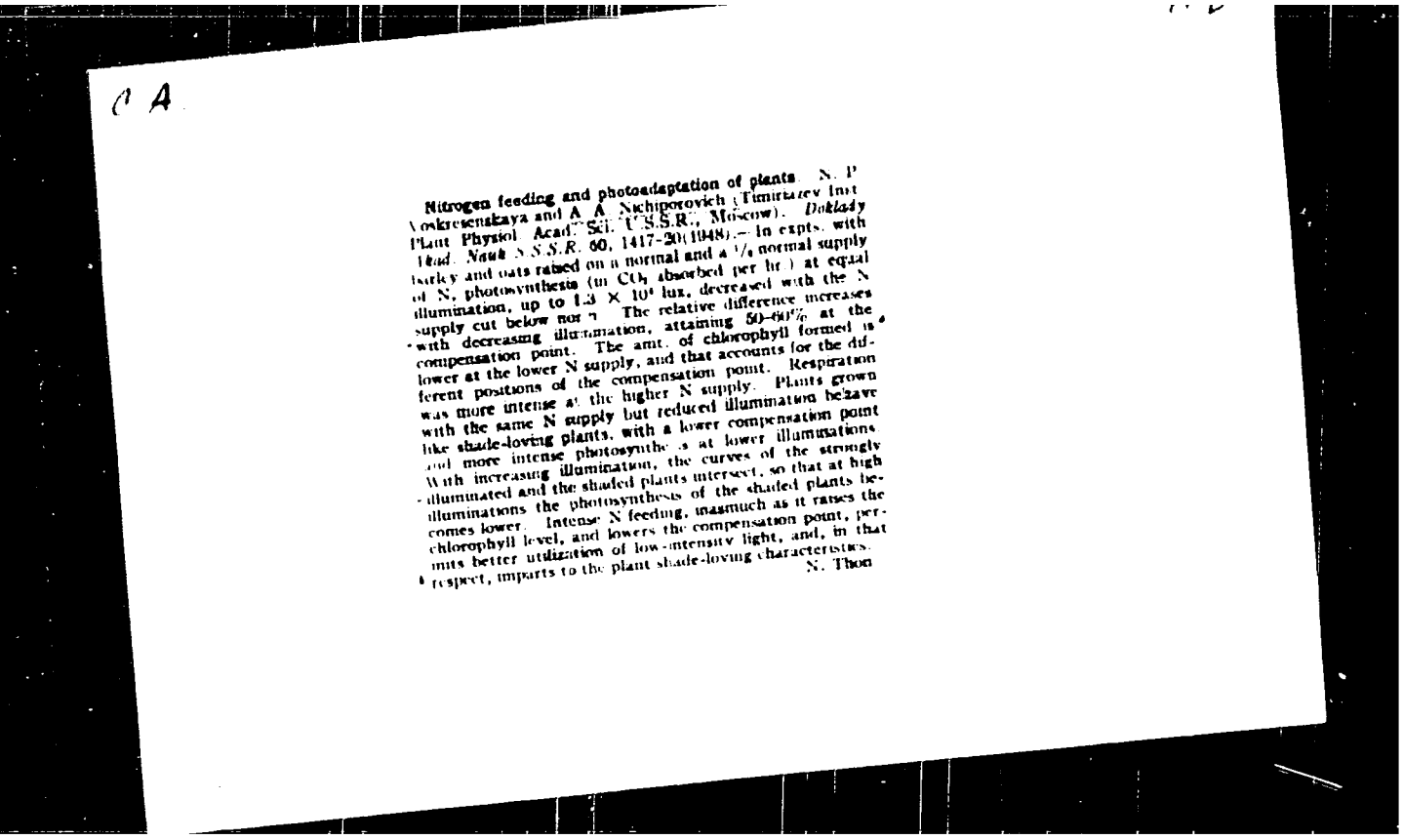
PROCESSES AND PROPERTIES INDEX

CA

Laticiferous system as one regulating the course and direction of biochemical processes in plants. A. A. Nichiporovich. *Doklady Akad. Nauk S.S.S.R.* **67**, 145-8 (1949). *Compt. rend. acad. sci. U.R.S.S.* **67**, 142-5. Roots of *kok-saghyz* were deprived of 25% of their latex content by slicing to tap the latex and then scoring the roots. Treated plants in respiration chambers respired less energetically than scored check plants during the first 2 hrs. after treatment, but more energetically 2-3 days after treatment (tests of N. G. Vasileva). Similar plants in Jones respirators showed decreased R.Q.'s after partial latex removal (tests of L. A. Ostapenko). These findings, with previous ones on the influence of the latex system on water economy, photosynthesis, carbohydrate and protein exchange, and malic disappearance in plants indicate the function of the latex system in coordinating vital processes in plants. K. Starr Chester

D

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



CA

Nitrogen feeding and photoadaptation of plants. N. P. Voskresenskaya and A. A. Nichiporovich (Timiriazev Inst. Plant Physiol. Acad. Sci. U.S.S.R., Moscow). *Doklady Akad. Nauk S.S.S.R.* 60, 1417–20 (1948).—In expts. with barley and oats raised on a normal and a ⅛ normal supply of N, photosynthesis (in CO_2 absorbed per hr.) at equal illumination, up to 1.3×10^4 lux, decreased with the N supply cut below normal. The relative difference increases with decreasing illumination, attaining 50–60% at the compensation point. The amt. of chlorophyll formed is lower at the lower N supply, and that accounts for the different positions of the compensation point. Respiration was more intense at the higher N supply but reduced illumination behave like shade-loving plants, with a lower compensation point and more intense photosynthesis at lower illuminations. With increasing illumination, the curves of the strongly illuminated and the shaded plants intersect, so that at high illuminations the photosynthesis of the shaded plants becomes lower. Intense N feeding, inasmuch as it raises the chlorophyll level, and lowers the compensation point, permits better utilization of low-intensity light, and, in that respect, imparts to the plant shade-loving characteristics. N. Thon

NICHIPOROVICH, A. A.

20685. Nichiporovich, **A.A.** i Khrustalev, N. Ya. O raschete ustoychivosti plastin na neskal'nykh osnovaniyakh - Gidrotekhn. stroit-vo, 1949, No. [illegible], s. 6-11

SO: LETOPIS ZHURNAL STATEY - Vol. 28, Moskva, 1949

NICHIPOROVICH, A. A.

