

GUL', V.Ye.; MAYZEL', N.S.; PASYNSKAYA, A.A.

Investigating the structure and properties of thermosetting
electroconductive plastics. Plast.massy no.10:38-42 '63.
(MIRA 16:10)

PASHINSKI, A.

Peculiarities of the behavior of polymers in organisms. p. 130

ANALELE ROMINO-SCIENTIFICE. SERIA BIOLOGIE (Academia Republicii Populare
Romine. Institutul de Studii Romino-Sovietic
Bucuresti, Rumania
Vol. 13, no. 2, April/June 1959

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

157 AND 158 CODES

PROCESSES AND PROPERTIES INDEX

157 AND 158 CODES

BC

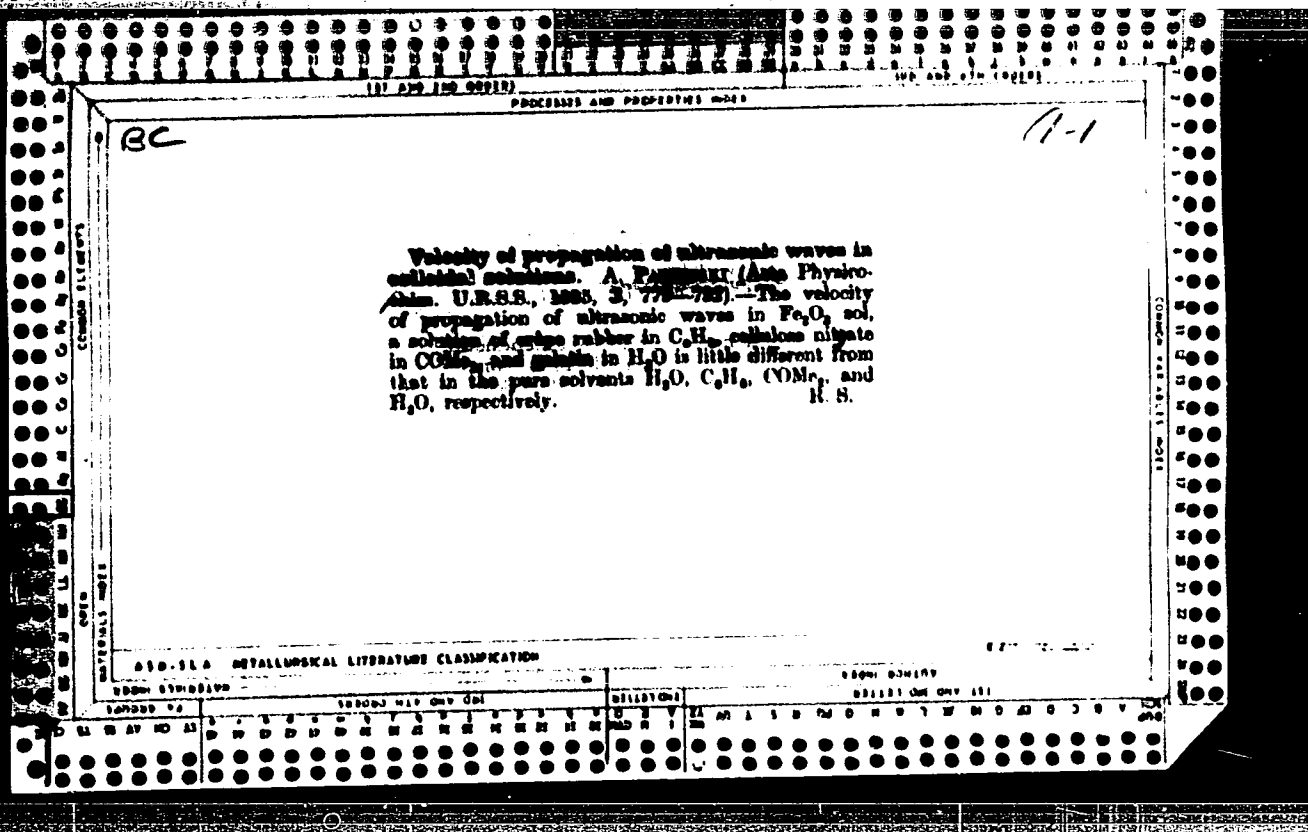
Viscosimetry of highly viscous lyophilic colloids. II. Application of viscosimeters based on Stokes' law. A. G. PASINSKI and A. I. RABINOVITSAH (J. Phys. Chem. U.S.S.R., 1934, 8, 521-533; cf. A., 1935, 444).—The capillary and falling-sphere methods give concordant results if correction is made for differences in velocity gradients. Data for various 10-20% cellulose nitrate solutions are given. (Ch. Ans. (c))

PASINSKI, Anatoliy Germanovich

ASB-3LA METALLURGICAL LITERATURE CLASSIFICATION

157 AND 158 CODES

157 AND 158 CODES



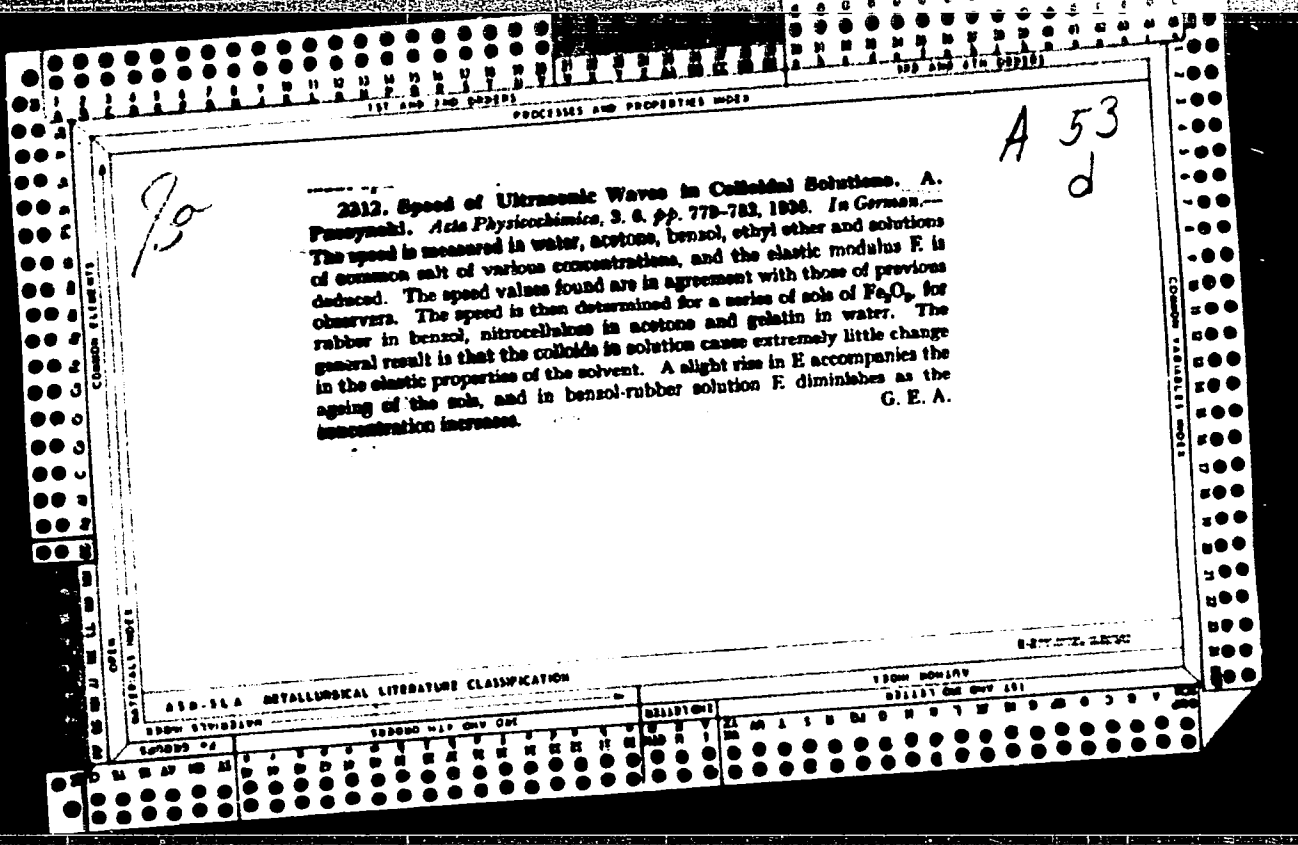
PROCESSES AND PROPERTIES INDEX

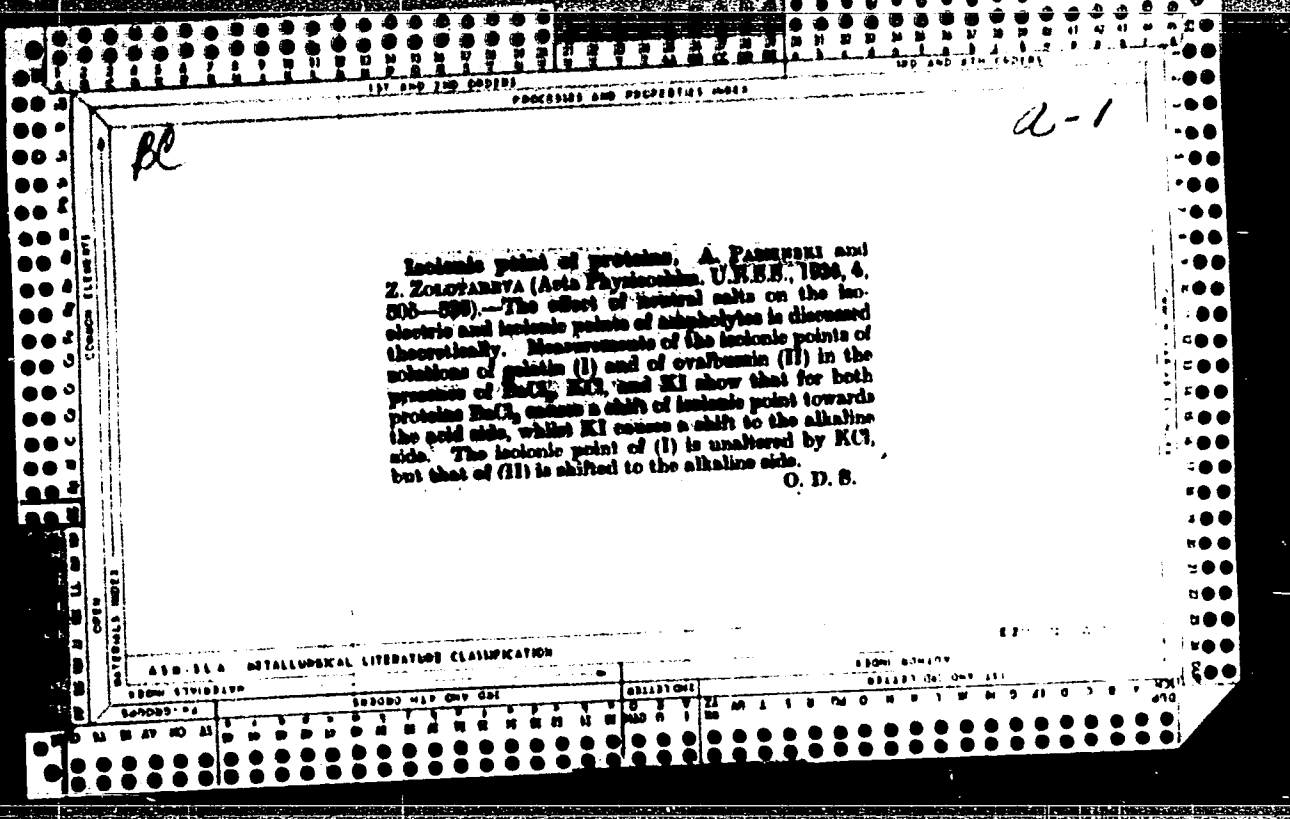
BC

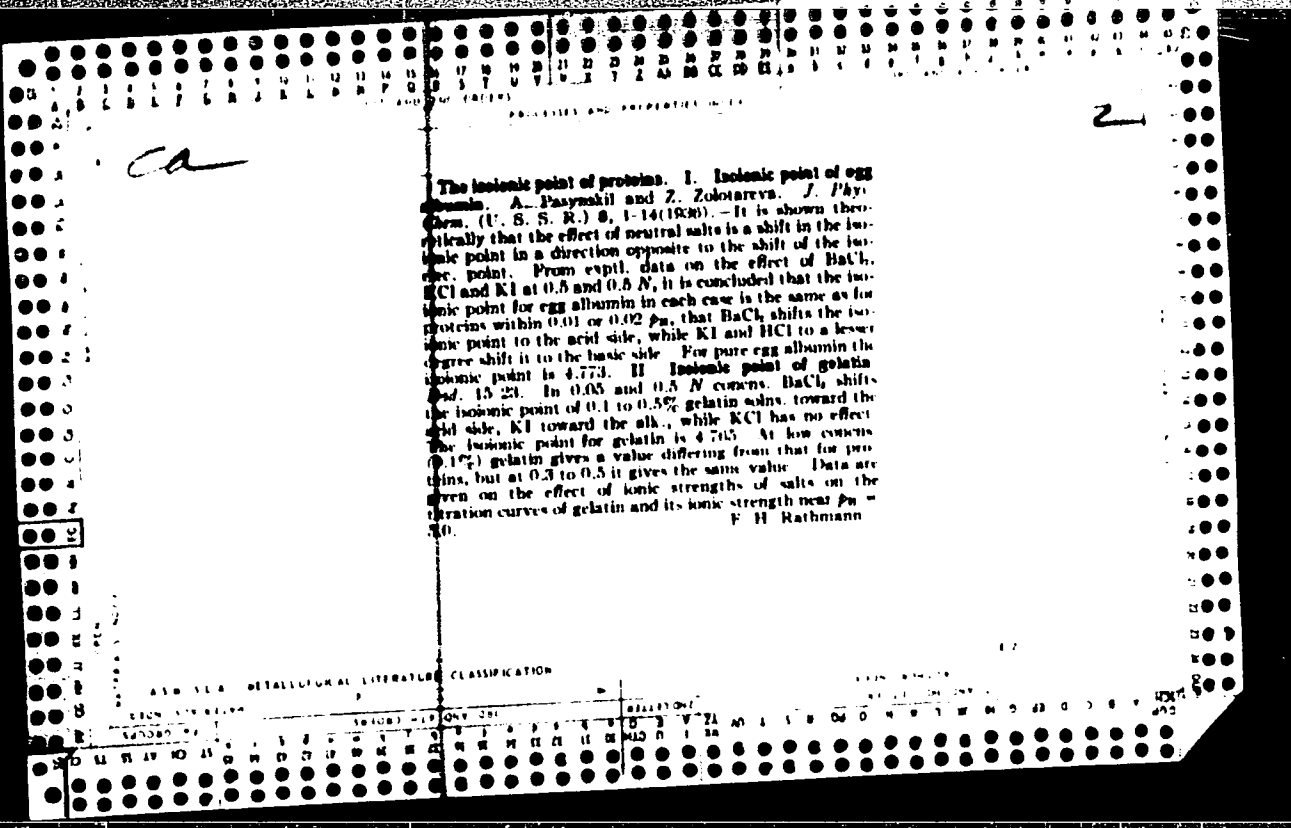
p_a measurements in gelatin solutions. I. PETROV and A. PAMUSKI (J. Appl. Chem. Russ., 1935, 8, 165-171; C. A., 1935, 700).—The p_a of buffered gelatin solutions can be reproduced with an accuracy of ± 0.05 pH units by (H, quinhydrone, glass electrode) or (I, colorimetrically with Michalek and Loh's indicators. In unbuffered solutions the corresponding vals. are ± 0.15 for purified, and ± 0.20 for impure, gelatin. B. T.

