

KATILYUS, R. V.[Katilius, R.]; VANAGAS, V. V.[Vanagas, V.]

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(Electrons) (Matrices) (Functions)

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skoy SSR, Vil'nyus (Institute of Physics and Mathematics, AN LitSSR)

SUBMITTED: 25Apr64

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KATIN, V. *K*

Strengthening the economy of Tunisia. Vnesh.torg. 42 no.7:20-21  
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(Tunisia--Economic conditions) (Russia--Commerce--Tunisia)  
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SOV/147-59-2-2/20

**AUTHOR:** Katin, Ye.I.

**TITLE:** Spreading of an Incompressible Turbulent Stream over the Surface of a Circular Cone (Rasprostraneniye turbulentnoy strui neszhimayemoy zhidkosti po poverkhnosti konusa)

**PERIODICAL:** Izvestiya vysshikh uchebnykh zavedeniy, Aviatsionnaya tekhnika, 1959, Nr 2, pp 12-20 (USSR)

**ABSTRACT:** Knowledge of the flow parameters of a gas jet issuing from a circular nozzle and flowing over a conical surface is essential for solving many practical problems. The case of the laminar viscous flow with a swirl is considered in Ref 1. This solution appears applicable also to the case of the turbulent flow if the coefficient of "eddy viscosity" be assumed constant. In the velocity profile so obtained the maximum of the fundamental component occurs at a distance from the cone surface equal to 1/4 of the thickness of the stream tube. This is only an approximate solution. Experiments show that this maximum is appreciably nearer the surface. However, from the analysis of the

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experimental data it may be concluded that friction affects the velocity distribution only in a relatively thin layer close to the surface and its influence is quite insignificant on the flow parameters further away from the surface. Consequently, when the knowledge of the flow parameters only is of an interest, not the effect of the flow on the cone, surface friction may be neglected altogether. This assumption is made in this article and, as shown in Fig 1, only the axi-symmetrical flows are considered. The distance  $l$  between the cone apex and the orifice is assumed sufficiently small so as to ensure the uniformity of the free stream before it impinges on the cone. With  $u$  and  $v$  being the mean velocities in the  $x$ - and  $y$ -directions and  $\tau$  being the turbulent shear stress, as expressed by Eq (3) in which  $c$  is a constant, the momentum and the continuity requirements lead to Eq (1) and (2) respectively. Assuming now that a distance from the pole the flow is self-similar and that no friction

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exists at the surface of the cone, then as shown in Ref 1, the equation of motion transforms into Eq (4) and (5) where  $a$  is a constant of the turbulence and  $u_m$  is a fictitious maximum velocity of the flow (which would actually exist if no friction at the surface were present), this velocity being called the axial velocity. To solve the problem fully its value must be known. It can be found from the momentum principle as given by Eq (6) by considering the mass flow per second;  $u_0$  is the discharge velocity at the nozzle. Using now the geometrical relations of the flow as shown in Eq (7) and continuing this with Eq (5) and (6), the axial velocity  $u_m$  may be found, Eq (8). By Eq (4), (5) and (8) it follows that the dimensionless velocity profile remains unchanged for a given cone angle  $\alpha$  but changes when  $\alpha$  is altered. Thus when  $\alpha = 0$ , Eq (9) is obtained. In Ref 2 the corresponding

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velocity for the case of a free jet is given by Eq (10). Relating these two leads to Eq (11). To analyse the validity of this similarity, the graph of Fig 2 is drawn. In this diagram  $a = 1$  and  $a_1$  is obtained from Eq (11) and the full line represents the solution of Eq (4). When  $\alpha = 90^\circ$  (Fig 3), Eq (12) is obtained by substitutions of Eq (13). This may be transformed to agree exactly with the corresponding expression obtained in Ref 3, from which Eq (14) follows. (In Ref 3 the constant was erroneously quoted as 1.46, it should be  $\sqrt{1.46} = 1.21$ ) Some experiments were carried out to test these relations. The apparatus is shown in Fig 4. The flow was produced by a wind tunnel with exchangeable nozzles (1) of diameters 30 and 40 mm; the cones (2) had 20, 30 and 40° at the vertex and were fixed by the attachment (3) so that they could be moved axially. Pressures were measured by the Pitot tubes (4) held in the clamp (5) which enabled measurements of the x- and y-coordinates. Fig 5 shows