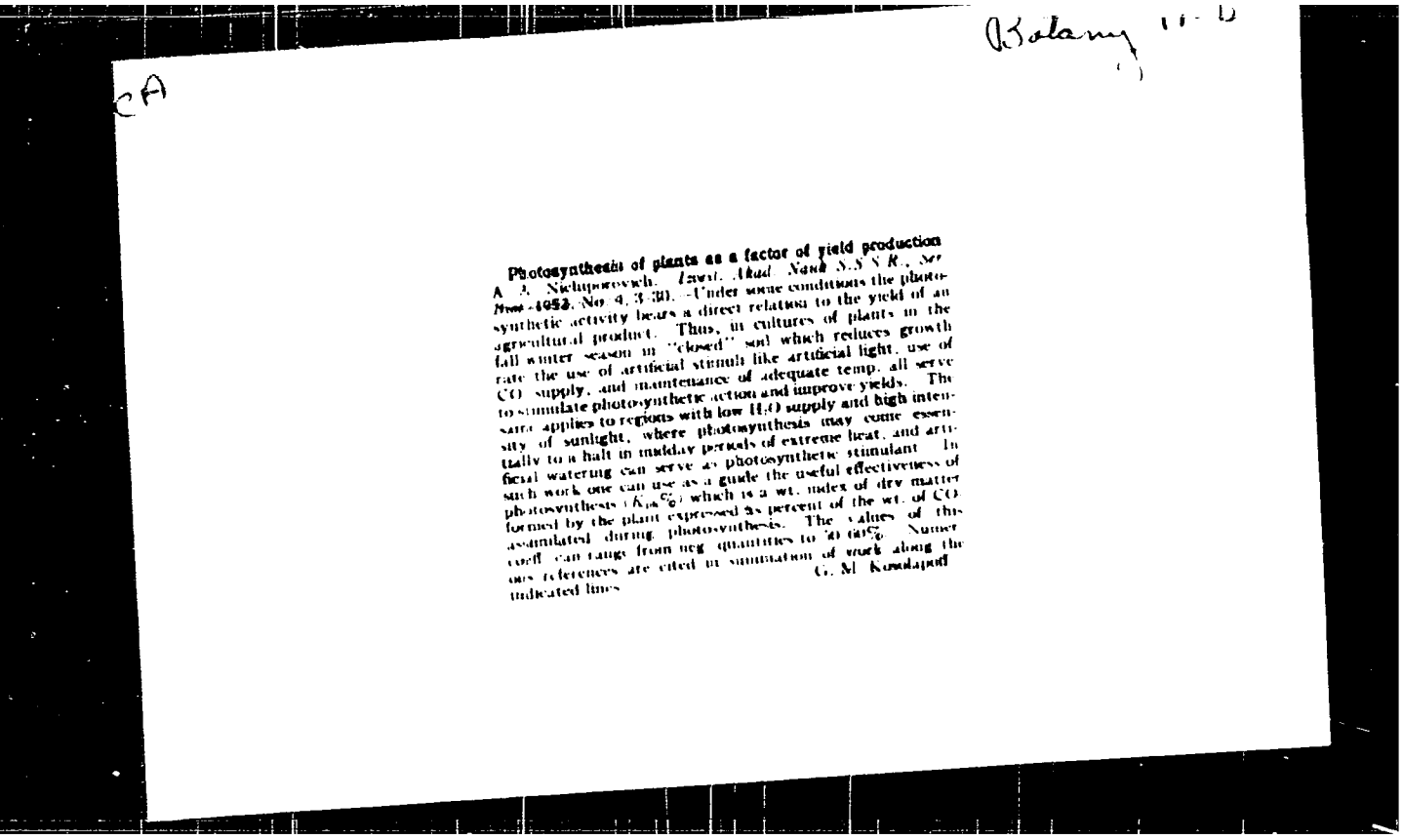
30402

Sravnityel'naya anatomo-fiziol ogichyeskaya kharaktyeristika vtopichnogo rosta kornyey kok-sagyza I kul'turnykh kornyel odov. Trudy in-ta fiziologii rastyeniy Im. Timiryazyeva, T. VI. vyp. 2, 1949, S. 176-93.--Bibliogr: 15 Nazv.

SO: Letopis' No. 34

NICHIPOROVICH, A.A.

Principal problems of photosynthesis. Probl.bot. no.1:342-366 '50.
(Photosynthesis) (MLRA 8:11)



CA

Botany 11-D

Photosynthesis of plants as a factor of field production

A. A. Nichiporovich. *Izvest. Akad. Nauk S.S.S.R., Ser. Biol.* 1952, No. 4, 3–30). —Under some conditions the photosynthetic activity bears a direct relation to the yield of an agricultural product. Thus, in cultures of plants in the fall winter season in "closed" soil which reduces growth rate the use of artificial stimuli like artificial light, use of CO_2 supply, and maintenance of adequate temp. all serve to stimulate photosynthetic action and improve yields. The same applies to regions with low H_2O supply and high intensity of sunlight, where photosynthesis may come essentially to a halt in midday periods of extreme heat, and artificial watering can serve as photosynthetic stimulant. In such work one can use as a guide the useful effectiveness of photosynthesis (K_{ph} %) which is a wt. index of dry matter formed by the plant expressed as percent of the wt. of CO_2 assimilated during photosynthesis. The values of this coeff. can range from neg. quantities to 40 or 50%. Numerous references are cited in summation of work along the indicated lines.

G. M. Kondratieff

NICHIPOROVICH, A.A. (Prof)

USSR/Biology - Photosynthesis Apr 52

"Photosynthesis in Plants," Prof A. A. Nichiporovich

"Priroda" No 4, pp 37-46

Reviews USSR work on the subject, mentioning results of own expts.

219T9

NICHIPOROVICH, A. A., Prof.

Photosynthesis

Modern notions of photosynthesis in plants. Est. v shkole no. 5, 1952.

Monthly List of Russian Accessions. Library of Congress. December 1952. Unclassified.

MICHIPOROVICH, A., REVIEWER

Timiryazev, Kliment Arkad'yevich

Pride of Russian science ("Philosophy of K.A. Timiryazev." G.V.Platonov, Author. Reviewed by A. Michiporovich). Novyi mir 28, no. 5, 1952.

9. Monthly List of Russian Accessions, Library of Congress, _____1953. Unclassified.

NICHIPOROVICH, A. A.

Photosynthesis

Photosynthesis in plants. Priroda 41 No. 4, 1952.

9. Monthly List of Russian Accessions, Library of Congress, July 1952. 1953, Uncl.

NICHIPOROVICH, A.A., professor.

Effect of light on plants. Zat.v shkole no.5:12-20 S-O '53. (MLRA 6:8)

1. Institut fiziologii rasteniy Akademii nauk SSSR.
(Plants, Effect of light on)

The products of photosynthesis and the physiological role of the photosynthetic apparatus of plants. A. A. Nichiporovich. *Trudy Inst. Fiziol. Rastenii im. K. A. Timiryazeva*, 5, No. 1, 3-41(1953).—A review giving selected data best characterizing the particular steps in the photosynthesis of carbohydrates (I) and proteins (II). Photosynthetic reduction of nitrates and formation of II are particularly discussed. Main conclusions are: The primary products of photosynthesis are not only I but also II; other plant constituents may also be formed; the reaction of the transfer of the H of water for reduction of CO_2 is highly specific; the 1st step in the synthesis of II, the reduction of nitrates, is closely connected with photosynthesis, the I's intermediary products being utilized for the reduction; the relative amts. of I and II depend on the physiol. conditions, the N nutrition of plants, and the intensity and quality (spectrum) of light; the primary products of CO_2 reduction are used first for synthesis of II; synthesis of I (after the needs for formation of II are met) is increased when less N is supplied and when the intensity of light and the time of illumination are increased (at const. CO_2 supply); the photosynthetic app. is the main factor responsible for the specific growth and development of plants, their hereditary characteristics, and the hereditary changes induced by ecological and environmental changes. 110 references. E. Wierbicki

1. NICHIPOROVICH, A. A., Prof.
2. USSR (600)
4. Botany - Physiology
7. One of the most important tasks of plant physiology. Sel. i sem. 20, no. 2, 1953.