ASS. I. I. A METALLURGICAL LITERATURE CLASSIFICATION

GROUP	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
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ca

2

A comparison of the direct and indirect methods of determining the isoelectric point of gelatin. II. Determination of the isoelectric points in various kinds of gelatin. I. Ya. Petrov and A. G. Pasyanski. *J. Phys. Chem. (U. S. S. R.)* 8, 34-34(1957). The curves of clouding are compared with those of acid-base titration, of cataphoresis, binding of Ag, etc., for various gelatins with various isoelec. points. The anomalous position of the isoelec. point in acidic gelatins was shown by an electrometric method. Buffer solutions shift this point considerably. The exact conditions for obtaining anomalous gelatins are still not clear. Various anomalous gelatins can be characterized by their acid-alkali titration curves. The differences in the results of direct and indirect methods are discussed.

F. H. Rathmann

ASD SLA DETAILORICAL LITERATURE CLASSIFICATION

PROCESS AND PROPERTIES INDEX

a-1

BC

Theory of the isoelectric point of proteins. A. PANKAS—(Acta Physicochim. U.R.S.S., 1956, 8, 367—370, and J. Phys. Chem. Repts., 1958, 11, 481—489).—General formulae are derived for the calculation of the isoelectric points of polypeptides and proteins from their ionization constants. Calculations for serum-albumin, three grades of gelatin, and edestin are in fair agreement with recorded experimental values. The formulae are applied to two complex polypeptides. W. R. A.

METALLURGICAL LITERATURE CLASSIFICATION

EDMONTON SOCIETY

SECTION	YEAR	MONTH	DAY	NO.	ISSUE	COLLECTION	EDMONTON SOCIETY

1ST AND 2ND COPIES

PROCESSES AND PROPERTIES INDEX

SA

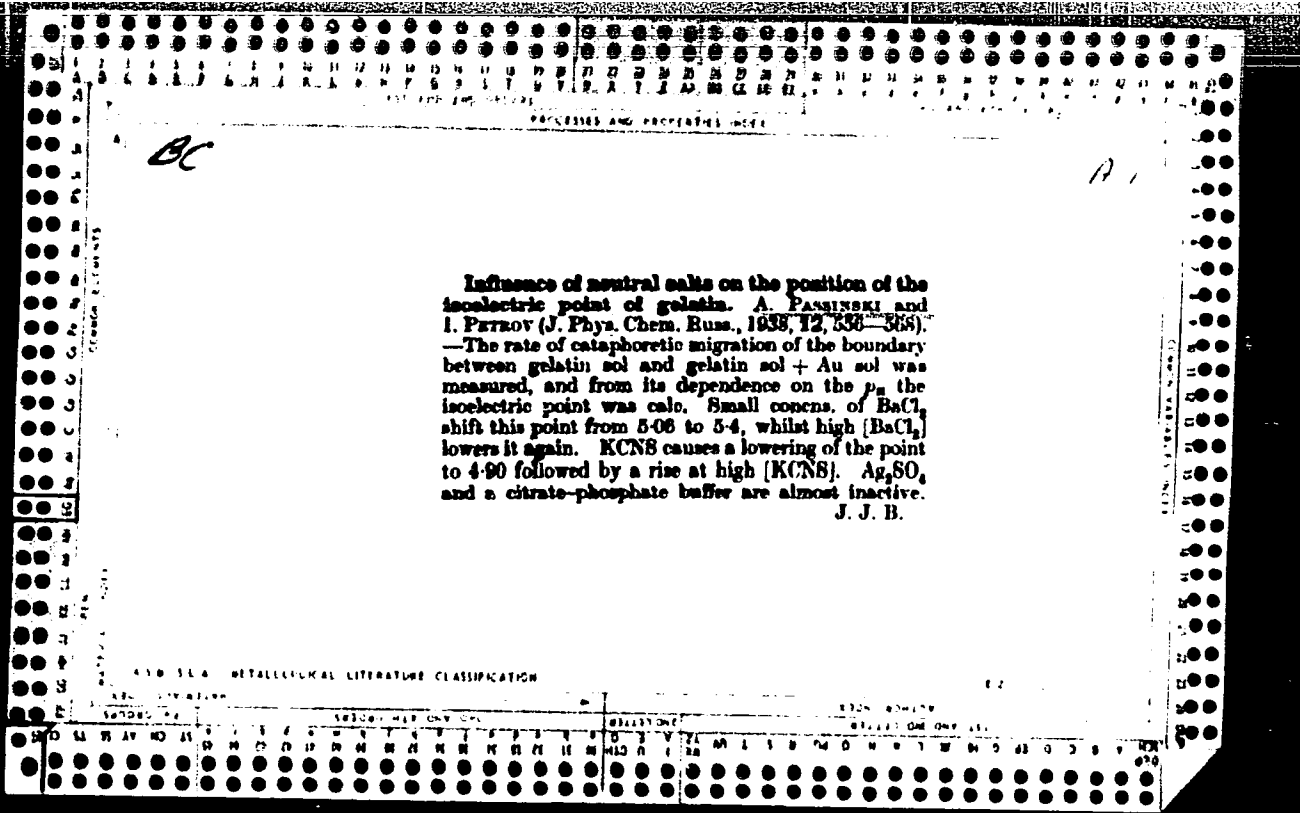
7730. Compressibility and Solvation of Solutions of Electrolytes. A. Passynski. *Acta Physicochimica*, 8, 4, pp. 383-418, 1958. In English.—A theory is elaborated, which determines the solvation of electrolytes in terms of the compressibility of solutions and is based upon Debye's theory of the compressibility of electrolyte solutions as well as upon Bridgman's experiments. A method is devised for determining the compressibility of electrolyte solutions by observing the velocity of propagation of ultrasonic waves in them, using the Piezo acoustic interferometer. The compressibility of solutions of LiCl, LiBr, NaF, NaCl, NaBr, NaI, KF, KCl, KBr, KI, BaCl₂, MgCl₂, BeCl₂, and AlCl₃ was measured over a wide range of concentrations. It is shown that the compressibility change in solutions of electrolytes is proportional to the number of ions in solution and to the 1-5-th power of their charge, and depends but little upon their radii; the result obtained are confronted with the conclusions of Debye's theory. The solvation of the electrolytes investigated has been calculated from the author's own data on the compressibility of electrolytes as well as by recalculating some data borrowed from the literature. The results obtained are discussed from the standpoint of Hernal and Fowler's theory of the hydration of ions and applied to computing the solvation of individual ions. AUTHOR.

ASD. 55A METALLURGICAL LITERATURE CLASSIFICATION

FROM BOARD

RECORD NO.

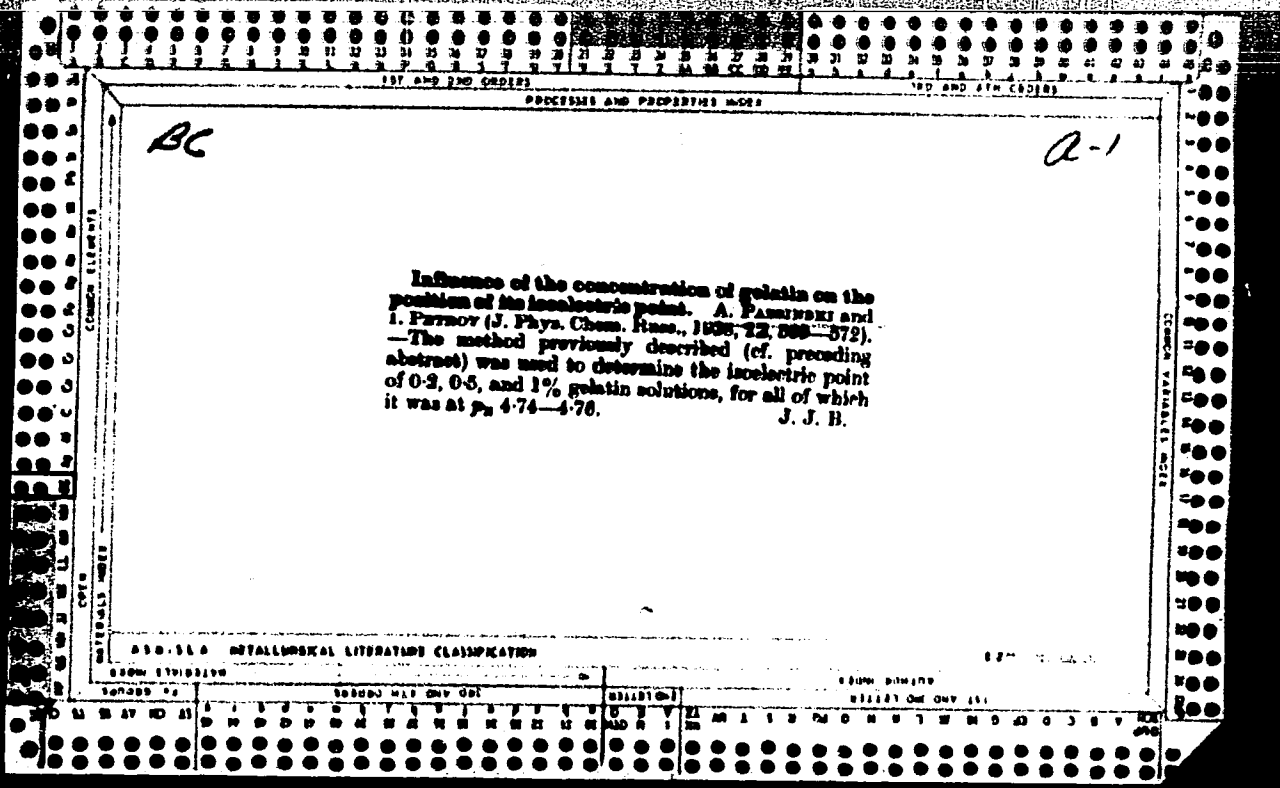
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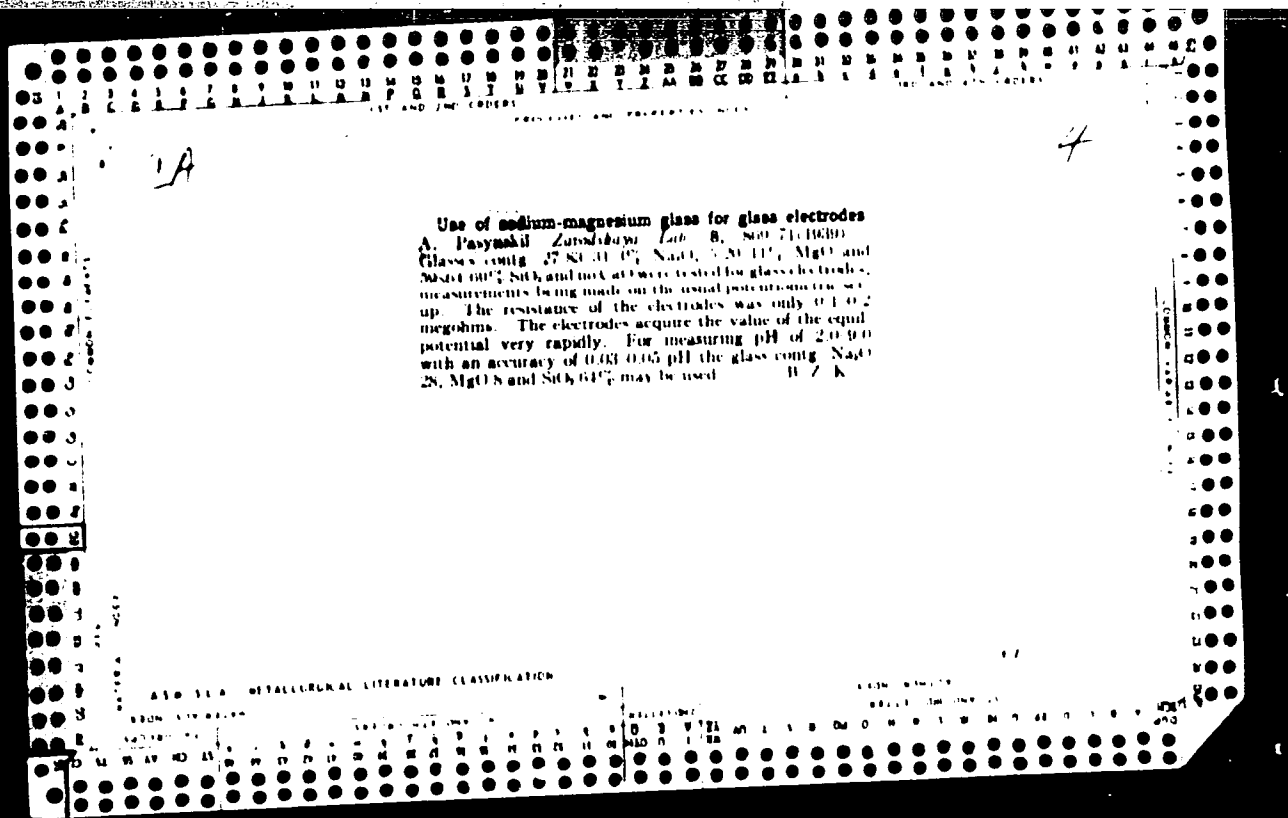