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the graphs of the total pressure and Fig 6 of the static pressure for the discharge velocity  $u_0 = 20$  m/sec, nozzle radius  $r_0 = 20$  mm and the semi-vertical angle of the cone  $\alpha = 20^\circ$ . Fig 7 gives the velocity profiles for this case. The graph includes also the theoretical values of the axial velocity (O points) derived from Eq (8). The agreement is perfect. Fig 8 and 9 give the dimensionless velocity profiles; this was obtained by taking the ratio of the experimental values of  $u$  and the theoretical value of  $u_m$ . The universal character of the profile is clearly visible. The full lines in these graphs represent the theoretical relation for the case when  $a = 0.07$ . Since Eq (8) cannot be checked directly by an experiment, the graphs of Fig (10) and (11) were drawn for this purpose; these represent  $u = f(x)$  for  $\varphi = \text{const}$ . In this case the velocity  $u$  is directly proportional to the axial velocity, which can be

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determined from Eq (8). The graphs show that for  $x \gg 180$  mm the experimental and theoretical values agree very well but for  $x < 180$  mm this is not so because the similarity of the flow has not yet been established. A similar relation between the experimental and theoretical results exists for the boundary layer. There are 11 figures and 3 references, all Soviet.

ASSOCIATION: Leningradskiy voyenno-mekhanicheskiy institut  
(Military Institute of Mechanical Engineering, Leningrad)

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20606  
S/147/61/000/001/015/016  
EO32/E314

11.5100

AUTHOR: Katin, Ye.I. (Leningrad)

TITLE: Determination of the Composition of the Combustion Products in Liquid-fuelled Jet Engines

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Aviatsionnaya tekhnika, 1961, No. 1, pp. 126 - 132

TEXT: If the fuel contains the elements C, H, O and N, then the composition of the gaseous mixture in the absence of the solid phase can be determined by solving the following set of equations:

a) mass balance

$$\frac{C_T}{O_T} = \frac{12}{16} \frac{P_{CO_2} + P_{CO}}{2P_{CO_2} + P_{CO} + P_{H_2O} + P_{OH} + 2P_{O_2} + P_O + P_{NO}}, \quad (1)$$

$$\frac{H_T}{O_T} = \frac{1}{16} \frac{2P_{H_2O} + 2P_{H_2} + P_{OH} + P_H}{2P_{CO_2} + P_{CO} + P_{H_2O} + P_{OH} + 2P_{O_2} + P_O + P_{NO}}, \quad (2)$$

$$\frac{N_T}{O_T} = \frac{14}{16} \frac{2P_{N_2} + P_{NO} + P_N}{2P_{CO_2} + P_{CO} + P_{H_2O} + P_{OH} + 2P_{O_2} + P_O + P_{NO}}, \quad (3)$$

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Determination of ....

b) equilibrium

$$k_1 = \frac{P_{CO} \cdot P_{O_2}^{1/2}}{P_{CO_2}}, \quad (4)$$

$$k_2 = \frac{P_{H_2} \cdot P_{O_2}^{1/2}}{P_{H_2O}}, \quad (5)$$

$$k_3 = \frac{P_{OH} \cdot P_{H_2}^{1/2}}{P_{H_2O}}, \quad (6)$$

$$k_4 = \frac{P_{H_2}^2}{P_{H_4}}, \quad (7)$$

$$k_5 = \frac{P_{O_2}^2}{P_{O_4}}, \quad (8)$$

$$k_6 = \frac{P_{NO}}{P_{O_2}^{1/2} \cdot P_{N_2}^{1/2}}, \quad (9)$$

$$k_7 = \frac{P_{N_2}^2}{P_{N_4}}, \quad (10)$$

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Determination of ....

c) Dalton's equation

$$P = P_{CO_2} + P_{CO} + P_{H_2O} + P_{H_2} + P_{OH} + P_{H} + P_{N_2} + P_{NO} + P_{O_2} + P_{O} \quad (11)$$

where  $C_T$ ,  $H_T$ ,  $N_T$  and  $O_T$  are the amounts of carbon, hydrogen, nitrogen and oxygen per 1 kg of fuel,

$P_{CO_2}$ ,  $P_{CO}$ ,  $P_{H_2O}$ , etc. are the partial pressures of the gas-mixture components,

$P$  is the total pressure of the gas mixture, and

$k_1$ ,  $k_2$ ,  $k_3$ , etc. are the chemical-equilibrium constants which are functions of temperature.