9. Monthly List of Russian Accessions, Library of Congress, May 1953. Unclassified.

NICHIPOROVICH, A.A., doktor biologicheskikh nauk.

Problem of the responsivity of plants (general meeting of members of the Moscow section of the All-Union Botanical Society). Vest.AN SSSR 23 no. 4:96-97 Ap '53. (MLRA 6:6)

(Botany--Ecology)

NICHIPOROVICH, A.A., professor.

Optical properties of plants (meeting in the Department of Biological Sciences of the Academy of Sciences of the U.S.S.R.). Vest. AN SSSR 23 no. 5:109-110 My '53. (MLRA 6:7)
(Plants, Effect of light on) (Reflection (Optics))

NICHIPOROVICH, A.A., professor.

K.A.Timiriazev's work on photosynthesis and its importance to contemporary biology. Priroda 41 no.7:80-85 Jl '53. (MLRA 6:6)
(Photosynthesis) (Timiriazev, Kliment Arkad'evich, 1843-1920)

MICHURINOVICH, Anatoliy Aleksandrovich

Photosynthesis and the theroy of obtaining high crop yields; 15th Timiryazev Lecture, Read 4 June 1954 (M.-L.; U. D.)
53 L. Graphs, tables 22 CM. (Timiryazevskiye Chteniya, 15)
Translated from the original Russian: Fotosintez i teoriya polucheniya Vysokykh Urozhayev, Moscow, Izdat. AN SSSR, 1956.
Includes bibliographical references.

POROVICH, A.A.

KLESHNIN, A.F.; KURSANOV, A.L., akademik, otvetstvennyy redaktor; NICHI-POROVICH, A.A., professor, otvetstvennyy redaktor; SAMYGIN, Yu.A., redaktor; ZELENKOVA, Ye.V., tekhnicheskiy redaktor.

[Plants and light; theory and practice of plant growing in artificial light] Rastenie i svet; teoriia i praktika svetokul'tury. Moskva, Izd-vo Akad. nauk SSSR, 1954. 456 p. (MLRA 7:12)
(Plants, Effect of light on)

USSR:

2606. PHOTOSYNTHESIS OF PLANTS AND UTILIZATION OF SOLAR RADIATION BY BIOLOGICAL AND PHOTOCHEMICAL MEAN. Nichiporovich, A.A. (Vestn. Akad. Nauk SSSR (J. Acad. Sci. U.S.S.R.), Sept. 1954, 24 [illegible]titative data are examined and the importance of developing this practically inexhaustible source of food, industrial products and energy is stressed.

NICHIPOROVICH, A.A.

Aspects of the development and functioning of the photosynthetic mechanism under field conditions in relation to the problem of increasing yields. Fiziol.rast. 1 no.2:97-108 N-D '54. (MLRA 8:10)

1. Institut fiziologii rasteniy imeni K.A.Timiryazeva Akademii nauk SSSR, Moscow
(Photosynthesis) (Crop yields)

USSR/Biology : Photosynthesis

Card : 1/1

Authors : Nichiporovich, A. A., Prof. Dr. of Biological Sciences

Title : The problem of photosynthesis

Periodical : Nauka i Zhizn'. 5, 13 - 16, May 1954

Abstract : Photosynthesis is discussed. Illustrations.

Institution : ....

Submitted : ....

NICHIPOROVICH, A.A.

USSR/Biology - Photosynthesis

Card 1/1 : Pub. 124 - 4/24

Authors : Michiporovich, A. A., Professor

Title : Photosynthesis of plants and biological and photochemical utilization of solar radiation

Periodical : Vest. AN SSSR 9, 24-35, Sep 1954

Abstract : Plant photosynthesis and the advantages derived through biological and photo-chemical utilization of solar radiation are discussed. Table; graph; diagram.

Institution : ...

Submitted : ...

NICHIPOROVICH, A.A., professor, doktor biologicheskikh nauk.

Problem of photosynthesis. Nauka i zhizn' 21 no.5:13-16a My '54.
(MLRA 7:6)

(Photosynthesis)

NICHIPOROVICH, A.A.; KURSANOV, A.L., akademik, redaktor; SHTERNBERG, M.B., redaktor; GRACHOVA, Ye.D., tekhnicheskiy redaktor.

[Nourishment of plants by light and carbon dioxide; photosynthesis. Svetovoe i uglerodnoe pitanie rastenii; fotosintez. Moskva, Izd-vo Akademii nauk SSSR, 1955. 286 p. (MLRA 8:12)
(Photosynthesis)

NICHIPOROVICH, N.N.

SABININ, D.A.; GENKEL', P.A., professor; KURSANOV, A.L., akademik, redaktor; MICHIPAROVICH, A.A., professor, redaktor; KOLOSOV, I.I., doktor biologicheskikh nauk, redaktor; TRUBETSKOVA, O.M. kandidat biologicheskikh nauk, redaktor; SAMYGIN, G.A., redaktor; ZELENKOVA, Ye.V., tekhnicheskiy redaktor;

[Physiological principles of plant nutrition] Fiziologicheskie osnovy pitaniia rastenii. Moskva, Izd-vo Akademii nauk SSSR, 1955. 512 p. (MLRA 8:8)
(Plants--Nutrition)

NICHIPOROVICH, A. A.

"Tracer Atoms Used to Study the Products of Photosynthesis as Depending on the Conditions in Which the Process Takes Place," a paper presented at the Atoms for Peace Conference, Geneva, Switzerland, 1955

NICHIPOROVICH, A.A.

Methods of calculating and studying photosynthesis as a factor of productivity. Trudy Inst.fiziol.rast. 10:210-249 '55. (MIRA 8:9)

1. Institut fiziologii rasteniy im. K.A. Timiryazeva Akademii nauk SSSR.
(Protosynthesis)

NICHIPOROVICH, A.A.

Methods and units of computing solar energy in plant physiology. Trudy Inst.fiziol.rast. 10:265-271 '55. (MLRA 8:9)
(Solar energy) (Plants, Effect of light on)

NICHIPOROVICH, Anatoliy Aleksandrovich; KURSANOV, A.L., akademik, otvetstvennyy redaktor; SAMYGIN, Yu.A., redaktor izdatel'stva; ZEMLYAKOVA, T.A., tekhnicheskiy redaktor

[Photosynthesis and a theory of high crop yields] Fotosintez i teoriia polucheniia vysokikh urozhaev. Dolozheno na Piatnadtsatom ezhegodnom Timiriazevskom chtenii 4 iiunia 1954 g. Moskva, Izd-vo Akademii nauk SSSR, 1956. 92 p. (Timiriazevskie chteniia, 15) (MLRA 10:1)
(Photosynthesis)

USSR / General Division, Congresses, Conventions, Conferences A-4

Abs Jour : Ref Zhur - Biol., No 1, 1958, No 105

Author : Nichiporovich, A.A.