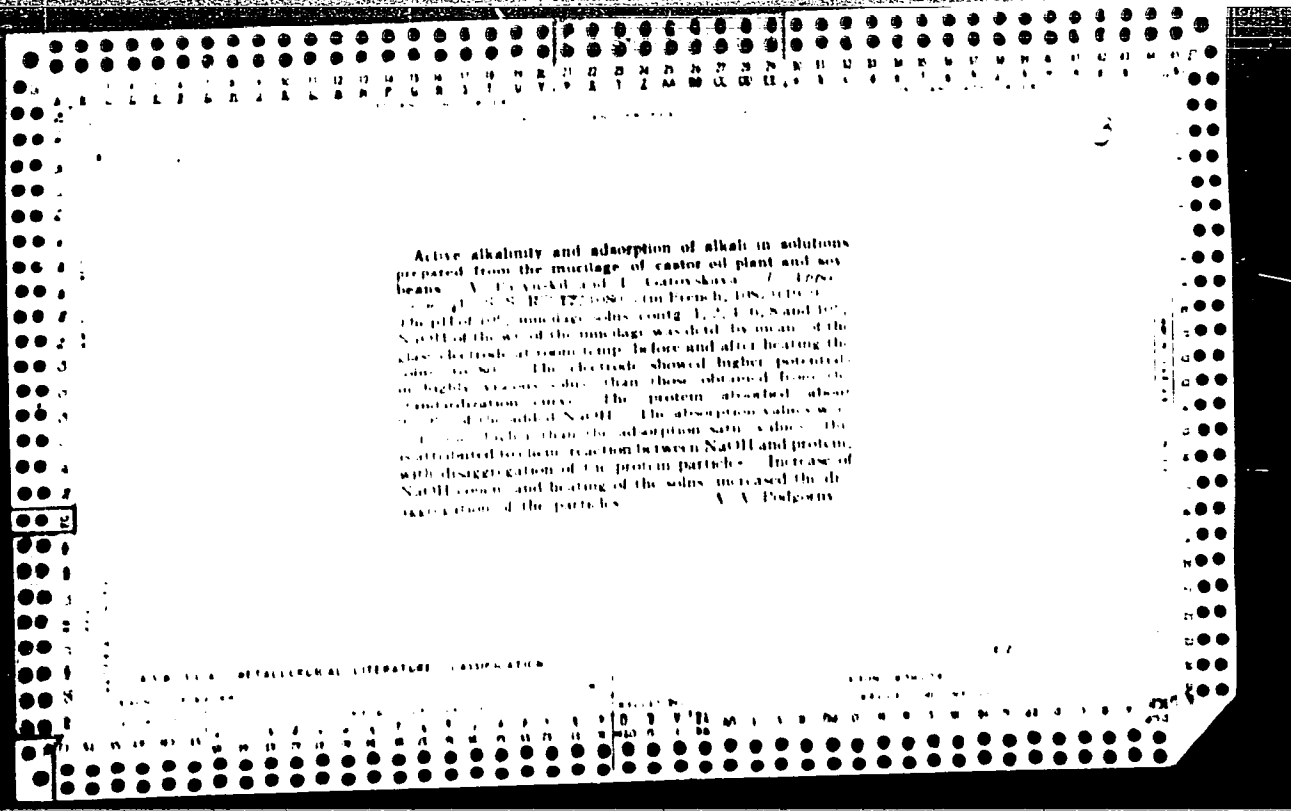
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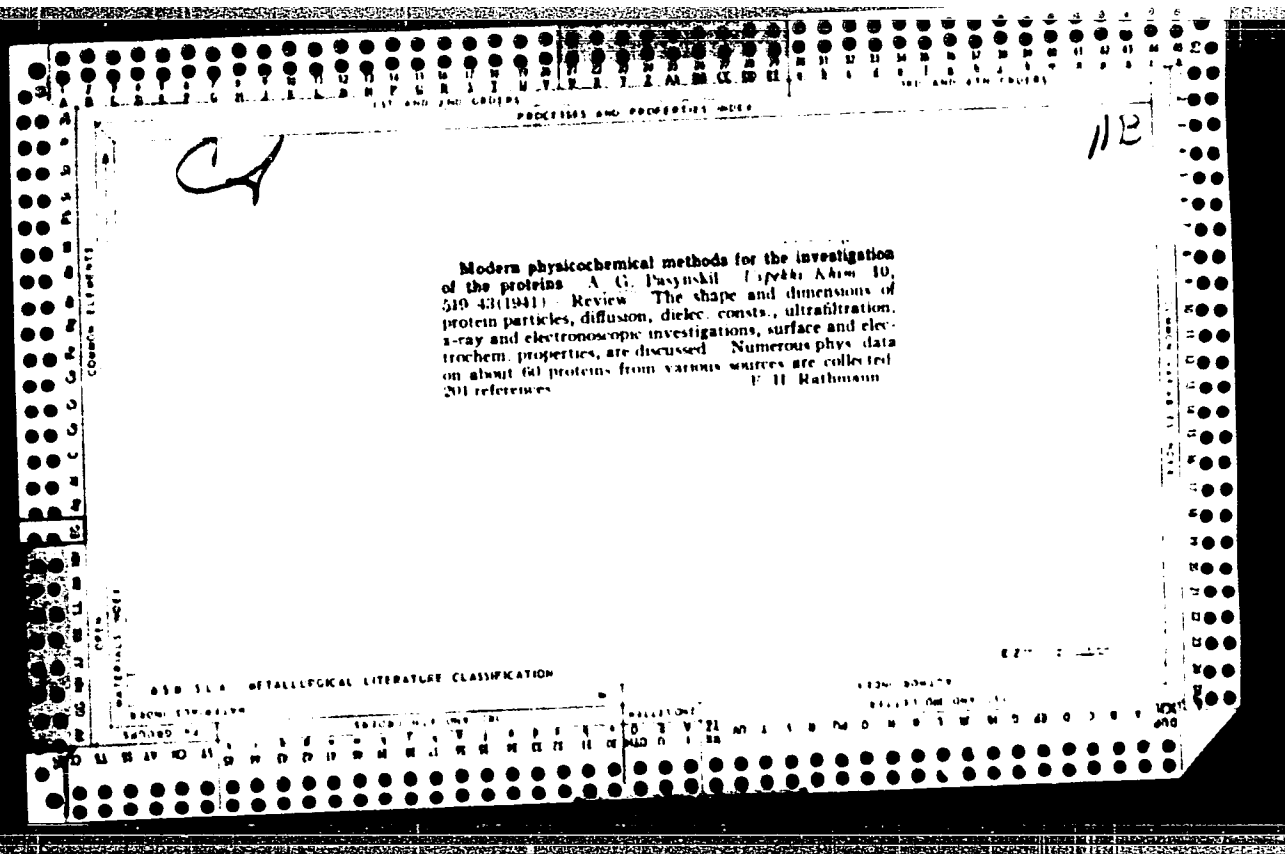
A 1

Influence of neutral salts on the position of the isoelectric point of gelatin. A. PASSINSKI and I. PAVROV (J. Phys. Chem. Russ., 1938, 12, 536-538).
 —The rate of cataphoretic migration of the boundary between gelatin sol and gelatin sol + Au sol was measured, and from its dependence on the p_H the isoelectric point was calc. Small concns. of BaCl₂ shift this point from 5.06 to 5.4, whilst high [BaCl₂] lowers it again. KCN causes a lowering of the point to 4.90 followed by a rise at high [KCN]. Ag₂SO₄ and a citrate-phosphate buffer are almost inactive.
 J. J. B.









PASYNSKIY, A.; ZOLOTAREVA, Z.

"Research on the Electrochemistry of Proteins--IX. The Exchange Adsorption of Neutral Salts on Gelatine", Zhur. Fiz. Khim. 16, Nos. 1-2, 1942. Received 26 May 1941.

Report U-1523, 24 Oct. 1951.

PASTERNAK, A.

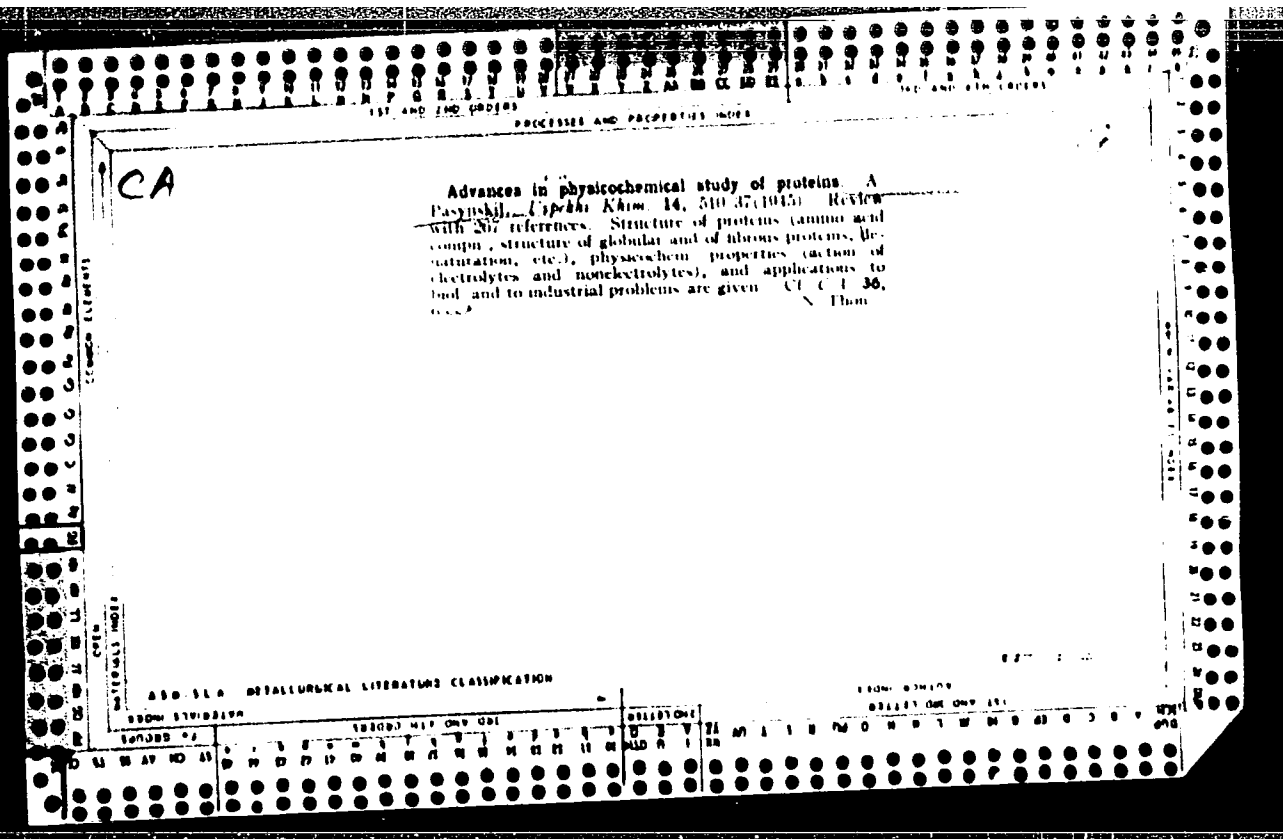
"Research on the Electrochemical Properties of Proteins --
XII. The Influence of the Concentration of
the Solution on the Electrochemical Properties
of Proteins", *Zh. Fiz. Khim.* 16
Nos. 1-2, 1942. Received for publication.

Report 1-15-42, U.S.S.R.

2/12

Exchange adsorption of neutral salts by proteins. A. Passinchi, Z. Zolotareva, and A. Muchina (*Acta Physicochim. U.R.S.S.*, 1942, 10, 236-256). The adsorption of neutral salts by gelatin (Ag_2SO_4 , KNO_3 , BaCl_2), ovalbumin (Ag_2SO_4 , BaCl_2 , $\text{NH}_4^+\text{NO}_3^-$), and casein (CaCl_2) has been investigated analytically and potentiometrically with amalgam electrodes. Comparison of the adsorption of the neutral salt by the protein with the change of pH of the medium shows that in a no. of cases there is a partial exchange of metal ions for H^+ . A. J. M.

Lib. Colloid Chem., Karpov Inst. Phys. Chem., Moscow



1ST AND 2ND CODERS PROCESSES AND PROPERTIES INDEX

11A

CH

Diffusion and molecular weight of lysozyme A.G. Pasyanski and V. Plaskev (All-Union Inst. for Expt. Med., Academy of Science of U.S.S.R.) *Compt. rend. acad. sci. U.R.S.S.* 48, 579-81(1945)(in English) --The mol. wt. of lysozyme was detd. by Lamm and Polson's diffusion method (*C.A.* 30, 4523?) and was found to be 13,000. The mol. consists of monodispersed elongated particles with a relationship between the semi-axis of $b/a = 11$. Bruno Vassel

3RD AND 4TH CODERS

A.S.D.-S.L.A. METALLURGICAL LITERATURE CLASSIFICATION

830M 80M10V 8318T 08M 10V 101

830M 80M10V 8318T 08M 10V 101

PROCESSES AND PROPERTIES INDEX

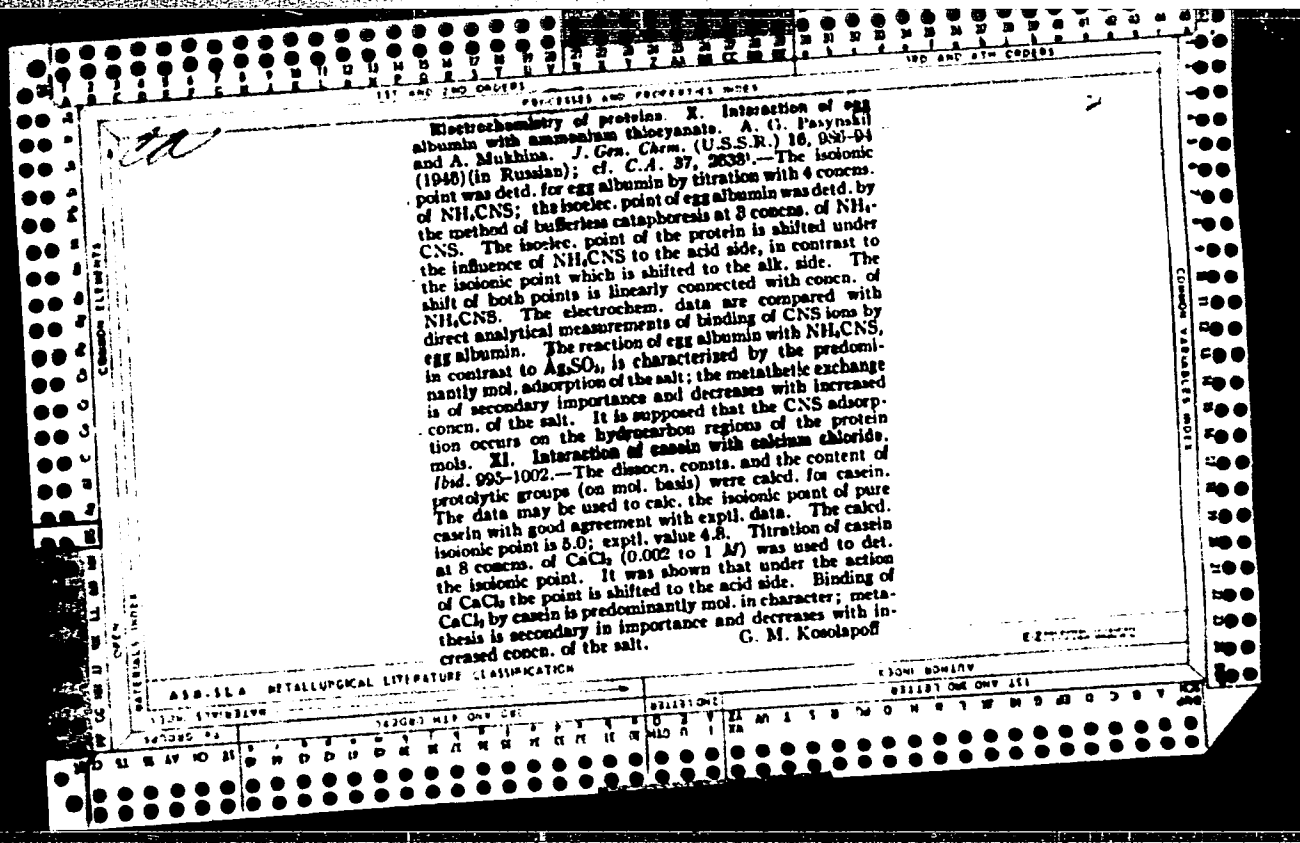
11A

CA

Electrophoresis of lysozyme by the Tiselius method.
 A. G. Pasyanski and T. Kastorskaya. *Compt. rend. acad. sci. U.S.S.R.* 99: 604-7 (1945); cf. C.A. 36, 6555; 40, 5081'.—Lysozyme (I) was prepd. by a modified Bordet method and purified by Bouyanovskaya's method (C.A. 34, 781'). An 0.8% soln. of I was dialyzed in the cold in a collodion membrane. A 0.02 M phosphate buffer soln. was added to I. Detns. of pH (with a precision of 0.01 to 0.02 units) and of the elec. cond. were made. The pH of I after electrophoresis was within 0.03 units of the initial values. All measurements were made at 20 ± 0.01°. Between pH 6 to 8 I behaves in the Tiselius app. (C.A. 33, 2150') as a homogeneous substance (at least for 1.5 hrs. at 7 v./cm.). At pH 5 another component of I appears. The isoelec. point (II) of the principal component of I is at pH 6 (cf. Shabordin, C.A. 35, 5918'); the slope of the mobility vs. pH curve in the region of II is 2.5×10^{-3} . This corresponds to the basic property of I; it is in agreement with the direct analysis of the amino acids obtained from I (Abraham, C.A. 33, 7831'). P. and K. assume that the max. lytic activity of I and the max. absorption of I by sensitive bacteria probably correspond to the II of I, or is at least closely related to II. The difference between the II value of 6 and of 10.5 (Alderton, Ward, and Fewell, C.A. 39, 1650') is explained by the difference in the constitution of the buffers used. Louis B. Marchi

