1. KURSAKOV, G. A.

2. USSR (600)

4. Grafting

7. Grafting root cuttings. Agrobiologia no. 5, 1952.

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

KURSAKOV, G.A.

Anomalies of flowers and fruit in distant hybrids of stone fruit species. Bot.zhur. 50 no.11:1585-1589 N '65. (MIRA 19:1)

1. TSentral'naya geneticheskaya laboratoriya imeni I.V. Michurina, g.Michurinsk. Submitted April 1, 1963.

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KURSAKOV, G. A.: "The results of agrobiologic l study of hybrid seedlings of saffron 'pepin'." Min Higher Education USSR. Fruit and Vegetable Inst imeni I. V. Michurin. Michurinsk, 1956.
(Dissertation for the degree of Candidate in Agricultural Sciences.)

SO: Knizhnaya Letopis'ъ No 36, 1956, Moscow.

KURSAKOV, G.A.

Morphological aspects in the root grafting of apples. Agrobiologiia no.3:468 My-Je '59. (MIRA 12:9)

1. Nauchno-issledovatel'skiy institut sadovodstva imeni I.V. Michurina, g.Michurinsk.
(Apple) (Grafting)

SNEZHKO, IA. S.: OLEYNIK, A. K.: KURSAKOV, N. K.

Mine Sanitation

Prevention of silicosis in mining., Gig. i san., no. 12, 1951

Monthly List of Russian Accessions, Library of Congress, March 1952, UNCLASS.

KURSAKOV, S.F.

Mistakes in TEKSO cards. Avt.i trakt. prom. no.8:31-32 Ag'55.
(MLRA 8:11)

1. Minskiy avtozavod
(Card system in business)

KURSAKOV, S.F.

"Planning at a machinery plant" by G.IA.Mett, N.M.IUr'ev. Reviewed by S.F.Kursakov. Mashinostroitel' no.3:47 Mr '59. (MIRA 12:3)
(Machinery industry) (Mett, G.IA.) (IUr'ev, N.M.)

KURSAKOV, Safon Fedorovich; PEVZNER, M.I., spetsred.; KUZNETSOV, P.V., red.; PONOMAREVA, A.A., tekhn.red.

[Organization and planning of inventions and rationalization work in enterprises] Organizatsiia i planirovanie izobretatel'skoi i ratsionalizatorskoi raboty na predpriiatiiakh. Moskva, Gosplanizdat, 1960. 95 p. (MIRA 14:2)
(Industrial management) (Inventions)
(Technological innovations)

GEL'FGAT, Samuil Naumovich; KURSAKOV, S.F., ekon., retsenzent; TROITSKIY, P.A., ekon., red.; ANTIPOV, V.P., red. izd-va; SMIRNOVA, G.V., tekhn. red.

[Production costs of a machinery manufacturing enterprise] Sebestoimost' produktsii mashinostroitel'nogo predpriiatiia. Moskva, Gos. nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1961. 126 p. (MIRA 14:8)

(Machinery industry—Costs)

K[illegible], A.P.

Experience in the organization of a reference collection at enterprises of the West Ural Economic Geog. R. NTI no.12:35 '64. (MIRA 18:3)

1. Nachal'nik otdela spravochno-informatsionnogo fonda Zapadno-Ural'skogo soveta narodnogo khozyaystva.

KURSAKOVA, A.D.; SHARTS, A.K.

Participation of the Central Science and Technology Library of the Western Urals Economic Council in building a reference collection. NTI no.7:10-11 '64. (MIRA 17:11)

UNAKOV, S.V.; MAGAZANNIK, S.S.; OSHCHEPKOVA, A.N.; SHUTOV, A.V.; [illegible], Ye.I.; KAMENEVA, A.L.; KURSAKOVA, A.S.; UTNITSKAYA, P.S.

Immunological prophylaxis of tick-borne encephalitis. Vop. virus. 10 no.4:462-467 Jl-Ag '65. (MIRA 18:8)

1. Moskovskiy nauchno-issledovatel'skiy institut virusnykh preparatov Ministerstva zdravookhraneniya SSSR i Sverdlovskaya oblastnaya sanitarno-epidemiologicheskaya stantsiya.

KURSAKOVA, G.M.

Extraction of bismuth from its ores. Cbog. rud. 2 no.4:11-12 '57. (MIRA 11:8)
(Bismuth) (Flotation)

VLODAVSKIY, I Kh. [deceased]; GORLOVSKIY, S.I ; KURSAKOVA, G.N.

Use of complexing collectors for the flotation of wolframite.
Obog. rud 6 no.3 5-7 '61. (MIRA 14:11)
(Wolframite) (Flotation)

3(?)

AUTHORS: Kursakova, I. V., Shcherbakova, L. N. SOV/6-59-6-5/22

TITLE: Brigades of Communist Work in the NRKCh (Brigady kommunisticheskogo truda v NRKCh)

PERIODICAL: Geodeziya i kartografiya, 1959, Nr 6, pp 34-37 (USSR)

ABSTRACT: 6 brigades in the NRKCh are fighting at present for the right of calling themselves Brigades of Communist Work. The first brigade was constituted at the Department for the Delineation of Maps on a suggestion by Tamara Yegorova. Her brigade consists of: Nina Gladyshova, Galya Dikova, Tanya Dvoynykh, Lyusya Trianditilova and Galya Popovskaya and 5 more. Next participants in the competition were the brigades of the School Map Department of V. F. Smagina and V. A. Alekseyeva. The former includes L. M. Timasheva, Z. F. Antropova, Nadya Gusikova, the latter V. S. Tereshkova and A. A. Nikolayeva. The charting editors of the two brigades are, N. A. Lobzova, A. V. Kravchenko, L. N. Kolosova, L. A. Bogdanova. Besides, two photographer brigades of 2 men each - V. P. Stepanov and V. P. Solovtsovskiy, and Yu. A. Pomkin and V. D. Medvedchuk are taking part. The 6th brigade is a group of members of the

Card 1/2

Brigades of Communist Work in the NIIKCh

SOV/6-59-6-5/22

Komsomol. All members of the Alekseyeva Brigade are learning English, and some members of the Yegorova Brigade are studying at the Department of Geography of the MGU. There is 1 figure.

Card 2/2

KURSAKOVA, L.

Role of the amount of pollen in the pollination and character inheritance of fruit crops. Biul. nauch. inform. TSGL no.7/8: 83-86 '59. (MIRA 13:1)
(Fruit culture) (Fertilization of plants)

LESYUK, Ye.A., kand. sel'khoz. nauk, nauchn. sotr.; KATSURA, O.P., kand. sel'khoz. nauk, nauchn. sotr.; KURSAKOVA, L.Ye., nauchn. sotr.; SMIRNOV, A.G., nauchn. sotr.; KUZ'MIN, A.Ya., kand. sel'khoz. nauk, nauchn. sotr.; FEDOROVA, Yu.A., red.

[Key for the identification of fruit and berry varieties; manual of certification] Opredelitel' sortov plodovo-iagodnykh kul'tur; rukovodstvo po aprobatsii. Moskva, Rossel'khozizdat, 1965. 150 p. (MIRA 18:7)

1. ROZANOV, L. N. : CHERVINSKAYA, M. V. : KURSAKOVA, Z. N. : MAZYUK, V. V.

2. USSR (600)

4. Buguruslan District - Geology

7. Reinterpretation and dissemination of the electric geophysical exploration materials of 1936 - 1943 and their coordination with the data of the geological prospecting activities in the Buguruslan petroleum district. /Abstract/ Izv. Glav. upr. geol. fon. no. 3 : 1947.

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

AUTHOR: Kursakova, Z. N.

S/169/63/000/002/112/127
D263/D307

TITLE: On the application of electric prospecting by the vertical electric sounding (VES) method in the study of the geological structure of the Ukrainian crystalline massif

PERIODICAL: Referativnyy zhurnal, Geofizika, no. 2, 1963, 30, abstract 2D183 (Byul. nauchno-tekhn. inform. M-vo geol. i okhrany nedr SSSR, 1961, no. 5 (33), 24-29)

TEXT: Electric prospecting by the VES method was first carried out in the Dneper brown coal basin, to discover coal-bearing depressions, and was then part of combined geophysical (magnetic and gravimetric exploration) studies carried out to find the intrusions of basic and ultrabasic rocks, since with these are associated deposits of Ni, chromites, and other useful minerals. The VES curves represent a multilayered geoelectric section, and their interpretation is rather difficult. The main electric horizon of high resistance is associated with the crystalline pre-Cambrian rocks, but the pre-

Card 1/2

sence of a zone of erosion of crystalline rocks with its water causes the absence of a sharp electric boundary. The upper part of the section, corresponding to the sedimentary Tertiary and Quaternary deposits, is denoted by the inconstancy of the parameters of individual electric horizons. Screening horizons are observed in some cases. Surface topography also exerts a major interfering effect on the VES curves. In spite of limited possibilities of quantitative interpretation of VES curves, the work carried out supports the validity of applying electric prospecting by VES, in combination with other geophysical methods, for the mapping of pre-Cambrian rocks. In processing the data, of greatest interest was the construction of apparent resistance sections down the VES profiles, and of curves of the total longitudinal conductivity. [Abstracter's note: Complete translation.]

Card 2/2

S/169/63/000/002/112/127
D263/D307

AUTHOR: Kursakova, Z. N.

TITLE: On the application of electric prospecting by the vertical electric sounding (VES) method in the study of the geological structure of the Ukrainian crystalline massif

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[Abstracter's note: Complete translation.]

Card 2/2

KURSANOV, A., akademik; VYSKREBENTSEVA, Z.; IVESHNIKOVA, I.; KRASAVINA, M.

Disorganization of energy metabolism in roots suffering from potassium deficiency. Dokl. AN SSSR 162 no.1:211-214 My '65.
(MIRA 18:5)

USSR.

Vladimir Aleksandrovich Engel'gardt

KURSANOV, A.D.

Metabolism of primary assimilation of ions and the theory of cellular carriers. Izv.AN SSSR.Ser.biol. no.5:740-753 S-O '62. (MIRA 15:10)

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

(PLANTS--METABOLISM)

Kursanov, A.L.
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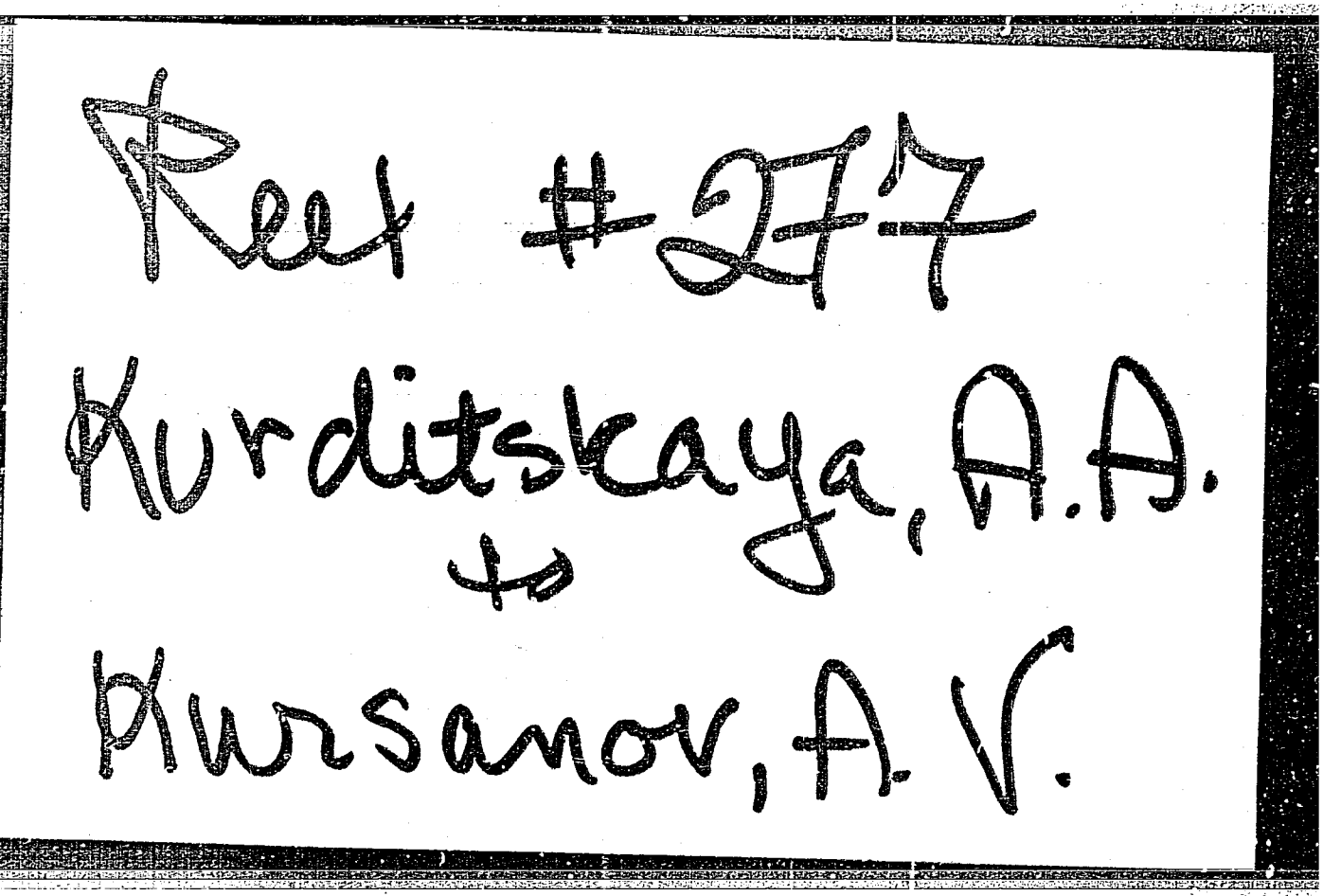
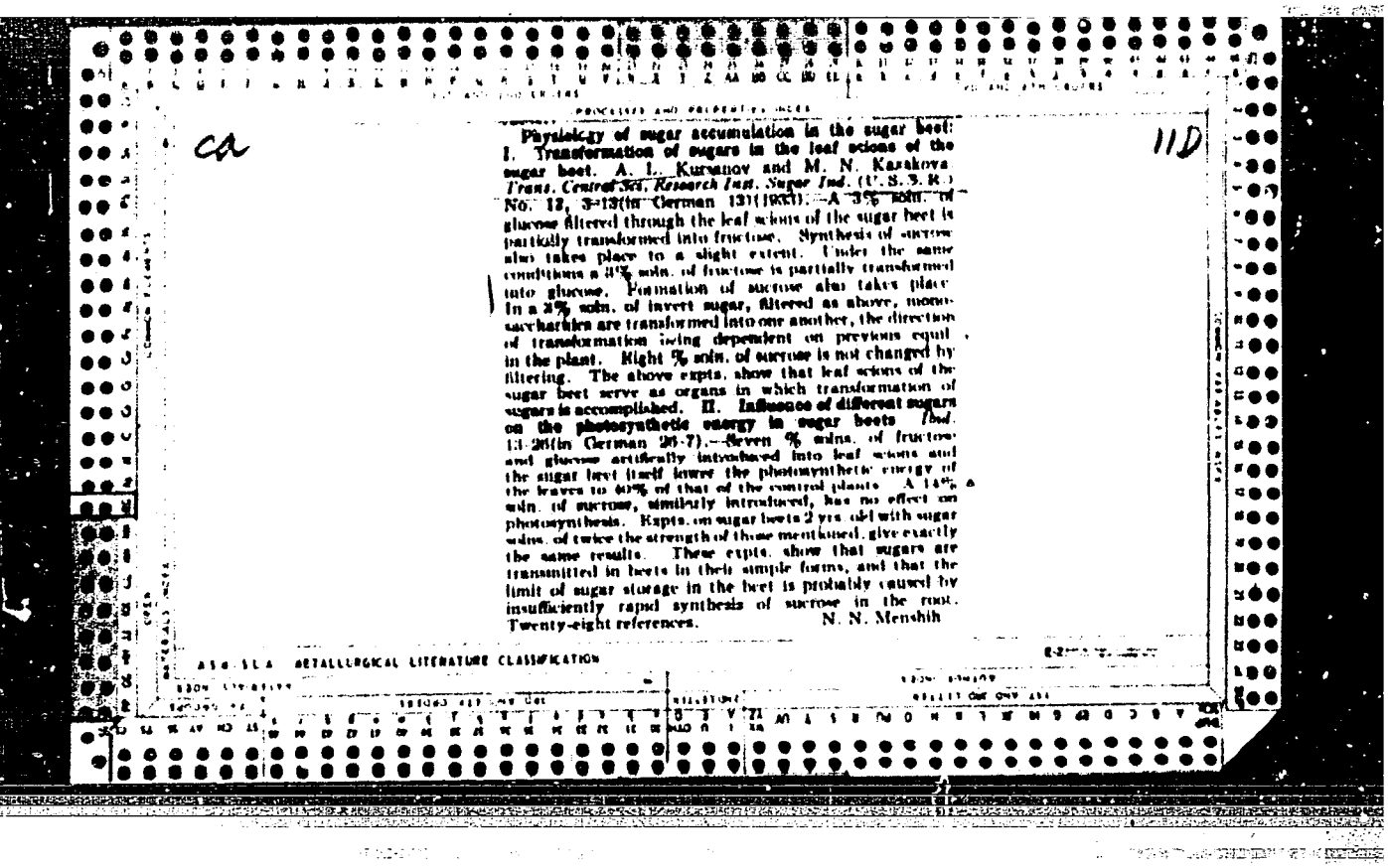


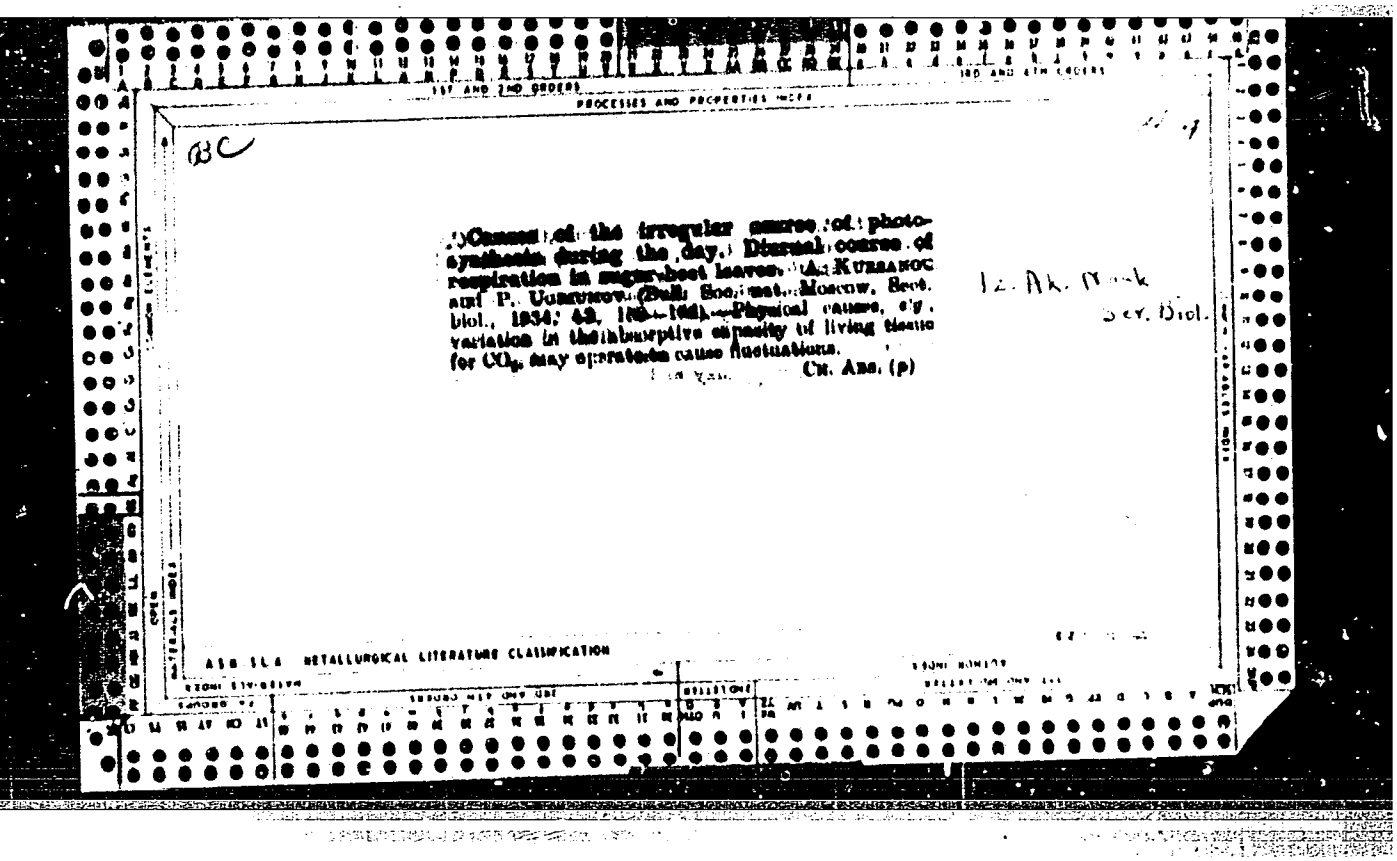


CA

Physiology of sugar accumulation in the sugar beet: I. Transformation of sugars in the leaf scions of the sugar beet. A. L. Kursanov and M. N. Kazakova. *Trans. Central Sci. Research Inst. Sugar Ind.* (U. S. S. R.) No. 12, 3-12(in German 13)(1933).—A 3% soln. of glucose filtered through the leaf scions of the sugar beet is partially transformed into fructose. Synthesis of sucrose also takes place to a slight extent. Under the same conditions a 3% soln. of fructose is partially transformed into glucose. Formation of sucrose also takes place. In a 3% soln. of invert sugar, filtered as above, monosaccharides are transformed into one another, the direction of transformation being dependent on previous equil. in the plant. Eight % soln. of sucrose is not changed by filtering. The above expts. show that leaf scions of the sugar beet serve as organs in which transformation of sugars is accomplished. **II. Influence of different sugars on the photosynthetic energy in sugar beets** *Ibid.* 13-26(in German 26-7).—Seven % solns. of fructose and glucose artificially introduced into leaf scions and the sugar beet itself lower the photosynthetic energy of the leaves to 60% of that of the control plants. A 14% soln. of sucrose, similarly introduced, has no effect on photosynthesis. Expts. on sugar beets 2 yrs. old with sugar solns. of twice the strength of those mentioned give exactly the same results. These expts. show that sugars are transmitted in beets in their simple forms, and that the limit of sugar storage in the beet is probably caused by insufficiently rapid synthesis of sucrose in the root. Twenty-eight references. N. N. Menshih

IID

A S & S L A METALLURGICAL LITERATURE CLASSIFICATION

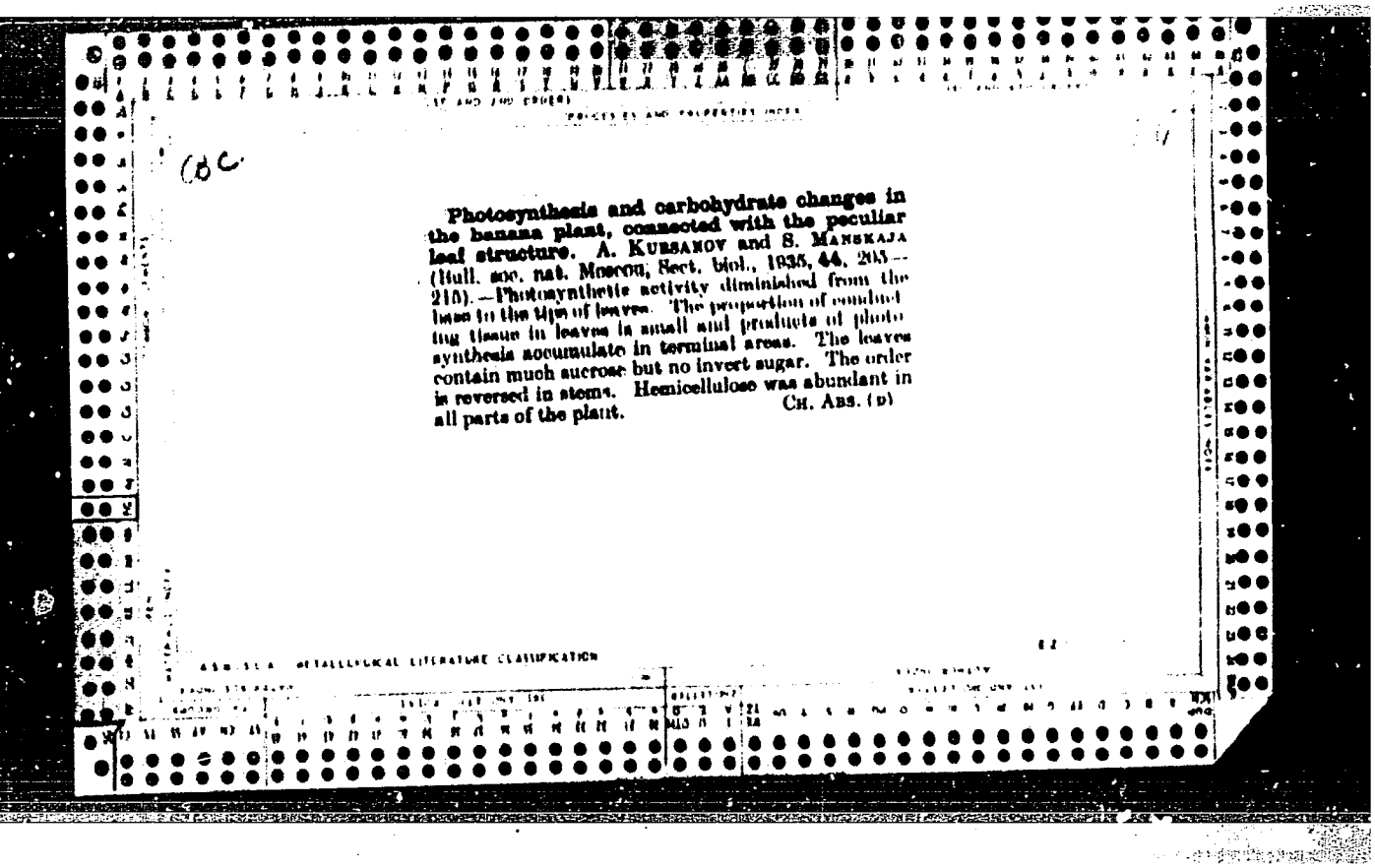


BC

Causes of the irregular course of photosynthesis during the day. Diurnal course of respiration in sugar-beet leaves. A. Kursanov and P. Usmanov. Bull. Soc. nat. Moscow, Sect. biol., 1934, 43, [No. 1-2]. Physical causes, e.g. variation in the absorptive capacity of living tissue for CO_2, may operate to cause fluctuations. Ch. Abs. (p)

12. Ak. Nauk Ser. Biol.

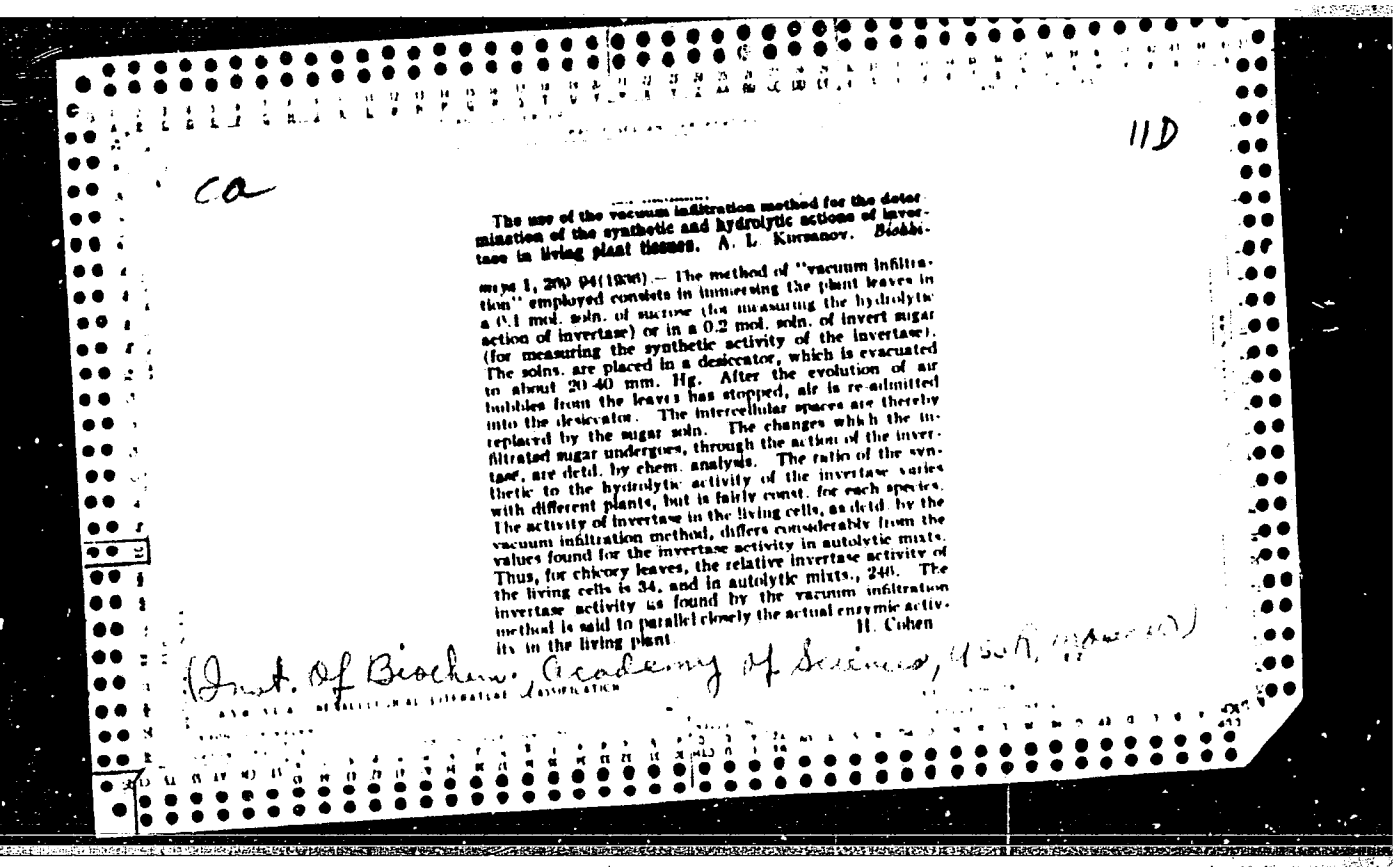
A58 SLA METALLURGICAL LITERATURE CLASSIFICATION



(BC

Photosynthesis and carbohydrate changes in the banana plant, connected with the peculiar leaf structure. A. KURSANOV and S. MANSKAJA (Bull. soc. nat. Moscou, Sect. biol., 1935, 44, 205—216).—Photosynthetic activity diminished from the base to the tips of leaves. The proportion of conducting tissue in leaves is small and products of photosynthesis accumulate in terminal areas. The leaves contain much sucrose but no invert sugar. The order is reversed in stems. Hemicellulose was abundant in all parts of the plant.