Inst : Not Given

Title : The Coordinating Conference of the Problem "Photosynthesis"

Orig Pub : Fiziol. rastenij, 1956, 3, No 5, 495-496

Abstract : A short account of the conference, conducted on March 16-17, 1956 by the K.A. Timiryazev Institute of Plant Physiology on the subject: the study of photosynthesis as a factor of the fruitfulness of plants.

Card : 1/1

NICHIPOROVICH, A.

An outline of the plan of plant physiology for Czechoslovak scientific institutes. p. 352. (CESKOSLOVENSKA BIOLOGIE, Vol. 5, No. 6, Nov 1956, Praha, Czechoslovakia)

SO: Monthly List of East European Accessions (EEAL) LC, Vol. 6, No. 12, Dec 1957. Incl.

NICHIPOROVICH, A.A.

GRAYEVSKIY, Emanuil Yakovlevich; SHAPIRO, Nikolay Iosifovich; SHAPIRO, F.B., redaktor izdatel'stva; NICHIPOROVICH, A.A., otvetstvennyy redaktor; ASTAF'YEVA, G.A., tekhnicheskiy redaktor

[Present-day problems in radiobiology.] Sovremennye voprosy radiobiologii. Moskva, Izd-vo Akad.nauk SSSR, 1957. 93 p. (MLRA 10:5)

(Radiobiology)

NICHIPOROVICH, A.A., with ANDREYEVA, T.F., VOSKRESENSKAYA, N.P.
Timiriazev Institute of Plant Physiology, Moscow

"Different Ways of Transformation of Carbon Assimilated by Plants in the Process of Photosynthesis,"

paper presented at Intl. Conf. on Uses of Radioisotopes in Scientific Research (UNESCO) Paris, 9-20 Sept 1957

MICHIPOROVICH, A.A.

[illegible]

extent to the progress made in research on photosynthesis. The Soviet scientists A.N. Terenin and A.A. Krasnovskiy established that the process of photosynthesis represents a complex chain of accompanying light and dark reactions;

of light energy, the others occur spontaneously, due to the chemical energy of molecules. A.P. Vinogradov established that due to the decomposition of water during the photo-

Card 1/3

Storehouse of the Sun 25-1-3/48

synthetic process oxygen is released while hydrogen is used for the formation of carbohydrate. Photosynthesis of green plants is the primary source for the regeneration of all organic substances and consequently of all alimentary resources for living organisms on earth. With the help of marked atoms, Soviet scientists have studied and thereby disclosed many details of the photosynthetic formation of carbohydrate. However, this information is not yet sufficient for the creation of an apparatus for synthetic photosynthesis. Such a device, making use of the light of the sun, should have a very large area of a complicated design, operating according to the mechanical principles of perpetual motion. Recent experiments carried out with the help of marked atoms by Soviet scientisits T.N. Godnev, A.A. Shlyk and F.V. Turchin showed that many components (necessary for the photosynthetic process, such as chlorophyll, protein etc) are continuously being consumed, renewed and regenerated. The intensity of metabolism depends on the extent of the operation of the entire system.

In spite of the important significance that research in this field might have for the chemical industry, synthetic

Card 2/3 photosynthesis will never equal the photosynthesis perform-

25-1-3/48

Storehouse of the Sun

ed by nature itself in efficiency and operation. The article will be continued.
There are four sketches.

AVAILABLE: Library of Congress

Card 3/3

Nichiporovich, A.A

25-2-3/43

AUTHOR: Nichiporovich, A.A., Doctor of Biological Sciences, Professor

TITLE: Storehouse of the Sun (Kladovaya Solntsa)

PERIODICAL: Nauka i Zhizn', 1958, # 2, p 13-16 (USSR)

ABSTRACT: This article discusses the possibilities of increasing the photosynthetic productivity of plants, and thereby solving the problem of supplying enough food for all peoples.

The Laboratory for Photosynthesis of the Institute for Physiology of Plants of the USSR Academy of Sciences is engaged in research in an effort to take advantage of the process of photosynthesis to increase the yield of crops. Results obtained showed that only those crops, which form a large leaf surface capable of absorbing a considerable quantity of solar energy and of assimilating a large amount of carbon-dioxide from the air, give high and sure yields. It is important to supply the plants with sufficient nutriments and water to increase the intensity and productivity of the photosynthetic process.

It has been found that under favorable conditions such leaves are capable of assimilating 20, 30 and sometimes even 40 g of carbon-dioxide in one day. From each gram of assimilated

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carbon-dioxide, plants can produce 0.5-0.55 g of dry substances. This results in an accumulation of 10-12 g of dry substances per sq m of the leaves during a 24 hour period. This may increase to 20 g in the near future. An increase in the yield of crops gives a corresponding increase in food resources.

Vast ocean areas could serve as another important food resource, since the average photosynthetic productivity of water-flora surpasses that of land vegetation by 1½ times. Foreign and Soviet scientists (N.S. Gayevskaya) have developed a method of obtaining valuable bird-seed, as well as fodder for cattle, from algae. The algae is cultivated for test purposes in shallow basins containing the necessary nutrients. The aqueous suspension is scavenged by air which is enriched with carbon-dioxide. The concentration formed is capable of absorbing all light rays thrown on it, and thus all cells are able to carry out an intensive photosynthesis.

Later, the liquid is filtered. The filtrate obtained is a dry bio-substance suitable for feeding birds and cattle. During the vegetation period, up to 70 tons of dry bio-substance can be produced from each hectar of the basin's surface.

There are three sketches and six Russian references.

AVAILABLE: Library of Congress

Card 2/2

NICHIPOROVICH, A.A., prof.; MUAZ, A. [Moise, A.], prof.

Science discovers production secrets of "green factories".
IUn.tekh. 2 no.4:40-42 Ap '58. (MIRA 11:5)

1.Rukovoditel' laboratorii fotosinteza instituta fiziologii rasteniy AN SSSR (for Nichiporovich). 2. Sorbonnskiy universitet, Direktor laboratorii fotosinteza i fiziologii rasteniy (for Muaz).
(Photosynthesis) (Botany--Physiology)

AUTHOR: Nichiporovich, A.A., Professor (Moscow) 26-58-7-6/48

TITLE: At the Brussels Exhibition (Na Bryussel'skoy vystavke)

PERIODICAL: Priroda, 1958, Nr 7, pp 41-46 (USSR)

ABSTRACT: This is a description of the Brussels World Fair and the Soviet pavilion there. Special attention is devoted to the international "Science" pavilion with its individual departments. The department devoted to the "Living Cell" demonstrates the following: research results achieved by Academician V.A. Engel'gardt and M.N. Lyubimova, covering the important mechanism of muscle contraction, the works of Professor G.M. Frank of the Institut biofiziki AN SSSR (Institute of Biophysics of the AS USSR) showing that the transmission of an excitation along the nerve fiber (axon) is effected not only by chemical reactions but also by well-expressed physico-chemical changes of the structure and conditions of the ascoplasma substance; interesting results of the study of the mechanisms of the visual perceptions by Professor N.D. Nyuberg of the same institute; Professor A.M. Studitskiy presented material on the possibility of regeneration of damaged or even removed bones, muscles and tendons of several animals under certain conditions; Professor V.A.