ASSOCIATED METALLURGICAL LITERATURE CLASSIFICATION

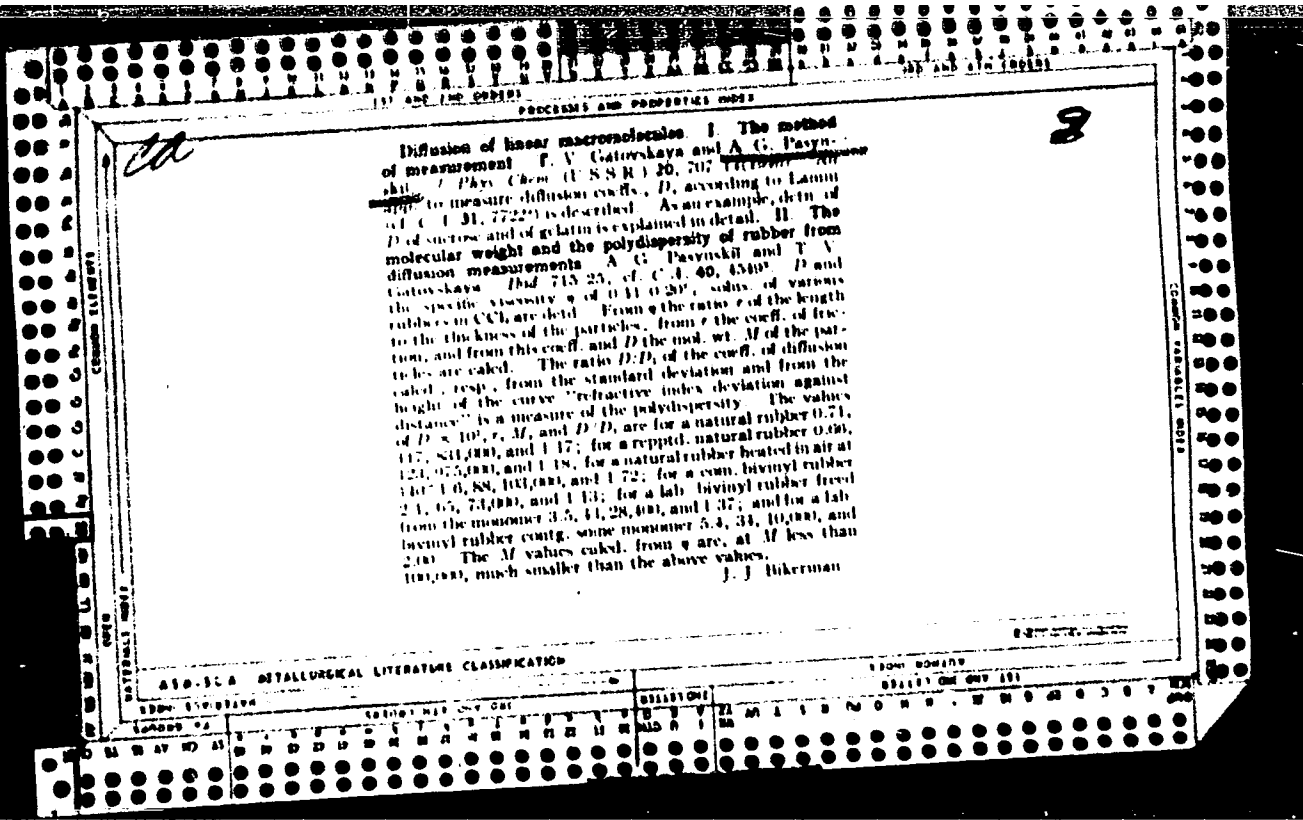
METALLURGICAL LITERATURE CLASSIFICATION



Electrochemistry of proteins. XIII. Theory of electrochemical properties of proteins. A. G. Pasyanin, *J. Gen. Chem. (U.S.S.R.)* 16, 1449-58(1946)(in Russian); *C. A. 37, 2638*; 41, 2828. — A summary of the work of P. and his collaborators over the past 10 yrs. on the applications of the mass action law and the double-layer theory to the electrochem. properties of proteins. 18 references.

G. M. Kosolapoff

ASIS-SEA METALLURGICAL LITERATURE CLASSIFICATION



8

ch

Diffusion of linear macromolecules. I. The method of measurement. F. V. Gatorovskaya and A. G. Pasynskii. *Phys. Chem. (U.S.S.R.)* 20, 707 (1966). II. To measure diffusion coeffs. D , according to Lamu (1966) is described. As an example, detn. of D of sucrose and of gelatin is explained in detail. II. The molecular weight and the polydispersity of rubber from diffusion measurements. A. G. Pasynskii and F. V. Gatorovskaya. *Ibid.* 715 23, of. C. J. 40, 4540. D and the specific viscosity η of 0.11-0.20% solns. of various rubbers in CCl₄ are detd. From η the ratio τ of the length to the thickness of the particles, from τ the coeff. of friction, and from this coeff. and D the mol. wt. M of the particles are calcd. The ratio D/D_0 of the coeff. of diffusion calcd. resp. from the standard deviation and from the height of the curve "refractive index deviation against height" is a measure of the polydispersity. The values of D/D_0 , τ , M , and D/D_0 are for a natural rubber 0.60, 117, 811,000, and 1.17; for a repptd. natural rubber heated in air at 120, 975,000, and 1.18; for a natural rubber heated in air at 160, 1.0, 88, 103,000, and 1.72; for a con. divinyl rubber 2.1, 65, 73,000, and 1.13; for a lab. divinyl rubber freed from the monomer 3.5, 41, 28,000, and 1.37; and for a lab. divinyl rubber contg. some monomer 5.3, 34, 10,000, and 2.00. The M values calcd. from η are, at M less than 100,000, much smaller than the above values.

J. J. Likerman

100 AND 4TH COPIES

1ST AND 2ND COPIES

PROCESSES AND PROPERTIES INDEX

CA

Solvation of nonelectrolytes and compressibility of their solutions. A. G. Pasyanski (Karpov Inst. Phys. Chem., Moscow). *J. Phys. Chem.* (U.S.S.R.) 20, 981-91 (1946) (in Russian).—The intense compression of the solvent around each dissolved dipole mol. because of electrostriction gives rise to an "incompressible vol. V " (expressed in mols. of the solvent per mol. of solute).

To det. V , the velocity of supersonic waves in the solns. was measured as before (C.A. 20, 4994) and the compressibility, β , calcd. from these velocity values and compared with the compressibility of the pure solvent. The β of aq. solns. decreases almost linearly when the concn., g (in wt. %), increases. The lowest $\beta \times 10^9$ and the highest g values detd. are, resp., for MeOH 43.25 (the unit is not defined in the original), 9.84; for EtOH 12.03, 8.00; PrOH 41.78, 6.98; ethylene glycol 40.73, 11.41; sucrose 40.03, 18.34; AcOH 42.80, 10.00; EtCO₂H 41.49, 10.50; butyric acid 42.20, 9.02; isobutyric acid 42.02, 7.87; valeric acid 45.00, 2.02; mandelic acid 44.24, 1.00; malic acid 42.62, 4.16; tartaric acid 42.71, 3.97; citric acid 42.78, 4.00; acetone 42.86, 7.99; urea 38.91, 14.73; glycine 42.31, 4.61; and alanine 43.99, 2.08. EtOAc lowers β of acetone from 89.28×10^{-9} to 84.67×10^{-9} at $g = 30.7$; and a 26% soln. of amyl acetate in acetone has $\beta = 86.73 \times 10^{-9}$. Heptane, a 53.8% soln. of C₁₁ in heptane, and a 68.8% soln. of butyl alc. in heptane have $\beta = 115.3, 88.6,$ and 92.9×10^{-9} , resp. From these β values V is calcd. It is found that V is independent of the length of a mol. and is approx. additive for its polar groups. Every OH group contributes 2-3 mols. of H₂O to V ; COOH contributes 3-4; CO 2, and NH, 1 mol. From the literature it is concluded that the aldehydic group binds 2 mols. of H₂O. In org. solvents V is about 0.2 mol. The effect of a polar group on β is about 0.3 to 0.5 that of a uni-univalent electrolyte.

I. I. Bikerman

ASS. S.L.A. METALLURGICAL LITERATURE CLASSIFICATION

FROM SOURCE

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1ST AND 2ND COPIES

PROCESSES AND PROPERTIES INDEX

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1ST AND 2ND COPIES

PA 54T33

PASSYNSKIY, A.

USSR/Chemistry - Rubber
Chemistry - Molecular Weight

Nov/Dec 1946

"Determination of Molecular Weight and Polydispersity of Rubber From Diffusion Measurements," A. Passynskiy, Lab Colloid Chem, Karpov Inst Phys Chem, T. Gatovskaya, Lab Macromolecular Structure, Back Biochem Inst, Acad Sci USSR, 20 pp

"Acta Physicochimica URSS" Vol XXI, No 6

Computes molecular weight for three rubber samples from measurements of diffusion coefficients and asymmetry of particles; calculates polydispersity coefficients. Notes close correspondence between variations of diffusion coefficient and molecular weight for rubber. Received, 4 Sep 1947.

54733

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

3RD AND 4TH ORDERS

CA

11 A

On the discrepancy between the isoelectric and the isoelectric point of egg albumin. A. Pasyzhil, E. Stuyanova, and T. Kastorskaya. *Compt. rend. acad. sci. U.R.S.S. 51, 127-9(1949)*. — Electrophoresis measurements on egg albumin adsorbed on a Au sol and on dissolved albumin show that the discrepancy between the isoelectric and isoelectric points persists even in most pure solutions of the protein and cannot be accounted for by the effect of buffer salts, as suggested by Tiselius. This discrepancy may be explained by the fact that the particles of this protein are globular in solution, while on interfaces they easily become denatured and unfolded. The globular structure is permeable enough to the ions of electrolytes, and in potentiometric titrations when thermodynamic equilibrium is attained, the distribution of the ions proceeds in the normal way. Unlike this, in electrokinetic measurements upon which isoelectric points are based, the limitation of freedom of movement of the compensating ions inside the globule inactivates them to some extent. G. K. Taylor

ASSOCIATED METALLURGICAL LITERATURE CLASSIFICATION

1ST AND 2ND ORDERS

3RD AND 4TH ORDERS

5TH AND 6TH ORDERS

7TH AND 8TH ORDERS

9TH AND 10TH ORDERS

11TH AND 12TH ORDERS

13TH AND 14TH ORDERS

15TH AND 16TH ORDERS

17TH AND 18TH ORDERS

19TH AND 20TH ORDERS

21ST AND 22ND ORDERS

23RD AND 24TH ORDERS

25TH AND 26TH ORDERS

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33RD AND 34TH ORDERS

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41ST AND 42ND ORDERS

43RD AND 44TH ORDERS

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49TH AND 50TH ORDERS

51ST AND 52ND ORDERS

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73RD AND 74TH ORDERS

75TH AND 76TH ORDERS

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79TH AND 80TH ORDERS

81ST AND 82ND ORDERS

83RD AND 84TH ORDERS

85TH AND 86TH ORDERS

87TH AND 88TH ORDERS

89TH AND 90TH ORDERS

91ST AND 92ND ORDERS

93RD AND 94TH ORDERS

95TH AND 96TH ORDERS

97TH AND 98TH ORDERS

99TH AND 100TH ORDERS

ca

30

PROCEDURES AND PROPERTIES INDEX

Molecular weight and polydispersity of rubber by diffusion measurements. A. G. Parynski and T. V. Gatorvskaya (Karpov Inst. Phys. Chem., Moscow). *Nature* 197, 819-19(1948).--Diffusion and viscosity measurements are used to obtain fairly complete mol. characterization of rubberlike polymers. The method is valuable for labs. not having an ultracentrifuge. Saverio Zuffanti

COMMON ELEMENTS

MATERIALS INDEX

ASB-51-A METALLURGICAL LITERATURE CLASSIFICATION

SECTION 1	SECTION 2	SECTION 3	SECTION 4
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

62/49748

USSR/Medicine - Penicillin
Medicine - Biochemistry

Nov/Dec 47

"Physicochemical Mechanisms of the Action of Penicillin," A. Pasynskiy, T. Katorzhaya, Lab of Phys Chem, Inst of Biol Prophylaxis of Infectious, 12 pp

"Zhurnal" Vol XII, No 6

Direct microcomometric studies proved penicillin is absorbed by *Staphyl. aureus*. This means that part of the mechanism of the action of penicillin is dependent on the action of this substance on enzymes in the bacterial cells.

62/49748

USSR/Medicine - Penicillin (Contd) Nov/Dec 47

Established limits of oxidation-reduction potentials of bacterial cells (*Staphyl. aureus*) and explained significance of conditions surrounding this process in the cells due to penicillin. Submitted 6 Feb 47.

PASYSKIY, A.

62/49748

PROCESSES AND PROPERTIES INDEX

Molecular weight and polydispersity of rubber by diffusion measurements. A. G. Pasyvskii and T. V. Gatovskaya (Karpov Inst. Phys. Chem., Moscow). *Rubber Chem. and Technol.* 20, 377-9(1947).—See C.A. 40, 4549P.
C. C. Davis

50

AND SEA METALLURGICAL LITERATURE CLASSIFICATION

GROUP	SECTION	SUBSECTION	CLASSIFICATION
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PASSYNSKY, A.