CH. ABS. (D)

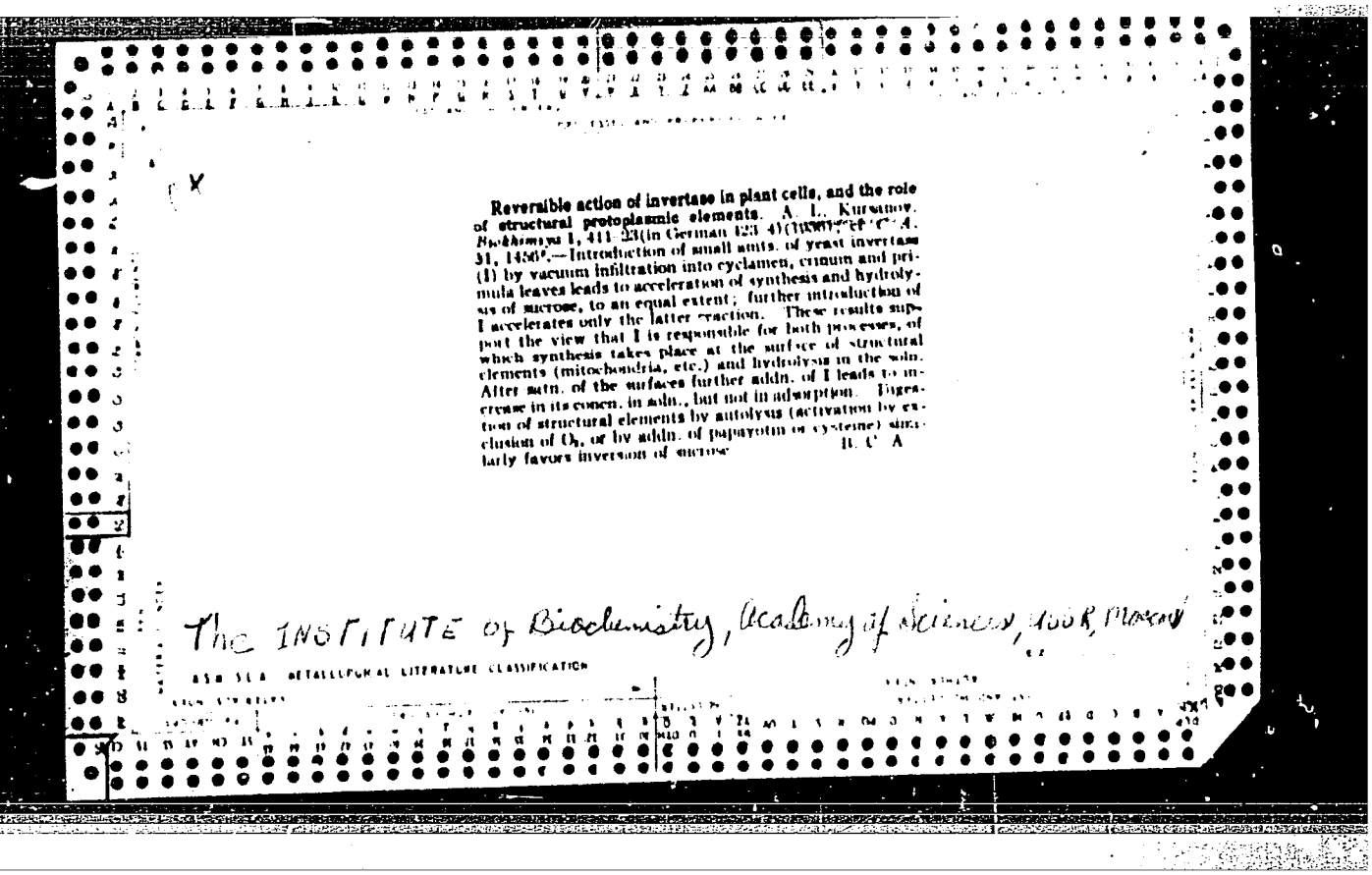


11D

ca

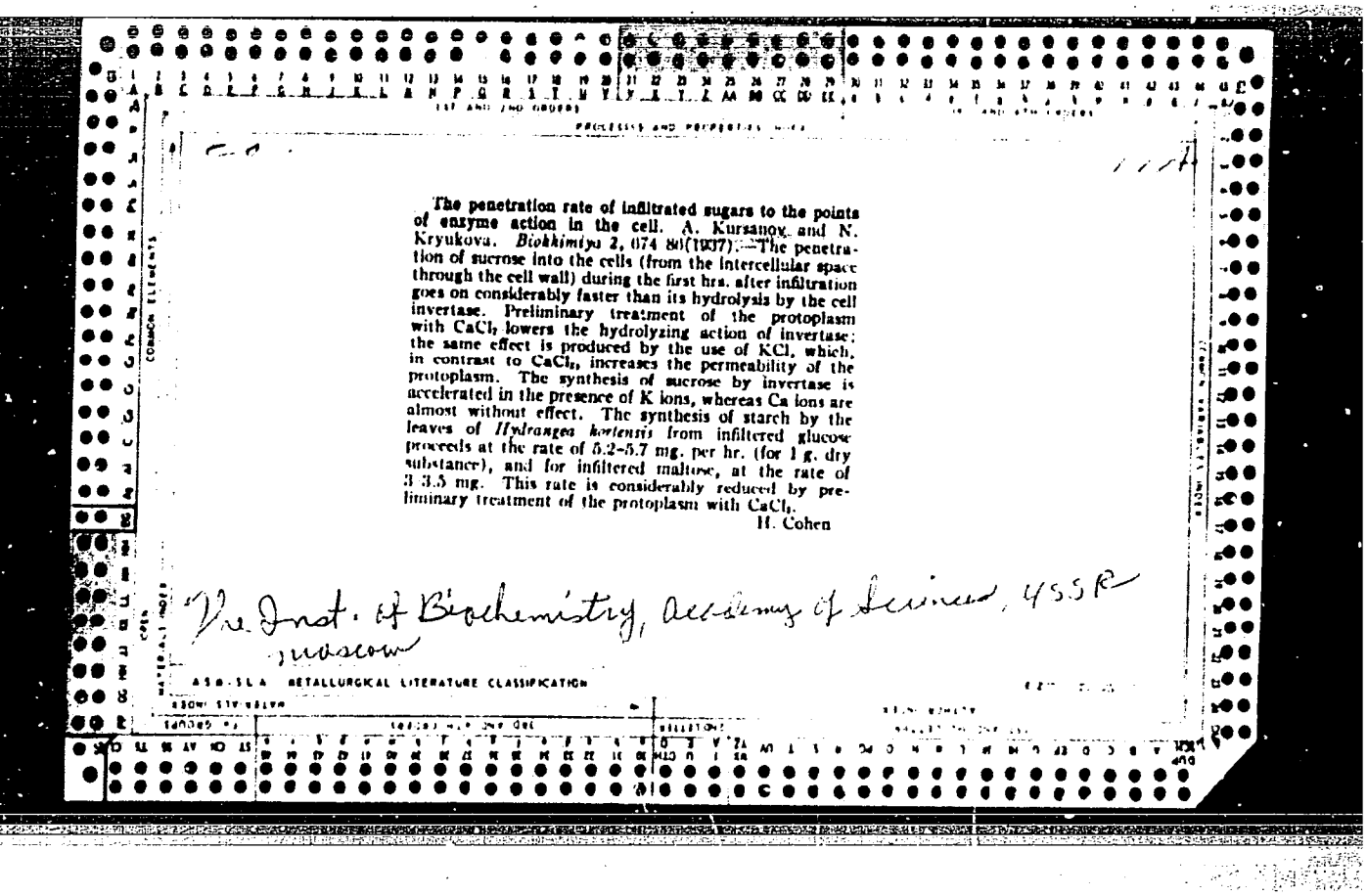
The use of the vacuum infiltration method for the determination of the synthetic and hydrolytic actions of invertase in living plant tissues. A. L. Kursanov. *Biokhimiya* 1, 289–94(1936).— The method of "vacuum infiltration" employed consists in immersing the plant leaves in a (0.1 mol. soln. of sucrose (for measuring the hydrolytic action of invertase) or in a 0.2 mol. soln. of invert sugar (for measuring the synthetic activity of the invertase). The solns. are placed in a desiccator, which is evacuated to about 20–40 mm. Hg. After the evolution of air bubbles from the leaves has stopped, air is re-admitted into the desiccator. The intercellular spaces are thereby replaced by the sugar soln. The changes which the infiltrated sugar undergoes, through the action of the invertase, are detd. by chem. analysis. The ratio of the synthetic to the hydrolytic activity of the invertase varies with different plants, but is fairly const. for each species. The activity of invertase in the living cells, as detd. by the vacuum infiltration method, differs considerably from the values found for the invertase activity in autolytic mixts. Thus, for chicory leaves, the relative invertase activity of the living cells is 34, and in autolytic mixts., 240. The invertase activity as found by the vacuum infiltration method is said to parallel closely the actual enzymic activity in the living plant. H. Cohen

(Inst. of Biochem., Academy of Sciences, USSR, Moscow)



Reversible action of invertase in plant cells, and the role of structural protoplasmic elements. A. L. Kursanov. *Biokhimiya* 1, 411-23(in German 423-4)(1936); cf. *C. A.* 31, 1450⁶.—Introduction of small amts. of yeast invertase (I) by vacuum infiltration into cyclamen, cumin and primula leaves leads to acceleration of synthesis and hydrolysis of sucrose, to an equal extent; further introduction of I accelerates only the latter reaction. These results support the view that I is responsible for both processes, of which synthesis takes place at the surface of structural elements (mitochondria, etc.) and hydrolysis in the soln. After satn. of the surfaces further addn. of I leads to increase in its concn. in soln., but not in adsorption. Digestion of structural elements by autolysis (activation by exclusion of O_2, or by addn. of papayotin or cysteine) similarly favors inversion of sucrose. H. C. A

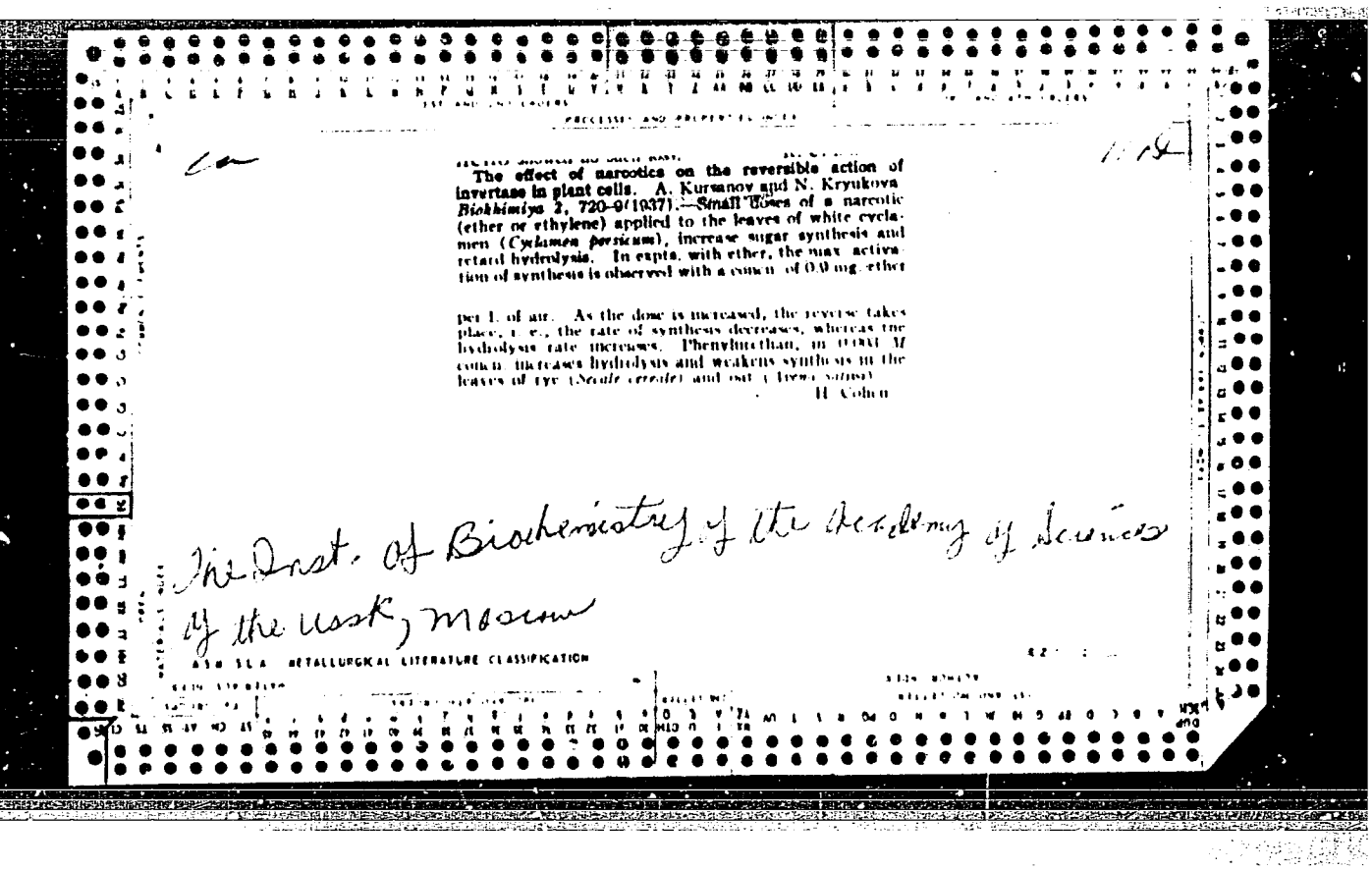
The INSTITUTE of Biochemistry, Academy of Sciences, USSR, Moscow



The penetration rate of infiltrated sugars to the points of enzyme action in the cell. A. Kursanov and N. Kryukova. *Biokhimiya* 2, 674-80(1937).—The penetration of sucrose into the cells (from the intercellular space through the cell wall) during the first hrs. after infiltration goes on considerably faster than its hydrolysis by the cell invertase. Preliminary treatment of the protoplasm with $CaCl_2$ lowers the hydrolyzing action of invertase; the same effect is produced by the use of KCl, which, in contrast to $CaCl_2$, increases the permeability of the protoplasm. The synthesis of sucrose by invertase is accelerated in the presence of K ions, whereas Ca ions are almost without effect. The synthesis of starch by the leaves of *Hydrangea hortensis* from infiltered glucose proceeds at the rate of 5.2–5.7 mg. per hr. (for 1 g. dry substance), and for infiltered maltose, at the rate of 3 3.5 mg. This rate is considerably reduced by preliminary treatment of the protoplasm with $CaCl_2$.

H. Cohen

"Ve. Inst. of Biochemistry, Academy of Sciences, USSR
Moscow"

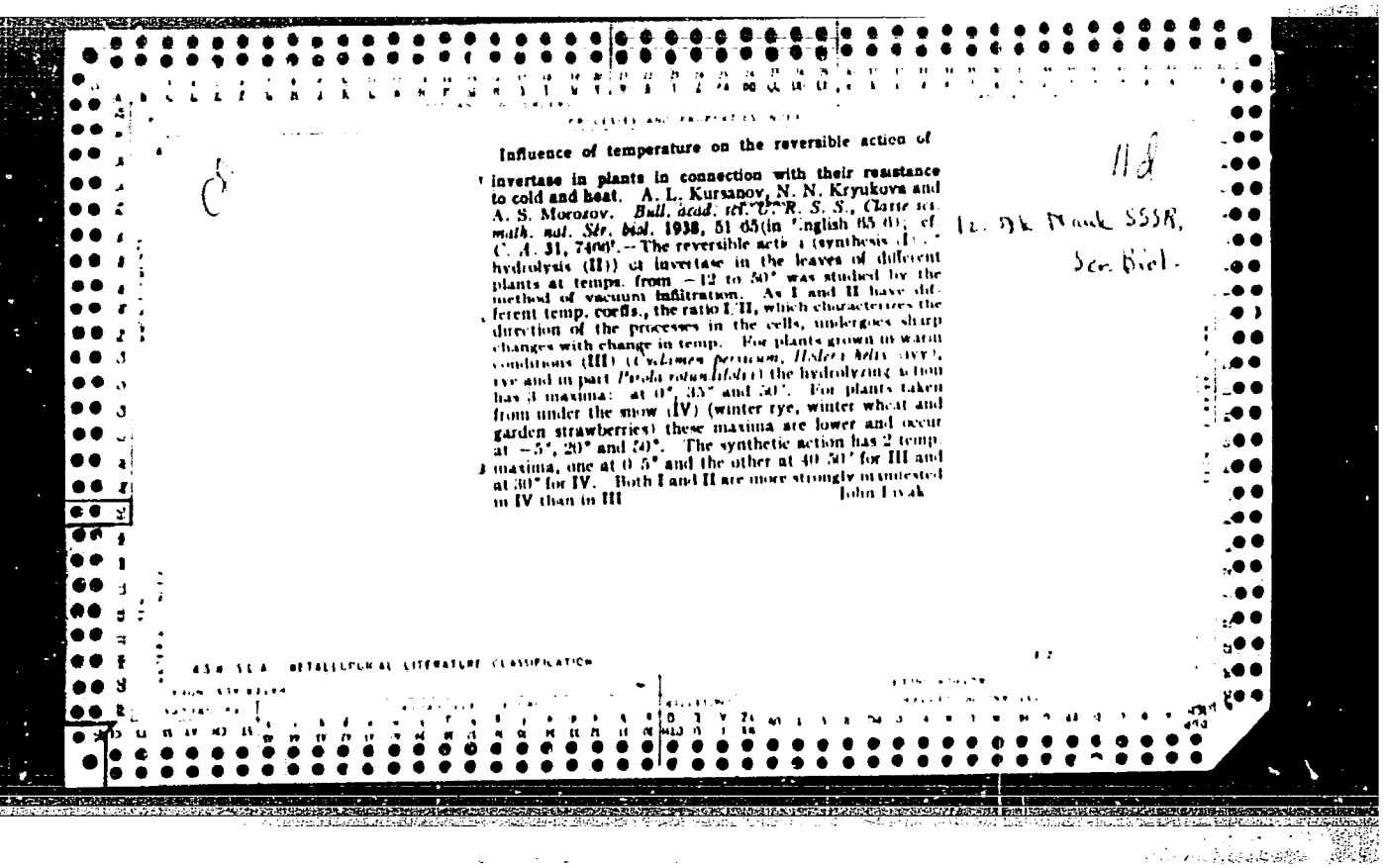


The effect of narcotics on the reversible action of invertase in plant cells. A. Kursanov and N. Kryukova *Biokhimiya* 2, 720–9(1937).—Small doses of a narcotic (ether or ethylene) applied to the leaves of white cyclamen (*Cyclamen persicum*), increase sugar synthesis and retard hydrolysis. In expts. with ether, the max. activation of synthesis is observed with a concn. of 0.0 mg. ether per l. of air. As the dose is increased, the reverse takes place, i. e., the rate of synthesis decreases, whereas the hydrolysis rate increases. Phenylurethan, in 0.0001 *M* concn. increases hydrolysis and weakens synthesis in the leaves of rye (*Secale cereale*) and oat (*Avena sativa*).

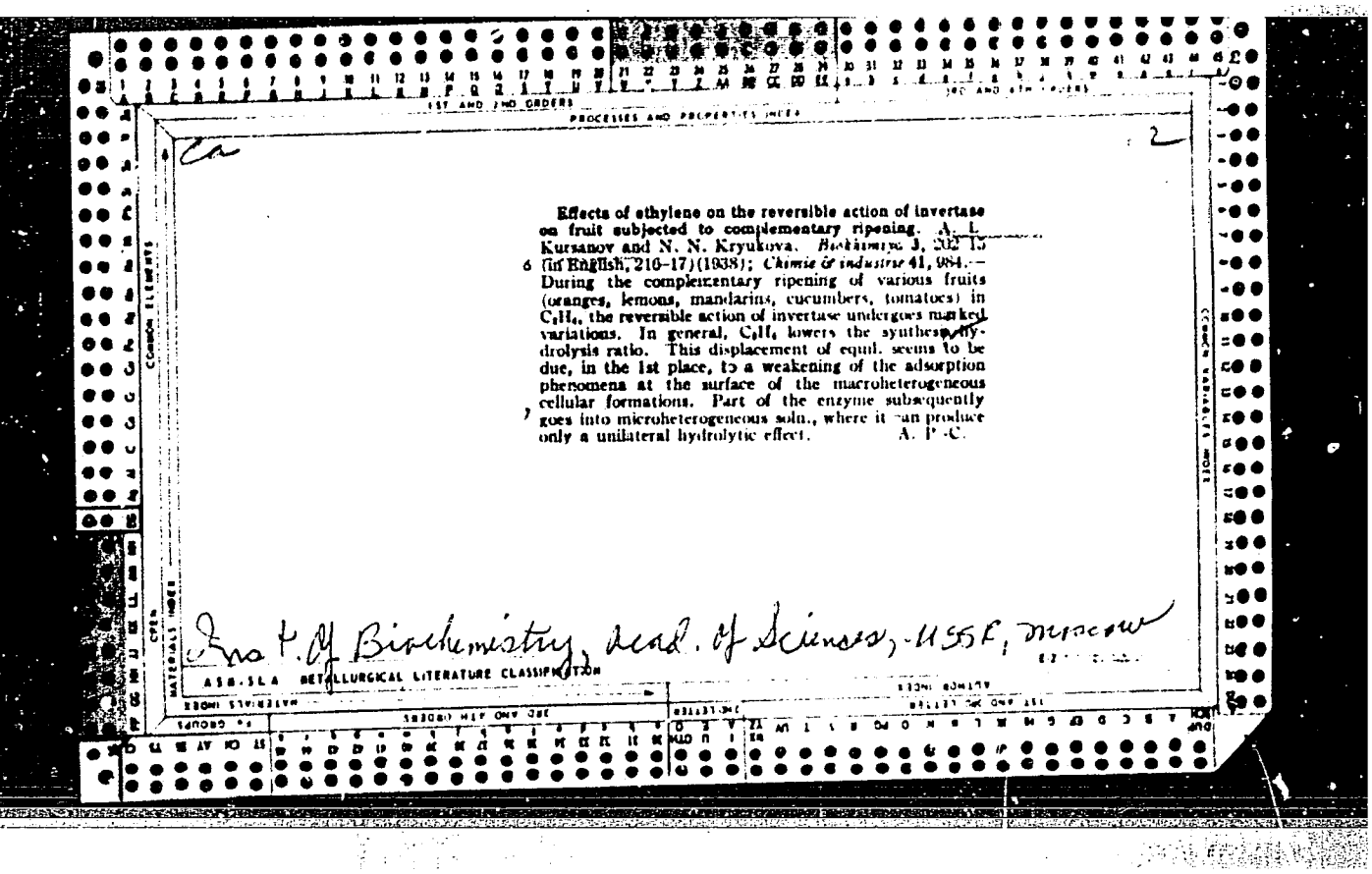
H. Cohen

The Inst. of Biochemistry of the Academy of Sciences of the USSR, Moscow

ASM SLA METALLURGICAL LITERATURE CLASSIFICATION



Influence of temperature on the reversible action of invertase in plants in connection with their resistance to cold and heat. A. L. Kursanov, N. N. Kryukova and A. S. Morozov. *Bull. acad. sci. U.S.S.R. S. S., Classe sci. math. nat. Sér. biol.* 1938, 51-65(in English 65-6); cf. *C. A.* 31, 7466⁹.—The reversible activity (synthesis of hydrolysis (II)) of invertase in the leaves of different plants at temps. from −12 to 50° was studied by the method of vacuum infiltration. As I and II have different temp. coeffs., the ratio I/II, which characterizes the direction of the processes in the cells, undergoes sharp changes with change in temp. For plants grown in warm conditions (III) (*Cyclamen persicum*, *Hedera helix* (ivy), rye and in part *Poa rotundifolia*) the hydrolyzing action has 3 maxima: at 0°, 35° and 50°. For plants taken from under the snow (IV) (winter rye, winter wheat and garden strawberries) these maxima are lower and occur at −5°, 20° and 50°. The synthetic action has 2 temp. maxima, one at 0-5° and the other at 40-50° for III and at 30° for IV. Both I and II are more strongly manifested in IV than in III John Livak

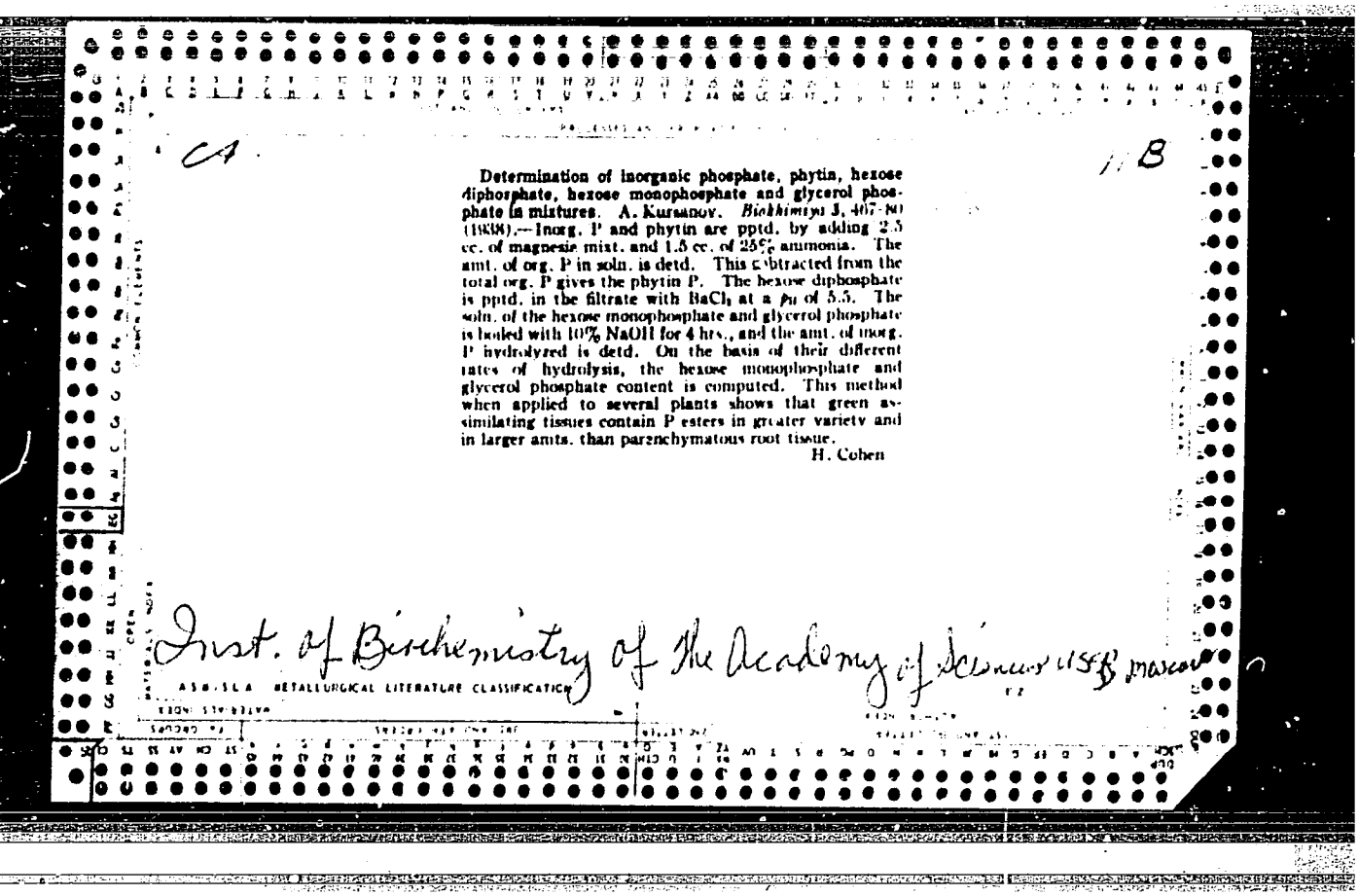


Ca

2

Effects of ethylene on the reversible action of invertase on fruit subjected to complementary ripening. A. I. Kursanov and N. N. Kryukova. *Biokhimiya* 3, 202–15 (in English, 210–17)(1938); *Chimie & industrie* 41, 984.— During the complementary ripening of various fruits (oranges, lemons, mandarins, cucumbers, tomatoes) in C_2H_4, the reversible action of invertase undergoes marked variations. In general, C_2H_4 lowers the synthesis-hydrolysis ratio. This displacement of equil. seems to be due, in the 1st place, to a weakening of the adsorption phenomena at the surface of the macroheterogeneous cellular formations. Part of the enzyme subsequently goes into microheterogeneous soln., where it can produce only a unilateral hydrolytic effect. A. P.-C.