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At the Brussels Exhibition

26-58-7-6/48

Peshkov demonstrated an improved microscope, increasing considerably the possibility of studying very small structures of cell organization. In the department of the "Plant Cell", Soviet results on investigations of the function of photosynthesis are presented as follows: the absorption of light quantums and their utilization for chemical operations by the living cells of green organisms as studied in the Institute of Biochemistry of the AS USSR under the direction of Academician A.N. Terenin and Professor A.A. Krasnovskiy; ways and stages of carbon transformation in the process of photosynthesis as explored by aid of marked atoms in the Laboratoriya fotosinteza Institutafiziologii rasteniy AN SSSR (Photosynthesis Laboratory of the Institute of Plant Physiology of the AS USSR) under the direction of Professor A.A. Nichiporovich; methods to investigate the photosynthesis by aid of marked carbon under laboratory conditions and in the field as worked out by the Botanicheskiy institut AN SSSR (Botanical Institute of the AS USSR) under O.V. Zalenskiy; the problem of transportation and metabolism of substances from organ to organ worked out by Academician A.L. Kursanov of the Institute of Plant Physiology of the AS USSR. Here the method of marked atoms is also being largely used; re-

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sults of investigations on the ferment activities based on the work of Academician A.I. Oparin and his co-researchers in the Institut biokhimii AN SSSR (Institute of Biochemistry of the AS USSR) and N.M. Sisakyan's work in the same institute on the biochemical functions of the plastids; biogeochemical research on the influence of such elements as Ca, J, B. Co, Mn, Fe, etc, on the plant life as represented by Academician A.P. Vinogradov's work; Czech Academician B. Němec's investigations on the accumulation of gold in maize plants.
There are 6 photos on insert.

1. Science--Exhibition

NICHIPOROVICH, A., prof.

Exhibit of Soviet biological sciences at the Brussels Fair.
Nauka i pered. op. v sel'khoz. 8 no.4:55-57 Ap '58. (MIRA 11:5)
(Brussels--Exhibitions)
(Biological research)

AUTHOR: Nichiporovich, A.A., Professor [illegible]

TITLE: Photosynthesis and the Method of Tracer Atoms (Fotosintez i metod mechenykh atomov)

PERIODICAL: Priroda, 1958, Nr 12, pp 15-[illegible] (USSR)

ABSTRACT: The article states the importance of the photosynthesis of plants as the almost unique source of new formation of organic substances and, consequently, food resources for all living beings. Every year terrestrial and marine plants together synthetize about 450 billion tons of organic substances or 180 tons per human being. An historical survey on results in the study of photosynthesis is given. A vast and prospective field for researchers was opened by the use of marked atoms in the study of photosynthesis and food crops. Soviet scientists A.A. Nichiporovich, T.E. Andreyeva, N.E. Voskresenskaya and L.A. Nezgovorova used marked carbon and nitrogen and stated that the transformation of carbon assimilated photosynthetically in the process of photosynthesis may proceed along different lines and with different speed, while the composition of the products formed in photosynthesis shows differences that depend on the type of plants, their physiological state, and the conditions of the outer medium, such as

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the intensity and spectral composition of the light, our city factors, nitrogen provision, etc. This "lability" is connected with the formation of trioses and hydrocarbons and the oxidation leading to the formation of pyroracemic acid and subsequent products. As suggested by Professor A.M. Yuzin and Ye.M. Boychenko, the diversity of products of photosynthesis can also be explained by the assumption that the original fixation of CO_2 is not limited to one acceptor but comprises several acceptors, e.g. polyuronic acids or, according to L.A. Nezgovorova, albumins. Maximum harvests are obtained only when the leaf area grows in accordance to calculated optimum graphs. The speed of this growth can also be studied by means of tracer atoms. I.F. Belikov of the Dal'nevostochnyy filial AN SSSR (the Far-East Branch of the AS USSR) stated that the known amount of radioactivity in the leaves and other organs gave the clue that in the soybean plant, the future beans - during germination and bean formation - are provided with nutrition by the leaves of the nodes to which these beans belong (Fig. 2). The photosynthesis laboratory of the Institute of Plant Physiology imeni K.A. Timiryazev has developed a special device which makes it possible to expose in a closed system of an air current with [illegible] parts of

leaves enclosed in special chambers consisting of two halves (Fig. 4), to determine the photosynthesis and the composition of its products. The same $C^{14}O_2$ was used by A.L. Kursanov and N.Pristup to study the flow-off of assimilation products from the leaves to the roots under diverse conditions of water and nitrogen supplies. T.F. Andreyeva studied the carbon assimilation of plants given to various changes of the conditions of the outer medium, by means of $C^{14}O_2$. The faster or slower assimilation of C^{14} as a sign of sufficient or insufficient humidity of the soil substrata, was investigated by L.A. Nezgovorova, T.N. Godnev, A.A. Shlyk and F.V. Turchin showed that chlorophyll and albumins are subject to constant renewals, that of chlorophyll taking about two weeks. L.A. Nezgovorova directed attention to the fact that increased doses (1.5 to 2 times) of nitrogen increase the faculty of the leaves to bring about that first reaction through which CO_2 can be introduced into the cycle of photosynthetic transformations. Increased large-scale experimentation along these lines in the USSR and abroad will cover two big contemporary problems: the utilization of the inner-atomic energy, and of photosynthesis - including vegetation in small and large bodies of water - as the point

Photosynthesis and the Method of Tracer Atoms

of origin of all food resources.
There are 6 diagrams, 1 set of photos, 1 set of graphs and
2 Soviet references

ASSOCIATION: Institut fiziologii rastenly im [illegible]
Moskva (The Institute of Plant Physiology imeni [illegible]
miryazev of the AS USSR, Moscow)

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NICHIPOROVICH, A.A., doktor biol. nauk, prof.

The sun's storeroom. Nauka i zhizn' 25 no.1:7-10 Ja '58. (MIRA 11:3)
(Photosynthesis)

MICHIFOROVICH, A.A., doktor biol. nauk, prof.

The sun's storeroom (conclusion). Nauka i zhizn' 25 no.2:13-16 F '58. (MIRA 11:3)
(Photosynthesis) (Food supply)

Nichiporovich, A.A.

NICHIPOROVICH, A. A. and VOSKRESSENSKAYA, N. P.

"Effect of Radiation in Various Wavelength Regions on Plant Composition."
Paper submitted for the Int'l Botanical Congress, Montreal, Canada, 17-29 Aug 1959.

Timiriazev Inst. of Plant Physiology, Academy of Sciences U.S.S.R. Moscow.

KURSANOV, A.L., akademik, red.; NICHIPOROVICH, A.A., prof., red.; KRASNOVSKIY, A.A., prof., red.; RUBIN, B.A., prof., red.; BOYCHENKO, Ye.A., doktor biol.nauk, red.; OSIPOVA, O.P., kand.biol.nauk, red.; KLESHNIN, A.F., red.izd-va; POLYAKOVA, T.V., tekhn.red.