PA 26T61

USSR/Physics
Solubility
Fluids, Compressibility

Jan 1947

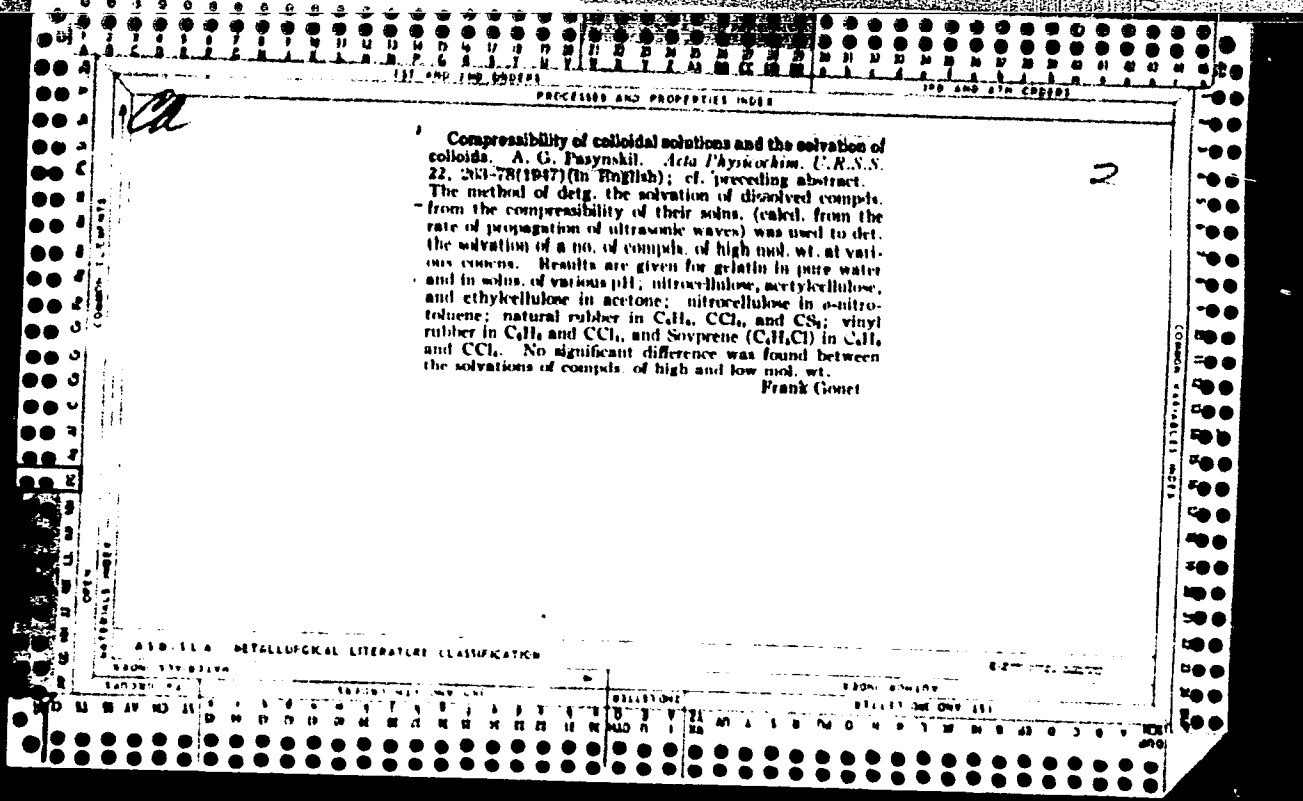
"Solvation of Nonelectrolytes and the Compressibility
of their Solutions," A. Passynsky, Karpov Institute
of Physical Chemistry, Moscow, 16 pp

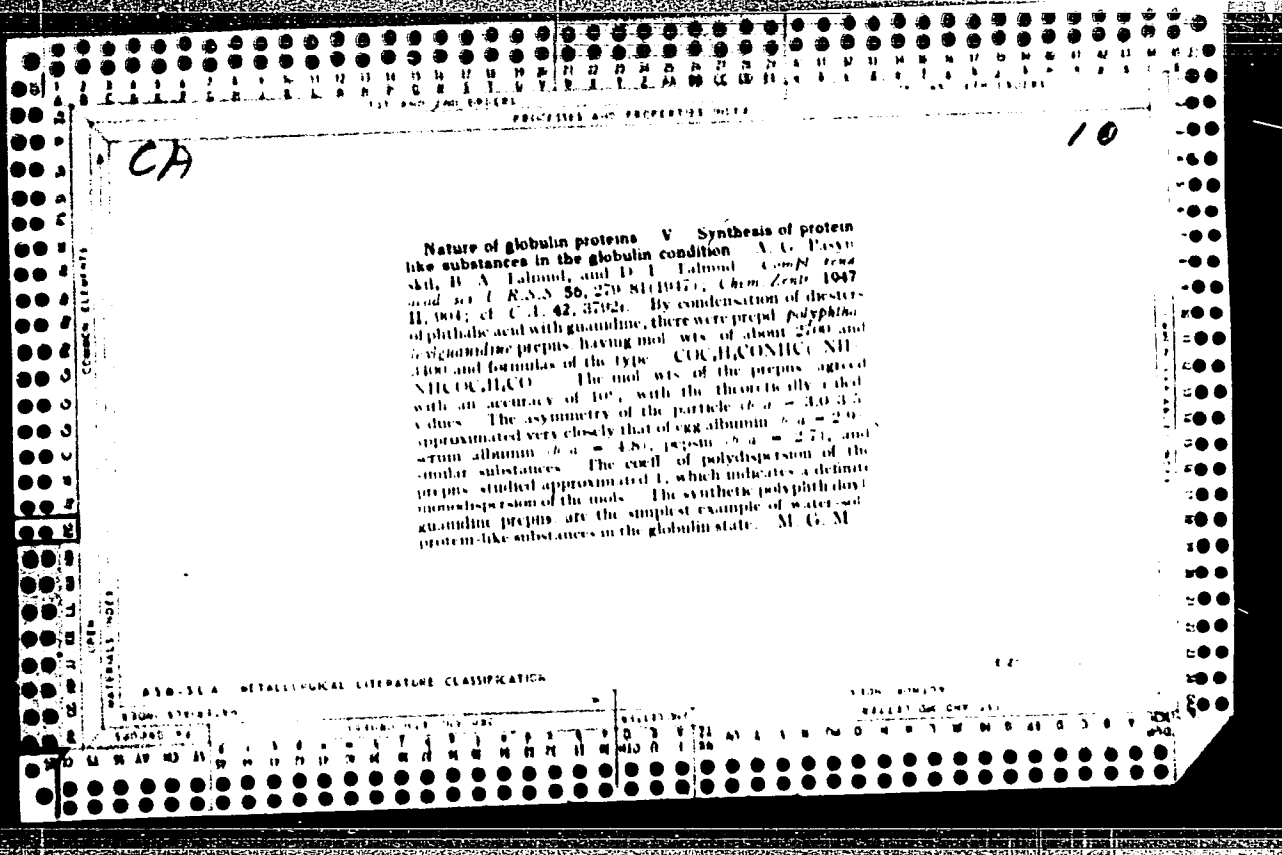
"Acta Physicochimica URSS" Vol XXII, No 1

The compressibility of solutions is shown to
determine the subject solvation. Measurements are
given of supersonic velocity, compressibility, and
solvation of alcohols, organic acids, amino acids,
etc., in water and of ethyl and amyl acetates in
acetone, at various concentrations.

MS

26T61





PASYNSKIY, A.

USSR/Chemistry - Rubber, Vulcanizing
Chemistry - Rubber, Reclaiming

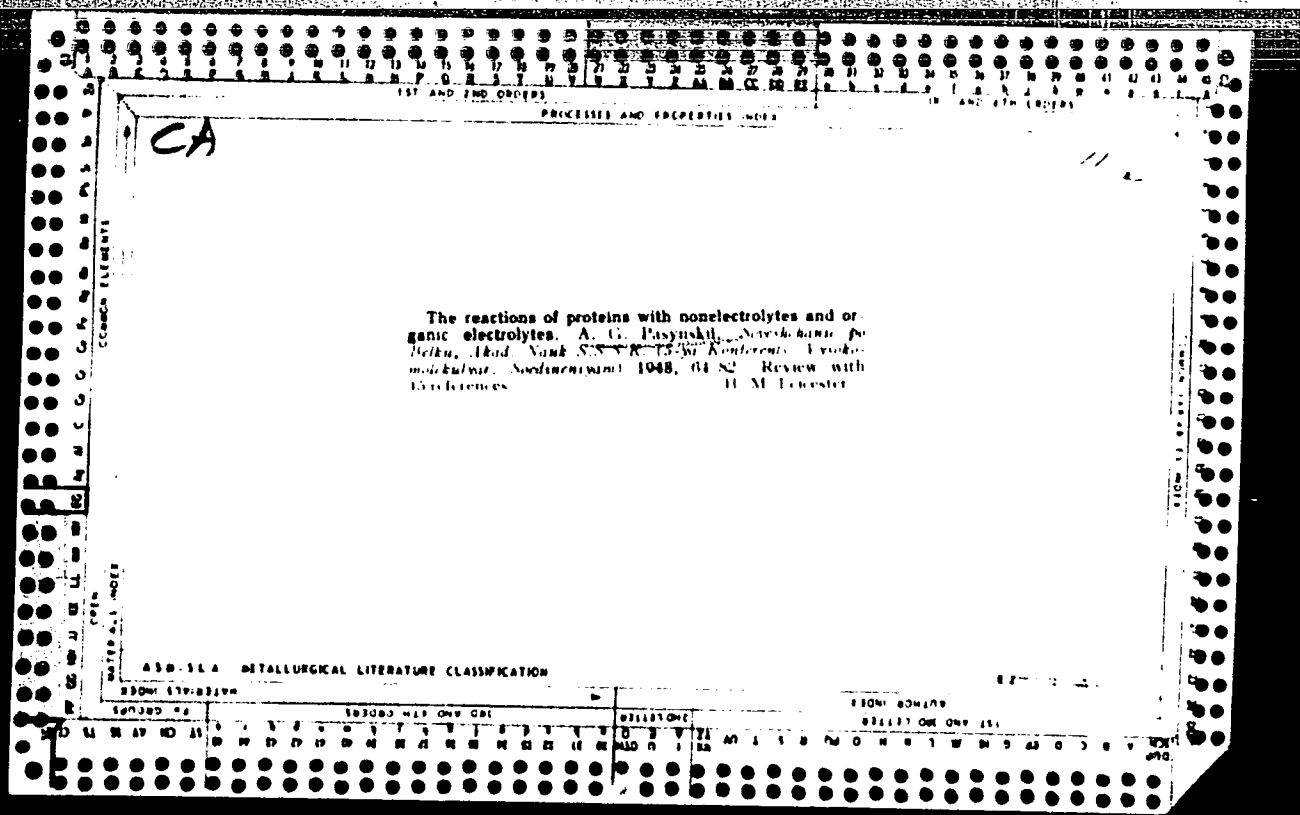
Jun 47

"Destructive Dissolving of Vulcanized Rubber," B. Bogadkin, Z. Tarsova, A. Pasynskiy,
Moscow Inst Fine Chem Tech, 4 pp

"Dok Akad Nauk SSSR, Nov. Ser" Vol XVI, No 7

Asserts that vulcanization should be considered process in which main feature is formation of spatial structure for molecular chains, connected in operation of vulcanizing agent by forces of main valences. Describes process of destructive dissolving of rubber, undoubtedly of great importance in technical processes of refurbishing rubber by dissolving method. Illustrated with graphs.

PA 0012



PASYSKIY, A.

PA 78T10

USSR/Chemistry - Gelatin
Chemistry - Deformation

May/June 1948

"The Deformation of Molecules of Gelatin in Solution
During Changes in Their Charge," R. Chernyak, A.
Pasynskiy, Lab of Structure of Albumins, Inst of Bio-
chem, Acad Sci USSR, Moscow, 3 pp

"Kolloid Zhur" Vol X, No 3

Experimental studies of the relationship between the
discharge and configuration of the gelatin molecule in
buffer and nonbuffer solutions. Submitted 13 May 1947.

78T10

PASYNSKIY, A. G.

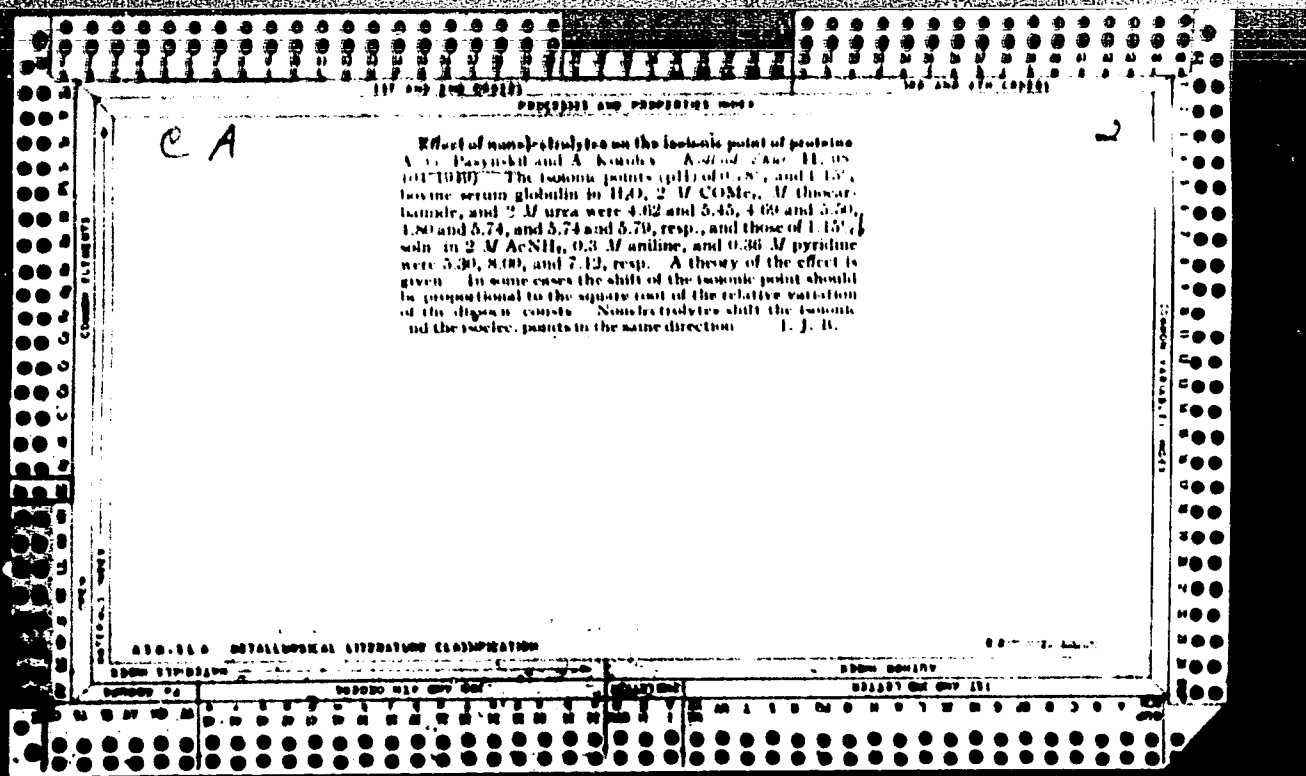
Pasynskiy, A. G. "Diffusion and molecular weight of linear polymers," In the symposium: Investigations in the field of complex-molecular compounds, Moscow-Leningrad, 1947, p. 23-70, - Bibliogr. citats.

SO: J-6241, 17 December 1953, (Leto is 'Zhurnal' in: Statey, vol. 14, 1947)

PASYNSKIY, A.G.

22350-Pasynskiy, A.G. Sovremennyye Metody Opredeleniya Molekulyarnikh Vesov
Vysokopolimerov. Vysokomolekulyar Soyedineniya, Vyp. 8, 1949, S. 14-23-Bibliogr:
S. 23

SO: Letopis' No. 30 1949



The development and the present state of the physical
chemistry of proteins in U.S.S.R. A. G. Pasyanski
Izvestiya Sovetskoi Biologii (Advances in Modern Biol.)
28, 354-64 (1940) Review of the work, largely for the
past 15 years. G. M. Kowaloff

PASYNSKIY, A. G., and PAVLOVSKAYA, T. YE. (USSR)

"The Mechanism of the Oxygen Effect in the Irradiation of Proteins."

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

PASYSKIY, A.G.; VOLKOVA, M.S.; KOMAROVA, L.V.

Effect of radiation damage to the nucleoprotein and lipoprotein
interfaces on the enzyme reaction rate. Radiobiologia 4
no.1:29-35 '64. (MIRA 17:4)

PASYNSKIY, A. G. and CHERNYAK, R. S.

"Adsorption of Non-Electrolyte Molecules by Proteins," Koll. zhur., No.12,
pp. 460-66, 1950

Translation 9006479

PASYNSKIY, A.