This system of equations is usually solved by the method of successive approximations. It is shown in the present paper that Eqs. (1) - (11) can be reduced to a form which is convenient for the successive-approximations method. Eqs. (1), (2) and (3) can be written down in the form

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Determination of ....

$$aA = P_{CO} + P_{CO}, \quad (1a) \quad (1a)$$

$$bA = P_{H,O} + P_{H} + f, \quad (2a) \quad (2a)$$

$$cA = P_{N} + h, \quad (3a) \quad (3a)$$

(3a)

using the substitutions given by

$$f = 0,5 P_{OH} + 0,5 P_{H}, \quad h = 0,5 P_{NO} + 0,5 P_{N}, \quad (12)$$

$$i = P_{OH} + P_{H} + P_{NO} + P_{N} + P_{O} + P_{O},$$

$$A = 2 P_{CO} + P_{CO} + P_{H,O} + P_{OH} + 2 P_{O} + P_{NO} + P_{O},$$

From these equations, one finds that

$$A = \frac{P - l + f + h}{b + b + c} \quad (13)$$

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while the division of Eq. (4) by Eq. (5) gives

$$k_{2a} = \frac{k_1}{k_2} = \frac{P_{CO} P_{H_2O}}{P_{CO_2} P_{H_2}} \quad (14) .$$

Using Eq. (1a) and the last of the relations given by Eq. (12), one finds that

$$P_{H_2O} = A(1 - a) - P_{CO_2} - e \quad (15) .$$

Eqs. (2a) and (15) can be used to determine the partial pressure of molecular hydrogen since

$$P_{H_2} = A(a + b - 1) = f + e + P_{CO_2} \quad (16) .$$

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Determination of ....

Next, from Eq. (1a)

$$P_{CO} = aA - P_{CO_2}$$

(17) .

Substituting Eqs. (15), (16) and (17) into Eq. (14), the partial pressure of the CO<sub>2</sub> is given by .

$$\pm \sqrt{\frac{\{k_{2a}[A(a+b-1) - f + e] + A - e\}^2}{4(k_{2a}-1)} + \frac{aA[A(1-a) - e]}{k_{2a}-1}} \quad (18) .$$

If it is assumed that f, e, h, and i are known, then Eqs. (13), (18), (15), (16), (17) and (3a) can be used to determine P<sub>CO<sub>2</sub></sub>, P<sub>H<sub>2</sub>O</sub>, P<sub>H<sub>2</sub></sub>, P<sub>CO</sub> and P<sub>N<sub>2</sub></sub> .

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Determination of ....

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The partial pressure of the remaining gases can be determined from the equilibrium equations :

$$P_{O_2} = \left( \frac{k_1 P_{CO_2}}{P_{CO}} \right)^2 \quad (4a)$$

$$P_{OH} = \frac{k_2 P_{H_2O}}{P_{H_2}} \quad (6a)$$

$$P_H = \sqrt{k_4 P_{H_2}} \quad (7a)$$

$$P_O = \sqrt{k_5 P_{O_2}} \quad (8a)$$

$$P_{NO} = k_6 \sqrt{P_{O_2} P_{H_2}} \quad (9a)$$

$$P_N = \sqrt{k_7 P_{N_2}} \quad (10a)$$

In the case of fuels used in liquid-fuelled jet engines, it can be assumed on the first approximation that

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$$P_{OH} = P_H = P_{NO} = P_N = P_{O_2} = P_O = 0 .$$

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In that case  $e = f = h = i = 0$  and the first-  
approximation values of  $P_{CO_2}$ ,  $P_{CO}$ ,  $P_{H_2O}$ ,  $P_{H_2}$ ,  $P_{N_2}$  can be  
determined from Eqs. (13), (18), (15), (16), (17) and (3a).  
Using these partial pressure, Eqs. (4a), (6a), (7a), (8a),  
(9a) and (10a) can be used to find  $P_{OH}$ ,  $P_H$ ,  $P_{NO}$ ,  $P_N$ ,  $P_{O_2}$ ,