Inst. of Biochemistry, Acad. of Sciences, USSR, Moscow



CA

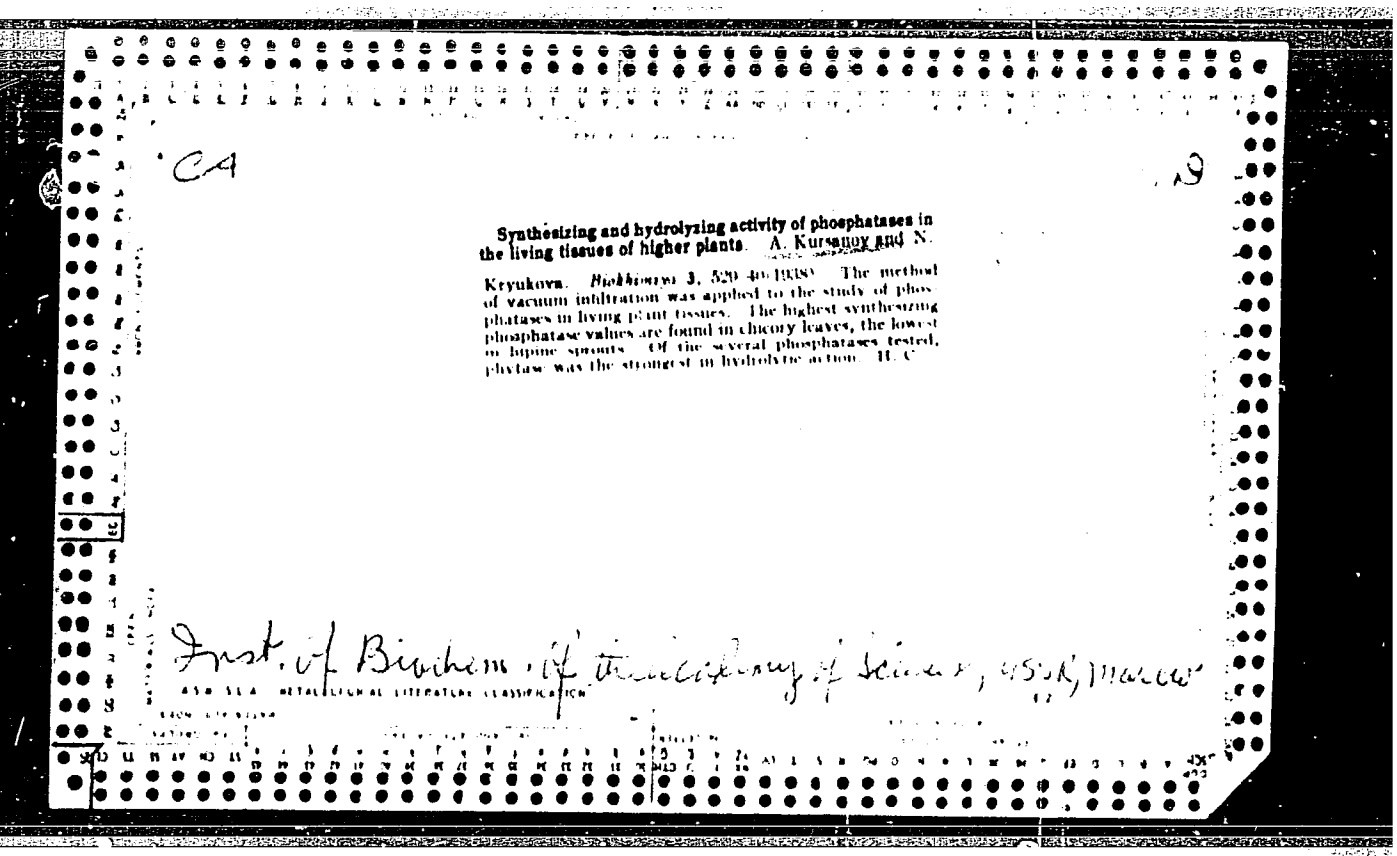
11 B

Determination of inorganic phosphate, phytin, hexose diphosphate, hexose monophosphate and glycerol phosphate in mixtures. A. Kursanov. *Biokhimiya* 3, 407-80 (1938).—Inorg. P and phytin are pptd. by adding 2.5 cc. of magnesia mixt. and 1.5 cc. of 25% ammonia. The amt. of org. P in soln. is detd. This subtracted from the total org. P gives the phytin P. The hexose diphosphate is pptd. in the filtrate with $BaCl_2$ at a p_H of 5.5. The soln. of the hexose monophosphate and glycerol phosphate is boiled with 10% NaOH for 4 hrs., and the amt. of inorg. P hydrolyzed is detd. On the basis of their different rates of hydrolysis, the hexose monophosphate and glycerol phosphate content is computed. This method when applied to several plants shows that green assimilating tissues contain P esters in greater variety and in larger amts. than parenchymatous root tissue.

H. Cohen

Inst. of Biochemistry of the Academy of Sciences USSR Moscow

ASM/SLA METALLURGICAL LITERATURE CLASSIFICATION

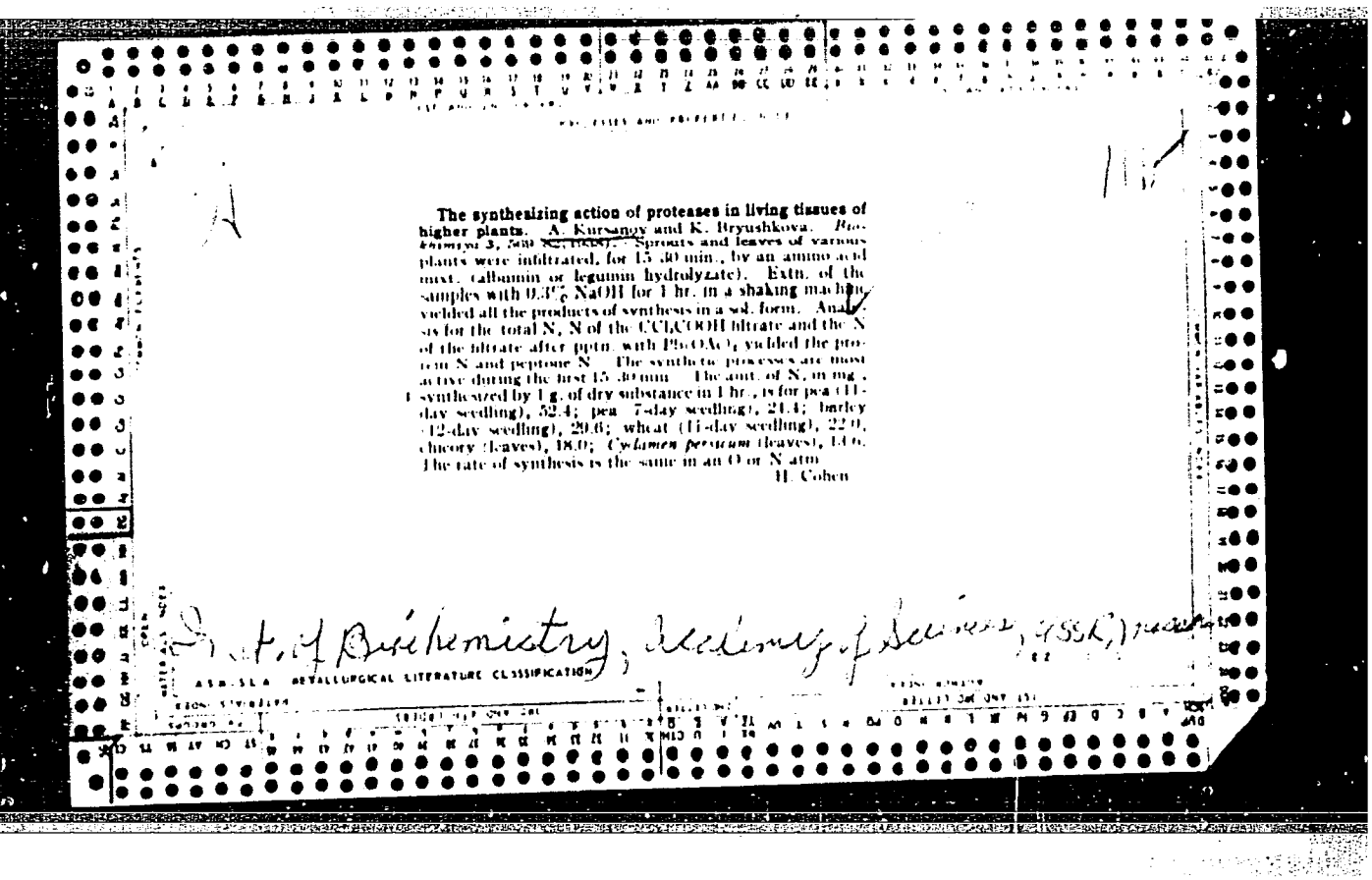


CA

9

Synthesizing and hydrolyzing activity of phosphatases in the living tissues of higher plants. A. Kursanov and N. Kryukova. *Biokhimiya* 3, 529-40 (1938). The method of vacuum infiltration was applied to the study of phosphatases in living plant tissues. The highest synthesizing phosphatase values are found in chicory leaves, the lowest in lupine sprouts. Of the several phosphatases tested, phytase was the strongest in hydrolytic action. H. C.

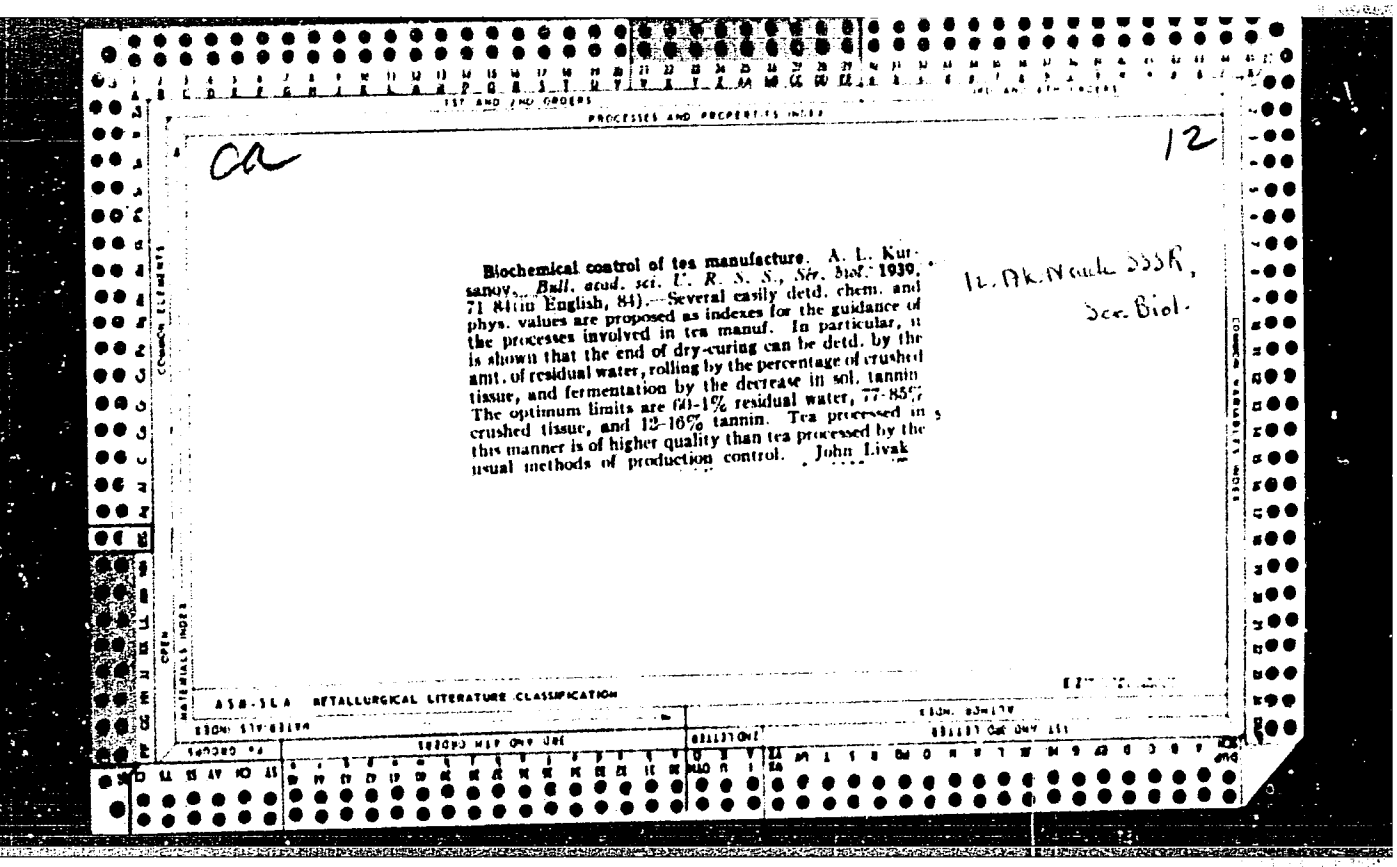
Inst. of Biochem. of the Academy of Sciences, USSR, Moscow



The synthesizing action of proteases in living tissues of higher plants. A. Kursanov and K. Bryushkova. *Biokhimiya* 3, 580 (1938). Sprouts and leaves of various plants were infiltrated, for 15–30 min., by an amino acid mixt. (albumin or legumin hydrolyzate). Extn. of the samples with 0.3% NaOH for 1 hr. in a shaking machine yielded all the products of synthesis in a sol. form. Analysis for the total N, N of the CCl_3COOH filtrate and the N of the filtrate after pptn. with $Pb(OAc)_2$ yielded the protein N and peptone N. The synthetic processes are most active during the first 15–30 min. The amt. of N, in mg., synthesized by 1 g. of dry substance in 1 hr., is for pea (11-day seedling), 52.4; pea (7-day seedling), 21.4; barley (12-day seedling), 20.6; wheat (11-day seedling), 22.0; chicory (leaves), 18.0; *Cyclamen persicum* (leaves), 13.6. The rate of synthesis is the same in an O or N atm.

H. Cohen

Dept. of Biochemistry, Academy of Sciences, USSR, Moscow



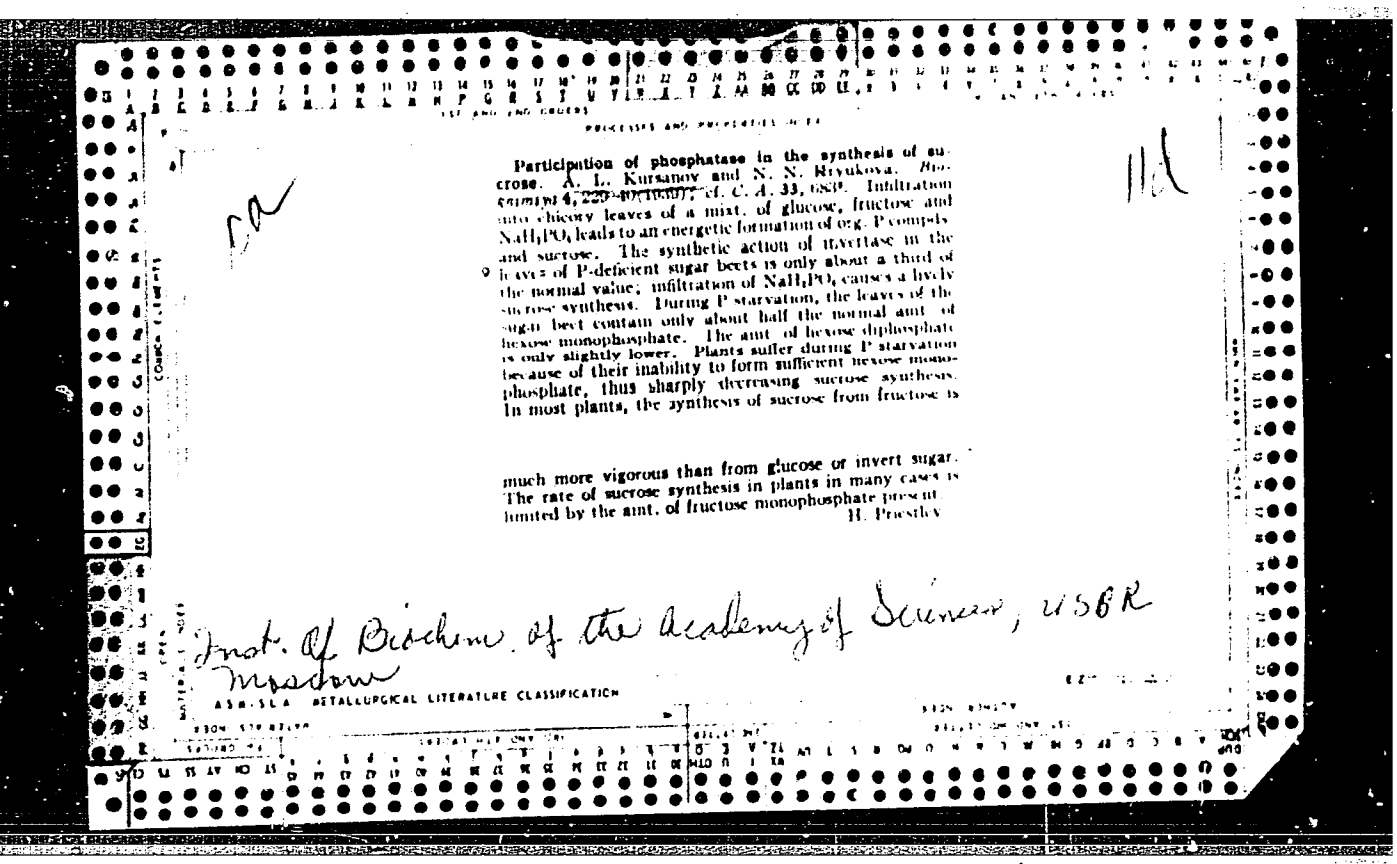
CA

12

Biochemical control of tea manufacture. A. L. Kursanov. *Bull. acad. sci. U. R. S. S., Sér. biol.* **1939**, 71-84(in English, 84).—Several easily detd. chem. and phys. values are proposed as indexes for the guidance of the processes involved in tea manuf. In particular, it is shown that the end of dry-curing can be detd. by the amt. of residual water, rolling by the percentage of crushed tissue, and fermentation by the decrease in sol. tannin. The optimum limits are 60-1% residual water, 77-85% crushed tissue, and 12-16% tannin. Tea processed in this manner is of higher quality than tea processed by the usual methods of production control. John Livak

12. Ak. Nauk SSSR, Ser. Biol.

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

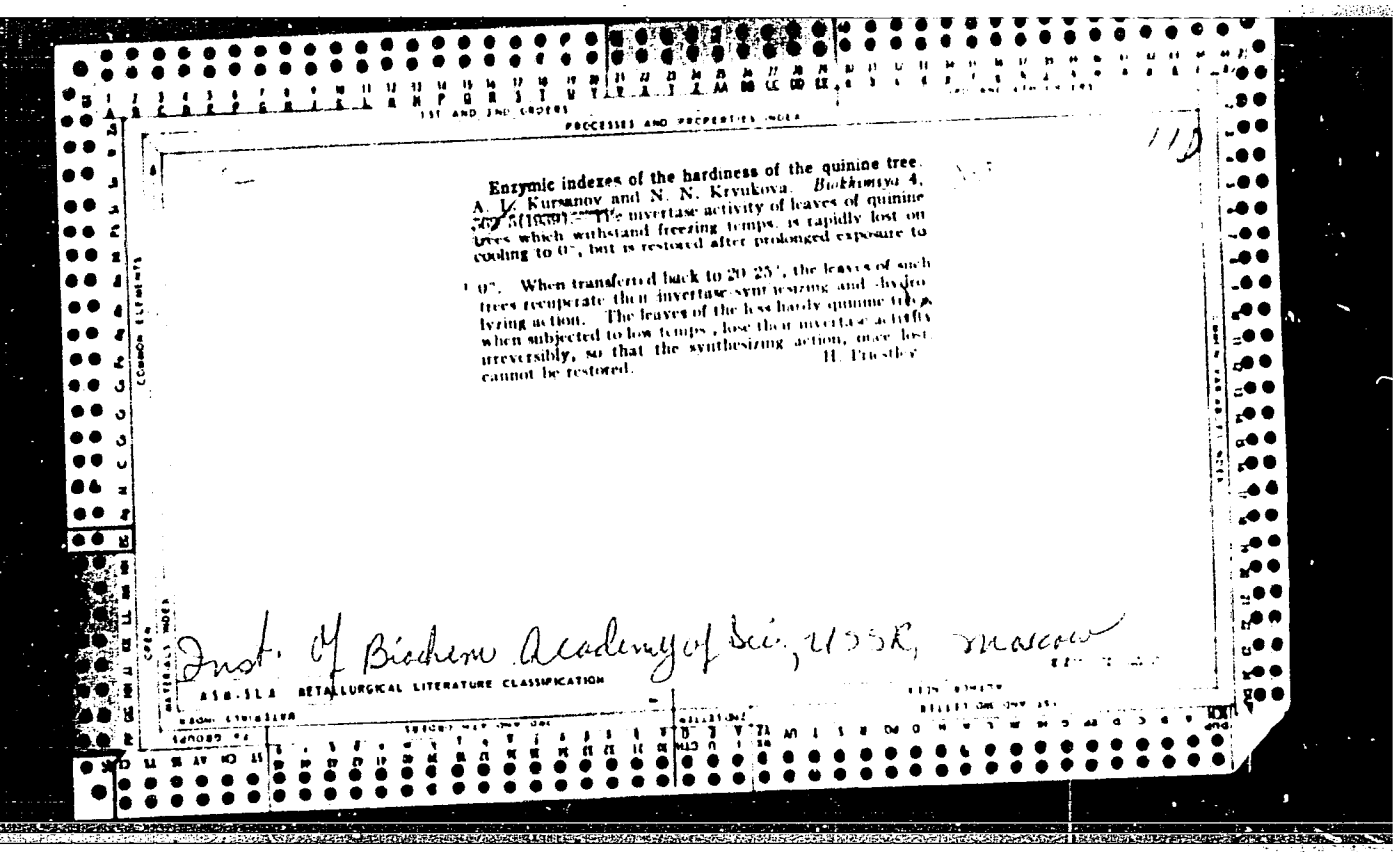


Participation of phosphatase in the synthesis of sucrose. A. L. Kursanov and N. N. Rivukova. *Biokhimiya* 4, 229–40 (1939); cf. *C. A.* 33, 6830. Infiltration into chicory leaves of a mixt. of glucose, fructose and NaH_2PO_4 leads to an energetic formation of org. P compds. and sucrose. The synthetic action of invertase in the leaves of P-deficient sugar beets is only about a third of the normal value; infiltration of NaH_2PO_4 causes a lively sucrose synthesis. During P starvation, the leaves of the sugar beet contain only about half the normal amt. of hexose monophosphate. The amt. of hexose diphosphate is only slightly lower. Plants suffer during P starvation because of their inability to form sufficient hexose monophosphate, thus sharply decreasing sucrose synthesis. In most plants, the synthesis of sucrose from fructose is much more vigorous than from glucose or invert sugar. The rate of sucrose synthesis in plants in many cases is limited by the amt. of fructose monophosphate present.