[Problems of photosynthesis; reports at the Second All-Union Conference on Photosynthesis, Moscow, Jan.21-26, 1957] Problemy fotosinteza; doklady na II Vsesoiuznoi konferentsii po fotosintezu, Moskva, 21-26 ianvaria 1957 g. Moskva, 1959. 747 p. (MIRA 12:12)

1. Akademiya nauk SSSR. Otdeleniye biologicheskikh nauk.
(PHOTOSYNTHESIS--CONGRESSES)

ICHIPOROVICH, A.A.

Vladimir Ivanovich Palladin; on the one-hundredth anniversary of his birth. Fiziol. rast. 6 no.4:385-387 Jl-Ag '59. (MIRA 12:10)
(Palladin, Vladimir Ivanovich, 1859-1922)

MICHIPOROVICH, A.A.

Problems of plant physiology in the light of the decisions of the 21st Congress of the CPSU. Fiziol. rast. 6 no.4:388-399 Jl-Ag '59. (MIRA 12:10)

1.K.A. Timiriazev Institute of Plant Physiology, U.S.S.R. Academy of Sciences, Moscow.
(Plant physiology) (Agriculture)

NICHIPOROVICH, A.A.; CHEN' IN' [Chen Yin]

Photosynthesis and absorption of mineral nutrients and water by plant roots. Fiziol. rast. 6 no.5:513-521 S-O '59. (MIRA 13:2)

1.K.A. Timiryazev Institute of Plant Physiology U.S.S.R. Academy of Sciences, Moscow.
(Plants--Assimilation)

NICHIPOROVICH, A.A.

Conference on work problems associated with the measurement of optical radiation in agrometeorology, plant physiology, and plant ecology. Fiziol. rast. 7 no.6:744-747 '60. (MIRA 14:1)
(Plants, Effect of light on)
(Radiation--Measurement)

BUTENKO, R.G.; NICHIPOROVICH, A.A.; PROTASOVA, N.N.

Biological significance of the diversity of photosynthetic products in plants. Dokl. AN SSSR 135 no.1:210-212 N'60. (MIRA 13:11)

1. Institut fiziologii rasteniy im. K.A.Timiryazeva AN SSSR. Predstavleno akademikom A.L.Kursanovym.
(Photosynthesis)

NICHIPOROVICH, A.A.

USSR

BOYCHENKO, Ye. A. Dr. - "Chloroplast Enzymes Participating in CO_2 Fixation" (Session C)

DOMAN, N. A., Dr., Institute of Biochemistry, Imeni A. N. BAKH, USSR Academy of Sciences - "Primary Products of CO_2 Assimilation in Photosynthesis" (Session D)

KRYSTINSKIY, V. B., Dr. - "Photoassimilation of Chlorophyll Under Heterogeneous Conditions" (Session B)

KRASNOVSKIY, A. A., Institute of Biochemistry, Imeni A. N. BAKH, USSR Academy of Sciences - "The Nature of Chlorophyll Under Heterogenous Conditions" (Session B)

NICHIPOROVICH, A. A., Dr., Institute of Plant Physiology, Imeni K. A. TIMIRYAZEV, USSR Academy of Sciences - "Ways of Carbon and Nitrogen in Photosynthesis" (Session D)

SAPOZHNIKOV, D. I., Institute of Botany, Imeni V. L. KOMAROV, USSR Academy of Sciences - "Participation of Carotenoids in Reactions of Photosynthesis" (Session C)

SAUKKONEN, O. V., Dr., Institute of Botany, Imeni V. L. KOMAROV, USSR Academy of Sciences - "Relation Between Photosynthesis and Respiration" (Session D)

Report to be presented at the 5th Int'l Congress of Biochemistry, Moscow, USSR, 1-10 Aug 61.

NICHIPOROVICH, A.A.; STROGONOVA, L.Ye.; CHMORA, S.N.; VLASOVA, M.P.; KURSANOV, A.L., otv.red.; SHAROVATOVA, I.E., red.izd-va; VOLKOVA, V.M., tekhn.red.

[Photosynthetic activity of cultivated plants; methods and object of records kept in connection with the formation of grain] Fotosinteticheskaia deiatel'nost' rastenii v posevakh; metody i zadachi ucheta v sviazi s formirovaniem urozhaev. Moskva, Izd-vo Akad.nauk SSSR, 1961. 132 p. (MIRA 14:4)

(Photosynthesis)

NICHIPOROVICH, A.A.; VLASOVA, M.P.

Formation and efficieny of the photosynthetizing apparatus in different cultivated plants during the growing season. Fiziol. rast. 8 no.1:19-28 '61. (MIRA 14:3)

1. K.A. Timiriazev Institute of plant Physiology, U.S.S.R. Academy of Sciences, Moscow.
(Photosynthesis) (Corn(Maize))(Wheat)

BUTENKO, R.G.; NICHIPOROVICH, A.A.; PROTASOVA, N.N.

Physiological activity of the products of photosynthesis in plants exposed to light of different spectral composition. Fiziol. rast. 8 no.2:153-160 '61. (MIRA 14:3)

1. K. A. Timiriazev Institute of Plant Physiology, U.S.S.R, Academy of Sciences, Moscow.
(Photosynthesis)

NICHIPOROVICH, A.A.

Properties of plant stands considered as optical systems. Fiziol. rast. 8 no.5:536-546 '61. (MIRA 14:10)

1. Timiriazev Institute of Plant Physiology, U.S.S.R. Academy of Sciences, Moscow.
(Plants, Space arrangement of)

NICHIPOROVICH, A.A., doktor biolog.nauk

Photosynthesis and the problem of food resources. Vest. AN SSSR 31 no.11:47-58 N '61. (MIRA 14:11)
(Photosynthesis) (Food supply)

NICHIPOROVICH, A.A., prof.

Unified system of the living world. Priroda 50 no.5:16 My '61. (MIRA 14:5)

(Space biology)

39289
S/216/62/000/002 002/002
I016/I216

AUTHOR: Nichiporovich, A. A., Semenenko, V. E. and Vladimirova, M. G.

TITLE: Intensification of the photosynthetic productivity of a culture of unicellular algae

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya biologicheskaya, no. 2, 1962, 163-172

TEXT: Unicellular algae could be used for food and for regeneration of O_2 in space flights if the photosynthetic productivity of the algal cultures were considerably improved. The present study deals with means of increasing the photosynthetic productivity of such cultures, mainly by increasing the rate of photosynthesis per unit volume of culture. Light is the major factor affecting photosynthetic productivity of dense algal suspensions. However, stronger illumination raises the temperature of the culture slowing down the growth of the mesophilic algae. Experiments with thermophilic algae have shown that with these forms, much higher photosynthetic productivity could be achieved employing higher illumination coefficients. There are 11 figures.

ASSOCIATION: Institut fiziologii rasteniy im. K. A. Timiryazeva, Akademii nauk SSSR (Institute of Plant Physiology im. K. A. Timiryazev, Academy of Sciences USSR)

SUBMITTED: December 8, 1961

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VLADIMIROVA, M.G.; SEMENENKO, V.Ye.; NICHIPOROVICH, A.A.