$P_O$ ,  $e$ ,  $f$ ,  $h$ ,  $i$  for the second approximation. These can  
then be used to improve the values of the partial pressures  
of the main components of the gas mixture. This procedure  
can be continued until identical gas-mixture compositions are  
obtained in successive approximations. Unfortunately, in  
practice a large number of trials are necessary before the  
calculation settles down to steady values. For this reason  
it is necessary to determine rough values of  $P_{OH}$ ,  $P_H$ ,  $P_{NO}$ ,

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$P_N$ ,  $P_{O_2}$ ,  $P_O$  in advance of the above procedure. Detailed numerical data are quoted in the form of graphs and tables, which can be used to abbreviate the number of steps in the approximation procedure outlined above. There are 7 figures, 1 table and 3 Soviet references.

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X

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KATIN - YARTSEV, L.V.

AFANAS'YEVA, A.L., kand.biól.nauk; BAYERTUYEV, A.A., kand.sel'skokhozyaystvennykh nauk; BAL'CHUGOV, A.V., kand.sel'skokhozyaystvennykh nauk; BELOZHEROVA, N.A., agronom; BELOZOROV, A.T., kand.sel'skokhozyaystvennykh nauk; MAKSIMENKO, V.P., agronom; BERNIKOV, V.V., doktor sel'skokhozyaystvennykh nauk; BOGOMYAGKOV, S.T., kand.sel'skokhozyaystvennykh nauk; VOLYNETS, O.S., agronom; BODROV, M.S., kand.sel'skokhozyaystvennykh nauk; BOGOSLAVSKIY, V.P., kand.tekhn.nauk; KHRUPPA, I.P., kand.tekhn.nauk; VSRNER, A.R., doktor biol.nauk; VOZBUTSKAYA, A.Ye., kand.sel'skokhozyaystvennykh nauk; VOINOV, P.A., kand.sel'skokhozyaystvennykh nauk; VYSOKOS, G.P., kand.biól.nauk; GALDIN, M.V., inzhener-mekhanik; GERASIMOV, S.A., kand.tekhn.nauk; GORSHENIN, K.P., doktor sel'skokhozyaystvennykh nauk; YELENEV, A.V., inzhener-mekhanik; GERASKEVICH, S.V., mekhanik [deceased]; ZHARIKOVA, L.D., kand.sel'skokhozyaystvennykh nauk; ZHEGALOV, I.S., kand.tekhn.nauk; ZININA, Ye.A., agronom; BARANOV, V.V., kand.tekhn.nauk; PAVLOV, V.D.; IVANOV, V.K., kand.sel'skokhozyaystvennykh nauk; KAPLAN, S.M., kand.sel'skokhozyaystvennykh nauk; KATIN-YARTSEV, L.V., kand.sel'skokhozyaystvennykh nauk; KOPYRIN, V.I., doktor sel'skokhozyaystvennykh nauk; KOCHERGIN, A.Ye., kand.sel'skokhozyaystvennykh nauk; KOZHEVNIKOV, A.R., kand.sel'skokhozyaystvennykh nauk; KUZNETSOV, I.N., kand.sel'skokhozyaystvennykh nauk; LAMBIN, A.Z., doktor biol.nauk; LEONT'YEV, S.I., kand.sel'skokhozyaystvennykh nauk; MAYBORODA, N.M., kand.sel'skokhozyaystvennykh nauk; MAKAROVA, G.I., kand.sel'skokhozyaystvennykh nauk; MEL'NIKOV, G.A., inzhener; ZHDANOV, B.A., kand.sel'skokhozyaystvennykh nauk; MIKHAYLENKO, M.A., kand.sel'skokhozyaystvennykh nauk; MAGILEVTSEVA, N.A., kand.sel'skokhozyaystvennykh nauk;

(Continued on next card)

AFANAS'YEVA, A.L.... (continued) Card 2.