H. Priestley

Inst. of Biochem. of the Academy of Sciences, USSR
Moscow

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

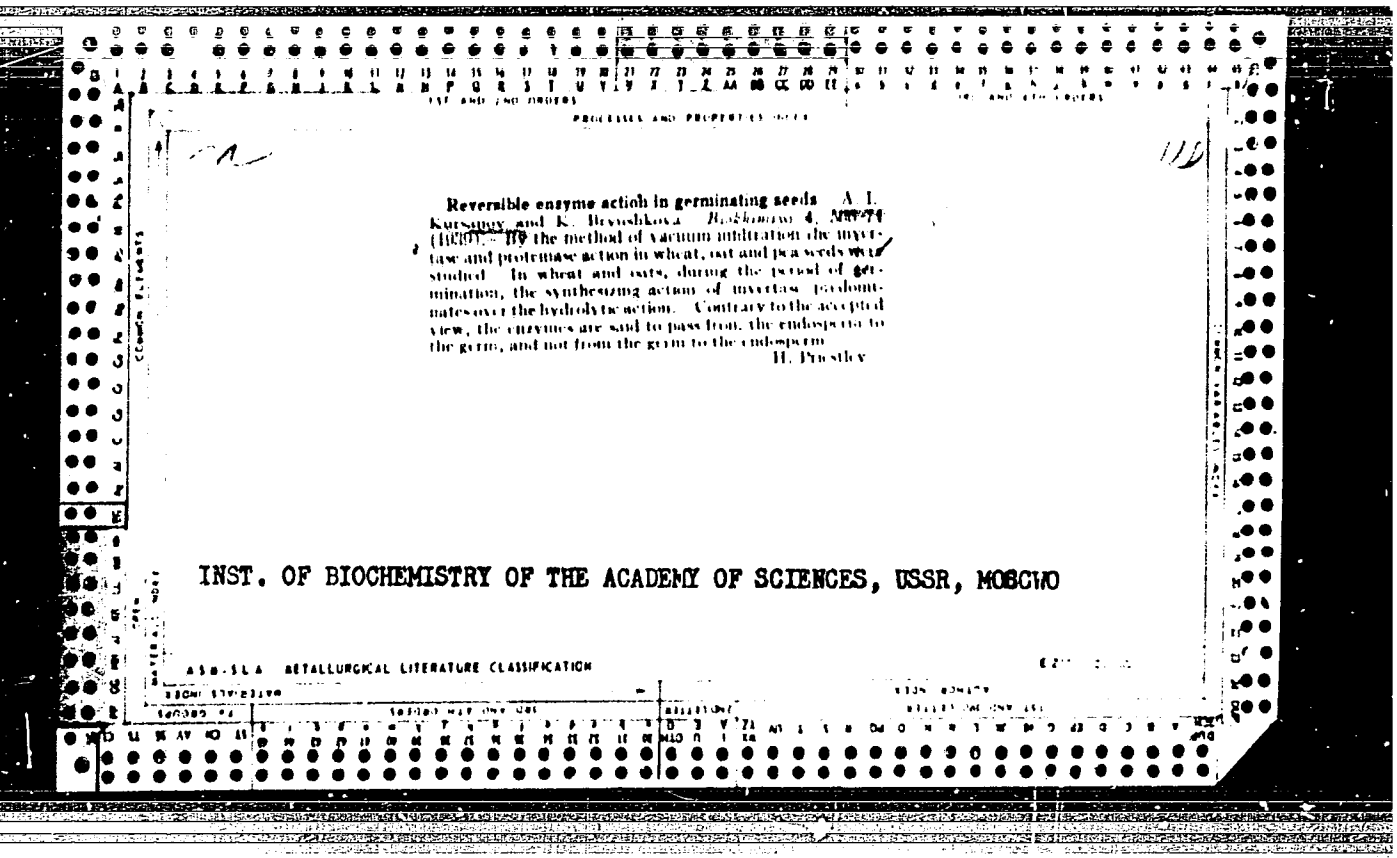


PROCESSES AND PROPERTIES INDEX

Enzymic indexes of the hardiness of the quinine tree. A. V. Kursanov and N. N. Krvukova. *Biokhimiya* 4, 367-75(1939).—The invertase activity of leaves of quinine trees which withstand freezing temps. is rapidly lost on cooling to 0°, but is restored after prolonged exposure to 0°. When transferred back to 20-25°, the leaves of such trees recuperate their invertase-synthesizing and -hydrolyzing action. The leaves of the less hardy quinine trees, when subjected to low temps., lose their invertase activity irreversibly, so that the synthesizing action, once lost, cannot be restored. H. Priestley

Inst. of Biochem. Academy of Sci., USSR, Moscow

A5A-5L4 METALLURGICAL LITERATURE CLASSIFICATION



Reversible enzyme action in germinating seeds A. I. Kursanov and K. Bronshkova *Biokhimiya* 4, [illegible] (1939). — By the method of vacuum infiltration the invertase and proteinase action in wheat, oat and pea seeds was studied. In wheat and oats, during the period of germination, the synthesizing action of invertase predominates over the hydrolytic action. Contrary to the accepted view, the enzymes are said to pass from the endosperm to the germ, and not from the germ to the endosperm.
H. Pucshev

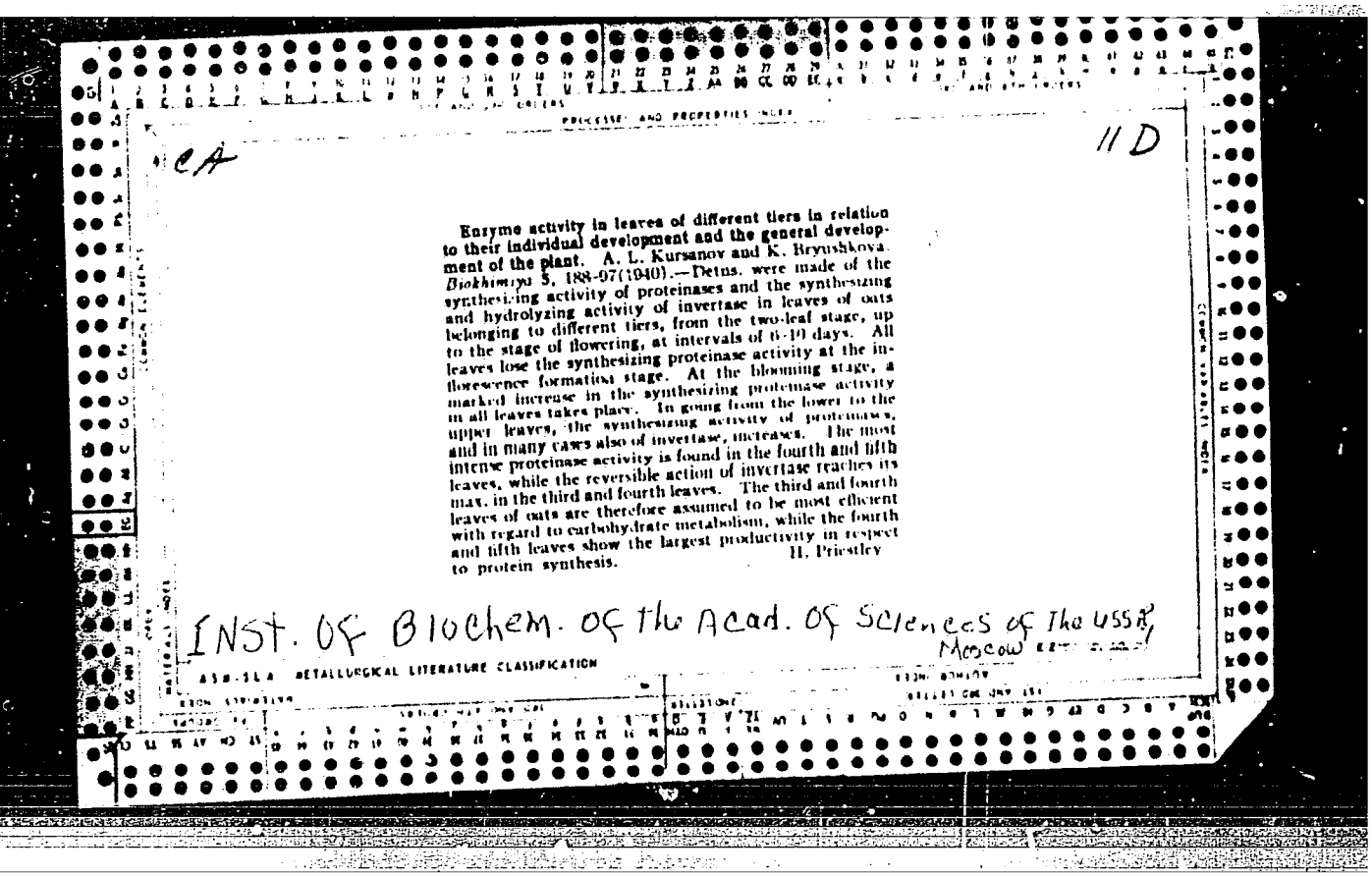
INST. OF BIOCHEMISTRY OF THE ACADEMY OF SCIENCES, USSR, MOSCWO

A58-51A METALLURGICAL LITERATURE CLASSIFICATION

KURSANOV, A. L.

The reversible action of ferments in living plant cells.
Moskva, Izd-vo Akademii nauk SSSR, 1940. 232 p.

Yudin QP601.K8



CA

11 D

Enzyme activity in leaves of different tiers in relation to their individual development and the general development of the plant. A. L. Kursanov and K. Bryushkova. *Biokhimiya* 5, 188-97(1940).—Detns. were made of the synthesizing activity of proteinases and the synthesizing and hydrolyzing activity of invertase in leaves of oats belonging to different tiers, from the two-leaf stage, up to the stage of flowering, at intervals of 6-10 days. All leaves lose the synthesizing proteinase activity at the inflorescence formation stage. At the blooming stage, a marked increase in the synthesizing proteinase activity in all leaves takes place. In going from the lower to the upper leaves, the synthesizing activity of proteinases, and in many cases also of invertase, increases. The most intense proteinase activity is found in the fourth and fifth leaves, while the reversible action of invertase reaches its max. in the third and fourth leaves. The third and fourth leaves of oats are therefore assumed to be most efficient with regard to carbohydrate metabolism, while the fourth and fifth leaves show the largest productivity in respect to protein synthesis. H. Priestley

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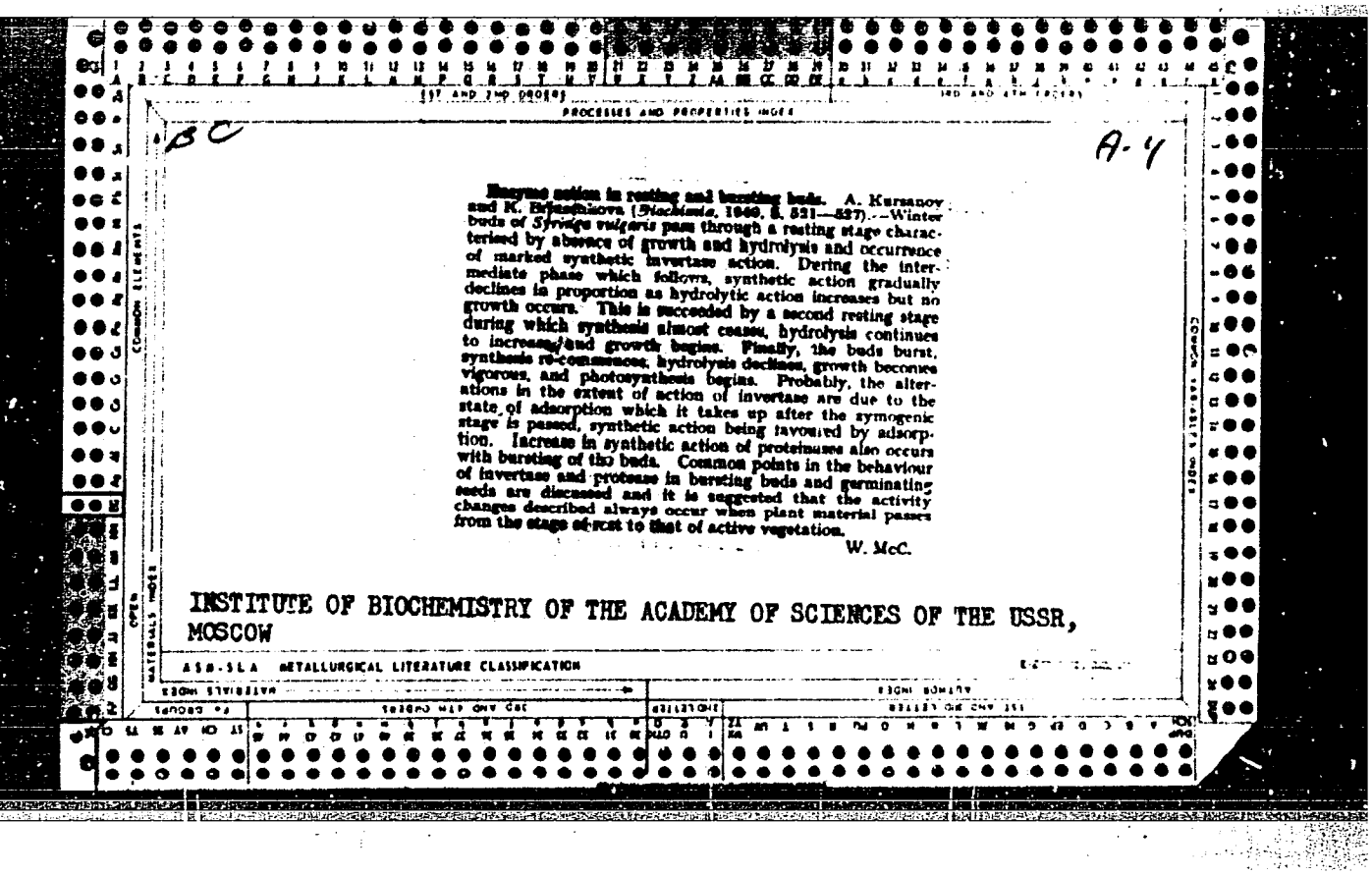
ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



BC

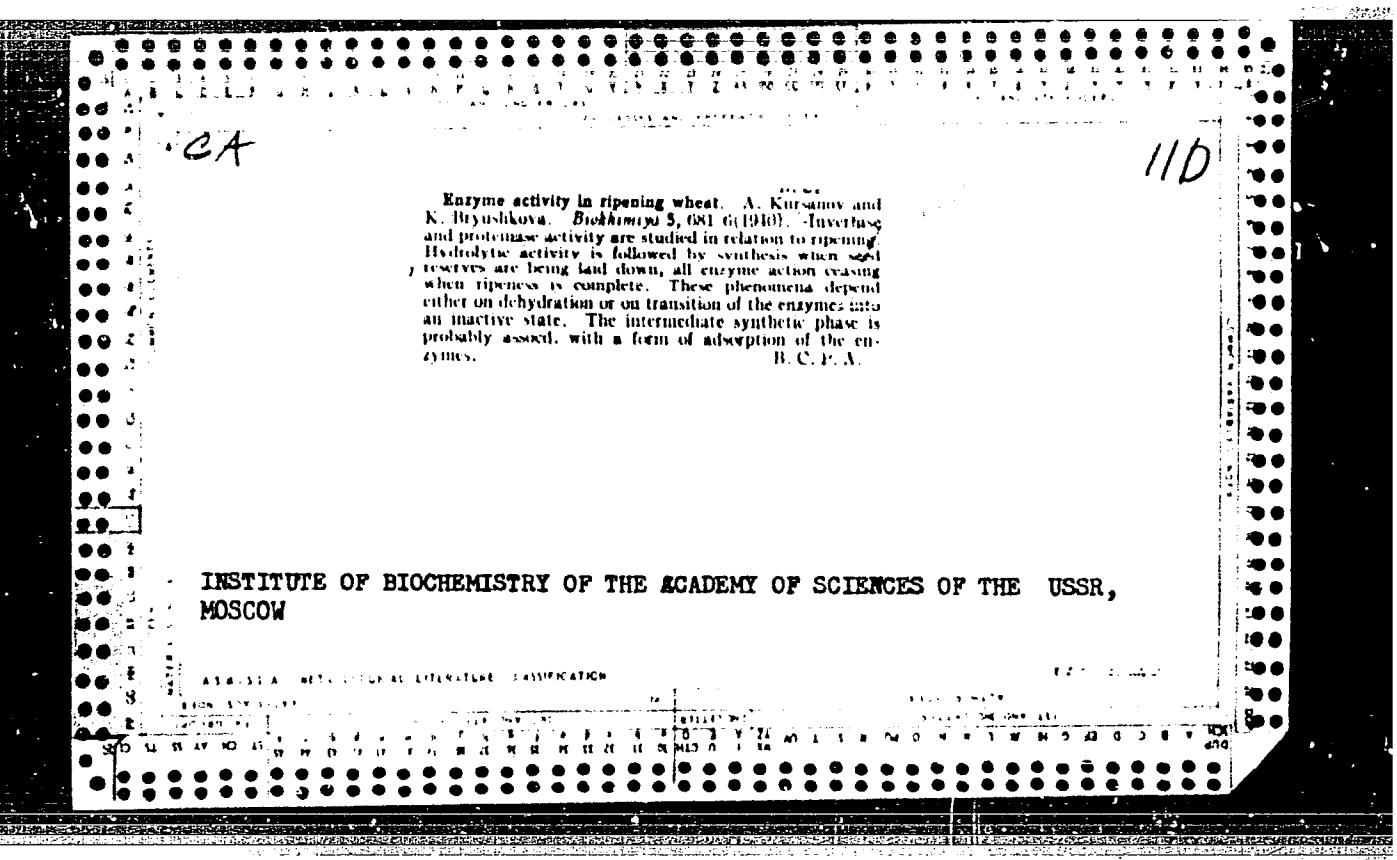
A-4

Enzyme action in resting and bursting buds. A. Kursanov and K. Brjushkova (*Biochimia*, 1940, 5, 521—537).—Winter buds of *Syringa vulgaris* pass through a resting stage characterised by absence of growth and hydrolysis and occurrence of marked synthetic invertase action. During the intermediate phase which follows, synthetic action gradually declines in proportion as hydrolytic action increases but no growth occurs. This is succeeded by a second resting stage during which synthesis almost ceases, hydrolysis continues to increase, and growth begins. Finally, the buds burst, synthesis re-commences, hydrolysis declines, growth becomes vigorous, and photosynthesis begins. Probably, the alterations in the extent of action of invertase are due to the state of adsorption which it takes up after the zymogenic stage is passed, synthetic action being favoured by adsorption. Increase in synthetic action of proteinases also occurs with bursting of the buds. Common points in the behaviour of invertase and protease in bursting buds and germinating seeds are discussed and it is suggested that the activity changes described always occur when plant material passes from the stage of rest to that of active vegetation.

W. McC.

INSTITUTE OF BIOCHEMISTRY OF THE ACADEMY OF SCIENCES OF THE USSR, MOSCOW

A58-51A METALLURGICAL LITERATURE CLASSIFICATION



CA

11D

Enzyme activity in ripening wheat. A. Kursanov and K. Bryushkova. *Biokhimiya* 5, 681 6(1940). -Invertase and proteinase activity are studied in relation to ripening. Hydrolytic activity is followed by synthesis when seed reserves are being laid down, all enzyme action ceasing when ripeness is complete. These phenomena depend either on dehydration or on transition of the enzymes into an inactive state. The intermediate synthetic phase is probably assocd. with a form of adsorption of the enzymes. B. C. P. A.

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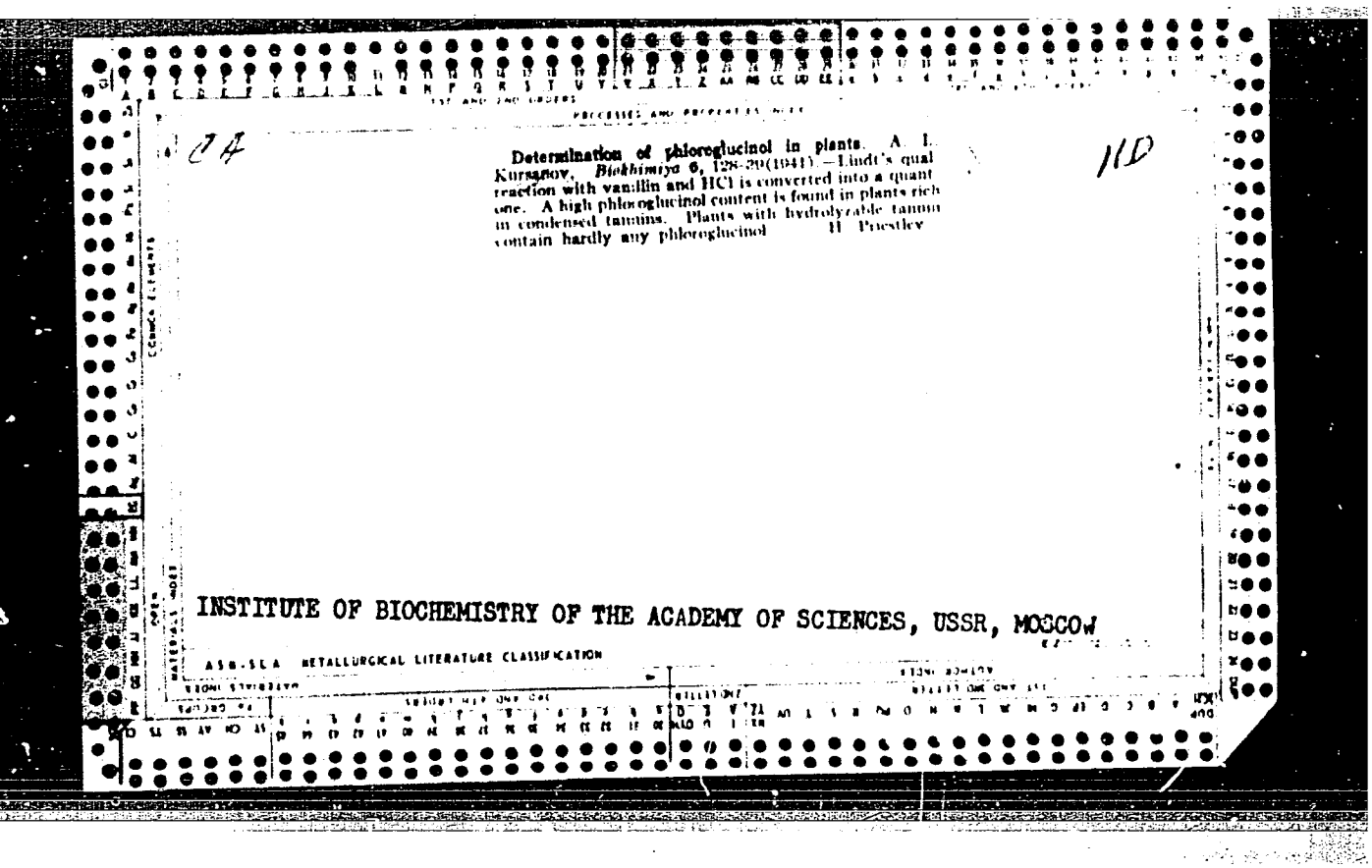

Determination of phloroglucinol in plants. A. I. Kursanov. *Biokhimiya* 6, 128-29(1941).—Lindt's qual reaction with vanillin and HCl is converted into a quant one. A high phloroglucinol content is found in plants rich in condensed tannins. Plants with hydrolyzable tannin contain hardly any phloroglucinol H Priestley

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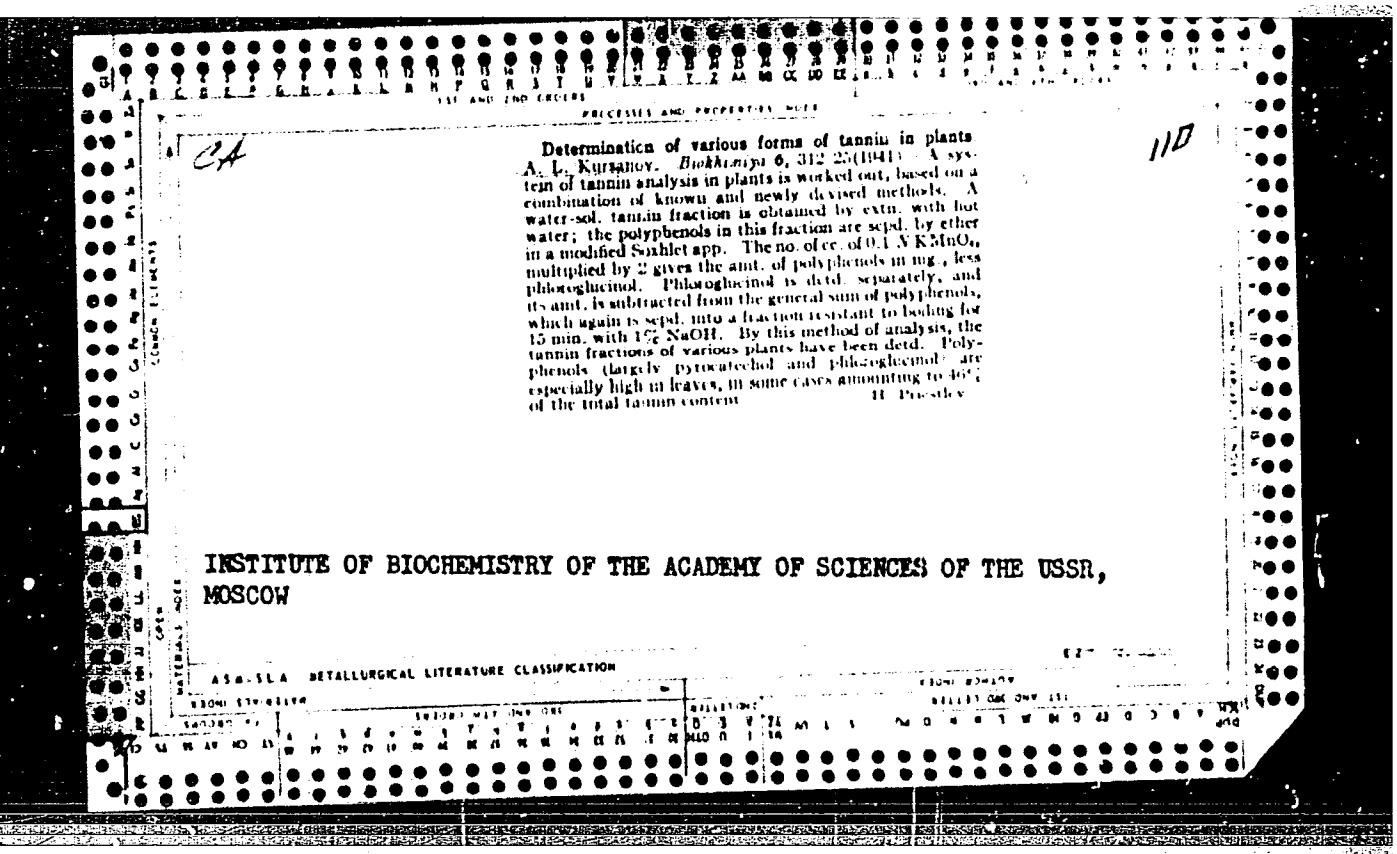
ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



CA

110

Determination of various forms of tannin in plants
A. L. Kursanov. *Biokhimiya* 6, 312-25(1941). A system of tannin analysis in plants is worked out, based on a combination of known and newly devised methods. A water-sol. tannin fraction is obtained by extn. with hot water; the polyphenols in this fraction are sepd. by ether in a modified Soxhlet app. The no. of cc. of 0.1 *N* $KMnO_4$ multiplied by 2 gives the amt. of polyphenols in mg., less phloroglucinol. Phloroglucinol is detd. separately, and its amt. is subtracted from the general sum of polyphenols, which again is sepd. into a fraction resistant to boiling for 15 min. with 1% NaOH. By this method of analysis, the tannin fractions of various plants have been detd. Polyphenols (largely pyrocatechol and phlorogluciol) are especially high in leaves, in some cases amounting to 40% of the total tannin content. H. Priestley

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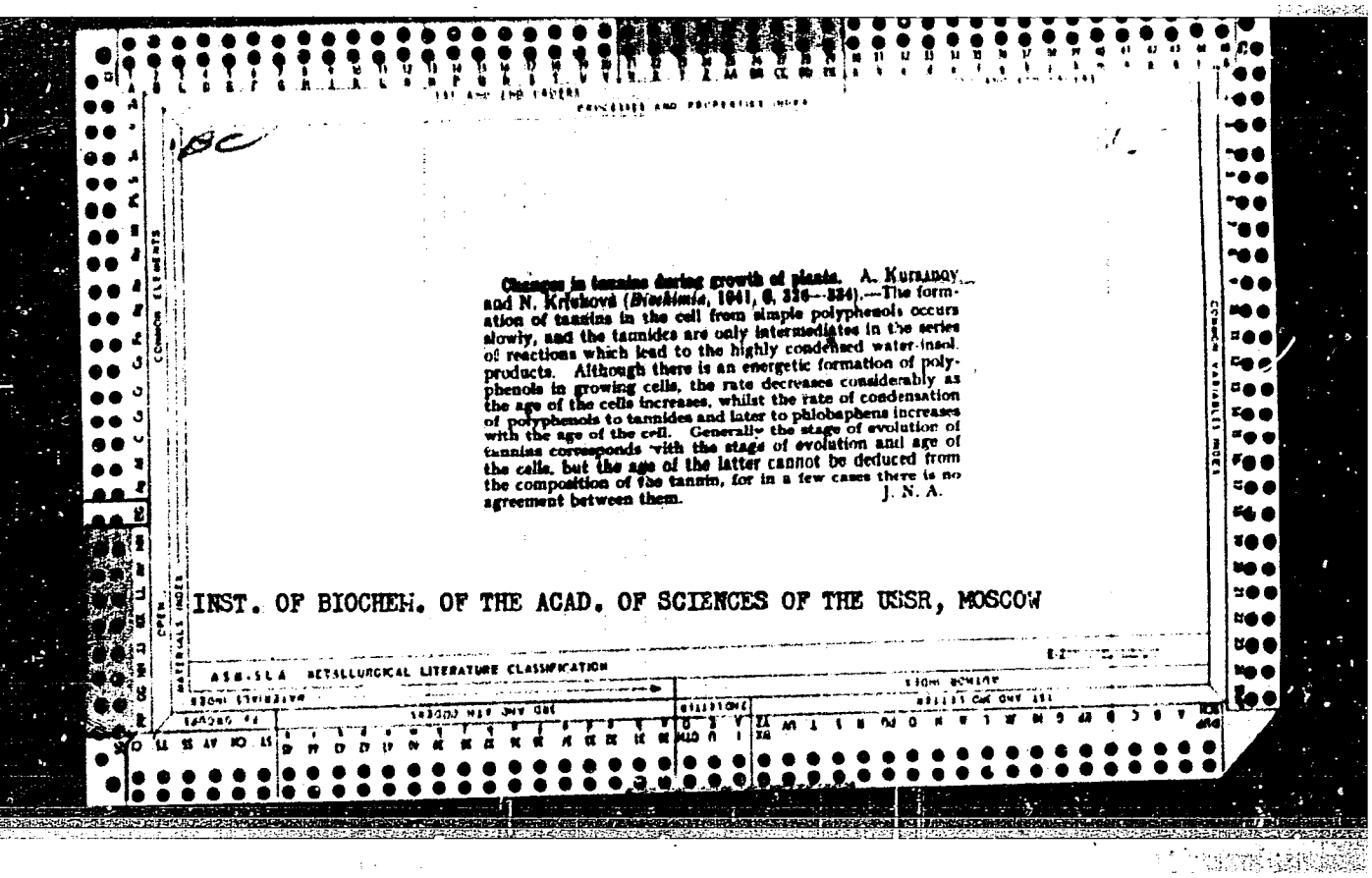
ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



Changes in tannins during growth of plants. A. Kursanov and N. Krylova (*Biokhimia*, 1941, 6, 326–334).—The formation of tannins in the cell from simple polyphenols occurs slowly, and the tannides are only intermediates in the series of reactions which lead to the highly condensed water-insol. products. Although there is an energetic formation of polyphenols in growing cells, the rate decreases considerably as the age of the cells increases, whilst the rate of condensation of polyphenols to tannides and later to phlobaphens increases with the age of the cell. Generally the stage of evolution of tannins corresponds with the stage of evolution and age of the cells, but the age of the latter cannot be deduced from the composition of the tannin, for in a few cases there is no agreement between them. J. N. A.