Comparative study on the productivity of various forms of unicellular algae. Probl.kosm.biol. 2:314-325 '62 (MIRA 16:4)

(ALGAE--CULTURES AND CULTURE MEDIA)

SEMENENKO, V.Ye.; VLADIMIROVA, M.G.; NICHIPOROVICH, A.A.

Some principles of the intensification of the photosynthetic productivity of some cultures of unicellular algae. Probl.kosm. biol. 2:326-339 '62. (MIRA 16:4)
(ALGAE--CULTURES AND CULTURE MEDIA)
(PHOTOSYNTHESIS)

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S/030/62/000/001/009/011
B105/B101

AUTHORS: Semenenko, V. Ye., Nichiporovich, A. A.

TITLE: Installation for investigating algae

PERIODICAL: Akademiya nauk SSSR. Vestnik, no. 1, 1962, 77 - 79

TEXT: The interest in algae is connected with their use for biological air regeneration and with the production of additional foodstuff during space flights of man. Research work during the last few years at the laboratoriya fotosinteza Instituta fiziologii rasteniy im. K. A Timiryazeva Akademii nauk SSSR (Laboratory for Photosynthesis of the Institute of Plant Physiology imeni K. A. Timiryazev of the Academy of Sciences USSR) has shown that active development of water plants can be safeguarded only under the following conditions: intensive lighting by day and night, uninterrupted supply of air enriched with carbon dioxide, intensive air supply, mixing of the suspension, preventing infection of the culture On this basis, a УИВ-1 (UIV-1) installation (Fig. 2) was designed at this laboratory. It was built by the Tsentral'noye konstruktorskoye byuro Akademii nauk SSSR (Central Design Office of the Academy of Sciences USSR)

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Installation for investigating algae

in 1960 - 1961. The installation permits physiological investigations of the growth, development, accumulation of biomass, and photosynthetic productivity of algae. A number of highly productive algae species were cultivated with its help. The effect of light intensity and carbon dioxide concentration on the growth of water plants was investigated. There are 2 figures.

Fig. 2. Principal diagram of the UIV-1 installation.

Legend: (1) compressor with receiver; (2) cocks for fine adjustment of gas supply; (3) rotameters; (4) mixer; (5) outlet valve; (6) culture vessels; (7) cotton-wool filters; (8) humidifiers; (9) cocks; (10) distribution pipes; (11) light source, APM-750 (DRL-750) bulb; (12) reducing valve with thermostat.

Card 2/[illegible]

NIC[illegible]CH, [illegible] doktor biol. nauk

In the Scientific Council on the problem "Photosynthesis." Vest. AN SSSR 32 no.6:108-109 Je '62. (MIRA 15:6)
(Photosynthesis)

NICHIPOROVICH, A.A., prof.

Sun, photosynthesis, and crop yields. Priroda 51 no.6:19-28 Je '62. (MIRA 15:6)

1. Institut fiziologii rasteniy im. K.A.Timiryazeva AN SSSR, Moskva.
(Photosynthesis) (Crop yields)

NICHIPOROVICH, A.A.

Conference on the control of the photosynthetic activity in plants.
Fiziol. rast. 10 no.3:389-390 My-Je '63. (MIRA 16:6)
(Photosynthesis—Congresses)

NICHIPOROVICH, A.A.; SLOBODSKAYA, G.A.; KARPUSHKIN, L.T.

Formation of carbohydrates in photosynthesis at various light intensities. Fiziol. rast. 10 no.4:405-415 Jl-Ag '63. (MIRA 16:8)

1. Timiriazev Institute of Plant Physiology, U.S.S.R. Academy of Sciences, Moscow.

NICHIPOROVICH, A. A.

"The photosynthetic capacity of leaves & the structure of chloroplasts."

report presented at 4th Intl Photobiology Cong, Oxford, UK, 26-30 Jul 64.

NICHIPOROVICH, A. A.

"Solar radiation energy and photosynthesis conditioning the productivity of ecological systems."

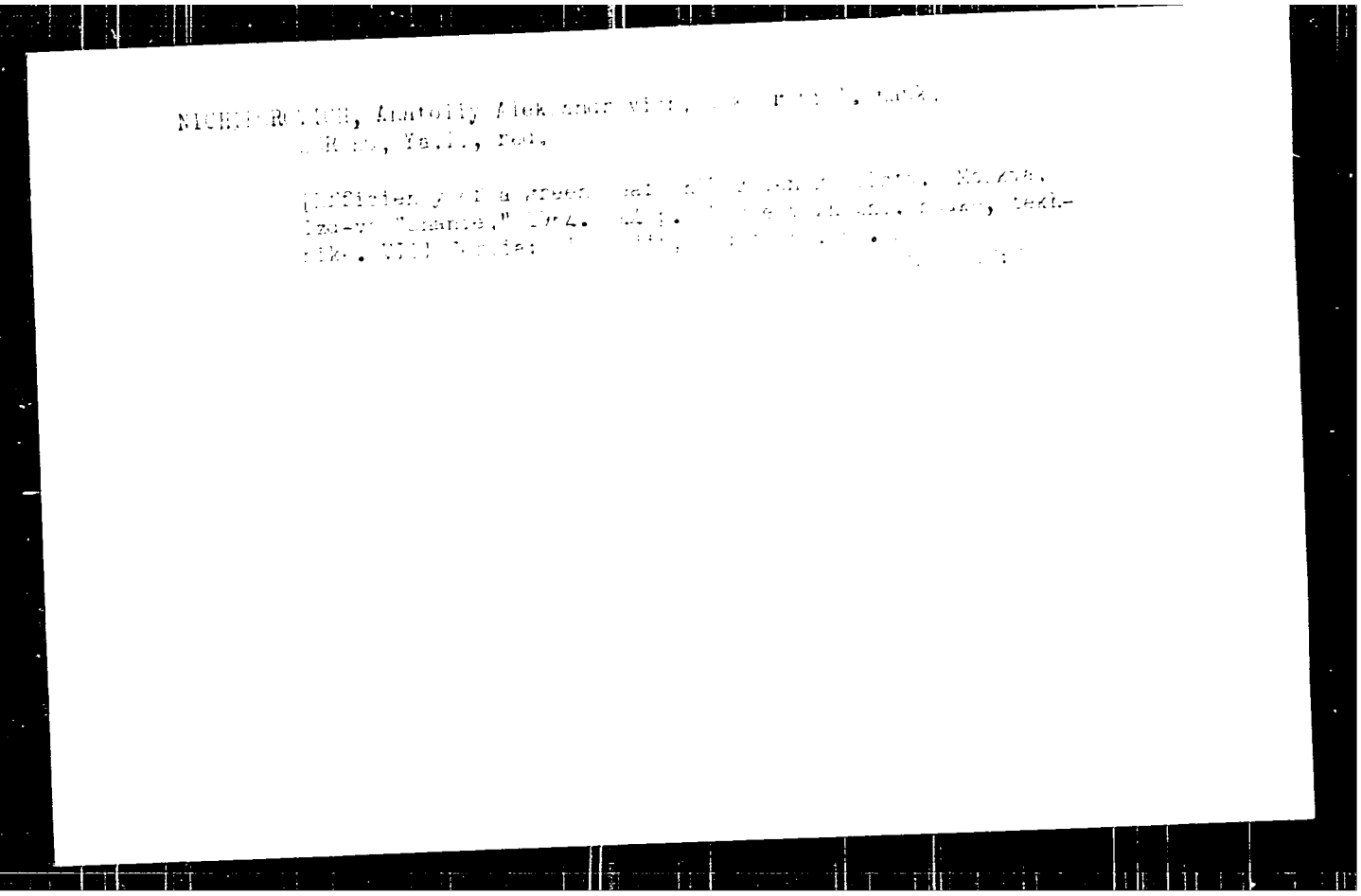
report submitted for 10th Intl Botanical Cong, Edinburgh, Scotland, 3-12 Aug 64.