NIKIFOROV, P.Ye., kand.sel'skokhozyaystvennykh nauk; NERASHNEV, N.I.,  
lesovod; PERVUSHINA, A.N., agronom; PLOTNIKOV, N.A., kand.biol.nauk;  
L.G.; kand.sel'skokhozyaystvennykh nauk; PAVLOV, V.D., kand.tekhn.  
nauk; PRUTSKOVA, M.G., kand.sel'skokhozyaystvennykh nauk; GURCHENKO,  
V.S., agronom; POPOVA, G.I., kand. sel'skokhozyaystvennykh nauk;  
PORTYANKO, A.F., agronom; RUGHKIN, V.N., prof.; RUSHKOVSKIY, T.V.,  
agronom; SAVITSKIY, M.S., kand.sel'skokhozyaystvennykh nauk; BOLDIN,  
D.T., agronom; NESTEROVA, A.V., agronom; SERAFIMOVICH, L.B., kand.  
tekhn.nauk; SMIRNOV, I.N., kand.sel'skokhozyaystvennykh nauk;  
SEREBRYAISKAYA, P.I., kand.tekhn.nauk; TOKHTUYEV, A.V., kand. sel'sko-  
khozyaystvennykh nauk; FAL'KO, O.S., iznh.; FEDYUSHIN, A.V., doktor  
biol.nauk; SHEVLYAGIN, A.I., kand.sel'skokhozyaystvennykh nauk;  
YUFEROV, V.A., kand.sel'skokhozyaystvennykh nauk; YAKHTENFEL'D, P.A.,  
kand.sel'skokhozyaystvennykh nauk; SEMENOVSKIY, A.A., red.; GOR'KOVA,  
Z.D., tekhn.red.

[Handbook for Siberian agriculturists] Spravochnaya kniga agronoma  
Sibiri. Moskva, Gos. izd-vo sel'khoz. lit-ry. Vol.1. 1957. 964 p.  
(Siberia--Agriculture) (MIRA 11:2)

KATINA, A.M.

Roentgenological picture in lymphogranulomatosis of the stomach.  
Vest.rent.i rad. 34 no.5:77-78 S-O '59. (MIRA 13:3)

1. Iz kafedry rentgenologii i meditsinskoy radiologii (zav. - dots.  
M.M. Mikhaylov) Voronezhskogo meditsinskogo instituta (dir. - prof.  
N.I. Odnoralov).

(HODGKIN'S DISEASE radiography)  
(STOMACH diseases)

YEGOROV, D.T., dotsent; KATINA, A.M., assistant

Neurodystrophic changes in the bones and soft tissues in the lower extremities following injuries of the spinal cord and its roots.

Vest. rent. i rad. 36 no. 2:65-67 Mr-Apr '61. (MIRA 14:4)

1. Iz kliniki gospital'noy khirurgii (zav. - prof. V.P. Rudushkevich) i kafedry rentgenologii s meditsinskoy radiologiyey (zav. - dotsent M.M. Mikhaylov) Voronezhskogo meditsinskogo instituta (dir. - prof. N.I. Odnorazlov).

(SPINAL CORD—WOUNDS AND INJURIES) (EXTREMITIES, LOWER)



KATINA, A.M.; POPOVA, L.I.

Renal osteodystrophy. Vest. rent. i rad. 37 no.1:67-68 Ja-F '62.  
(MIRA 15:3)

1. Iz kafedry rentgenologii i radiologii (zav. - dotsent  
M.M. Mikhaylov) Voronezhskogo gosudarstvennogo meditsinskogo  
instituta (rektor - prof. N.I. Odnorolov).  
(RICKETS)

KATINA, A.M.; SHAPOFAYLO, D.A.

Difficulties in the diagnosis of alveolar echinococcosis of the  
lungs. Vest. rent. i rad. 40 no.3:57-58 My-Je '65. (MIRA 18:7)

1. Kafedra rentgenologii i meditsinskoy radiologii (zav. - dotsent  
M.M. Mikhaylov) Voronezhskogo meditsinskogo instituta.

KATINA, A.M.

Some X-ray and gastroscopic signs of malignant degenerations of gastric polypi. Vop.onk. 7 no.11:43-49 '61. (MIRA 15:5)

1. Iz kafedry rentgenologii i medradiologii (zav. - dots. M.M. Mikhaylov) Voronezhskogo meditsinskogo instituta (dir. - prof. N.I. Odnoralov).

(STOMACH--CANCER)

MIKHAYLOV, M.M., dots., red.; KATINA, A.M., kand. med. nauk,  
red.; POPOVA, L.I., kand. med. nauk, red.;  
PETROPOL'SKAYA, O.A., red.; ORLOVA, N.I., tekhn. red.