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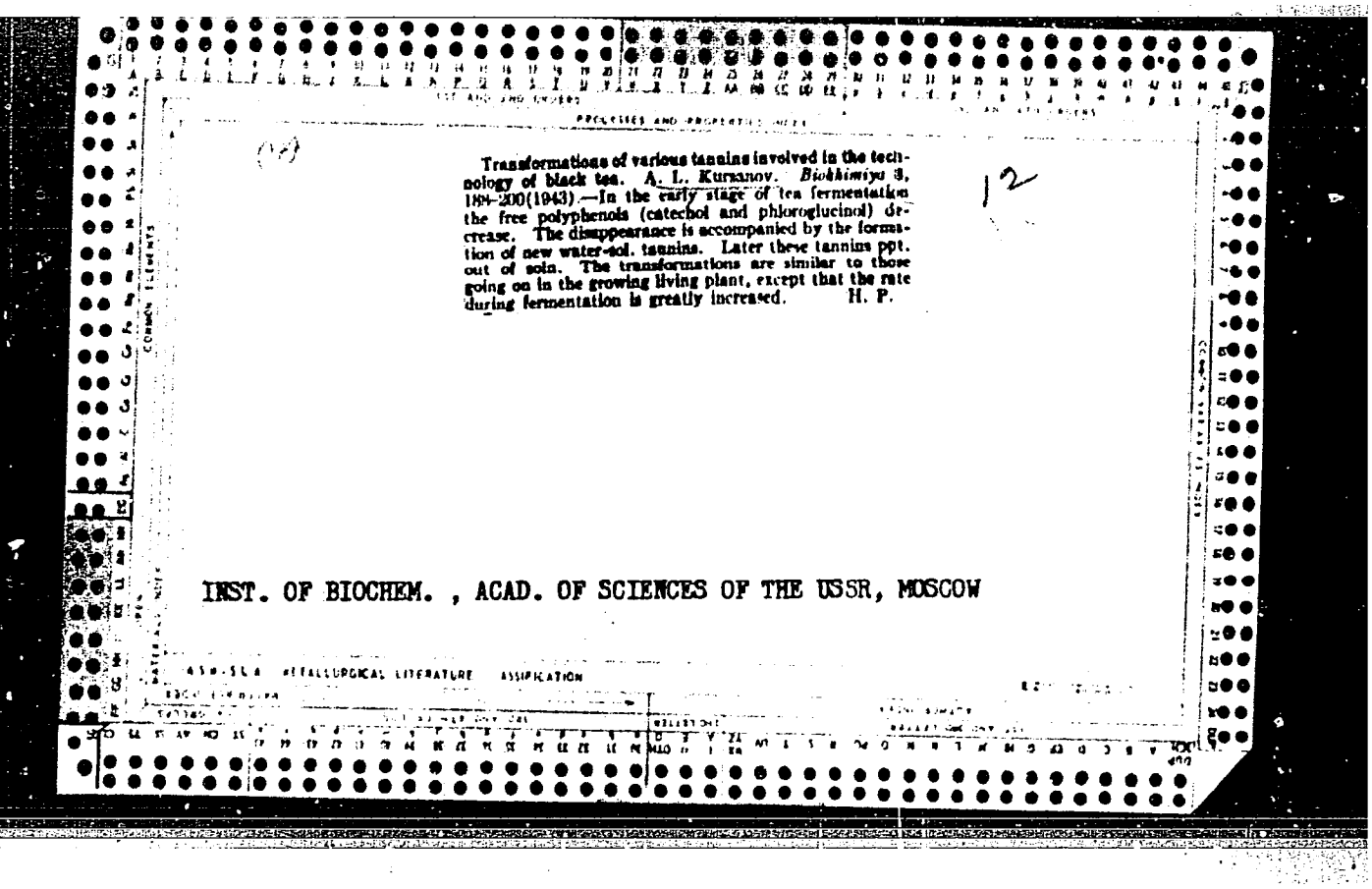

Transformations of various tannins involved in the technology of black tea. A. L. Kurkanov. *Biokhimiya* 8, 189–200(1943).—In the early stage of tea fermentation the free polyphenols (catechol and phloroglucinol) decrease. The disappearance is accompanied by the formation of new water-sol. tannins. Later these tannins ppt. out of soln. The transformations are similar to those going on in the growing living plant, except that the rate during fermentation is greatly increased. H. P.

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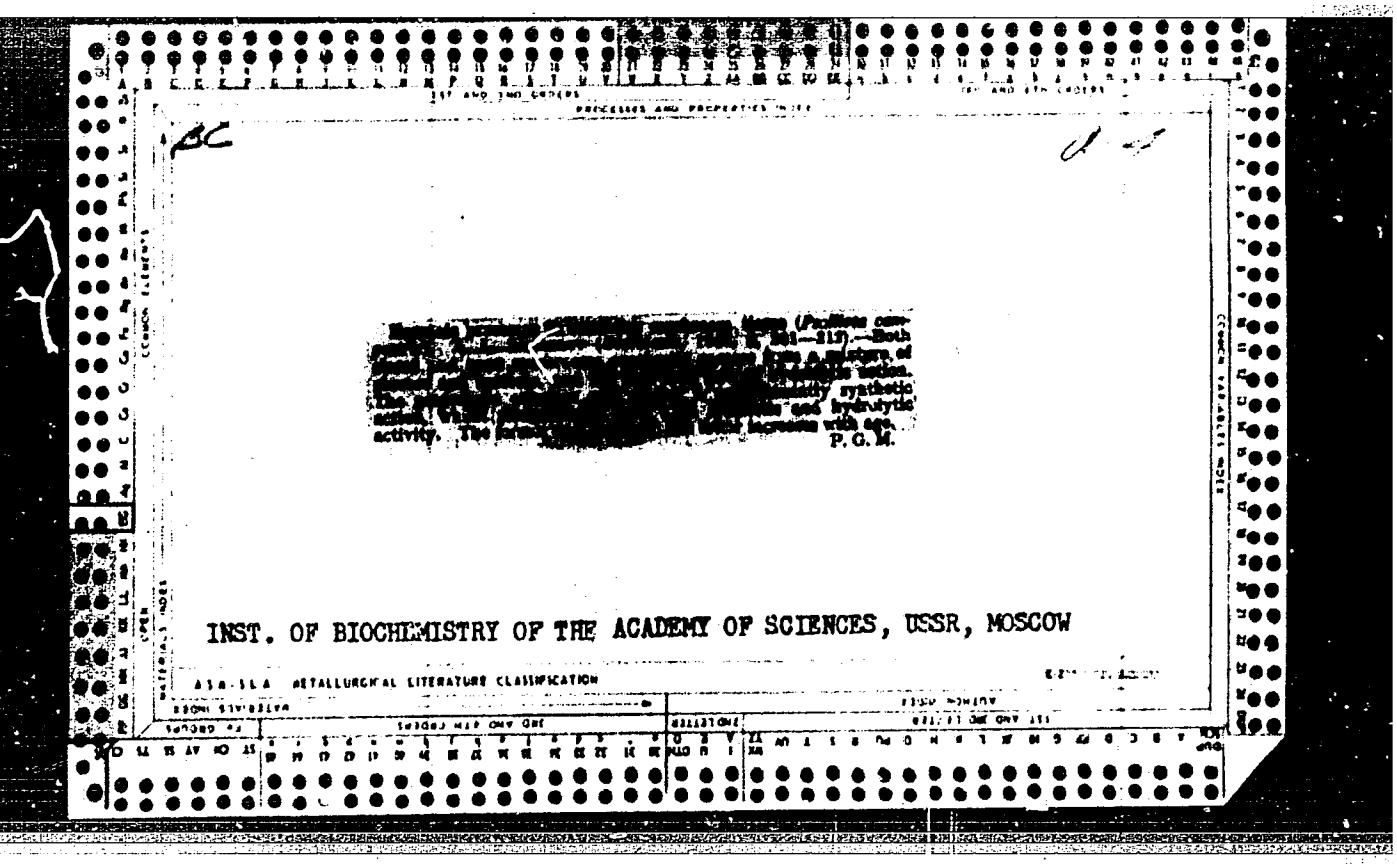

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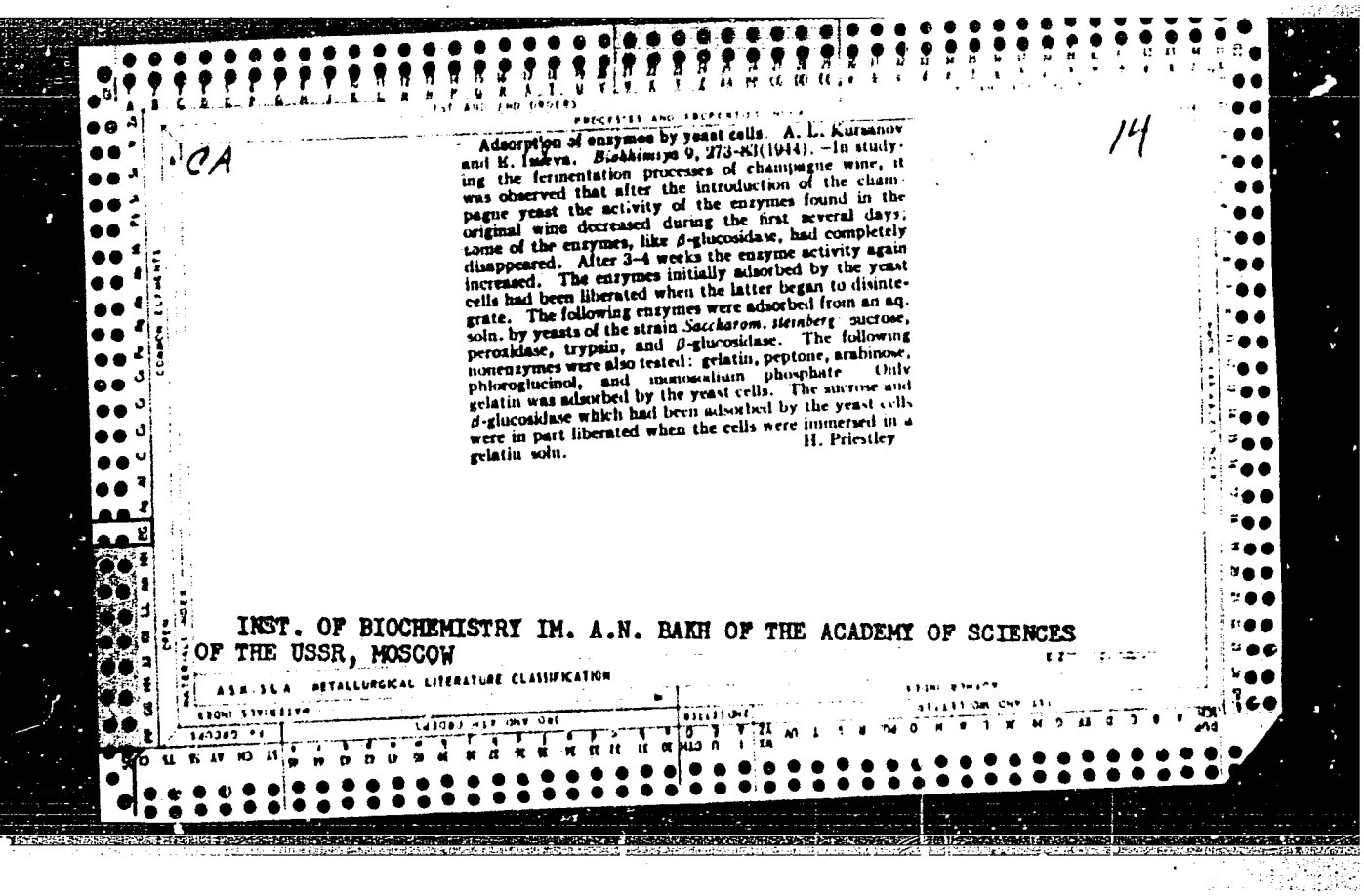


CA

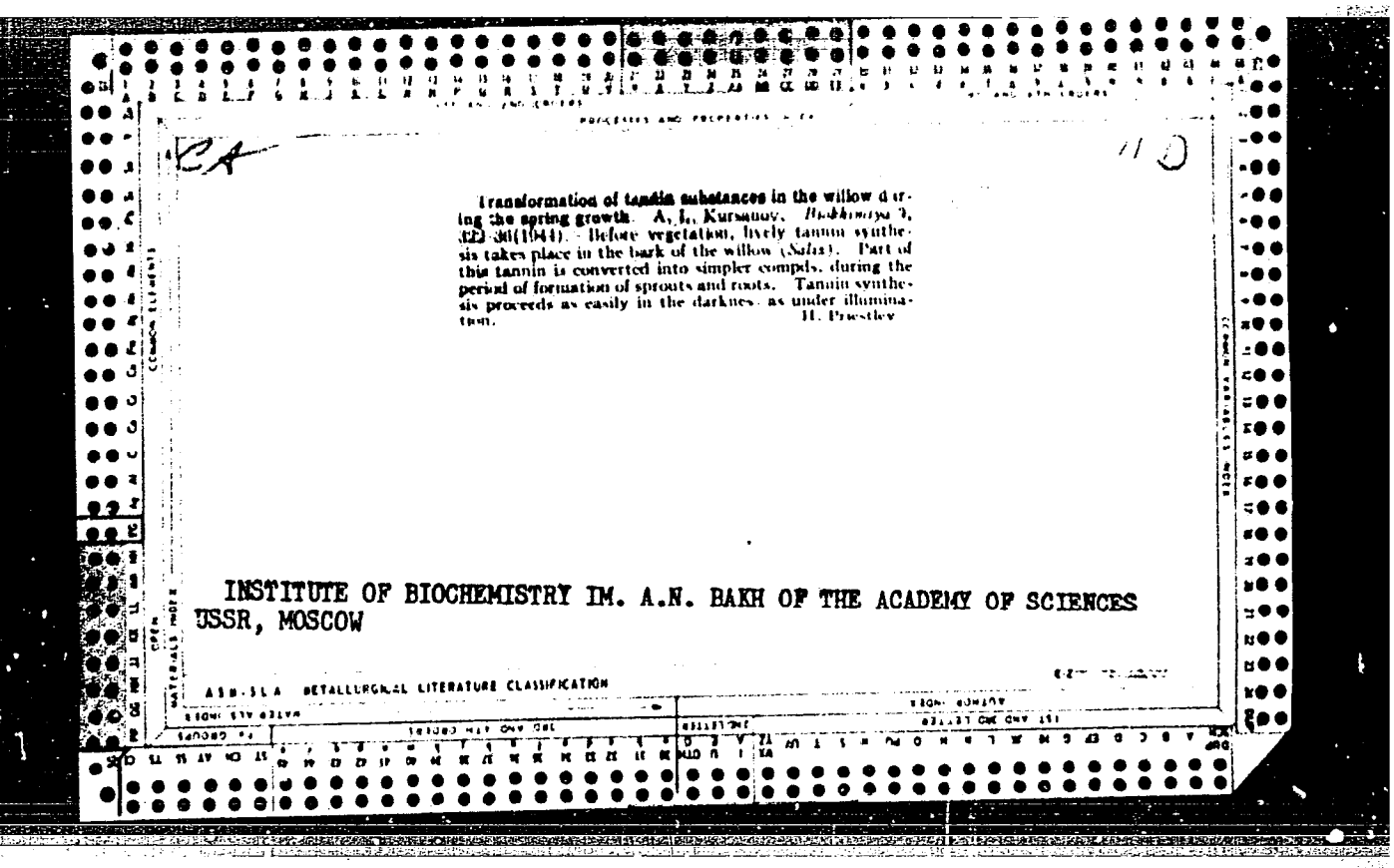
14

Adsorption of enzymes by yeast cells. A. L. Kursanov and E. Tsiseva. *Biokhimiya* 9, 273-81(1944). —In studying the fermentation processes of champagne wine, it was observed that after the introduction of the champagne yeast the activity of the enzymes found in the original wine decreased during the first several days; some of the enzymes, like β-glucosidase, had completely disappeared. After 3–4 weeks the enzyme activity again increased. The enzymes initially adsorbed by the yeast cells had been liberated when the latter began to disintegrate. The following enzymes were adsorbed from an aq. soln. by yeasts of the strain *Saccharom. steinberg*: sucrose, peroxidase, trypsin, and β-glucosidase. The following nonenzymes were also tested: gelatin, peptone, arabinose, phloroglucinol, and monosodium phosphate. Only gelatin was adsorbed by the yeast cells. The sucrase and β-glucosidase which had been adsorbed by the yeast cells were in part liberated when the cells were immersed in a gelatin soln.

H. Priestley

INST. OF BIOCHEMISTRY IM. A.N. BAKH OF THE ACADEMY OF SCIENCES OF THE USSR, MOSCOW

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



CA

11 D

Transformation of tannin substances in the willow during the spring growth. A. L. Kursanov. *Biokhimiya* 9, 32-30(1944). - Before vegetation, lively tannin synthesis takes place in the bark of the willow (*Salix*). Part of this tannin is converted into simpler compds. during the period of formation of sprouts and roots. Tannin synthesis proceeds as easily in the darkness as under illumination. H. Prestley

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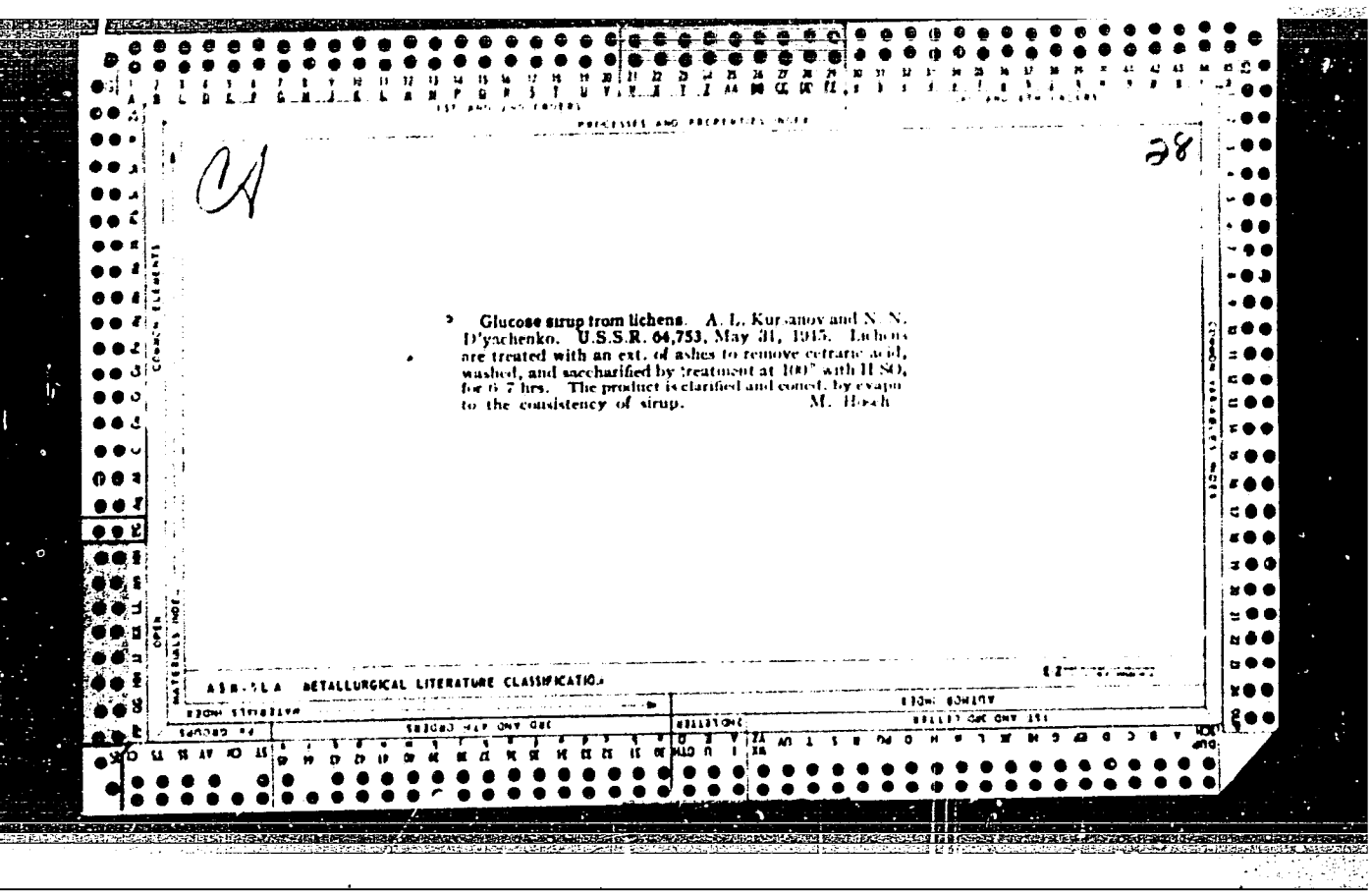
ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

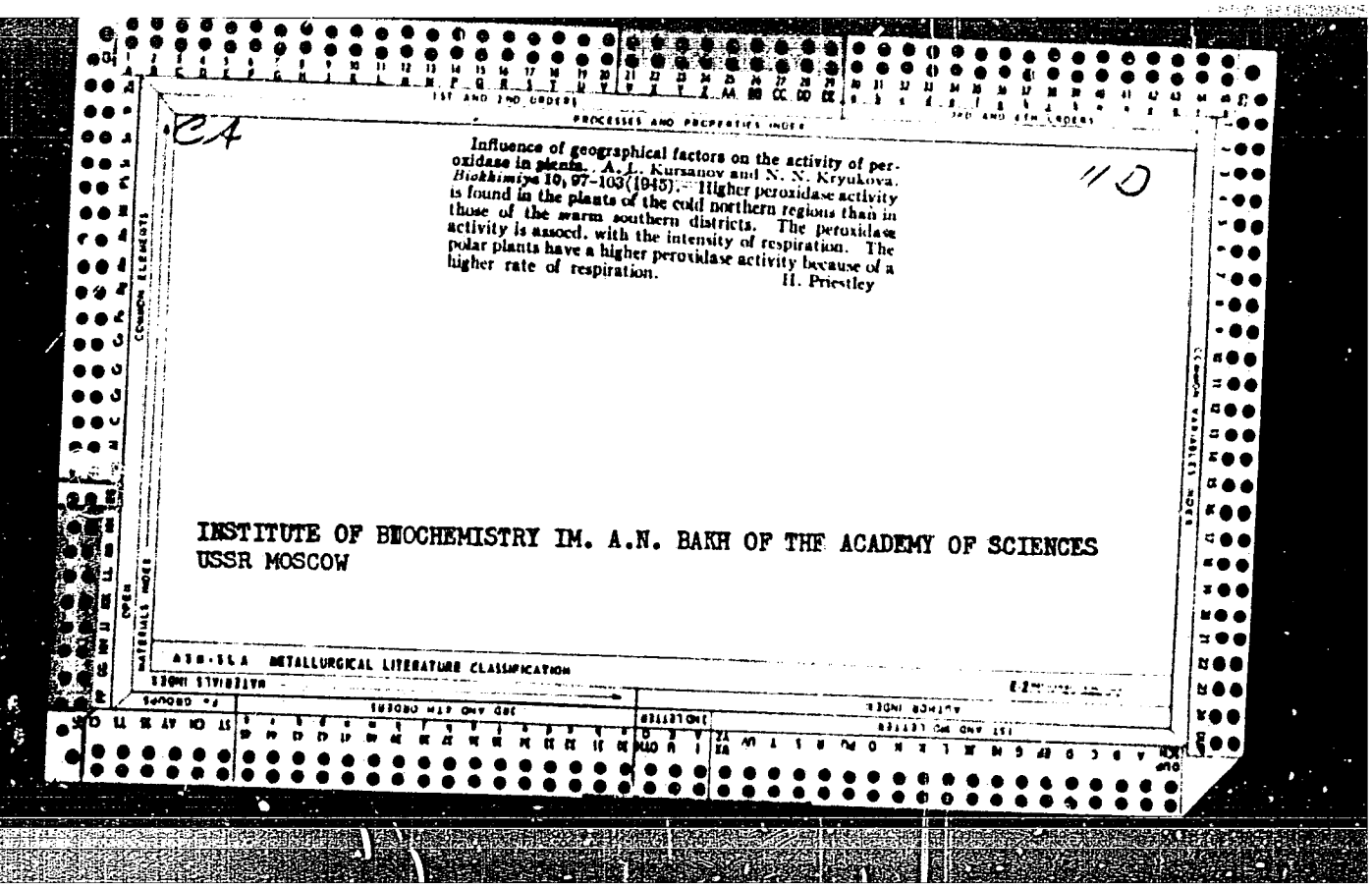


CA

28

Glucose sirup from lichens. A. L. Kursanov and N. N. D'yachenko. U.S.S.R. 64,753, May 31, 1945. Lichens are treated with an ext. of ashes to remove cetraric acid, washed, and saccharified by treatment at 100° with H_2SO_4 for 6-7 hrs. The product is clarified and concd. by evapn to the consistency of sirup. M. Hoch

ASB-ALA METALLURGICAL LITERATURE CLASSIFICATION



CA

Influence of geographical factors on the activity of peroxidase in plants. A. L. Kursanov and N. N. Kryukova. *Biokhimiya* 10, 97–103 (1945).—Higher peroxidase activity is found in the plants of the cold northern regions than in those of the warm southern districts. The peroxidase activity is assocd. with the intensity of respiration. The polar plants have a higher peroxidase activity because of a higher rate of respiration. H. Priestley

11D

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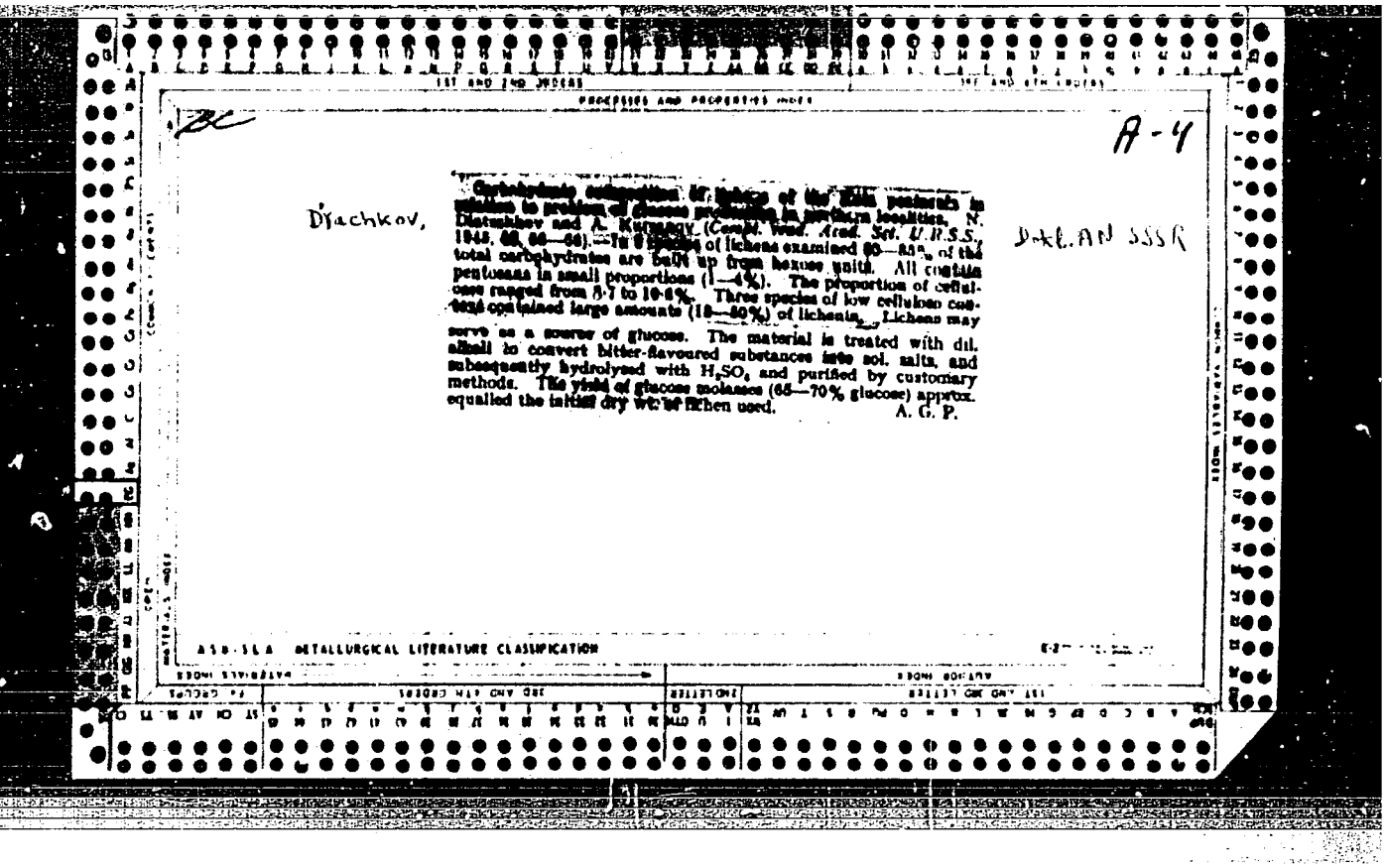