NICHIFOROVICH, A. A.

"On the significance of various elements and factors of the photosynthetic activity of plants in crops for their productivity."

report submitted for 12th Intl Botanical Cong, Edinburgh, 3-11 Aug 64.

Timiryazev Inst of Plant Physiology, AS USSR, Moscow.



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ACCESSION NR: AR5008613 S/0299/65/000/004/G009/G009

SOURCE: Ref. zh., Biologiya, Svodnyy tom, Abs. 4G62

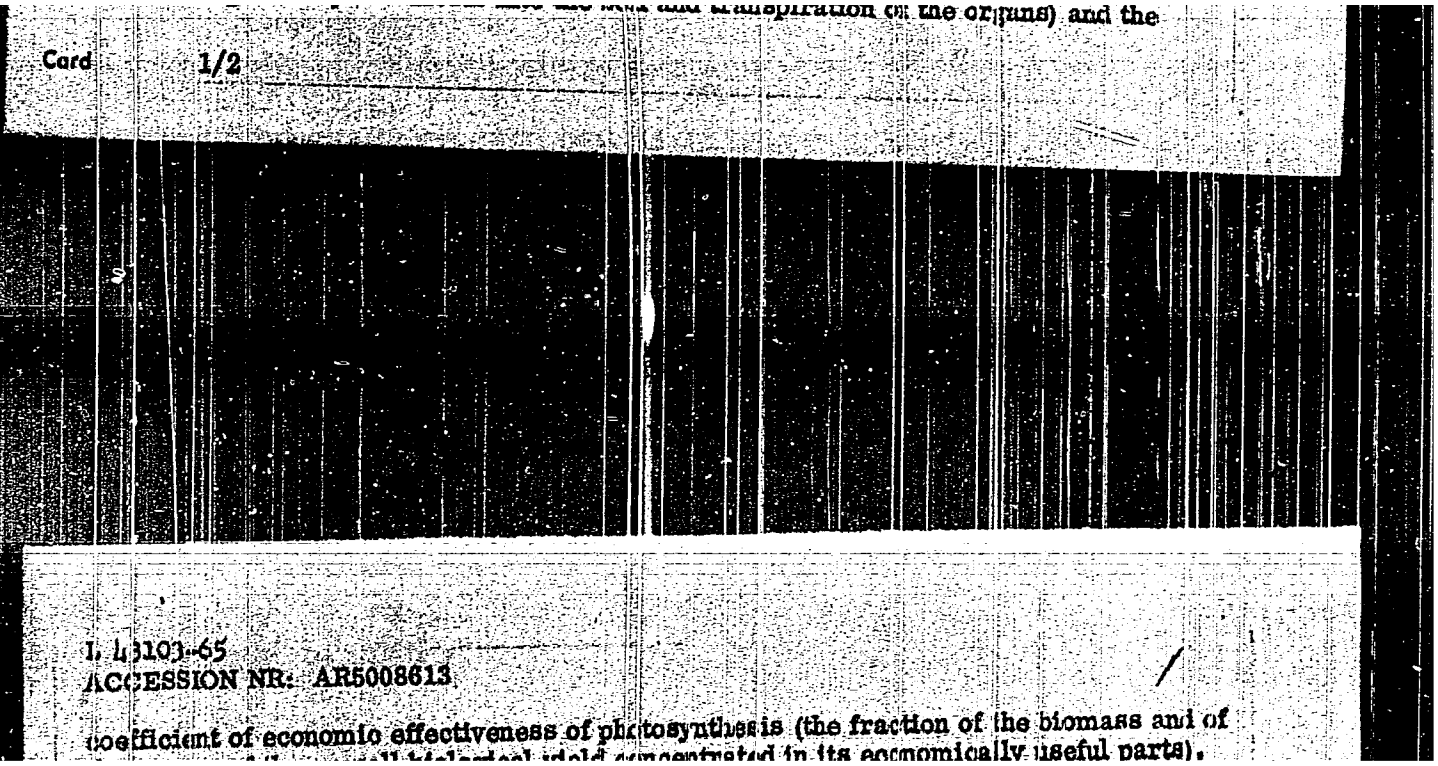
AUTHOR: Nichiporovich, A. A.

TITLE: Photosynthesis and mineral fertilizers

CITED SOURCE: Agrokhimiya, no. 1, 1964, 40-52

TOPIC TAGS: photosynthesis, mineral fertilizer, mineral nutrition, moisture supply, photosynthetic efficiency, leaf surface area, plant productivity

TRANSLATION: This is a review article. The author considers the basic indices of the photosynthetic activity of plants in a sowing to be: the leaf surface area, the photosynthetic potential of the sowing (integral growth curve of the leaf surface area during the growth period or the total of the daily indices of leaf surface area for the growth period), the overall productivity of photosynthesis (the amount of organic biomass created by the



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coefficient of economic effectiveness of photosynthesis (the fraction of the biomass and of

(Institute of Plant Physiology, AN SSSR) ...

M. Sb.

SUB CODE: LS ENCL: 00

Card 2/2

BUDAGOVSKIY, A.I.; MICHURINOVICH, A.A.; ROSS, Yu.K.

The quantitative theory of photosynthesis and its use for solving the scientific and practical problems of physical geography. Izv. AN SSSR Ser. geog. no.6:13-27 N-D '64 (MIRA 18:1)

1. Institut geografii AN SSSR, Institut rastenii AN SSSR i Institut fiziki i astronomii AN Estonskoy SSR.

ZAK, Ye.G.; NICHIPOROVICH, A.A.

Formation of amino acids during photosynthesis, identification and degradation of glycine, alanine and serine. Fiziol. rast. 11 no.1:20-30 Ja-F '64. (MIRA 17:2)

1. Institut fiziologii rasteniy imeni Timiryazeva AN SSSR, Moskva.

ZAK, Ye.G.; NICHIPOROVICH, A.A.

Paths of the formation of amino acids during photosynthesis.
Fiziol. rast. 11 no.6:945-950 N-D '64. (MIRA 18:2)

1. Institut fiziologii rasteniy imeni Timiryazeva AN SSSR, Moskva.