[Materials of the Fourth Voronezh Province Scientific  
Conference of Roentgenologists and Radiologists] Mate-  
rialy Voronezhskoi oblastnoi nauchnoi konferentsii rent-  
genologov i radiologov. 4th, 1963. Voronezh, Voronezhskoe  
knizhnoe izd-vo, 1963. 71 p. (MIRA 17:4)

1. Voronezhskaya oblastnaya nauchnaya konferentsiya rentge-  
nologov i radiologov. 4th, 1963. 2. Kafedra rentgenologii  
s meditsinskoy radiologiyey Voronezhskogo meditsinskogo in-  
stituta (for Mikhaylov, Katina, Popova).

AUTHORS: Ishkin, I.P., Doctor of Technical Sciences 67-58-3-16/18  
Katina, N.F., Engineer - Consultants

TITLE: Technical Consultation (Tekhnicheskaya konsul'tatsiya)  
Reply to Readers' Questions (Otvety chitatelyam)

PERIODICAL: Kislород, 1958, Vol. 11, Nr 3, pp. 45-45 (USSR)

ABSTRACT: To Tov. Boltenkov:  
Question: Is it possible, in the case of the permanent absence of acetylene in the liquid of the vaporizer and in liquid oxygen, to reduce the prescribed analyses undertaken for the purpose of determining acetylene to a minimum, e.g. to carry it out only once in one day, and to continue working in accordance with instructions only if the presence of acetylene has actually been established? This question is raised in connection with the fact that the oxygen station concerned is located in a high mountainous region where the air is always pure and acetylene could never be found to be present in the apparatus in the course of the analyses carried out in accordance with instructions in the course of two years.

Card 1/2 Answer: Independent of the fact whether acetylene was found to

Technical Consultation. Reply to Readers' Questions

67-58-3-16/18

be contained in the evaporation liquid or in the liquid oxygen or not, control analyses must be carried out in accordance with instructions. In consideration of special local conditions, your chief engineer may order the working instructions to be modified to the extent he may deem opportune under the given circumstances.

1. Acetylene--Determination
2. Oxygen--Production

Card 2/2

AUTHORS: Ishkin, I. P., Doctor of Technical Sciences, SOV/67-58 4-18/29  
Katina, N. F., Engineer

TITLE: Reply to Readers (1) (Otvety chitatelyam)

PERIODICAL: Kislород, 1958, V. 11 Nr 4, p 42 (USSR)

ABSTRACT: To: Ibragimov and Munasyova of Begovat, Tashkentskaya Oblast'.  
Question: Is absorption of acetylene from the air on the solid caustic on the drying block possible?  
Answer: Investigations of this problem carried out by the VNIIMash" (All-Union Scientific Research Institute for the Construction of Oxygen Machines) showed that such an absorption cannot be found to occur in the case of an acetylene content in the air of up to 0,2 cm<sup>3</sup>/m<sup>3</sup>.  
Question: What precautions must be taken in connection with oxygen condensers? Answer: As starting, e.g. in the case of the apparatus KG-30, takes 18-24 hours, and as in the case of existing working conditions the presence of acetylene gas in air is quite possible, it is possible that solid acetylene forms in the lower column of the apparatus during starting, which may cause an explosion. It is therefore expedient to see to it that reliably pure

Card 1/4

Reply to Readers (1)

SOV/67-58-4-18/29

air is conveyed through the pipes from outside. These pipelines can also be fitted with acetylene-absorbers.

Question: Where are apparatus for the determination of acetylene (in air) available ? Answer: Such a device can be made according to drawings and descriptions available from VNIKIIMash.

Question: Is it necessary to take the correction with respect to the loss of acetylene when determined by the condensation-colorimetric method into account ? Answer: This is not necessary because errors remain within permissible limits.

Question: Must the colorimetrication scales be submitted for confirmation to the chief engineer ? Answer: Colorimetrication scales for the determination of acetylene content can be worked out by any laboratory, but they must be confirmed by the head of the laboratory.

Question: Why is it not possible to determine the acetylene content in the liquid of the vaporizer by analysis in spite of the fact that at the same time considerable quantities of acetylene are found to be contained in the condenser ? Answer: With the 0,5 l test it is possible to determine the acetylene content if its

Card 2/4



Reply to Readers (1)

SOV/67-58-4-18/29

concentration is not less than  $0,009 \text{ cm}^3/\text{l}$ . In the case of a lower concentration it may not be possible to determine it, but it may accumulate in the liquid oxygen in the condenser.