BC

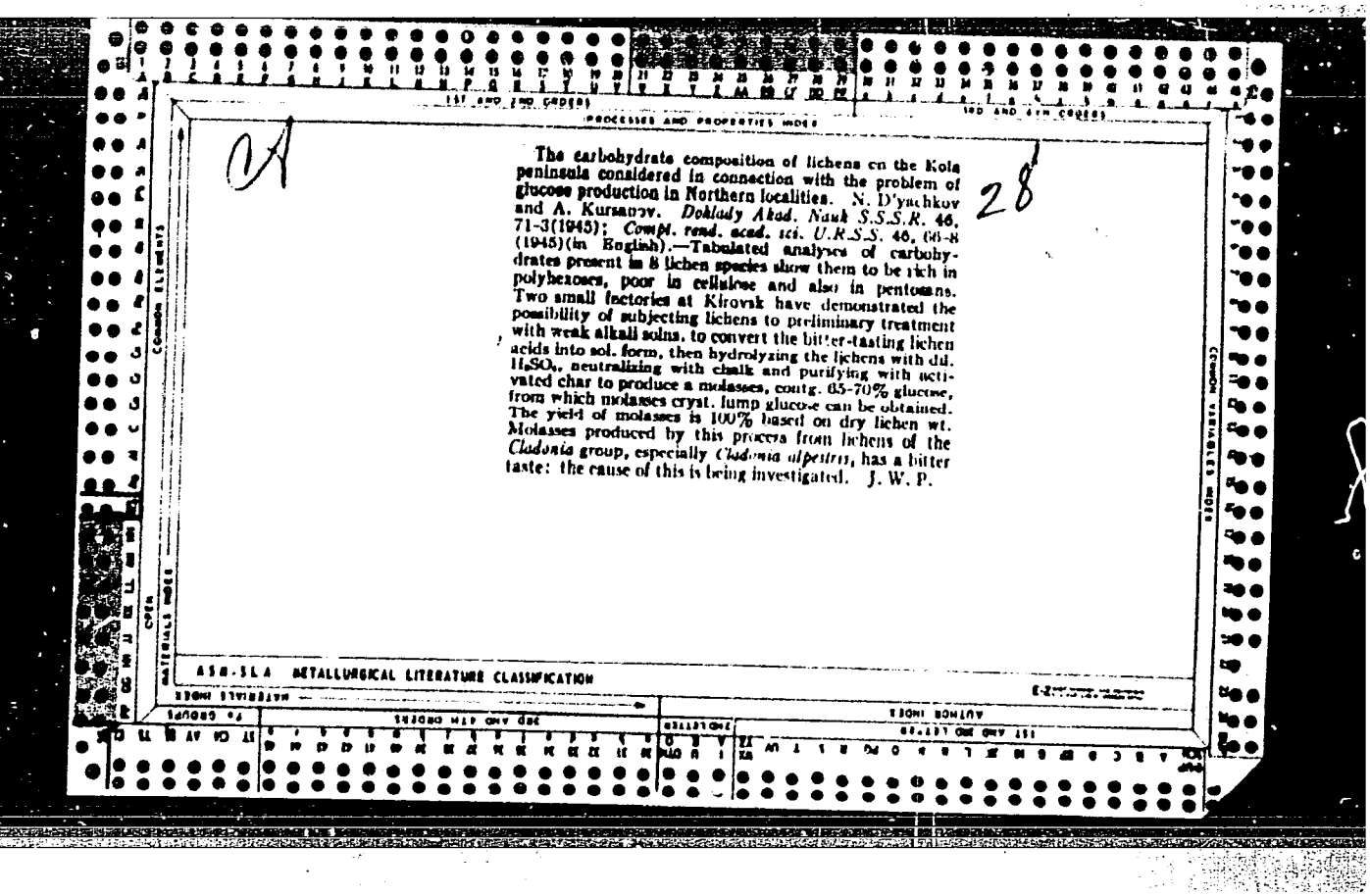
A-4

Djachkov,

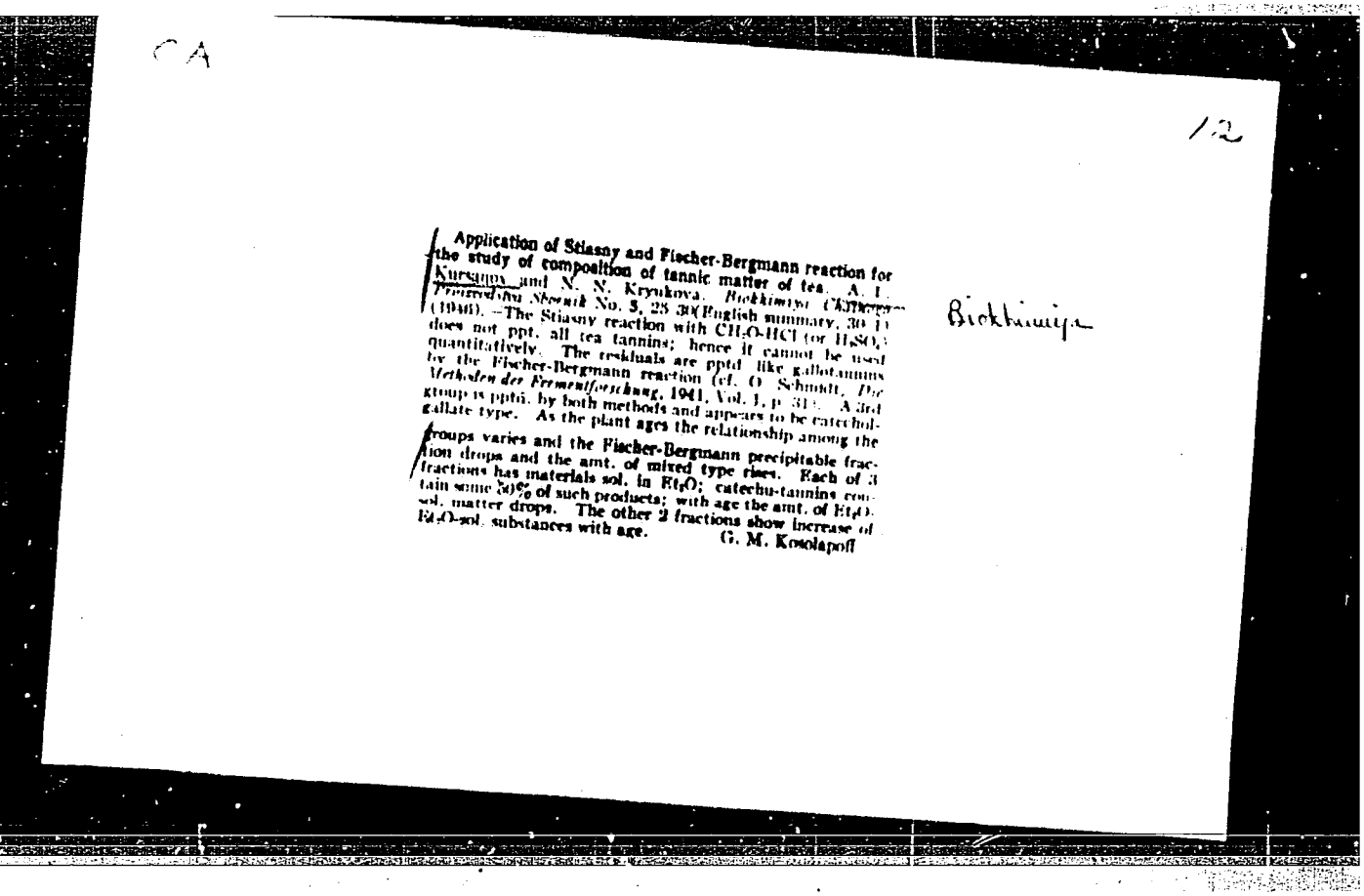
Carbohydrate composition of lichens of the Kola peninsula in relation to problem of disease prevention in northern localities. N. Diatroichev and A. Kursanov (*Compt. rend. Acad. Sci. U.R.S.S.*, 1943, 38, 64—66).—In 9 species of lichens examined 60—85% of the total carbohydrates are built up from hexose units. All contain pentosans in small proportions (1—4%). The proportion of cellulose ranged from 5·7 to 10·6%. Three species of low cellulose content contained large amounts (18—30%) of lichenin. Lichens may serve as a source of glucose. The material is treated with dil. alkali to convert bitter-flavoured substances into sol. salts, and subsequently hydrolysed with H_2SO_4 and purified by customary methods. The yield of glucose molasses (65—70% glucose) approx. equalled the initial dry wt. of lichen used. A. G. P.

DKLAN SSSR

A S B - S L A METALLURGICAL LITERATURE CLASSIFICATION



The carbohydrate composition of lichens on the Kola peninsula considered in connection with the problem of glucose production in Northern localities. N. D'yachkov and A. Kursanov. *Doklady Akad. Nauk S.S.S.R.* 46, 71-3(1945); *Compt. rend. acad. sci. U.R.S.S.* 46, 66-8 (1945)(in English).—Tabulated analyses of carbohydrates present in 8 lichen species show them to be rich in polyhexoses, poor in cellulose and also in pentosans. Two small factories at Kirovsk have demonstrated the possibility of subjecting lichens to preliminary treatment with weak alkali solns. to convert the bitter-tasting lichen acids into sol. form, then hydrolyzing the lichens with dil. H_2SO_4, neutralizing with chalk and purifying with activated char to produce a molasses, contg. 65-70% glucose, from which molasses crystal. lump glucose can be obtained. The yield of molasses is 100% based on dry lichen wt. Molasses produced by this process from lichens of the *Cladonia* group, especially *Cladonia alpestris*, has a bitter taste: the cause of this is being investigated. J. W. P.



CA

12

Application of Stiasny and Fischer-Bergmann reaction for the study of composition of tannic matter of tea. A. I. Kursanov and N. N. Kryukova. *Biokhimiya Chainogo Proizvodstva Sbornik* No. 5, 25-30(English summary, 30-1) (1940). —The Stiasny reaction with CH_2O-HCl (or H_2SO_4) does not ppt. all tea tannins; hence it cannot be used quantitatively. The residuals are ppted like gallotannins by the Fischer-Bergmann reaction (cf. O. Schmidt, *Die Methoden der Fermentforschung*, 1941, Vol. 1, p. 311). A 3rd group is ppted. by both methods and appears to be catechol-gallate type. As the plant ages the relationship among the groups varies and the Fischer-Bergmann precipitable fraction drops and the amt. of mixed type rises. Each of 3 fractions has materials sol. in Et_2O; catechu-tannins contain some 50% of such products; with age the amt. of Et_2O-sol. matter drops. The other 2 fractions show increase of Et_2O-sol. substances with age.

G. M. Kosolapoff

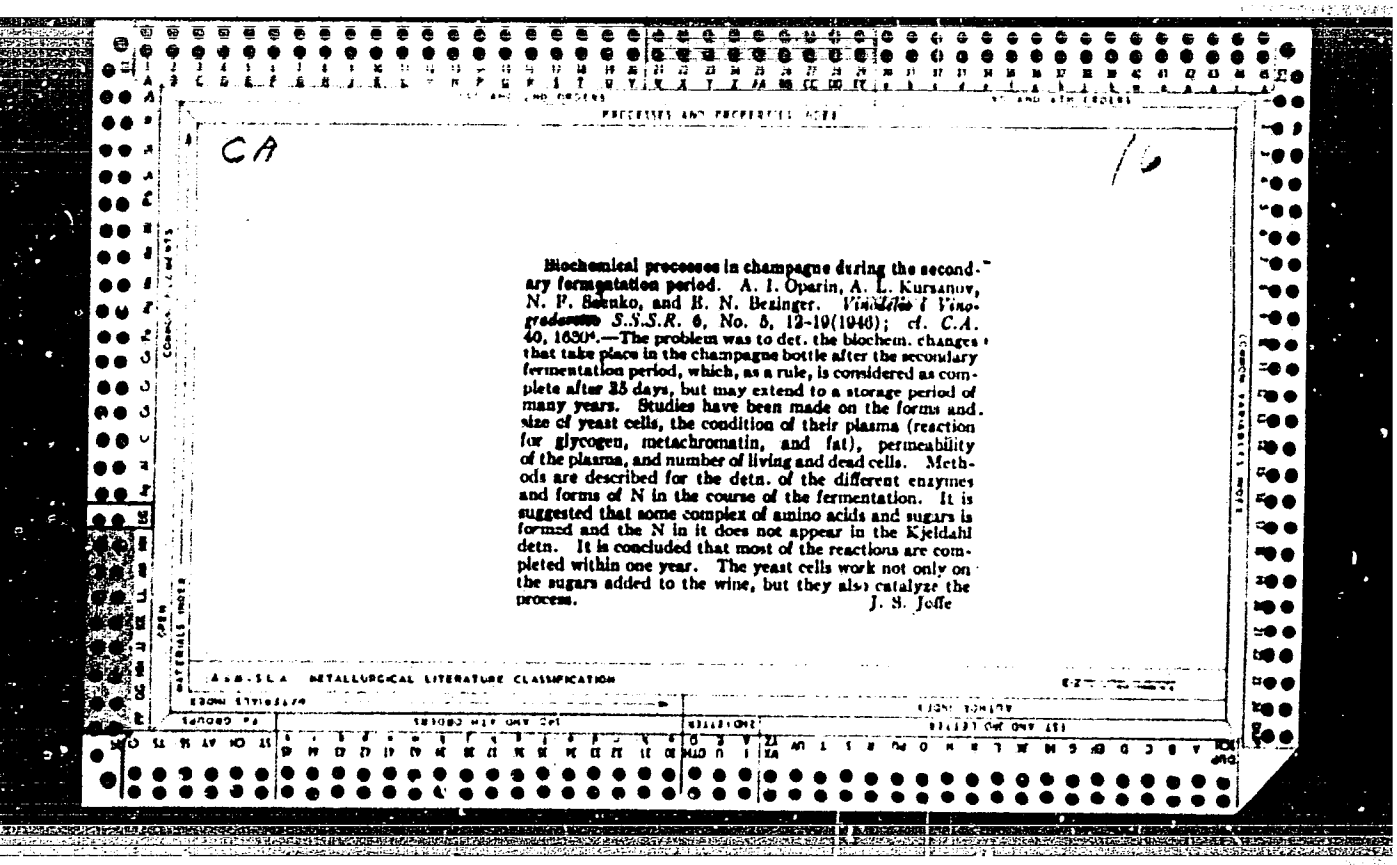
Biokhimiya

C A

12

Transformations of various forms of tannins during treatment of the tea leaf. A. L. Kursanov. *Biokhimiya Chainego Proizvodstva Sbornik No. 5*, 101–9 (English summary 110) (1946).—During conversion of the tea leaf into its final com. form of black tea, sol.-tannin content declines considerably; the polyphenol-catechol fraction declines by a factor of 6. Tannins as a whole are not decreased significantly. The most significant change occurs during the fermentation step, when the Et_2O-sol. fraction (polyphenol-catechols) is condensed to form the insol. tannins, which in the course of further enzymic action (oxidative) exhibit a tanning action of the leaf protein matter, with consequent rise of protein-tannin complex. The actually existing tea-leaf tannins and those formed during the fermentation are very close in nature and are composed of pyrocatechol and phloroglucinol units.

G. M. Kosolapoff

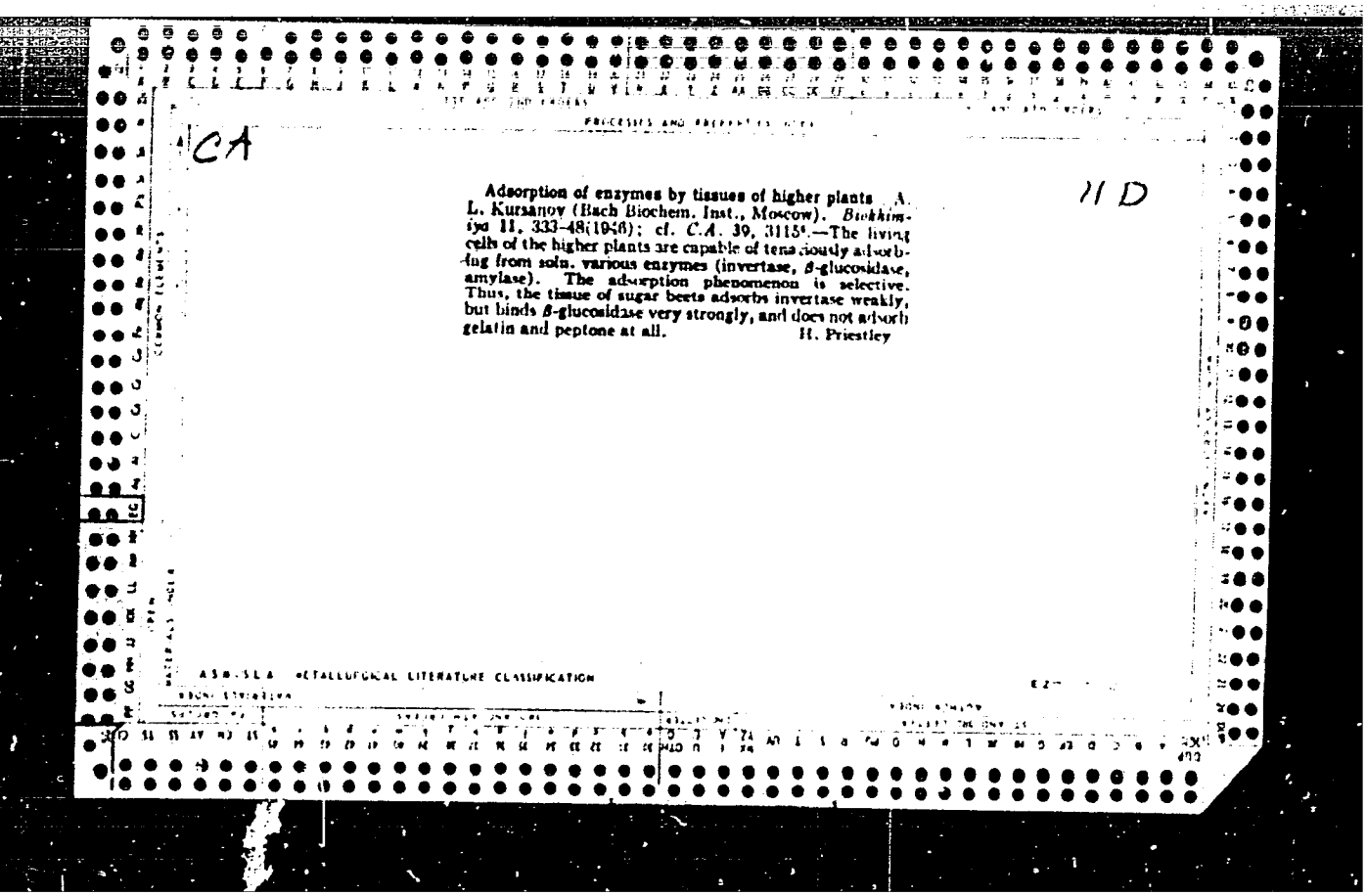


CA

10

Biochemical processes in champagne during the secondary fermentation period. A. I. Oparin, A. L. Kursanov, N. P. Sokuko, and B. N. Bezinger. *Vinodelie i Vinogradarstvo S.S.S.R.* 6, No. 5, 12-19(1946); cf. *C.A.* 40, 1650^{g}.—The problem was to det. the biochem. changes that take place in the champagne bottle after the secondary fermentation period, which, as a rule, is considered as complete after 35 days, but may extend to a storage period of many years. Studies have been made on the forms and size of yeast cells, the condition of their plasma (reaction for glycogen, metachromatin, and fat), permeability of the plasma, and number of living and dead cells. Methods are described for the detn. of the different enzymes and forms of N in the course of the fermentation. It is suggested that some complex of amino acids and sugars is formed and the N in it does not appear in the Kjeldahl detn. It is concluded that most of the reactions are completed within one year. The yeast cells work not only on the sugars added to the wine, but they also catalyze the process.

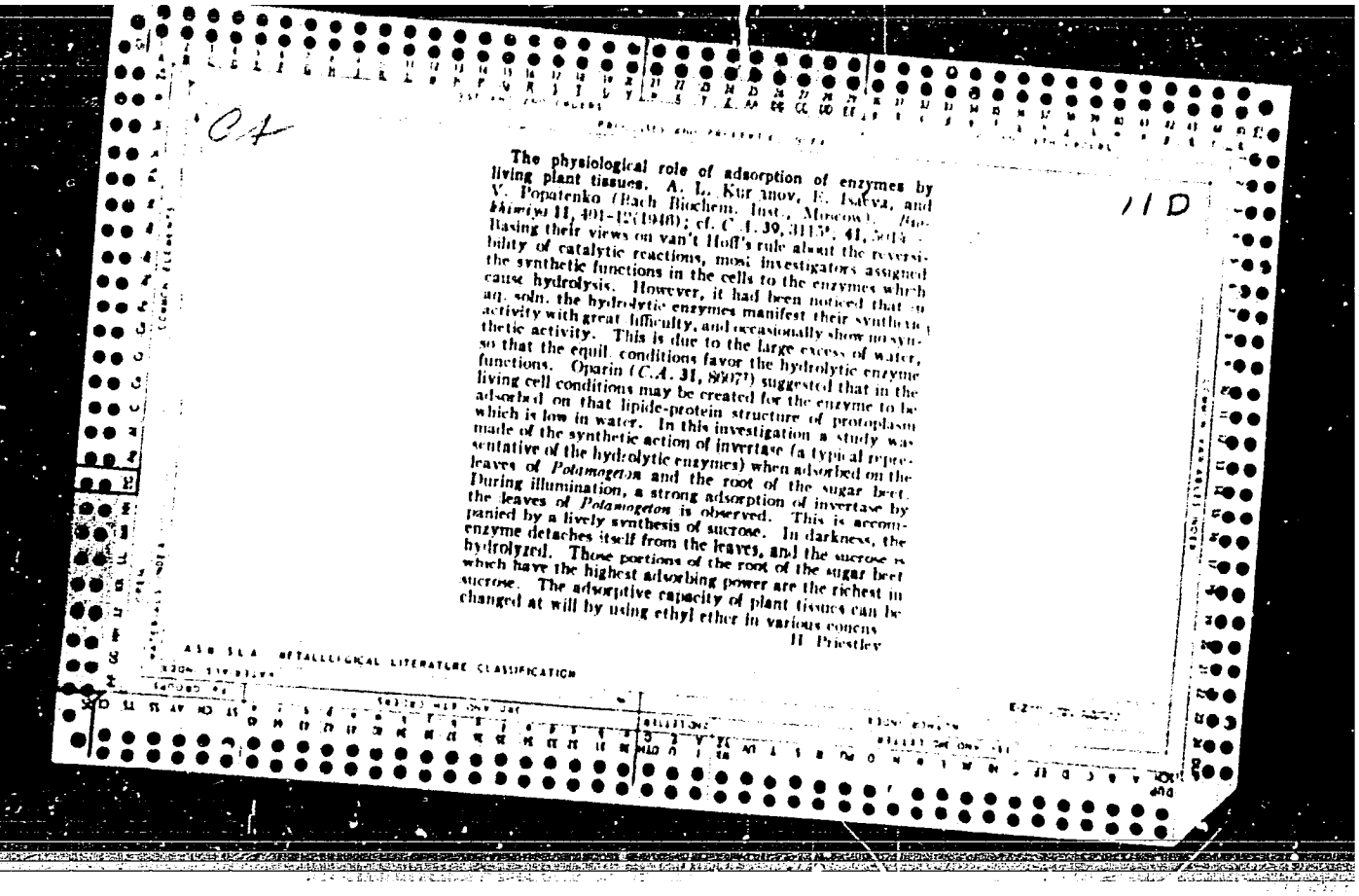
J. S. Joffe



CA

11 D

Adsorption of enzymes by tissues of higher plants. A. L. Kursanov (Bach Biochem. Inst., Moscow). *Biokhimiya* 11, 333-48(1946); cf. *C.A.* 39, 3115⁵.—The living cells of the higher plants are capable of tenaciously adsorbing from soln. various enzymes (invertase, β-glucosidase, amylase). The adsorption phenomenon is selective. Thus, the tissue of sugar beets adsorbs invertase weakly, but binds β-glucosidase very strongly, and does not adsorb gelatin and peptone at all. H. Priestley



C4

The physiological role of adsorption of enzymes by living plant tissues. A. L. Kurnanov, E. Isaeva, and V. Popatenko (Bach Biochem. Inst., Moscow). *Biokhimiya* **11**, 401-12(1946); cf. *C. A.* **39**, 3115⁹, **41**, 5014⁴. Basing their views on van't Hoff's rule about the reversibility of catalytic reactions, most investigators assigned the synthetic functions in the cells to the enzymes which cause hydrolysis. However, it had been noticed that in aq. soln. the hydrolytic enzymes manifest their synthetic activity with great difficulty, and occasionally show no synthetic activity. This is due to the large excess of water, so that the equil. conditions favor the hydrolytic enzyme functions. Oparin (*C.A.* **31**, 8007) suggested that in the living cell conditions may be created for the enzyme to be adsorbed on that lipide-protein structure of protoplasm which is low in water. In this investigation a study was made of the synthetic action of invertase (a typical representative of the hydrolytic enzymes) when adsorbed on the leaves of *Potamogeton* and the root of the sugar beet. During illumination, a strong adsorption of invertase by the leaves of *Potamogeton* is observed. This is accompanied by a lively synthesis of sucrose. In darkness, the enzyme detaches itself from the leaves, and the sucrose is hydrolyzed. Those portions of the root of the sugar beet which have the highest adsorbing power are the richest in sucrose. The adsorptive capacity of plant tissues can be changed at will by using ethyl ether in various concns.
H. Priestley

11D

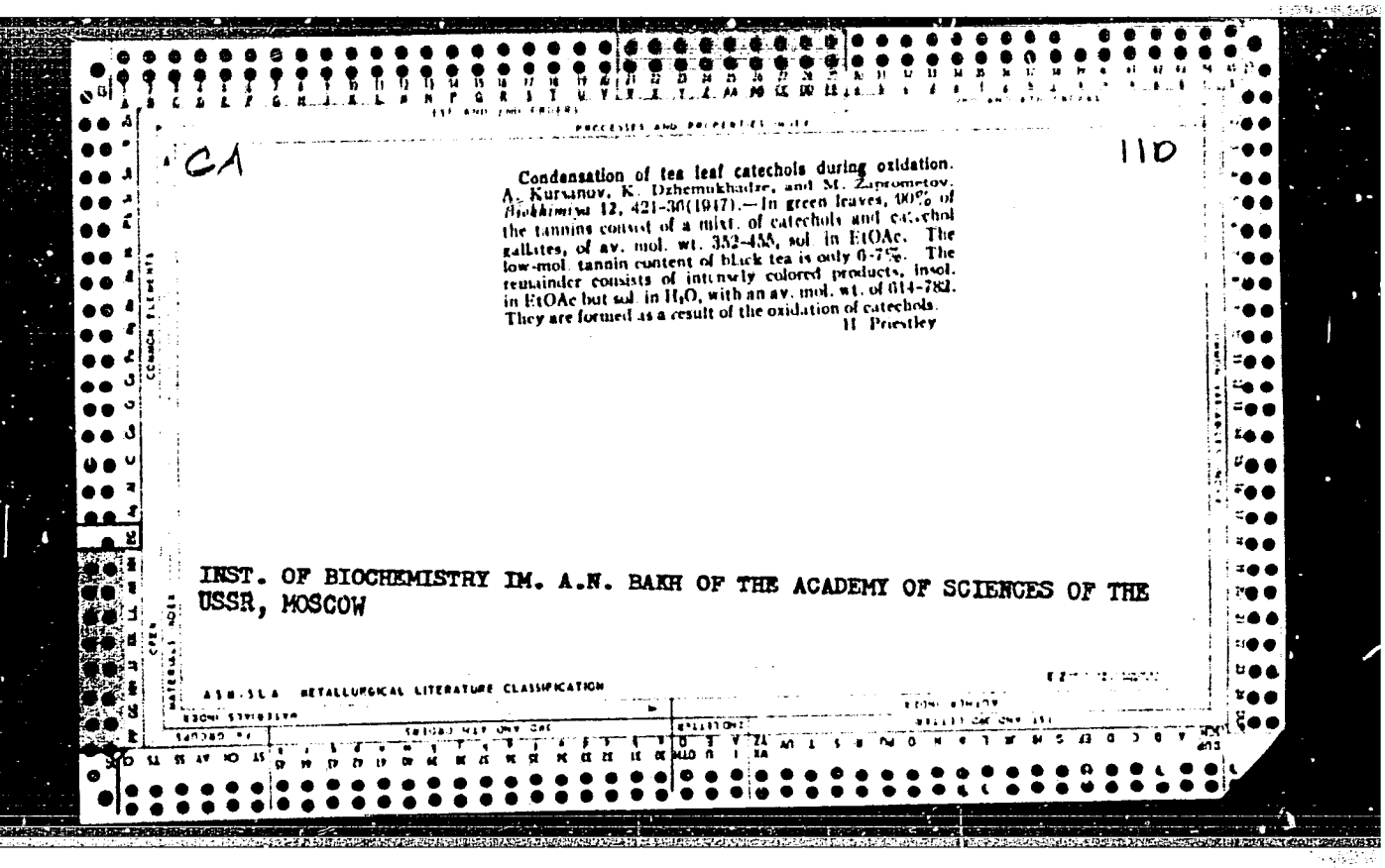
ASB SLA METALLURGICAL LITERATURE CLASSIFICATION

KURSANOV A.L.