(2)

Effect of detergents on the sensitivity of *Proteus vulgaris* and *Escherichia coli* toward penicillin. T. Kasterukhaya and A. Pasynskii. *Doklady Akad. Nauk S.S.S.R.* 73, 393-5 (1950).—To each of a series of physiol. solns., pH 7.4 ± 0.1 was added one of 20 different con. detergents in concn. 1-2%; the solns. were heated at 80° for 1 hr., cooled, filtered under sterile conditions, and mixed with the pure cultures of *Proteus vulgaris* (I) and *E. coli* (II), resulting in a 0.05-1% (approx. 0.01-0.02M) final concn. of the detergents. The sensitivity of the bacteria was detd. by a standard titration method using the physiol. solns. without detergents as blanks. The threshold of the sensitivity of I toward penicillin was lowered by 13 detergents (even more than 100 times by Na p-hexadecylbenzenesulfonate). The role of the detergents was to increase the penetrating ability of penicillin into the protoplasm of I by affecting the cell membranes. Penicillinase (not affected by detergents) in II eliminated any effect of detergent on sensitivity of II toward antibiotic.

B. Wierbicki

C. A.

11 A

Deformation of proteins of the keratin-myosin group in solutions of organic substances. A. G. Pasyanik and V. Boshkina. *Doklady Akad. Nauk S.S.S.R.* 73, 535-8 (1959).—The tensile characteristics of wool and hair keratins and muscle protein were examd., using various solns. for immersion. At 22° for wool keratin the values were: in H₂O, hysteresis loop (in % of area of the extension curve) 45.0, work of extension (carried to 30% relative extension) 1.0; in acetate buffer (pH 4.1), 36 and 0.85; in 5 M urea, 43.6 and 0.83; in 14% guanidine nitrate, 26.5 and 0.78; in M urethan 40.5 and 0.93; in 1% Sulfanol, 43.1 and 0.93; in 1% Igepon, 41.5 and 0.89; in 3% Na hydrosulfite (pH 4.1), 07.7 and 0.51. For hair keratin the figures were, resp.: 39.0 and 1.0; 31.0 and 0.95; 34.5 and 0.9; 32.5 and 0.82; 38.2 and 0.91; 34.0 and 0.92; 34.2 and 0.91; 44.7 and 0.50. Results at 40° were analogous. All substances tested reduce the work of extension and decrease the area of hysteresis loop except for Na hydrosulfite. The substances, except the last, weaken the bonding between the various regions of polypeptide chains, retaining the covalent links. In the case of hydrosulfite the disulfide links are cleaved and the work of extension drops sharply, while the hysteresis loop area increases owing to the possibility of "recombination" of the attractive areas of the freed polypeptide chains, an event impossible in the 1st category of substances. With rat sartorius muscle in 0.9% NaCl using similar 30% extension technique, it was found that in 3-4 hrs. return to original dimensions is almost 100%. In 5 M urea or 0.25% adenosinetriphosphate (ATP) the work of extension was but 0.75-0.8 and residual extension after 3-4 hrs. was 16-17%. If ATP soln. was replaced immediately after removal of load by physiol. soln., the contraction to original size took place, but with urea soln. residual ex-

tension remained. The hysteresis loop area was 62% for physiol. NaCl and 67-74% for ATP and urea solns. Deta. of temp. dependence of stress in the fibers in 15-60° interval allowed computation of the entropy factor F , in the work of extension for the various fibers studied. In hair keratin this was 11.9% in H₂O, 14% in 5 M urea, and 21.2% in hydrosulfite soln. The latter was 34% for wool keratin. Hence the entropy factor rises as the areas of chains or entire chains are freed from previous linkages. In muscle fibers, studied at 15-40°, the entropy factor in the solns. of urea or ATP is rather high, not under 30-40%. Hence, Astbury's (C.A. 41, 6004e) idea of completely energetic mechanism of muscle contraction is incorrect; this is also confirmed by x-ray investigations (C.A. 44, 807Ac).

G. M. Kosolapov

C.A.

Sorption of molecules of nonelectrolytes by proteins
 A. G. Pasyukil and R. S. Chernyak. *Doklady Akad. Nauk S.S.S.R.* 73, 771-4 (1950). -The technique of equilibrium dialysis through cellophane membrane was used to study the sorption of urea, guanidine nitrate, urethan and H₂O on human serum albumin, γ -globulin, and hair and wool keratins, at 3-4°. The equation suggested for nonelectrolyte sorption by Vitenski and Pavlova (*C.A.* 35, 71299) was used in calculation of true nonelectrolyte sorption. The results, given graphically, had the form of typical Langmuir isotherms with a clear zone of saturation, which gave the values of maximum adsorption. The extent of hydration was 0.11-0.19 for keratins, 0.5-0.65 for globulin, and 0.78 g/g for albumin. Urea reaches, resp., 0.08, 0.43, and 0.30, guanidine nitrate, 0.11-0.27, and 0.13, urethan, 0.08, 0.28, and about 0.3. Calculation on molar basis shows sorption of 1 urea unit per 2 amino acid residues, while other nonelectrolytes give a 1:3-4 ratio for soluble proteins and 1:8-10 for insoluble ones.
 G. M. Kosolapoff

PASYNSKIY, A. G.; Zasypkina, P. S.

"Electrometric Titration of Penicillin"

SOURCE: Voprosy Med Khim, Vol III, pp 94-101, 1951

W-24411, 31 Oct 52

PASYNKIY, A.

PA 193M17

USSR/Chemistry - Proteins
Immunology

May/June 51

"Conference on Proteins. Proteins in Industry and Agriculture (20-23 December 1950)," A. G. Pasynkiy "Uspekh Khim" Vol XX, No 3, pp 382-385

Reports on conference on proteins held by Dept of Biol Sci, Acad Sci USSR with attendance of over 700. Papers delivered at conference were concerned with structure and compn of proteins, their denaturation, their roles in photographic, plastic, leather, textile, and food industries. S. Ye.

193M17

USSR/Chemistry - Proteins (Contd)

May/June 51

Dresler's paper stated that resynthesis of high-mol protein under pressure restores haptenic properties in 1st stages, then completely restores antigenic properties.

193M17

PASYNSKIY, A.G.; ZASYPKINA, P.S.

Electrometric titration of penicillin. Vop.med.khim. 7:94-101 '51.
(MIRA 11:4)

1. Laboratoriya fizicheskoy khimii Vsesoyuznogo nauchno-issledovatel'skogo instituta po penitsilinu i drugim antibiotikam, Moskva.
(ELECTROCHEMICAL ANALYSIS) (PENICILLIN)

CB

29

Reaction of gelatin with plant tannins. A. G. Kassabov and A. Popova. *Zhur. Priklad. Khim.* (J. Applied Chem.) 24, 1191-5 (1951).--The deviation from additivity of potentiometric titration curves of mixts. of purified gelatin with tannin (Kahlbaum pure and oak ext.) is assumed to be a measure of the degree of interaction of the 2 substances. The value of deviation is min. at pH 4.5, i.e. at the isoelec. point. The deviation increases with acidification while in alk. range it reaches a max. at about pH 8.5-9.5. At pH 10 the pure tannin binding amounted to 0.9 g./g. gelatin, while at pH 6-8 it is 0.5-0.6 g./g. For oak ext. at pH 6 it is 0.2-0.4 g./g. The isoelec. point of the protein is simultaneously shifted to pH 3.6 by tannin and to 4.4 by oak ext. G. M. Kozlovskii

1952

Potentiometric study of reaction of gelatin with tannins
A. G. Posynskii and A. Popova. *Doklady Akad. Nauk S.S.S.R.* 76, 711-14 (1951).—Alkalimetric titration curve of mixed gelatin and tannins differs from the individual curves of these substances. Plant tannins give deviations at all pH values, but the difference is least at pH 4-5, a max is found near pH 8.5-9.5. Mineral tannins also give deviations: Cr alum gives essentially neg. deviation up to pH 7, and a pos. deviation at higher pH which rises with pH; Al alum gives a characteristic inflection near pH 5. These values are close to the zone of formation of basic salts of the metals. The ratio of the differences so obtained to the consumption of alkali by the tanning substance alone may give a measure of the amt. of tannin bound by gelatin. The results so obtained are somewhat higher than those obtained by leaching methods. Possibly with Cr and Al alum, the coordination of gelatin takes place at the polar nonionogenic groups (OH, peptide, etc.).
G. M. Kosolapoff

CA

Significance of dissimilarity of peptide bonds in protein
molecules A. G. Pazynski, *Doklady Akad. Nauk
S.S.S.R.* 77, 883 (1951). The assumption of Talmul
and Trester (C.A. 30, 1428) that the free energies of all
peptide bonds are the same is untenable in view of the
exptl. data of Huffman (C.A. 37, 1078) and of Levy and
Soloviansky (C.A. 44, 6911g). Other recent literature
bearing on this problem is reviewed. P. Daney.

KOLESNIKOV, G.S., *otv. red.*; ANDRIANOV, K.A., *red.*; DOGADKIN, B.A.,
red.; DOLGOPLOSK, B.A., *red.*; YENIKOLOPYAN, N.S., *red.*;
KARGIN, V.A., *red.*; KOZLOV, P.V., *red.*; KOROTKOV, A.A.,
red.; KORSHAK, V.V., *red.*; LAZURKIN, Yu.S., *red.*; MEDVEDEV,
S.S., *red.*; MIKHAYLOV, N.V., *red.*; PASYNSKIY, A.G., *red.*;
SLONIMSKIY, G.L., *red.*; SMIRNOV, V.S., *red.*; TSVETKOV, V.N.,
red.; FREYMAN-KRUPENSKIY, K.A., *tekh. red.*

[Carbochain high-molecular weight compounds] Karbotsepnye
vysokomolekuliarnye soedineniia; sbornik statei. Moskva,
Izd-vo AN SSSR, 1963. 287 p. (MIRA 17:1)

PASYNSKIY, A. G.

USSR .

Change in the form of protein molecules in solutions of urea. A. G. Pasynskiy and R. S. Chernyak. *Doklady Akad. Nauk S.S.S.R.* 79, 1001-4(1951).—The purpose of the investigation was to det. the proper value of n , the solvation correction factor, in the equation $(1 + \Delta s/n)^n$, which is used to compute the relative change in the vol. of globulin. For mols. having a loose structure, $n = 1$; for a spherical structure, $n = 1/2$; and, for the non-flowing ellipsoid form, $n = 1/3$. Data on the urea denaturation of serum albumin, egg albumin, horse serum globulin, and gelatin are presented as are data on the solvation correction and the "true" increase in asymmetry. Accuracy of the measurements is $\pm 15\%$. Elongation of albumin during denaturation includes the effect of solvation. For globulins, the apparent effects of elongation are detd. by the solvation force of urea. For gelatin with high natural asymmetry, the solvation force of urea is very small. Actual elongation of serum albumin (after deduction of the solvation correction) even in comparatively concd. urea solns. is about 2.0. Serum globulin is very little changed at the same concn. These data indicate the high degree of stability of the protein globule even in strong denaturants. One can also expect comparatively small protein deformations during the usual physiol. conditions. This conclusion fully corresponds to the new x-ray data on structural analysis on the constancy of the sedimentation const. in the limits of the zone of stability. This stability of configuration is probably the basis of the stability of their biol. specificity. It is possible that the greater stability of the globulin configuration is tied up with the special role of this protein in the formation

1/2

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1

7/9

of antibodies during immune reactions where it is required. With gelatin, a fibrous protein, a double elongation was observed in M urea which is a far lower concn. than for albumins. The rigid parts of the gelatin mol. apparently possess considerably higher flexibility than the tightly curled part in the protein globules. It is concluded that for denaturation, 30-40 breaks of the several hundred H bonds which exist in a mol. of serum globulin with a mol. wt. of 68,000, are sufficient. Although the full unwinding of the mol. of protein during denaturation does not proceed unconditionally, the elongation of the protein mol. in the detn. of the degree of denaturation after the introduction of urea and the breaking of the minimal no. of bonds is greatly facilitated. The rate of the process is calcd. for horse serum albumin and shows clearly the "true" change in asymmetry of the protein mol. (after the solvation correction has been introduced) in varying concns. of urea. Up to $3M$ urea, the elongation is about 20% and, apparently, is not related to the breaking of the basic globulin structure. In greater concns. of urea, the elongation is significantly modified, although it does not attain complete unfolding of the chain. Data are presented which show the intermittent character of the basic denaturation process of the splitting of the structure of the protein mol.

W. H. Fitzpatrick

PASYNSKIY, A C--
~~PASYNSKIY, A C--~~

1. Отделение биологических наук.
(Proteins in industry and agriculture; conference on
proteins) Belki v promyshlennosti i sel'skom khoziaistve;
konferentsiia po belku. (Pod red. A.I. Oparina, V.L.
Kretovicha i A.S. LAYBINA) Moskva, 1 i-vo Akademii
nauk SSSR, 1954. 304 s.

KUROKHTINA, T.P. [translator]; PASYNSKIY, A.G., professor, redaktor;
GRISHCHENKO, Ye.D., redaktor; GRASIMOVA, Ye.S., tekhnicheskii
redaktor

[Amino acids and proteins; a collection of articles. Translated from
the English] Aminokisloty i belki; sbornik statei. Perevod s
angliiskogo T.P.Kurokhtinoi. Pod red. i s predisl. A.G.Pasynskogo.
Moskva, Izd-vo inostrannoi lit-ry, 1952. 394 p. (MLRA 10:2)
(Amino acids) (Proteins)

USSR/Chemistry - Proteins

May/June 52

"Change of Form of Molecules of Proteins on Denaturation With Organic Substances," R. Chernyak, A. Pamyatskiy, Biochem Inst Imeni A. N. Bekh, Acad Sci USSR, Chair of Gen Chem, MFTI (Moscow Avn Technol Inst), Moscow

"Kolloid Zhur" Vol XIV, No 3, pp 205-211

Calcn on the assymetry of horse serum albumin and serum globulin, human serum albumin, egg albumin and gelatin were carried out after denaturing the substances in solns of urea, guanidine, etc., and corrected by the magnitude of solvation detd formerly

217718

by the authors. Gives various methods for calcs solvation correction. In albumins, the apparent stretching of protein mols is caused to an equal extent by the effect of solvation and by actual stretching in globulin the effect of solvation is greater, and in highly elongated gelatin particles less than in albumins. Actual elongation of mols is as follows, in ascending order: serum globulin, serum and egg; albumin, gelatin.

217718

PASYNSKIY, A.

PASYSKIY, A.G.

Chemical Abst.
Vol. 48 No. 9
May 10, 1954
General and Physical Chemistry

③
Change of shape of protein molecules during denaturation
by organic substances. R. S. Chernyak and A. G. Pasyn-
skii (A. N. Bakh. Biochem. Inst., Moscow). *Colloid J.*
(U.S.S.R.) 14, 220-30 (1952) (Engl. translation).—See C.A.
46, 8409b. H. L. H.

USSR/Chemistry, Colloid - Proteins, Jul/Aug 52
Radiation Effects

"Modification of Infrared Spectra of Proteins After
Irradiation With Ultraviolet Rays," A. G. Pasynskiy,
E. Ye. Pavlovskaya, Inst of Biochem imeni A. N. Bakh,
Acad Sci USSR

"Kolloid Zhur" Vol XIV, No 4, pp 239-249

Measured infrared absorption spectra in the region
2.0-10μ of human serum albumin, equine serum globulin,
gelatin, casein, and cysteine after denaturation by
the action of ultraviolet rays. Showed reduction in
intensity of some characteristic lines and

225T11

demonstrated connection of infrared spectra not
only with elementary groups of the protein mol,
but also with the specific type of colling of the
polypeptide chains.

PASYSKIY, A. G.

225T11

PASYNKIY, A. G.