Question: What method should be employed for the purpose of determining acetylene in air ? Answer: The method mentioned in "Vestnik Instituta fizicheskoy khimii AN USSR" (Reports of the Institute of Physical Chemistry, AS Ukr SSR), 1956, Vol. 13, pp. 147-151 must be employed.

Question: Is it possible to carry out a control-examination of the unused remnants of the lye solution by means of the potentiometric method ? Answer: There exist more simple methods as e.g. the method of titration (LN HCl).

Question: What are the last constructional changes carried out with respect to the oxygen plant KG-30 ? Answer: The production of such plants was stopped in 1955. Instead, new oxygen plants of the type KGN-30 are now being built by the I. Moscow Autogenous Plant and the Odessa Plant for the building of autogenous machines.

Card 3/4

Reply to Readers (1)

SOV/67-58-4-18/29

1. Acetylenes
2. Oxygen
3. Colorimetry

Card 4/4

AUTHORS: Ishkin, I. P., Doctor of Technical Sciences, SOV/67-58-4-24/29  
Katina, N. F., Engineer

TITLE: Reply to Readers (7) (Otvety chitatelyam)

PERIODICAL: Kislород, 1958, Vol. 11, Nr 4, p. 44-44 (USSR)

ABSTRACT: To: A. G. Apostolov of Nikolayev, Oblast'.  
Question: Is it possible to regenerate a lye solution which was saturated with carbon dioxide from the air in the course of operation? Answer: In chemical works regeneration of this kind is carried out with the solution of calcium hydroxide. In view of working conditions at oxygen stations this is not done because such a process would be unprofitable with respect to the small quantities concerned.  
Question: What kind of leather is used for the purpose of making sleeves for piston rods? Answer: For this purpose chromed leather (in accordance with GOST 1898-48), which is specially prepared, is used. The leather is saturated with synthetic wax having a dissolution heat of 62-88° or with a mixture of hydrocarbon having a dissolution heat of 56-60°. Saturation is carried out at 95°. The sleeve is then punched in a hot condition and

Card 1/2

Reply to Readers (7)

SOV/67-58-4-24/29

left in the punch until cooled.

1. Sodium hydroxide--Regeneration 2. Potassium hydroxide---  
Regeneration 3. Leather--Applications 4. Leather--  
Properties

Card 2/2

AUTHOR: Katina, N. E., Engineer

SOV/67-11-5-15/18

TITLE: Scale for the Determination of Acetylene (Shkala dlya opredeleniya atsetilena)

PERIODICAL: Kislород, 1958, Vol 11, No 68 - 69 (USSR)

ABSTRACT: In this article a brief instruction for the manufacture of scales for determining the acetylene content is given. For the manufacture of the scale nitric acid salts of cobalt and chromium should be used. The relations of the cobalt and chromium salts are varied from  $1 \div 10$  /  $10 \div 1$ . The scales can be manufactured in the works themselves. One scale is mentioned. There is 1 table.

Card 1/1

25(5)

AUTHORS:

Ishkin, I. P., Professor, Doctor of SOV/67-59-2-7/18  
Technical Sciences, Katina, N. F., Engineer

TITLE:

Adsorptive Purification of Air From Acetylene and Carbon Di-  
oxide in Plants for Gaseous and Liquid Commercial Oxygen  
(Adsorptionsnaya ochistka vozdukha ot atsetilena i dvuokisi  
ugleroda na ustanovkakh tekhnicheskogo gazoobraznogo i zhid-  
kogo kisloroda)

PERIODICAL:

Kislorod, 1959, <sup>12</sup>Nr 2, pp 37-38 (USSR)

ABSTRACT:

Various methods have hitherto been devised whereby air used  
for engines driven by compressed gas is purified from acetylene  
by adsorption (Ref 1); further, experiments were made  
concerning the purification of air from acetylene and carbon  
dioxide at low temperatures (Ref 2). In this experiment the  
authors investigated the possibility of purifying air si-  
multaneously from acetylene and carbon dioxide by way of ad-  
sorption. For this purpose, the process of adsorbing acetylene,  
carbon dioxide, and simultaneously a mixture of both at low  
temperatures and high pressure, both under dynamic and static  
conditions, was investigated in the VNIKIMASH (All-Union  
Scientific Research Institute for the Construction of