OPARIN, A.I.; KURSANOV, A.L.; SAYENKO, N.F.; BESINGER, E.N.

Biochemical processes in champagne during bottle aging [in Russian with English summary]. Biokhim.vin. no.1:134-157 '47. (MLRA 7:10)

1. Kafedra biokhimii rastenii Moskovskogo gosudarstvennogo universiteta imeni Lomonosova.
(Champagne (Wine))



CA

11D

Condensation of tea leaf catechols during oxidation. A. Kursanov, K. Dzhemukhadze, and M. Zaprometov. *Biokhimiya* 12, 421-30(1947).—In green leaves, 40% of the tannins consist of a mixt. of catechols and catechol gallates, of av. mol. wt. 352-455, sol. in EtOAc. The low-mol. tannin content of black tea is only 6-7%. The remainder consists of intensely colored products, insol. in EtOAc but sol. in H_2O, with an av. mol. wt. of 614-782. They are formed as a result of the oxidation of catechols.
H. Priestley

INST. OF BIOCHEMISTRY IM. A.N. BAKH OF THE ACADEMY OF SCIENCES OF THE USSR, MOSCOW

A58-SLA METALLURGICAL LITERATURE CLASSIFICATION

KURSANOV, A. L.

PA 64T24

USSR/Chemistry - Gallic Acid
Chemistry - Tea, Tannins in

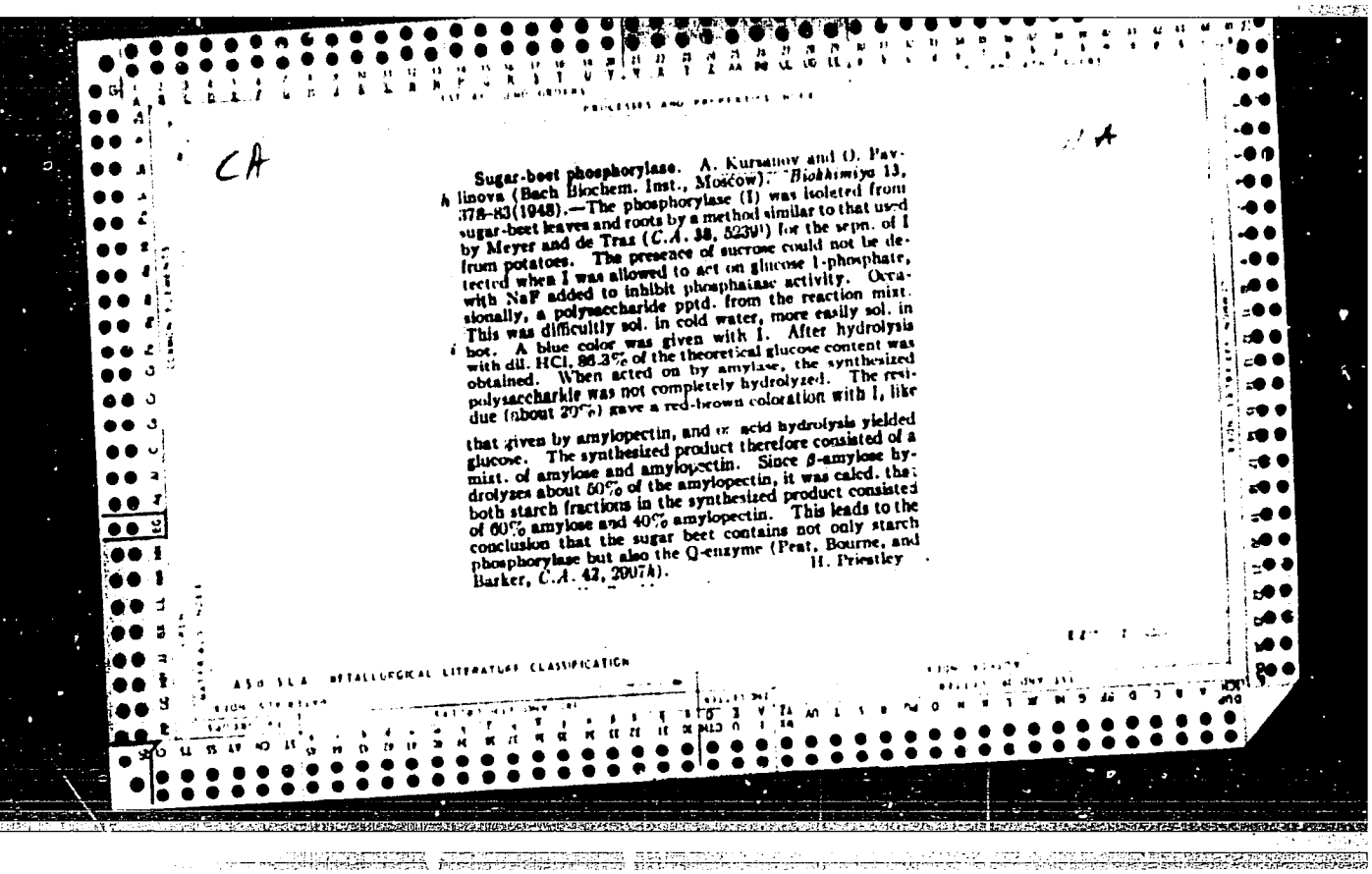
Jan/Feb 1948

"Gallic Acid in Composition With Tea Tannin," A. L. Kursanov, K. M. Dzhemukhadze, Inst of Biochem imeni A. N. Bakh, Acad Sci USSR, Moscow, 5 pp

"Biokhim" Vol XIII, No 1 - pp. 61-5

Show that free and ester-bonded gallic acid is present in the leaves of all tea family shrubs grown in Georgia. Tests to determine the comparative amounts of free and compounded gallic acid present in green leaves, and the black tea obtained from these green leaves. Submitted 11 Jun 1947.

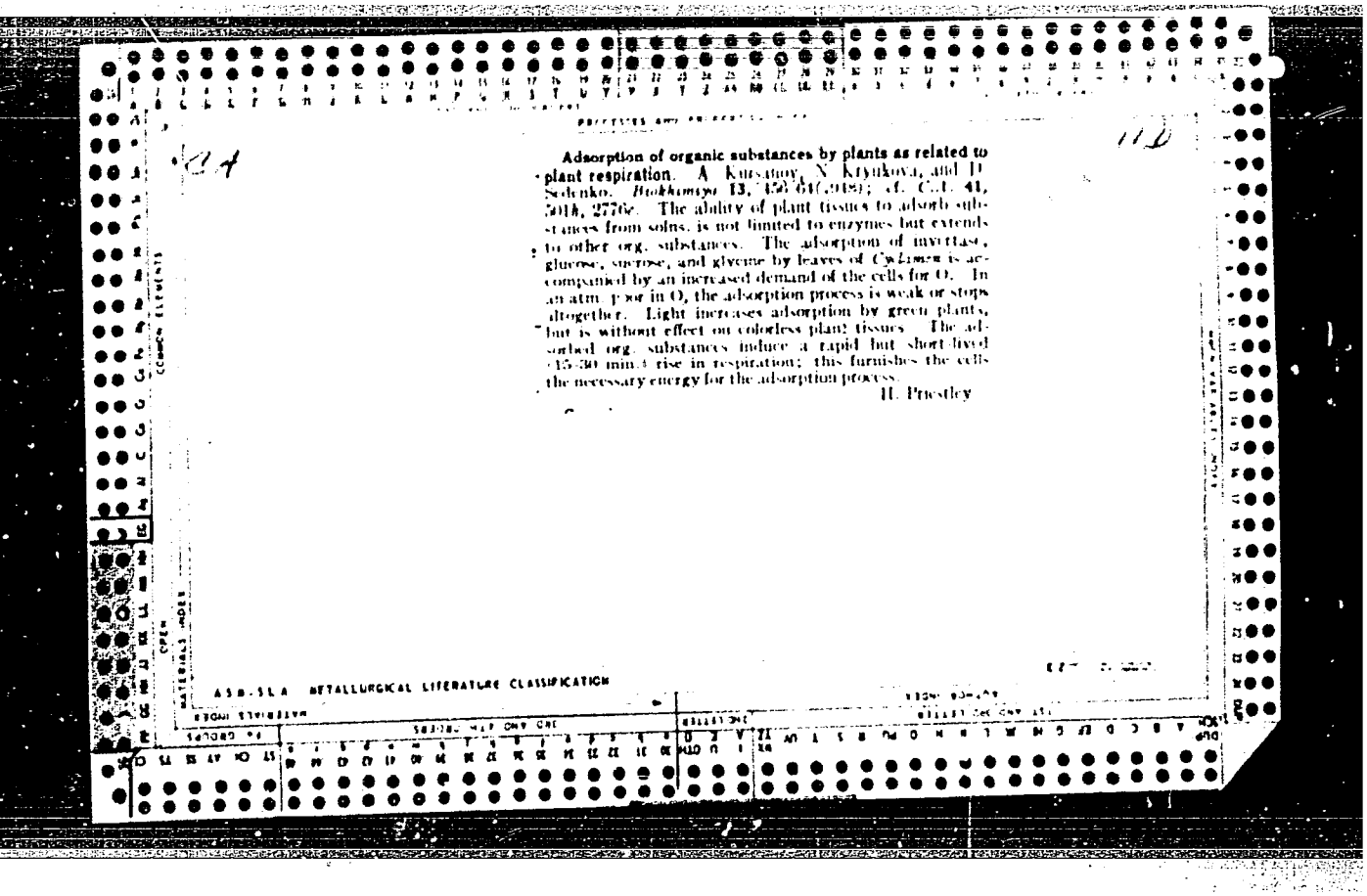
64T24



CA

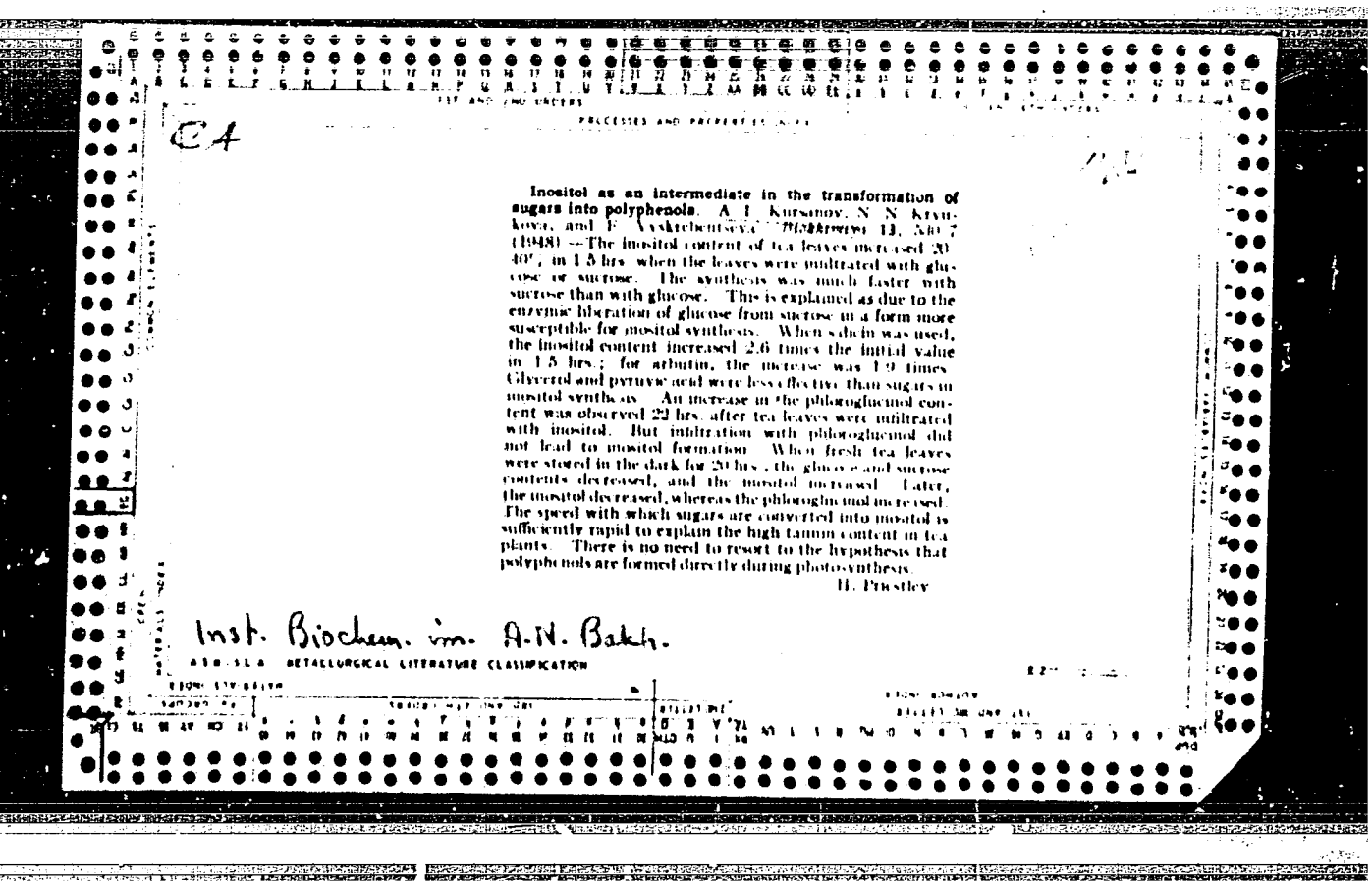
Sugar-beet phosphorylase. A. Kursanov and O. Pavlinova (Bach Biochem. Inst., Moscow). *Biokhimiya* 13, 378–83(1948).—The phosphorylase (I) was isolated from sugar-beet leaves and roots by a method similar to that used by Meyer and de Tras (*C.A.* 38, 5239⁹) for the separation of I from potatoes. The presence of sucrose could not be detected when I was allowed to act on glucose 1-phosphate, with NaF added to inhibit phosphatase activity. Occasionally, a polysaccharide ppt'd. from the reaction mixt. This was difficultly sol. in cold water, more easily sol. in hot. A blue color was given with I. After hydrolysis with dil. HCl, 86.3% of the theoretical glucose content was obtained. When acted on by amylase, the synthesized polysaccharide was not completely hydrolyzed. The residue (about 20%) gave a red-brown coloration with I, like that given by amylopectin, and on acid hydrolysis yielded glucose. The synthesized product therefore consisted of a mixt. of amylose and amylopectin. Since β-amylase hydrolyzes about 60% of the amylopectin, it was calcd. that both starch fractions in the synthesized product consisted of 60% amylose and 40% amylopectin. This leads to the conclusion that the sugar beet contains not only starch phosphorylase but also the Q-enzyme (Peat, Bourne, and Barker, *C.A.* 42, 2007h).

H. Priestley



Adsorption of organic substances by plants as related to plant respiration. A Kursanov, N Kryukova, and D Sedenko. *Biokhimiya* **13**, 452-64(1948); cf. C.A. **41**, 5014i, 2776e. The ability of plant tissues to adsorb substances from solns. is not limited to enzymes but extends to other org. substances. The adsorption of invertase, glucose, sucrose, and glycine by leaves of *Cyclamen* is accompanied by an increased demand of the cells for O. In an atm. poor in O, the adsorption process is weak or stops altogether. Light increases adsorption by green plants, but is without effect on colorless plant tissues. The adsorbed org. substances induce a rapid but short-lived (15-30 min.) rise in respiration; this furnishes the cells the necessary energy for the adsorption process.

H. Priestley



C4

Inositol as an intermediate in the transformation of sugars into polyphenols. A. I. Kursanov, N. N. Krasnikova, and F. [illegible]. *Doklady Akad. Nauk S.S.S.R.* 13, 331-7 (1948).—The inositol content of tea leaves increased 20-40%, in 1.5 hrs. when the leaves were infiltrated with glucose or sucrose. The synthesis was much faster with sucrose than with glucose. This is explained as due to the enzymic liberation of glucose from sucrose in a form more susceptible for inositol synthesis. When salicin was used, the inositol content increased 2.6 times the initial value in 1.5 hrs.; for arbutin, the increase was 1.9 times. Glycerol and pyruvic acid were less effective than sugars in inositol synthesis. An increase in the phloroglucinol content was observed 22 hrs. after tea leaves were infiltrated with inositol. But infiltration with phloroglucinol did not lead to inositol formation. When fresh tea leaves were stored in the dark for 20 hrs., the glucose and sucrose contents decreased, and the inositol increased. Later, the inositol decreased, whereas the phloroglucinol increased. The speed with which sugars are converted into inositol is sufficiently rapid to explain the high tannin content in tea plants. There is no need to resort to the hypothesis that polyphenols are formed directly during photosynthesis.

H. Priestley

Inst. Biochem. im. A.N. Bakh.

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

7

Determination of neighboring (1,2,3-) and ortho (1,2-) hydroxyl groups in polyphenols and in tannins. A. I. Kurnanov and M. N. Zaprometov. *Biokhimiya* 14, 67-75(1949).—The previously known violet color test for catechol and pyrogallol with Fe^{3+} salts in the presence of tartrate has been perfected into a quant. method. In a 50 ml. graduated cylinder mix 1-2 ml. of the test soln. (equiv. to 20-40 γ OH group) and 5 ml. of 0.1 M phosphate buffer (pH 8.08 for catechol detns. and pH 6.24 for pyrogallol). Then add 2 ml. of the Fe tartrate reagent (0.25 g. anhyd. $FeSO_4$ and 1.25 g. Rochelle salt in 250 ml. water). This reagent is stable for 48 hrs. if kept in the refrigerator. Make up to 50 ml. with distd. water. After 3 min., measure the color in a photometer with a red filter. Tables are given relating to the OH content of catechol and pyrogallol, alone and in mixts. In substituted polyphenols, at least 2 OH groups must be free in order that a color be given with the Fe tartrate reagent. The method was successfully employed for detg. the OH groups in ellagic acid and in Chinese tannin (*Rhus semialata*), before and after hydrolysis. H. P.

INST. OF BIOCHEMISTRY IM.A.N. BAKH OF THE ACAD. OF SCIENCES, USSR, MOSCOW

CA

1112

Adsorbing properties of protoplasm as a factor which determines motion of nitrogenous matter in the plant A. L. Kursanov and M. N. Zaprometov (Inst. Biokhim. im. A. N. Bakha, Akad. Nauk S.S.S.R.). *Doklady Akad. Nauk S.S.S.R.* 69, 89–92(1949); cf. *C.A.* 44, 1569c.—Immersion of wheat stems in 0.6% glycine or asparagine solns. gives rapid increase of N in the upper segments of the cutting if the morphologically lower end is immersed; the latter acquires little N per se and serves merely for transmission. If the direction of immersion is reversed, the immersed "upper" ends become rich in N, but the exposed "lower" ends show no or little N increase, or may even lose N. The results are confirmed by detn. of relative adsorbing power of stem sections to aq. solns. of glycine and asparagine, differing as much as 50%, with higher adsorption in upper stem portions (30–35 cm. length). This distribution holds to the beginning of wax ripeness.

G. M. Kosolapoff

CA

meso-Inositol in tea leaves and its formation paths. A. L. Kursanov, M. Vorob'eva, and E. Vyskrebentseva. *Doklady Akad. Nauk S.S.S.R.* 68, 737-40(1949); cf. C.A. 44, 11724.—All inositol in tea leaves (Georgian-unstated species) is shown to be *meso*-inositol by chem. analysis (Smirnov, C.A. 30, 4524[9]) and by biol. method in cultivation of *Saccharomyces carlsbergensis*, capable of utilizing only the *meso* form. Infiltration into the leaves of solns. of glucose, fructose, sucrose, and glucose 1-phosphate leads only to *meso*-inositol formation, part of which is in free state, but the bulk forms some other compds. from which *meso*-inositol can be obtained by 12-hr. hydrolysis with 22% H_2SO_4. The synthesis from sucrose is 3 times faster than that from glucose, probably caused by the presence of the glucosidic link; results with glucose 1-phosphate are similar to those with sucrose. Maltose is not utilized, nor is rhamnose, glyceraldehyde, and glycolaldehyde, as well as glycerol and pyruvic acid.

G. M. Kosolapoff

Participation of *meso*-inositol in carbohydrate phenol metabolism of the tea leaf A. I. Kursanov, E. Vvakrelent seva, and M. Vvedi'eva. *Doklady Akad. Nauk S.S.S.R.* 68, 541-6 (1949). cf. C.A. 43, 3370d. Infiltration of the leaf with glucose, fructose, sucrose, glucose 1-phosphate, maltose, rhamnose, glyceraldehyde or glycolaldehyde, showed that in all cases when the infiltrate could be metabolized into *meso*-inositol (1st 4 cases) a considerable increase (1-5 mg./g.) of phloroglucinol was observed, the last 4 substances being unable to be transformed into *m*-inositol did not give this result. Probably, *meso*-inositol in the leaf can be transformed into substances with phenolic OH groups in *meta*-positions. No increase of pyrogallol-type phenols was observed; the *meso*-inositol level in the adult leaf rises during the day and drops at night with 20-30% variation limits; monosaccharides show but a slight similar change, while sucrose behaves like *meso*-inositol. Stored freshly cut adult leaves (in dark moist chamber) display a continued utilization (decrease of content) of sugars with corresponding rise of tanninlike substances, with *meso*-inositol first rising, then declining as its utilization begins to predominate over synthesis, the phloroglucinol similarly rises in 1st 8 hrs., then declines. G. M. K.

Movement of nitrogenous substances in plants. A. L. Kursanov and M. N. Zaprometov. *Doklady Akad. Nauk S.S.S.R.* 68, 1113-16(1949).--By following the rate of accumulation of amino acids (unspecified) from soln. it was shown that the movement of N compds. in plants is rapid and does not appear to depend on movements of H_2O. In wheat expts. asparagine was shown to diffuse rapidly (within 2-3 hrs.) through the plant structure with largest accumulation (84%) in the seed structure and least in the stems. G. M. Kosolapoff

CA

12

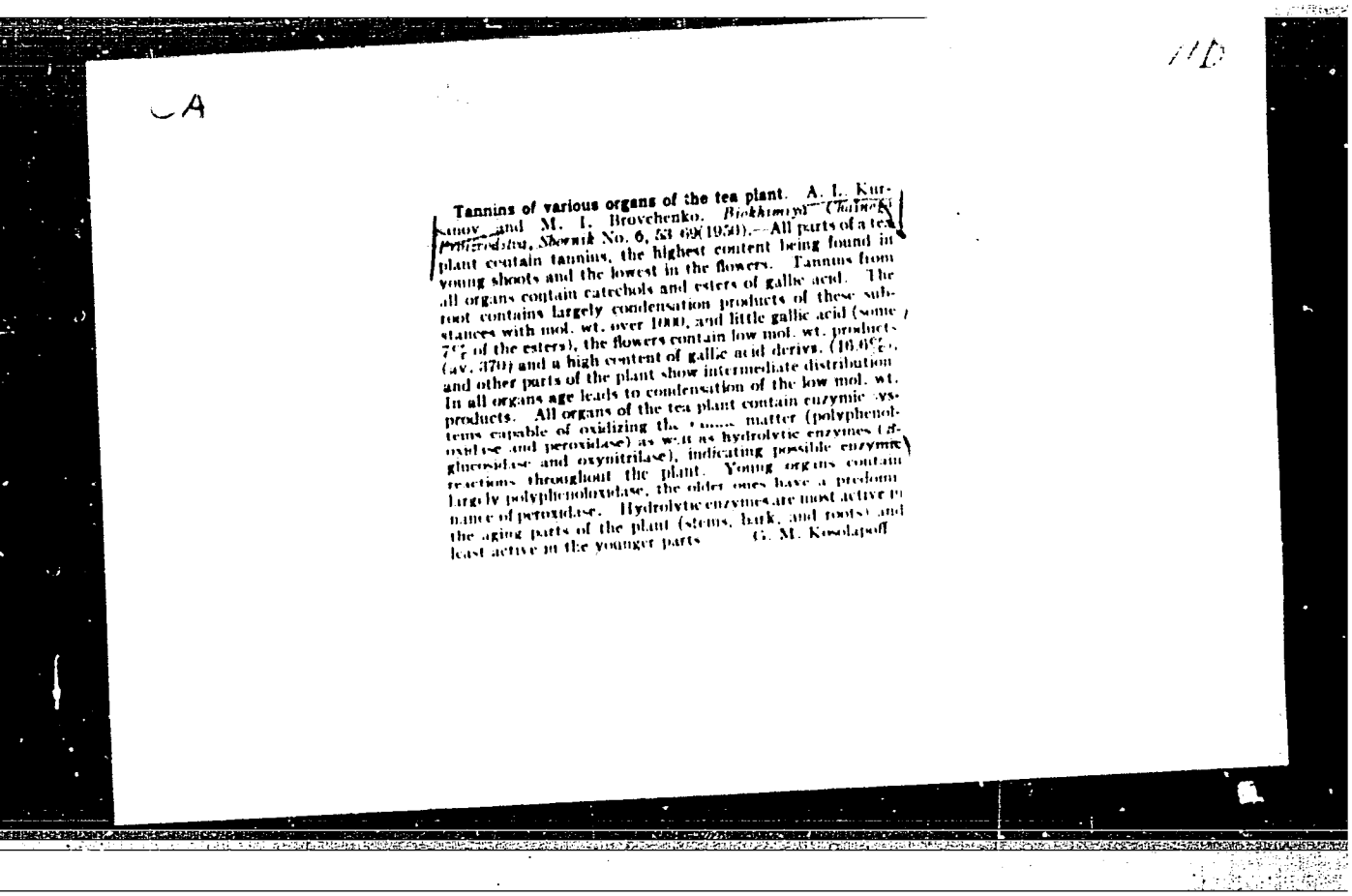
Biokhimiya

Synthesis of polyphenols in tea leaf. A. L. Kursanov and N. N. Kryukova. *Biokhimiya (Sbornik Problemy Matsuli* No. 6, 7-19(1954).--The results of previous work are summarized (30 references) as follows. Sugars are transformed in tea leaves into phenolic substances, with intermediate formation of *m*-inositol, which is always present in leaves in free and bound forms. The intermediate is synthesized from hexoses that have the same enol as glucose, but other sugars cannot be thus utilized. Sucrose, glucose-1-phosphate, arbutin, and salicin are transformed into inositol at an even greater rate than free glucose, indicating a favorable action of the glucoside link in this synthesis, indicating that degradation to simple sugars is probably not the first step. Intermediates of carbohydrate metabolism, such as pyruvic acid, show less rapid transformation into inositol or none at all. The inositol while being synthesized is simultaneously converted oxidatively to polyphenols with *m*-located HO groups (phloroglucinol derivs. which eventually lead to the tea tannins. The reverse process is not observed in the tea leaf. G. M. Kosolapoff

CA

11D

Composition of tannic substances and quality of the tea leaf. A. L. Kursanov and M. I. Brovchenko. *Biokhimiya Chainogo Proizvodstva, Sbornik* No. 6, 31-8(1950). The tannin materials in a two-leaf sprout of Chinese tea plant undergo changes during growth. In August when highest quality tea is produced the tannin of such sprouts has 73.77% of low mol. wt. material which is the source of the valuable taste qualities of black tea after fermentation. This tannin is also rich in phloroglucinol and esters of gallic acid, so that in August some 50% of tannin consists of catechol gallates. Georgian tea plant (strain No. 1) at this time contains 87.7% of low mol. wt. material in its tannin, being comparable to best Indian teas; Georgian No. 2 strain is inferior in quality (by its tannin compn.), but is still superior to Chinese and Japanese tea strains. G. M. Kosolapoff



CA

Tannins of various organs of the tea plant. A. I. Kurssanov and M. I. Brovchenko. *Biokhimiya Chainogo Proizvodstva, Sbornik* No. 6, 53-69(1954).—All parts of a tea plant contain tannins, the highest content being found in young shoots and the lowest in the flowers. Tannins from all organs contain catechols and esters of gallic acid. The root contains largely condensation products of these substances with mol. wt. over 1000, and little gallic acid (some 7% of the esters), the flowers contain low mol. wt. products (av. 370) and a high content of gallic acid derivs. (10.6%), and other parts of the plant show intermediate distribution. In all organs age leads to condensation of the low mol. wt. products. All organs of the tea plant contain enzymic systems capable of oxidizing the [illegible] matter (polyphenoloxidase and peroxidase) as well as hydrolytic enzymes (β-glucosidase and oxynitrilase), indicating possible enzymic reactions throughout the plant. Young organs contain largely polyphenoloxidase, the older ones have a predominance of peroxidase. Hydrolytic enzymes are most active in the aging parts of the plant (stems, bark, and roots) and least active in the younger parts. G. M. Kosolapoff

KURSANOV, A. L.