Chemical Abst.
Vol. 48 No. 8
Apr. 25, 1954
Biological Chemistry

②
Alteration of the infrared spectra of proteins on irradiation with ultraviolet. A. G. Pasynskii and T. E. Pavlovskaya. *Colloid J. (U.S.S.R.)* 14, 285-73(1952)(Engl. translation).—See *C.A.*: 46, 9632d. H. L. H.

PASYNSKII, A. G.

3

Deformation of keratin of hair and wool in solutions of organic compounds. A. G. Pasyuskii and V. P. Bilokhina (A. N. Bakh Inst. Biochem., Moscow). *Khim. i Fiz. Khim. Vysokomolekul. Soedinenii, Doklady 7-oi Konf. Vysokomolekul. Soedineniyam* 1952, 291-7; cf. C.A. 45, 684e.—Measurements of tensile strength, the relative size of the hysteresis ring, and of the temp. dependence of strain of hair and wool keratin in solns. of urea, urethan, detergents, salt buffers, and Na dithionite were made. The weakening of intermol. interaction (salt, H, and nonpolar bonds) leads to a decrease in the tensile strength and to an increase in the elastic properties (solns. of buffers, urea, guanidine, urethan, detergents), while the rupture of the disulfide links by dithionite decreases both tensile strength and elastic properties. H. D. Noethel

11 A

CA

Oxidation of sulfhydryl groups in the presence of denaturant substances. A. G. Pasynskii and R. S. Chernyak (Acad. Sci., Moscow). *Biokhimiya* 17, 198-202 (1952); cf. Anson, *C.A.* 40, 4751^o.—CO(NH₂)₂, a protein denaturant, does not affect the oxidation-reduction potential of sulfhydryl compds. The ease of oxidation of SH compds. is not dependent on the oxidation-reduction potential. Concd. solns. of CO(NH₂)₂ and analogous substances hasten the oxidation of simple SH compds. by air. H P

PASYNSKIY, A. G., NEYMARK, A. M.

Laboratories - Apparatus and Supplies

Laboratory fermenter made of glass. Mikrobiologiya 21, No. 5, 1952.

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

PASYNISKIY, A.

524 771.513 : 547.962.9 : 541.183.23 : 675.024
Interaction of Gelatin with Inorganic Tanning Agents. A. POPOVA and A. PASYNISKIY, *J. Appl. Chem., U.S.S.R.*, 1952, 25, 18-22.—The quantities of aluminium and chromic oxides adsorbed by gelatin from potassium and chrome alum, and from potassium dichromate have been determined from the difference between the potentiometric curves obtained by titrating mixtures of gelatin and the tanning agents with alkali, and those which would be arrived at by adding the curves for the titration of the components with alkali separately. It has been established that the polar, non-ionogenic groups in gelatin play a considerable part in the co-ordination sphere of the aluminium and chromium atoms bound by gelatin.

Brit. Abs.

PASYNSKIY, A.; BLOKHINA, V.

Displacement of isoelectric point in proteins in their deformation.
Doklady Akad nauk SSSR 86 no. 6:1171-1173 21 Oct 1952. (GLML 23:3)

1. Presented by Academician A. I. Oparin 3 September 1952. 2. Institute of Biochemistry imeni A. N. Bakh, Academy of Sciences USSR.

PASYESKIY, A.G.; TALMUD, D.L.

Change of amino acids in protein molecule in vitro. Doklady Akad.
nauk SSSR 85 no. 6:1361-1364 21 Aug 1952. (CLML 23:3)

1. Corresponding Member of the Academy of Sciences USSR for Talmud.
2. Institute of Biochemistry imeni A. N. Bakh, Academy of Sciences USSR.

PASYNSKIY, A-G

Electrometric titration of penicillin. A. G. Pasynskiy and P. S. Zasyplin. *Trudy Vsesoyuz. Nauch. Issledovatel. Inst. Antibiotik* 1953, No. 1, 73-80. Two ml. of penicillin soln. contg. 3000 units/ml. was titrated in physiol. saline with 0.1N KOH and HCl. The ascending titration curve in acid medium (pH 1.7-6.24) coincides with the descending curve in the same medium indicating that the penicillin mol. contains no unstable groups which change the shape of the titration curve. The curve has two inflection points in acid medium corresponding to pH of 2.4 and 4.8. The ascending titration curve in alk. medium (pH 6.24 to 11.6) differs from the descending curve in the same medium indicating some change in the soln. These changes lead to the increase of hydroxyl binding, most probably owing to the appearance of new carboxyl groups in the soln. owing to the hydrolysis of beta-lactam rings. On the assumption that the soln. does not contain any other groups capable of yielding carboxyl groups on hydrolysis, these titrations can be used for the detn. of penicillin in the following manner: Let a be the no. of meq. of base needed to bring the soln. from pH 7 to pH 11.5; b the no. of millimoles of acid necessary to bring the pH back to 7, then $a - b = c$, where c is the no. of millimoles of penicillin. This method is reproducible within $\pm 3\%$. Titrations of bacterial suspensions of *Staphylococcus aureus* and penicillin indicated the presence of substances of org. acid type in penicillin, which caused some electrochem. reaction in the action of penicillin on bacteria and which were not directly connected with the biol. activity of penicillin. V. Mihajlov.

PASYNSKIY, A.G.

The subject and the principles of a course in colloid chemistry. A. G. Pasynskiy, P. S. Vasil'ev, and B. A. Dreydnik. Chem. Rev. 24:7-13, 466-72 (1953).—The course should embrace "colloidal sols" (which are thermodynamically reversible) and "colloidal sols" (irreversible) but avoid discussion of low-mol. solns. and macroscopic surfaces. J. J. Bikerman *MA*

PASYNSKIY, A.G.

Second principle of thermodynamics in biology. Biokhimiia 18 no.5:644-653
S-0 '53. (MIRA 6:10)

(Thermodynamics) (Biology)

PASYNISKIY, A. G.

Chemical Abst.
Vol. 48
Apr. 10, 1954
Biological Chemistry

Problems in the theory of protein molecular structure.
A. G. Pasyniskii and V. A. Ginz'ker. *Uspekhi Sovremennoi*
Biol. 36. 238-61 (1953). — 4 references. T. F. S.

PASYNSKIY, A. G.

The union of antibiotics with the bacterial cell. A. M. Nelmark and A. G. Pasynskiy (All-Union, Sci. Research Inst. Antibiotics, Moscow). *Biokhimiya* 19, 313-18 (1954). Expts. were performed with penicillin, streptomycin, gramicidin, erythrin, and lysozyme, using *Micrococcus pyogenes* var. *aureus* (penicillin-sensitive at 0.02 units/ml.) and *Proteus vulgaris* (penicillin-resistant, at 500 units/ml.) as the test organisms. The antibiotics tested fell into 2 groups (1) penicillin and streptomycin, of a very low antibiotic binding order and (2) antibiotics of the polypeptide-protein nature which include the remaining 3 antibiotics, the degree of binding of which by the test organisms reaches

5-10% of the wt. of the bacteria. The binding power by the sensitive and resistant organisms with any one of the antibiotics tested was practically of the same magnitude and the degree of sensitivity or resistance was a function of the specific mechanism of action of the antibiotic in relation to such factors as the biochem. properties of the various bacterial strains under different growth conditions.

B. S. Levine

PASYSKIY, A. G. and BELITSER, V. A.

"The structure of the protein molecule", Uspekhi Sovremennoy Biologii, Vol. 37,
No 3, pp 358-360, 1954.

SO: Translation-M-695, 19 Aug 1955.

Binding of antibiotics by bacteria and proteins. A. M. Nemeth and V. G. Poyarko. *Protein* 1957, *Natl. S.S.S.R.* 95, 329-340 (1957); cf. *Protein Abstr.* 3:112 (1957). Penicillin, streptomycin, kanamycin B, erythrin, and lysozyme binding by drug-sensitive and resistant strains of such organisms as *Micrococcus pyogenes* var. *aureus*, *Bacteriella coli*, and *Pectus vulgaris* is the same. Hence, strain resistance to antibiotics is not a reflection of adsorption. However, penicillin and streptomycin show very slight adsorption while the other antibiotics of cephalosporin show considerably higher adsorption. Adsorption of penicillin by human serum albumin examined by the method of equilibrium analysis through a cellophane membrane was found to be low, about 0.10% of protein wt., indicating less than 1 mol. of the drug/mol. of the protein; adsorption of streptomycin is of even smaller magnitude. However, the adsorption of streptomycin by nucleoproteins is about 1.4%, indicating interaction of the drug with nucleic acid residues.

V. M. Kozlov

Translation M-208, 1 Mar 58

PARSONS, A. G.



Action of ionizing radiation on solutions of proteins and protein components. A. G. Parsons. *Soviet Acad. Sci. U.S.S.R. for Mirnaya Ispol'zovaniya Atomnoi Energii* 1955. *Zhurnal Obshch. Est. Nauk* 87-103 (Russian summary, 101-5). - Spectrographic results of x-irradiation on protein materials are shown graphically. Pure proteins, lipoproteins, and nucleoproteins show wide variations in sensitivity to radiation. The following threshold values of radiation (in thousands of r.) were experimentally found to be necessary to produce a detectable change, the 1st value given being that detected by the usual methods (spectrographic, electrophoresis, viscosity) and the 2nd value being that detected by the labeled isotope method (increased binding by the radiated fraction of ^{35}S -labeled methionine, the 2nd method being more sensitive): human serum albumin, x-rays 70-100 and 0.4-2.0, r-rays 100 and 5; neutrons 100 and 5; lipoproteins (blood serum) x-rays 1000 and 50; nucleoproteins (from thyroid) x-rays 0.05 and 0.5; blood serum, x-rays 1000-2000 and 20. It is suggested that absorption of radiation leads to an excited state of the proteins which is responsible for the phys. chem. changes which follow. The mere oxidation of available SH groups is not expected to account for the bulk of the change. 16 references. G. M. Kosolapoff

Handwritten initials and a date, possibly "J.M. 1955".

PASYNSKIY, A.G.

Quantitative determination of the rigidity of globular protein molecules.
Soob.o nauch.rab.chl.VKH0 no.3:28-30 '55. (MIRA 10:10)
(Proteins)

PASYN'SKIY, A. G.

325
ALTERATIONS OF THE ULTRAVIOLET AND INFRARED
SPECTRA OF ALBUMIN BY RADIATION. T. E.

Pavlovskaya and A. G. Pasynskii. (Bakh biochemical
Inst.). Kolloid. Zhur. 17, 305-14 (1955) July-Aug. (In
Russian) MD

Alterations of ultraviolet absorption spectra in the 240-
to 340-m μ range of human serum albumin, serum
albumin, gelatin, and blood serum of a horse with x and
ultraviolet radiation of various doses and the infrared
absorption spectra of human serum albumin and gelatin
by x radiation were investigated. (R.V.J.) ①

LIPATOV, S.M.

Comments on the paper: "The subject matter and principles of a course
in colloid chemistry". Koll. zhur. 17 no.4:324-327 J1-Ag'55.

(Pasynskiy, A.G.) (Vasil'ev, P.S.) (Dogadkin, B.A.) (MIRA 8:11)
(Colloids--Study
and teaching)

PASYSKIY, A. G.

✓ The effect of ultraviolet and of Röntgen irradiation on solutions of proteins. M. S. Volkova and A. G. Pasynskii (A. N. Bakh Inst. Biochem., Acad. Sci. U.S.S.P., Moscow). *Biokhimiya* 20, 470-8(1955). — Pure preps. of human serum albumin were obtained electrophoretically and dried at low temp.; horse serum globulin was obtained by fractional pptn. and dialysis. Amino N was detd. by the Van Slyke method and changes in soly. by the alc. coagulation method. Nonirradiated fractions were used as controls. For the detn. of the quantum yield, to 4 ml. of the protein soln., irradiated by ultraviolet rays, 1 ml. of alc. was added and the mixt. centrifuged. The sediment was washed twice with 1:4 alc. soln. and dried to const. wt., which represented the amt. of irradiated denatured protein. The addn. of 1 ml. alc. to 4 ml. of nonirradiated serum fractions failed to produce any turbidity. The intensity of irradiation was 2.3×10^4 ergs/cm.²/sec. and on the entire surface of irradiation 9.6×10^3 ergs/sec. The ratio between the quantity of denatured protein (assuming 1 ml. of 2% soln. of human serum albumin contains 1.8×10^{21} protein mols.) and the given no. of quanta during the irradiation period (assuming the av. energy quantum of 6.8×10^{-18} erg) represents the av. magnitude of the quantum yield, ϕ , in the interval 230-335 m μ . For an aq. serum albumin soln. $\phi = 7 \times 10^{-4}$.

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and with phosphate buffer with a somewhat higher protein concn, $\phi = 5.3 \times 10^{-4}$. The total irradiation dose and not its intensity detcs. the extent of protein denaturation. With increase in the protein soln. concn, the increase in its viscosity under irradiation is lessened but specific viscosity η_{sp}/c remains const. in broad intervals of concn., η_{sp} bearing a relation only to the denatured portion of the protein. Among the physicochem. changes are an increase in viscosity and turbidity, a lowering in the threshold of heat coagulability; amino acids by the Van Slyke procedure and optical rotation remain unchanged. At the isoelec. point denaturation appears more sharply depressed than at other pH values. Serum albumin is more easily irradiated by ultraviolet rays than is serum globulin. Denaturation of protein solns. by ultraviolet irradiation in the presence of detergents and urea showed an increase in the value of η , and in the presence of Na caprylate such values decreased; a decrease is found with phosphate buffer (M/15 and pH 7.0). The η_{sp}/c is greater in serum albumin than in serum globulin. In the case of Röntgen irradiation the effect of 30,000 r. could hardly be detected. Measurable effects were obtained with 75,000-10⁶ r. Serum globulin was more resistant than serum albumin. Amino N and optical rota-

tion remained unchanged even after 200,000 r. At 10⁶ r. 37% of the protein remains unaffected. Otherwise the effects of Röntgen-ray irradiation of serum protein fractions ran a parallel course of effects with that of ultraviolet irradiation.

B. S. Leyins

PASYSKIY, A.G.

The effect of ultraviolet and Röntgen rays on lipoprotein and nucleoprotein solutions. M. S. Volkova and A. G. Pasynskii (A. N. Bakh Inst. Biochem. Acad. Sci. U.S.S.R., Moscow). *Biokhimiya* 20, 605-72 (1968); cf. C.A. 50, 3704c. ~ Irradiation with ultraviolet rays was done with a PRK3 lamp of 220 V., 3.4 amp. For irradiation, solns. were placed in Petri dishes 9.2 cm. in diam. to a depth of 3 mm. with an approx. vol. of 20 ml. Petri plates were covered with cellophane and the solns. kept cold with ice. The irradiation distance was 35 cm. from the axis of the lamp. Irradiation intensity with intervals of 250-235 mμ was 2.3 X 10⁶ erg/sec. and irradiation duration was 90 min. In radiated with Röntgen rays was done by a short-focal RP tube of 50 kv., 5 ma., λ ~ 0.6 mμ, and 10.20 X 1000 r./min. The irradiated soln. was placed into a Plexiglass cup and cooled by running H₂O. Thickness of soln. was 1.7 cm. Part of the exps. was conducted with Röntgen therapeutic tubes (160 kv. and 5 ma.) with anticathodes and irradiation intensity 400-700 r./min. Irradiation of the soln. was performed with paper filter at a distance of 14 cm. in a cellophane-covered tube. Details of procedures used in the studies with the lip- and nucleoproteins are outlined. Irradiated were solns. of native lipoproteins from blood serum, nucleoproteins from the thyroid gland, and artificial mixts. of protein with Na oleate and ribonucleic acid; tests were made for changes in viscosity, spectroscopic absorption, electrophoretic properties, and others. The observed threshold of irradiation activity for lipoprotein (by the isotopic method) was detd. at 10⁵ r.; for nucleoprotein (by the viscosity test) at 20-50 r., which is approx. 1/10 the value of previous observations. The stability of lipoproteins to irradiation is greater than that of pure proteins. The stability of nucleoproteins is higher than that of lipoproteins. In the case of artificial mixts. of proteins, fats, and nucleic acids the latter exert a stabilizing effect on the proteins under irradiation. In the irradiation of lipoproteins and nucleoproteins there is observed a 1-2% shift of complex components. A considerable degree of depolymerization of nucleoproteins and a higher degree of polymerization of nucleic acids appears as a back structural change of these substances under irradiation. The results obtained indicate that nucleoprotein is built up from block segments bound to one another by nucleic acid.