184T84

USSR/Medicine - Vitamins Oct 50

"Biological Action of Tannin From Tea," A. L. Kursanov, V. I. Bukin, K. L. Povolotskaya, M. N. Zaprometov

"Biokhim Chaynogo Proizvod" Vol VI, pp 170-180 (Also published in "Biokhimiya")

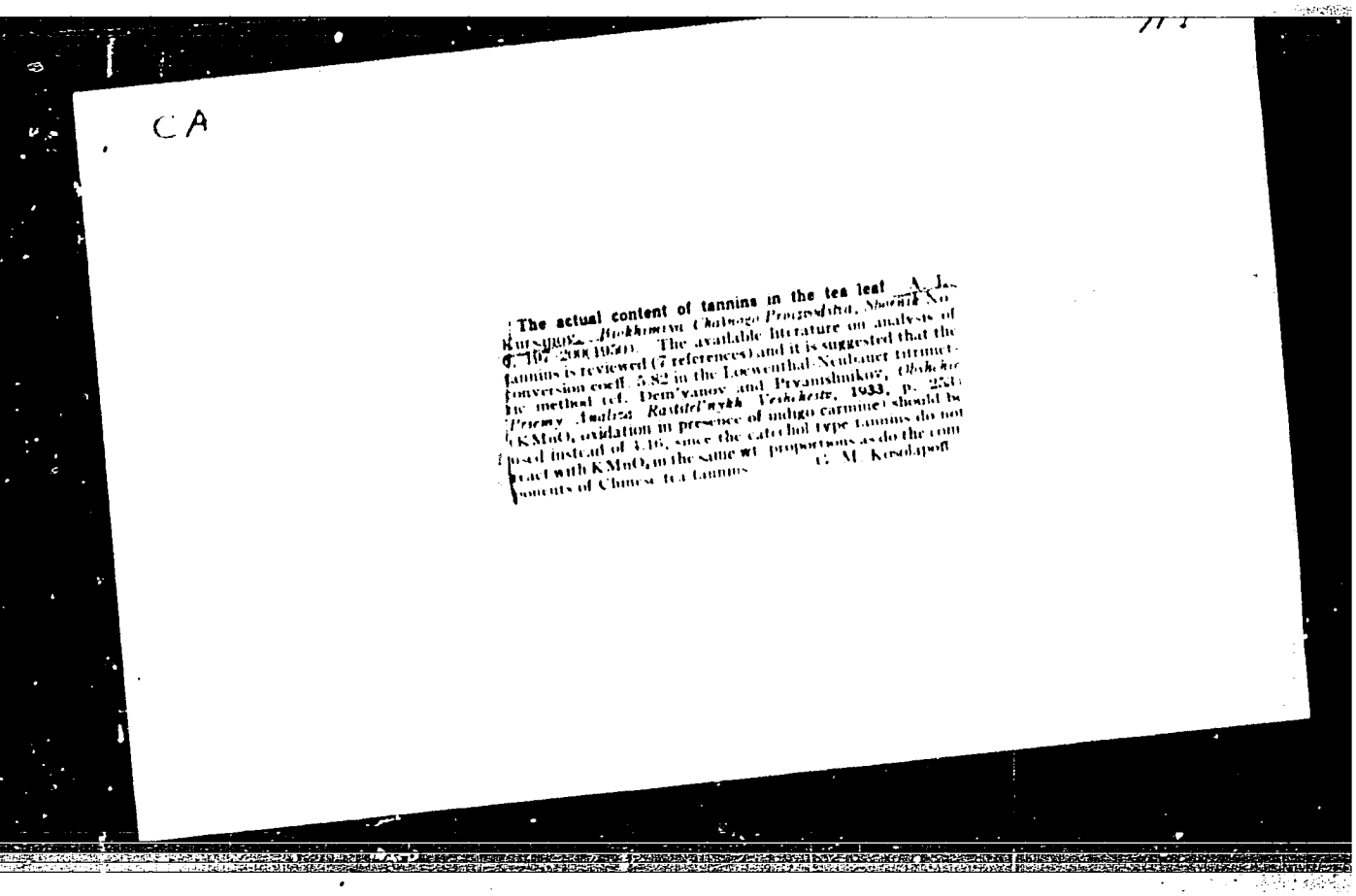
Isolated mixt of catechins and their gallic acid esters (I), also 1-epicatechin (II), from green leaves of Georgian tea. Isolated tannin (III) similar to I from black tea. One mg mixt of I, II, or III, injected intramuscularly into mice, increases considerably the strength of

LC 184T84

USSR/Medicine - Vitamins (Contd) Oct 50

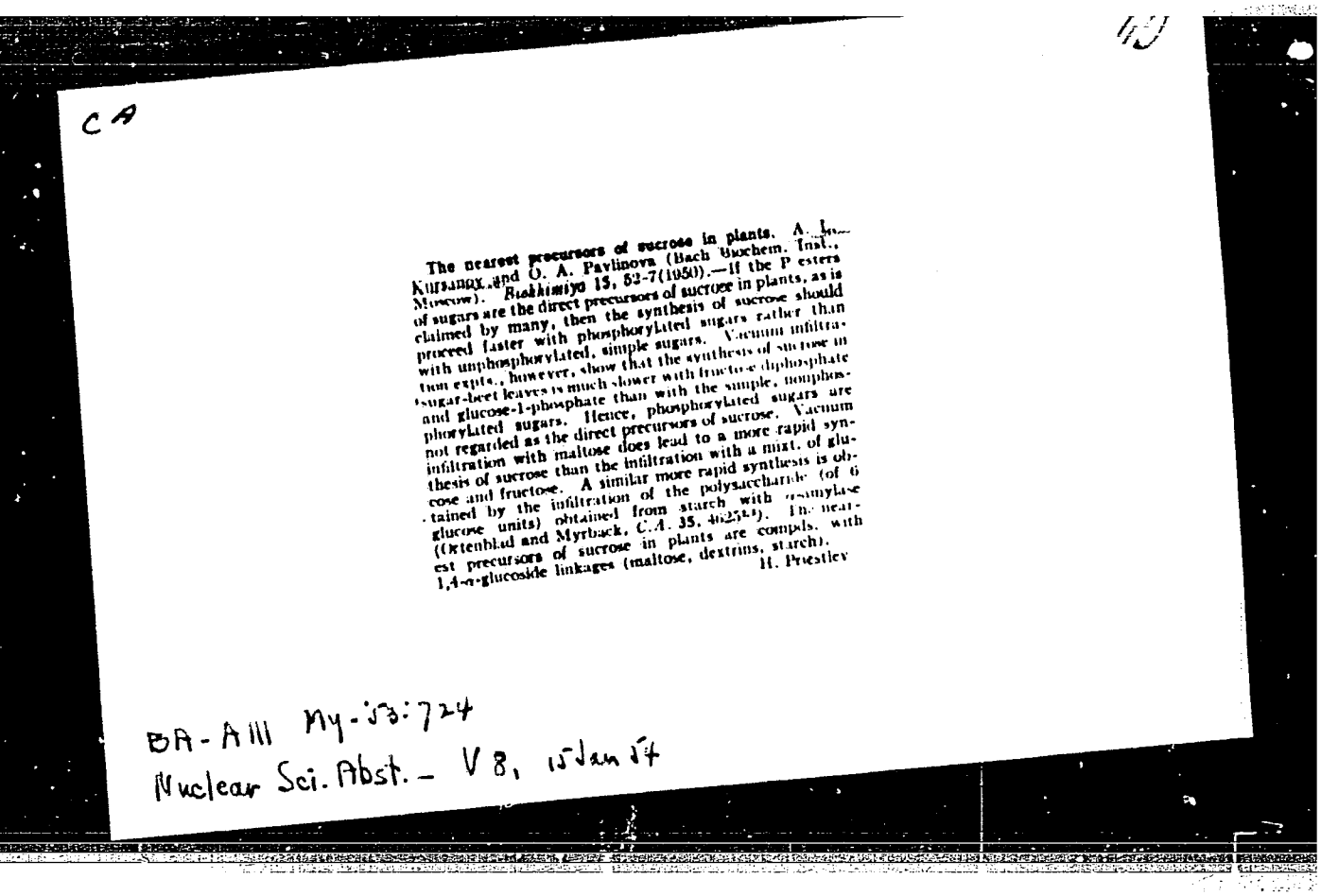
the animals' capillaries. There is reduction of hemorrhages in the lungs at lowered pressures. I is the most effective prepn. One mg of tea tannin per day, when added to the diet of guinea pigs, increases deposition of ascorbic acid in all organs and prevents scurvy. It follows that tea catechins have strong $P(C_2)$ vitamin activity.

LC 184T84



CA

The actual content of tannins in the tea leaf. A. I. Kursanov, Biokhimiya Chainogo Proizvodstva, Sbornik No. 1, 207–208 (1939). The available literature on analysis of tannins is reviewed (7 references) and it is suggested that the conversion coeff. 5.82 in the Loewenthal-Neubauer titrimetric method (cf. Dem'yanov and Pryanishnikov, Obshchee Proizvod. Analiza Rastitel'nykh Veshchestv, 1933, p. 253) KMnO, oxidation in presence of indigo carmine) should be raised instead of 4.16, since the catechol type tannins do not react with KMnO, in the same wt. proportions as do the com ponents of Chinese tea tannins. C. M. Kesel'apoff



CA

43

The nearest precursors of sucrose in plants. A. [illegible] Kursanov and O. A. Pavlinova (Bach Biochem. Inst., Moscow). *Biokhimiya* 15, 52-7(1950).—If the P esters of sugars are the direct precursors of sucrose in plants, as is claimed by many, then the synthesis of sucrose should proceed faster with phosphorylated sugars rather than with unphosphorylated, simple sugars. Vacuum infiltration expts., however, show that the synthesis of sucrose in sugar-beet leaves is much slower with fructose diphosphate and glucose-1-phosphate than with the simple, nonphosphorylated sugars. Hence, phosphorylated sugars are not regarded as the direct precursors of sucrose. Vacuum infiltration with maltose does lead to a more rapid synthesis of sucrose than the infiltration with a mixt. of glucose and fructose. A similar more rapid synthesis is obtained by the infiltration of the polysaccharide (of 6 glucose units) obtained from starch with [illegible]-amylase (Ostenblad and Myrback, *C.A.* 35, 4625[illegible]). The nearest precursors of sucrose in plants are compds. with 1,4-α-glucoside linkages (maltose, dextrins, starch).
H. Priestley

BA-A III My-53:724
Nuclear Sci. Abst. - V 8, 15 Jan 54

CA

Oxygen consumption in the synthesis of sucrose by plants. A. L. Kursanov and O. A. Pavlinova (Biochem. Inst., Moscow). *Biokhimiya* 15, 178-85(1950).—In order to confirm the hypothesis concerning the synthesis of sucrose from polysaccharides with 1,4-α-glucoside bonds (*C.A.* 44, 5439c), comparative detns. were made of the amt. of O consumed by plants for the synthesis of 1 mg. of sucrose from a mixt. of glucose and fructose, and from a mixt. of maltose (as the simplest representative with 1,4-α-glucoside linkages) and fructose. The respiration of wheat seedlings was detd. in a Warburg app., the side arm of which contained the sugar soln. The respiration of the wheat seedlings increased sharply immediately after the addn. of the sugar soln., reaching a max. in 1-1.5 hrs. An addtl. 27 μl. O was absorbed by the seedlings in the synthesis of 1 mg. sucrose from glucose and fructose. The synthesis of sucrose from a mixt. of maltose and fructose proceeded in the wheat seedlings as rapidly as from monosaccharides. But the rise in respiration was only 63% of that caused by simple sugars. From the energy standpoint, the synthesis of sucrose from maltose and fructose was more favorable. This is a verification of the view that in higher plants the nearest precursers of sucrose are polymers of glucose with 1,4-α-glucoside linkages (starch, dextrins, maltose). H. Priestley

BA - AIII My-53: 724

C.A.

Biological action of tea tannin. A. I. Kursanov, V. N. Bukin, K. L. Povolotskaya, and M. N. Zaprometov (A.N. Bakh Biochem. Inst., Moscow). *Biokhimiya* 15, 337–45 (1950). The tea tannins, being closely related in structure to cyanidin, are biologically active in increasing the capillary resistance when injected intramuscularly into white mice. Expts. with guinea pigs prove that tea tannins added to the diet assist in the accumulation of vitamin C in all the body organs, and thus prevent scurvy.
H. Priestley

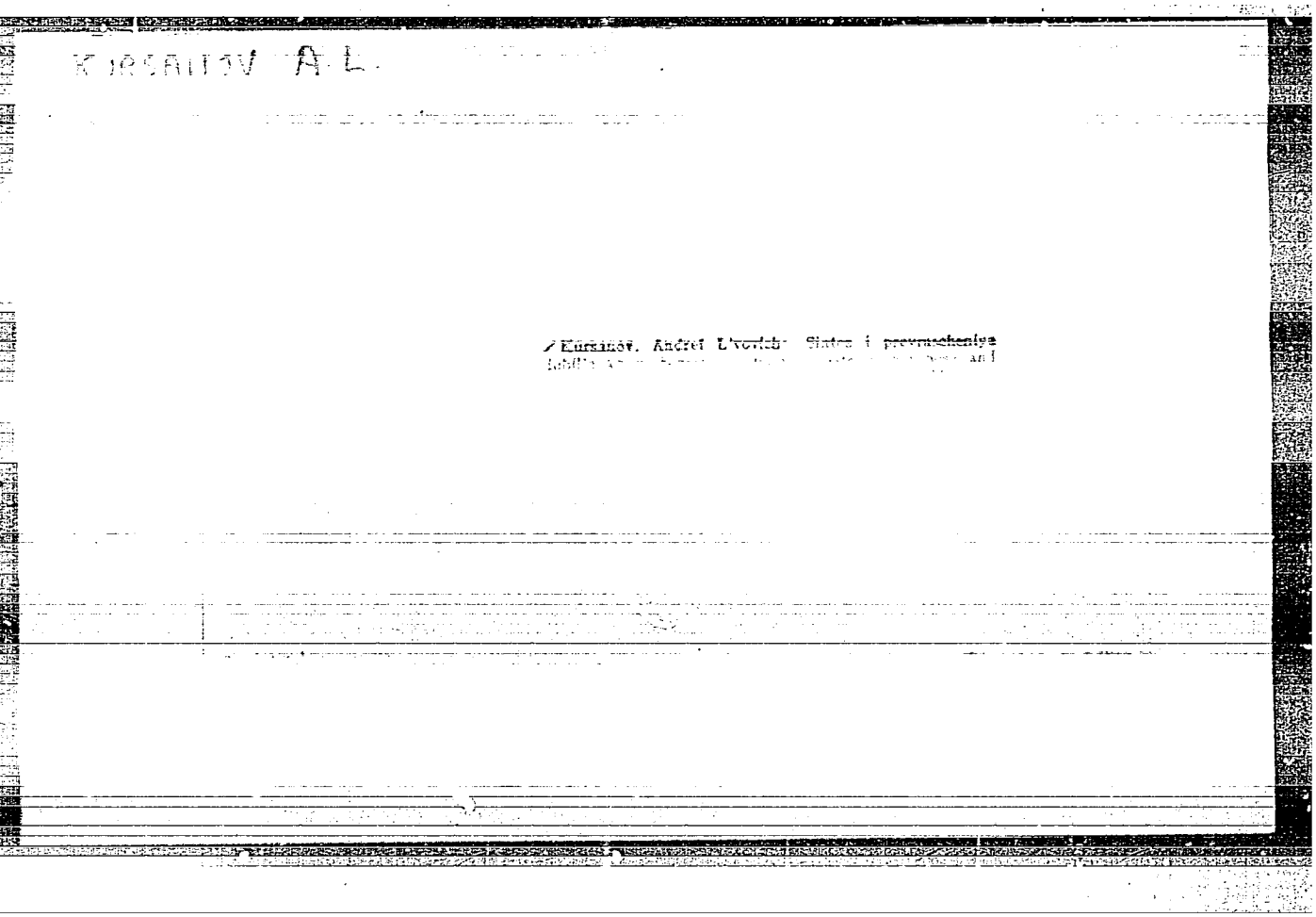
C.A

11D

Tanning substances of the tea leaf in connection with the improvement of quality of tea. A. L. Kursanov. *Izvest. Akad. Nauk S.S.S.R., Ser. Biol.* 1951, No. 2, 43-52.
A review and summary of the data on the relation of tannins to the quality of tea (11 references). On the basis of analysis alone it appears that polyphenol synthesis in the tea leaves occurs by the formation of inositol from glucose which is followed by dehydration to the polyphenols. Inositol reaches max. concn. during daylight and declines at night. Glucose, fructose, and mannose stimulate the formation of inositol; the most common other sugars do not. However, there is no direct connection between its synthesis and photosynthetic activity, since inositol can be formed in total absence of light. Probably the enolic form of the sugar is the immediate precursor of inositol. The tannins of the leaves from young shoots of the tea plant (most valuable kind) are largely in the form of the simplest structural units, relatively low mol. wt., while in older plants the products of high order of condensation predominate. In August (the period of production of the best quality tea) the predominantly low mol. wt. tannins contain some 20% gallic acid bound in ester forms with catechins; in early summer and in September, when the quality of tea is lower, the amt. of low-mol.-wt. matter declines as does the amt. of tannic acid esters (variation of 30-40%). The results of selective breeding of Georgian tea are outlined; they indicate that the newly developed strains are superior to Chinese and Japanese brands in respect to the content of tannins (35.6% against 31%) and in higher content of low mol.-wt. tannins (No. 7/4 against 67.5%) and gallic acid (21% against 11.16%).
G. M. Kosolapoff

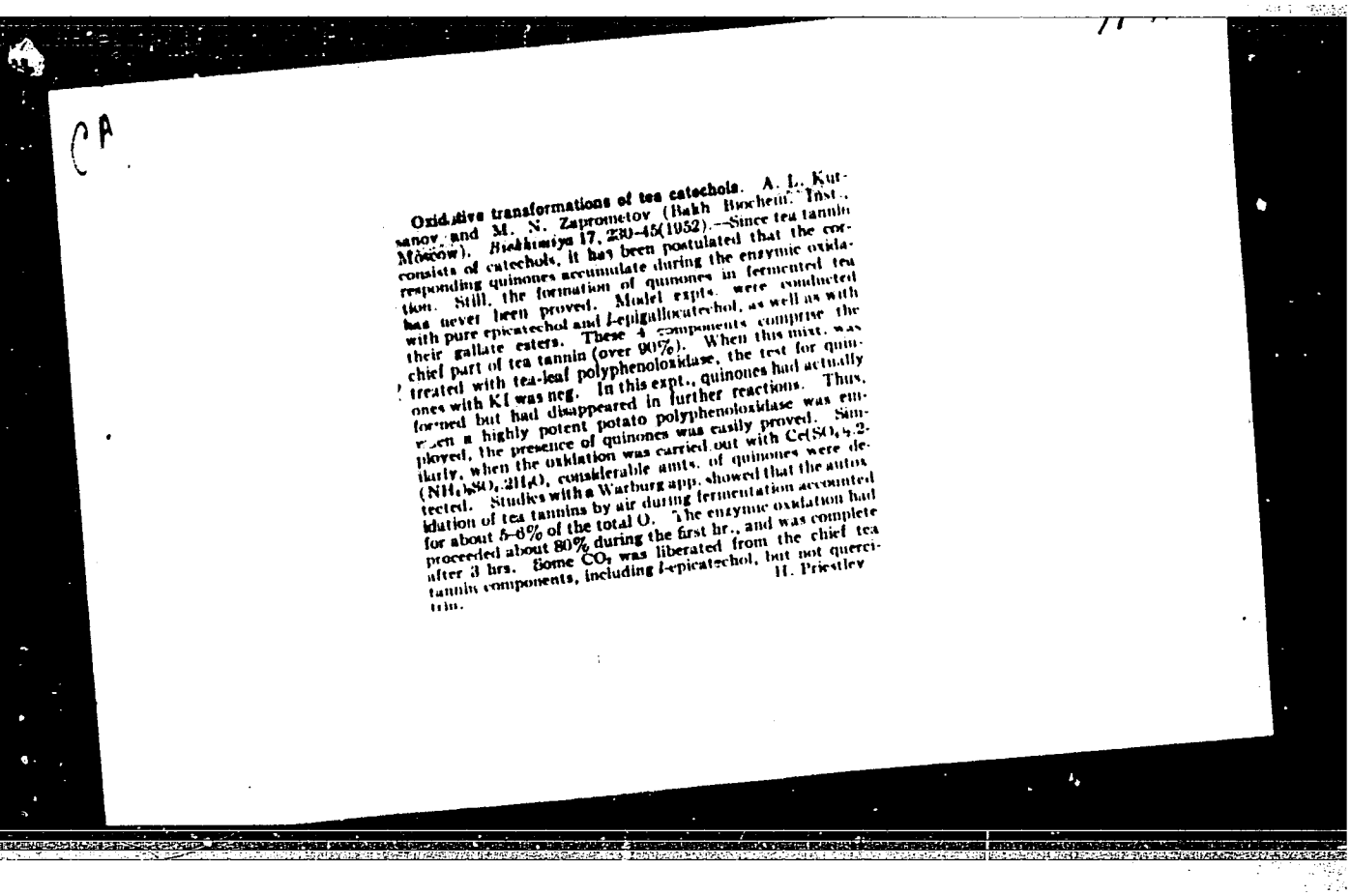
1951

Possibility of plants assimilating carbonates entering them from soil solutions. A. L. Kursanov, A. M. Kurin, and Ya. V. Mamul. *Doklady Akad. Nauk S.S.S.R.* 79, 685-7(1951).—Plants are able to take up carbonates from nutrient solns. and to use these carbonates in photosynthesis. Kidney beans were placed in a nutrient soln. contg. $NaHCO_3$ with a tagged carbon atom (C^{14}). The level of radioactivity of the soln. was kept low enough to avoid interference with the normal respiration and photosynthesis of the plants (10 ml. of soln. had a radioactivity of 5 microcuries). Plants were tested in a hermetically sealed glass container through the cork of which the leaves and stem extended. Beans thus sealed were illuminated for 3 and 18 hrs., resp. After exposure of the plants to light, radioactivity of the leaves was measured in terms of impulses per min. for 10 mg. tissue. After 3 hrs. of irradiation the leaf tissue had low radioactivity both before and after the samples had been digested with HCl. At the close of 18 hrs. of illumination, the amt. of radioactivity in the leaves had increased markedly but was much lower in the leaves than in the stems or the roots. Radioactivity in the leaf and in the root tissue decreased slightly after treatment of the tissue with HCl, but decreased about ½ in the stem tissues. Carbonates were evidently carried up to the stem and fixed there before the bulk of them reached the leaves. High radioactivity began at the point in the stem where the stem began to turn green. Radioautographs of plants kept in darkness showed that some radioactive material was present, but was low. Radioautographs of plants illuminated after a period of darkness showed more radioactive material throughout the plant, but less in the larger leaves. Small leaves near the stem were about as bright as the stem. A sugar identified as glucose from its osazone was isolated from leaf and stem tissue. The osazone was radioactive. The tagged atom present in the carbonate of the nutrient soln. was taken up by the plant and used in a way similar to the use of CO_2 from the air. Nellie M. Payne



KURSANOV A.L.

Kurs anov, Andrei L'vovich. Sintez i prevrashcheniya



CA

Oxidative transformations of tea catechols. A. L. Kursanov and M. N. Zaprometov (Bakh Biochem. Inst., Moscow). *Biokhimiya* 17, 230-45(1952).—Since tea tannin consists of catechols, it has been postulated that the corresponding quinones accumulate during the enzymic oxidation. Still, the formation of quinones in fermented tea has never been proved. Model expts. were conducted with pure epicatechol and *l*-epigallocatechol, as well as with their gallate esters. These 4 components comprise the chief part of tea tannin (over 90%). When this mixt. was treated with tea-leaf polyphenoloxidase, the test for quinones with KI was neg. In this expt., quinones had actually formed but had disappeared in further reactions. Thus, when a highly potent potato polyphenoloxidase was employed, the presence of quinones was easily proved. Similarly, when the oxidation was carried out with $Ce(SO_4)_2 \cdot 2(NH_4)_2SO_4 \cdot 2H_2O$, considerable amts. of quinones were detected. Studies with a Warburg app. showed that the autoxidation of tea tannins by air during fermentation accounted for about 5–6% of the total O. The enzymic oxidation had proceeded about 80% during the first hr., and was complete after 3 hrs. Some CO_2 was liberated from the chief tea tannin components, including *l*-epicatechol, but not quercitrin.

H. Priestley

KURSANOV, A. L.

Kursanov, Andrey L'vovich, 1902-

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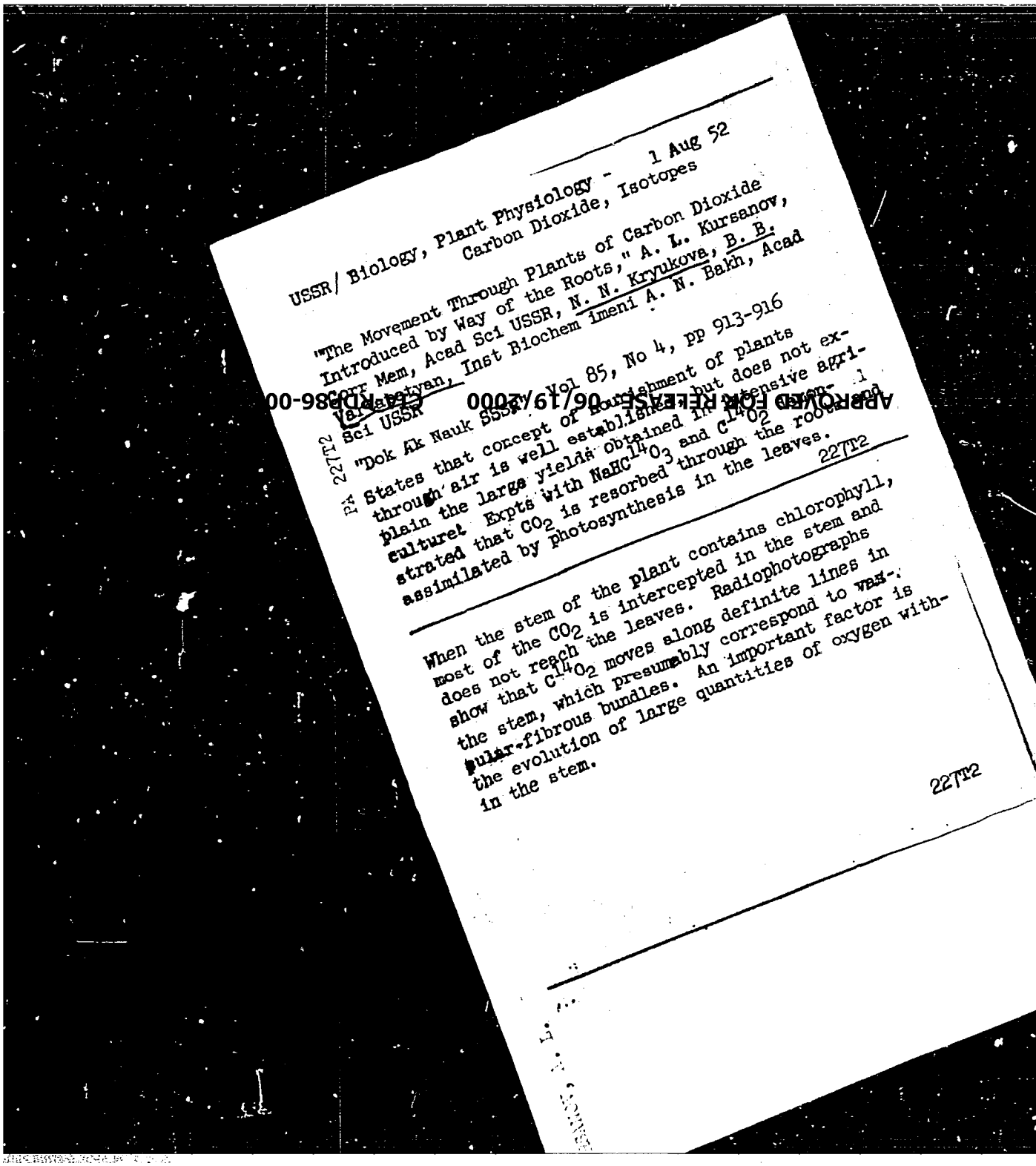

USSR/ Biology, Plant Physiology - 1 Aug 52
Carbon Dioxide, Isotopes

"The Movement Through Plants of Carbon Dioxide Introduced by Way of the Roots," A. L. Kursanov, Corr Mem, Acad Sci USSR, N. N. Kryukova, B. B. Vartapetyan, Inst Biochem imeni A. N. Bakh, Acad Sci USSR

"Dok Ak Nauk SSSR" Vol 85, No 4, pp 913-916

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227T2

When the stem of the plant contains chlorophyll, most of the CO_2 is intercepted in the stem and does not reach the leaves. Radiophotographs show that $C^{14}O_2$ moves along definite lines in the stem, which presumably correspond to vascular-fibrous bundles. An important factor is the evolution of large quantities of oxygen within the stem.

227T2

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PA 227T2

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227T2

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B. S. Levine

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