H. S. Levine

KOMAROVA, L.V.; PASYNSKIY, A.G.

Aggregation of protein molecules in reversible denaturation.
Ukr.biokhim.zhur.27 no.3:330-334 1955. (MLRA 8:12)

1. Yaroslavskiy meditsinskiy institut i Institut biokhimii im.
A.N.Bakha Akademii nauk SSSR, Moskva.

(PROTEINS,

aggregation of molecules in repeated denaturation)

PASYNISKIY, A.G.

USSR/Biology - Biochemistry

Card 1/1 Pub. 22 - 32/51

Authors : Pasynskiy, A. G.; Volkova, M. S.; and Blokhina, V. P.

Title : Isotopic method of determining the denaturing changes in albumins

Periodical : Dok. AN SSSR 101/2, 317-320, Mar 11, 1955

Abstract : Experiments showed that the denaturing of albuminous substances results in an increase in the chemical reactivity of numerous functional groups of the denatured albumin. The introduction of a new isotopic (S^{35}) method for the study and determination of changes in albumin due to denaturing is announced. Some results obtained with the new isotopic method are listed. Four references: 1 USSR, 1 USA, 1 German and 1 Belgian (1948-1953). Table.

Institution : Acad. of Sc. USSR, The A. N. Bakh Inst. of Biochemistry

Presented by: Academician A. I. Oparin, December 24, 1954

Pasynskiy, AG

USSR/Biology - Biochemistry

Card 1/1 Pub. 22 - 37/52

Authors : Pavlovskaya, T. Ye.; Volkova, M. S.; and Pasynskiy, A. G.

Title : Change in 5^{35} methionine blood-serum bonds during denaturing by radiation and heating

Periodical : Dok. AN SSSR 101/4, 723-726, Apr 1, 1955

Abstract : It is shown, on the basis of experimental data, that the denaturing of serum albumina by radiation with ultraviolet or x-rays, and by heating is accompanied by an increased absorption of the marked methionine regardless of whether the serum is pure or under the effect of the microbe factor. The increased adsorbability during denaturing was found to be due to the liberation of new active groups which become saturated by each other. The nature of such active groups is described. Four USSR references (1948-1955). Graphs.

Institution : Acad. of Sc., USSR, The A. N. Bakh Inst. of Biochemistry

Presented by : Academician A. I. Oprain, January 14, 1955

PASYNISKIY, A. G.

MD ✓ Dependence of hydration of proteins on pH and temperature of the medium. A. G. Pasynskii and I. E. El'piner (A. N. Bakh Biochem. Inst., Acad. Sci. U.S.S.R., Moscow). *Doklady Akad. Nauk S.S.S.R.*, 103, 1290-9 (1955); cf. *Kolloid. Zhur.*, 9, 53 (1946).—Hydration of specimens of serum albumin, egg albumin, and gelatin was detd. by the method of compression as detd. by the rate of propagation of supersonic waves in the soles. (standing-wave method.) For all 3 proteins hydration rises on both sides of the isoelec. point (shown graphically); in the pH interval of about 1.5 on both sides of the latter the hydration is substantially const., at about 0.3 g./g. for gelatin and serum albumin and 3.8 for egg albumin. The hydration curve of gelatin is steeper owing to its less-compact structure and more flexible configuration. In the pH range 4.4-9.8 human γ -globulin shows no significant change in hydration. Temp. dependence of hydration was detd. for horse hemoglobin and human serum albumin; 20-500 detns. show almost no change in degree of hydration. G. M. Kozlovoff

①

PASYNSKIY, A. G.

"Stability and Instability of Albuminous Substances" (Ustoychivost' i labil'nost' belkovykh veshchestv) from the book Trudy of the Third All-Union Conference on Colloid Chemistry, pp. 391-396, Iz. AN SSSR, Moscow, 1956

(Report given at above Conference, Minsk, 21-4. Dec 53)

PASYNISKIY, A G

21.

1948. Degree of deformability of protein molecules in solutions.
 V. G. Pasynskiy *Biofizika*, 1948, 1, 10-18; *Referat. Zh. biol. Khim.*,
 1956, Abstr. No. 17925. The calculation of relative elongation of
 ellipsoidal protein mol. depending on electrostatic repulsion of
 charges, leads to the following formula for the rigidity modulus,
 (E in kg./mm.²) of this molecule

$$E = (1.37 \times 10^3 n^2 m^2 \exp[-K/(e_0 \epsilon_0 \eta)] S^2 \times a_0^2 b_0 \times (m^2 - 1)^2)$$

where: n = number of charges on the molecule, S = surface area of
 ellipsoid; a₀ and b₀ are small and large half-axes of undeformed
 globule. m = (b/a)/(b₀/a₀) where (b/a) = axial ratio of deformed
 molecule, K = reciprocal of ion atmosphere thickness. Calculation
 of E was based on data derived from literature (including data obtained
 by the author) on charge, η and hydration of human serum albumin
 [I], and egg albumin [II] of different pH. For I: n = 16; m =
 1.04; and with μ ~ 10⁻⁴; E = 30 kg./mm.². For II: with pH 5.0
 -5.8; (n = 6, m = 1.05) E = 15 kg./mm.². E decreases for both I
 and II with more appreciable deformations. The presence of
 neutral salts increases E. The values of E obtained are approx. 2
 orders of magnitude higher than those of rubber polymers and are
 approximately equal to the corresponding values for polyamides and
 plastics of ebonite type. (Russian) K. LUSZCZYNSKI

OK
MT

PASYNSKIY, A. G.

Protective action of some substances in the irradiation of protein solutions. T. B. Pavlovskaya and A. G. Pasyunskii (A. N. Bakh Inst. Biochem., Acad. Sci. U.S.S.R., Moscow). *Kolloid. Zhur.* 18, 583-8 (1956).—Substance A protects substance B if c_A for A is considerably larger than c_B for B (c is concn. and s rate of reaction with the radicals produced by irradiation). If $(cs)_A \ll (cs)_B$, A does not protect B, but B protects A. One g. egg albumin contained 5.7 mg. SH (as cysteine) before, 3.4 mg. SH after irradiation with 2×10^{19} ergs of ultraviolet, but in the presence of 0.5% cysteine or 0.5% ascorbic acid irradiations had no effect. In these instances each radical produced by x-rays and each radical produced by 500 quanta reacted with the substrate, and the protection afforded by cysteine and ascorbic acid was due to their relatively high c . $CS(NH_2)_2$, at an equal c , had no protective action; its s must be small. Large excess of pyrotartrate is needed to protect catalase (Forsberg, *C.A.* 41, 4825d); P. and P. showed that small units of catalase protected pyrotartrate acid. According to Shekhtman, *et al.* (*C.A.* 45, 2783a), about 1 part of glucose (I) was needed to half the destruction of 1 part of methylene blue (II); and now protection of I by II was demonstrated. A method of analysis for SH in protein in the presence of cysteine is described.

2

PASYSKIY, A-G

Stud Changes in the lipide metabolism and the activity of the lipoxidases as effected by ionizing irradiation. B. V. B. Nitakaya, I. O. Borisova, and A. G. Pasynskii (A. N. Bakh Inst. Biochem., Acad. Sci. U.S.S.R., Moscow). *Biochimica* 21, 702-8 (1978).—The effect of Röntgen rays were studied on the lipoxidase of soy flour and on linoleic acid and on carotene in pure form and in conjunction with the simultaneous oxidation of mixt. of linoleic acid and carotene. The inactivation (97%) dose for dry lipoxidase was $3.5-4 \times 10^4$ r. and in soln. 600,000 r. In soln. a 10% inactivation of lipoxidase occurred at $40-50 \times 10^4$ r. The oxidation of lipoxidase proceeded in the form of a single-act reaction. On the basis of the results of the radiation inactivation of lipoxidase the mol. wt. of this enzyme was calcd. to be 120,000. It was demonstrated in the case of linoleic acid irradiation that its presence with carotene enhanced the oxidation of the latter. The inactivation of the enzyme and the nonenzymic oxidation of the substrate of lipoxidase as a result of low-dose x-ray irradiation were of secondary significance in the changes of lipide metabolism.
B. S. Levine

PASYNSKIY, A.G.; BLOKHINA, V.P.

Enzymatic oxidation of ascorbic acid in an open system [with English summary in insert]. Biokhimiia 21 no.6:826-833 N-D '56. (MIRA 10:7)

1. Institut biokhimiia imeni A.N.Bakha Akademii nauk SSSR, Moskva.
(VITAMIN C,
fermentative oxidation in open system (Rus))

PASYNSKIY, A-G.

Effect of ionizing radiation on activity of lipoxidase of soybeans. E. V. Dudnitskaya, I. G. Borisova, and A. G. Pasynskiy (A. N. Bakh Blochem. Inst., Moscow). *Doklady Akad. Nauk S.S.S.R.*, 110, 803-6(1956).—Lipoxidase activity was detd. of soybeans treated with x-radiation in aq. soln. at various dilns. or in dry solid state with dosage up to 100,000 r. Activity declines logarithmically with dose of radiation. Thus, the inactivation appears to be a single-act phenomenon. Calcn. showed that the probable mol. wt. unit of the enzyme is 120,000, estd. from known d. and the extrapolated vol. of 1.58×10^{-18} ml. required per ionization phenomenon during the radiation; the value agrees rather well with centrifugal estn. of the mol. wt. (Holman, *et al.*, *Advances in Enzymol.*, 8, 425(1949)). G. M. K.

3.

PASYSKIY, A-G.

Med

✓ Oxidation of ascorbic acid in flow conditions. A. G. Pasynskii and V. P. Blokhina (A. N. Bakh Biochem. Inst., Moscow). *Doklady Akad. Nauk S.S.S.R.* 111, 1293-6 (1958).—Simultaneous addn. of solns. of ascorbic acid and H_2O_2 in the presence of peroxidase (from horse-radish) to an app. provided with a semipermeable membrane in contact with constantly flowing H_2O was examd. as to the rate of oxidation of ascorbic acid. The kinetics of the reaction are examd. and the kinetic curves are shown. The system shows the typical enzymic behavior with ability to compensate extremes of concn. of the reactants and to stabilize itself dynamically as the reactants are brought in contact. The stationary-state stabilization is attainable with changes of 7-10% of the transfer coeff. in the system, at room temp.
G. M. Kosolupoff

PASSINSKIY, A. G

"Enzymatic Reactions in Steady Systems," a paper presented at the International Symposium on the Origin of Life, Moscow, 19-24 Aug 1957.

PAVLOVSKAYA, T. N., and PAGNINSKIY, A. G.,

"The Primary Formation of Amino Acids in Ultraviolet Rays and in Electric Discharge," a paper presented at the International Symposium on the Origin of Life, Moscow, 19-24 Aug 1957.

PASTUSKIY, A., Bach Biochemical Institute AS USSR, Moscow

"The Charge and Deformation of Protein Molecules," a paper submitted at the International Symposium on Macromolecular Chemistry, 9-15 Sep 1957, Prague.

PADYNSKIY, A. P.

"On the Physicochemical Investigation of Proteins,"
a paper submitted at the International Conference on the Protein
Problem. From an article in: Vopr. khim. i meditsinsk. nauk, 1977,
Vol. 30, No. 1, 1977, pp 81-82, Moscow.

PASYSKIZY, A. G.

PRIKHOT'KO, A F

24(7) 3 PHASE I BOOK EXPLOITATION 807/1365

L'vov. Universytet

Materialy X Vsesoyuznogo soveshchaniya po spektroskopii. t. 1: Molekulyarnaya spektroskopiya (Papers of the 10th All-Union Conference on Spectroscopy, Vol. 1: Molecular Spectroscopy) [L'vov] Izd-vo L'vovskogo univ-ta, 1957. 499 p. 4,000 copies printed. (Series: Its: Fizichnyy sbirnyk, vyp. 3/8/)

Additional Sponsoring Agency: Akademiya nauk SSSR. Komissiya po spektroskopii. Ed.: Jaser, S.L.; Tech. Ed.: Saranyuk, T.V.; Editorial Board: Lantekers, O.S., Academician (Resp. Ed., Deceased), Neperent, B.S., Doctor of Physical and Mathematical Sciences, Fabelinskiy, I.L., Doctor of Physical and Mathematical Sciences, Fabelinskiy, V.A., Doctor of Physical and Mathematical Sciences, Kornitakiv, V.G., Candidate of Technical Sciences, Rayskiy, S.M., Candidate of Physical and Mathematical Sciences, Klimovskiy, L.K., Candidate of Physical and Mathematical Sciences, Milyanchuk, V.S., Candidate of Physical and Mathematical Sciences, and Glauberman, A. Ye., Candidate of Physical and Mathematical Sciences.

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Card 16/30

Pasy nskiy, A. G.

VOLKOVA, M.S.; TONGUR, A.M.; CHUNAYEVA, A.S.; PASYNSKIY, A.G.

Radiation determination of the molecular weight of insulin [with summary in English]. *Biofizika* 2 no.4:465-468 '57. (MLRA 10:9)

1. Institut biokhimi im. A.N.Bakha Akademii nauk SSSR, Moskva
(INSULIN) (MOLECULAR WEIGHTS)
(RADIATION—PHYSIOLOGICAL EFFECT)

PASYNISKIY, A.G.
PASYNISKIY, A.G.

Theory of the biological effect of radiation [with summary in English]. Biofizika 2 no.5:566-572 '57. (MIRA 10:11)

1. Institut biokhimii im. A.N.Bakha AN SSSR, Moskva.
(RADIATION--PHYSIOLOGICAL EFFECT)

PASYNSKIY, A. G.

3

Periodic deformation of collagen in solutions of electrolytes and tanning agents. A. G. Pasynskiy and A. M. Tongur (A. N. Bakh Inst. Biochem. Acad. Sci. U.S.S.R., Moscow). *Kolloid. Zhur.* 19, 483-9 (1957).—On periodic deformation with a frequency of 1 to 1000 cycles/min. leather behaves as an elastic protein gel in water and diverse solns. (2M NaCNS, KCNS, LiCl, 5M urea, 25% (NH₄)₂SO₄) at temps. below the shrinkage point as well as at the various stages of the technological process and possesses only small relaxation periods. Only chrome-tanned leather (before the stage of vegetable tanning) possesses a large relaxation period that in the histologically heterogeneous porous structure makes its appearance despite the fixed position of the mols. This effect was used to accelerate the penetration of the tanning agent into the collagen. The tanning process could be considerably accelerated in comparison with tanning under plant conditions by subjecting the chrome-tanned leather to periodic compression in the tanning solns. with a frequency corresponding to the large periods of relaxation.

L. K. H.