Card 1/2

Adsorptive Purification of Air From Acetylene and SOV/67-59-2-7/18  
Carbon Dioxide in Plants for Gaseous and Liquid Commercial Oxygen

Oxygen Plants). The capacity of various commercial adsorbents for CO<sub>2</sub> was investigated. From among the used adsorbents the active carbon AG-2 and the crumbly silica gel KSM exhibited the strongest adsorptive power. Besides, the authors investigated the conditions of desorption from the adsorbents. As a result, virtually the whole quantity of acetylene and carbon dioxide was adsorbed at temperatures of between -100 and -160° and at high pressure. The data obtained served the purpose of designing commercial adsorbers for oxygen plants. There are 6 references, 2 of which are Soviet.

Card 2/2

5.115  
17.1153

<sup>31171</sup>  
S/080/61/034/012/005/017  
D243/D305

AUTHORS: Ishkin, I.P., and Katina, N.F.

TITLE: Statics of the absolute adsorption of carbon dioxide from mixtures with nitrogen at atmospheric pressure (1st report of a series of papers on the adsorption of carbon dioxide from air at low temperatures)

PERIODICAL: Zhurnal prikladnoy khimii, v. 34, no. 12, 1961, 2623 - 2627

TEXT: The present series of papers was devoted to the study of the properties of industrial adsorbents during the removal of carbon dioxide from air mixtures, at a concentration of 300 cm<sup>3</sup> CO<sub>2</sub> per 1 m<sup>3</sup> of air, at low temperatures, high and low pressures, and in static and dynamic conditions. The authors state that, hitherto, investigations in this field had only been carried out above -86°C and in static conditions. Data for the isotherms were obtained by the dynamic method. In preliminary tests the static capacity of the following adsorbents was determined at -110°C and CO<sub>2</sub> concentration of from 0 to 300 cm<sup>3</sup>/m<sup>3</sup>; АГ-2 (AG-2) activated carbon, KCM (KSM) x  
Card 1/3



31471  
S/080/61/034/012/005/017  
D243/D305

Statics of the absolute ...

and KCK (KSK) silica gel, activated alumina, and three ultraporous silica gels - CY (SU), G200 (S200) or No. 6 granulated silica gel, and G204 (S204). These tests showed that KSM lump silica gel and S200 ultraporous silica gel were the best adsorbents. The isotherms of absolute adsorption for these two and activated alumina were plotted at temperatures of  $-78.5^{\circ}$  to  $-140^{\circ}\text{C}$  and concentrations of  $0-2400 \text{ cm}^3/\text{m}^3$ . The main physical features of the three adsorbents are given. [Abstractor's note: No details of the other adsorbents listed are given]. Data obtained showed that the absolute static capacity of the adsorbents increased considerably with temperature fall. S200 silica gel had the greatest adsorption capacity being approximately 1.5 times that of KSM silica gel. Activated alumina had the lowest capacity, but may find use in adsorbers because of its greater stability. Identical mixtures gave different shaped isotherms showing the importance of adsorbent structure for the adsorption process: The curves only approximated to the single substance curves of Langmuir and Freundlich, despite the very low carbon dioxide content. The increase of the adsorption of KSM silica gel with concentrations greater than 0.0021 molar parts of  $\text{CO}_2$  only

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31471  
S/080/61/034/012/005/017  
D243/D305

Statics of the absolute ...

holds at atmospheric pressure and not for mixtures compressed to more than 7 atmospheres. There are 2 figures, 1 table and 13 references: 8 Soviet-bloc and 5 non-Soviet-bloc. The reference to the English-language publication reads as follows: S. Brunauer, P. Emmett, J. Am. Chem. Soc., 59, 2682, 1937.

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut kislorodnogo mashinostroyeniya (All Union Scientific Research Institute of Oxygen Machine Construction)

SUBMITTED: August 4, 1960

Card 3/3

5. 1115  
17. 1153

31172  
S/080/61/034/012/006/017  
D243/D305

AUTHORS: Ishkin, I.P., and Katina, N.F.

TITLE: Statics of the differential adsorption of carbon dioxide from air at high pressures (2nd of a series of reports on the adsorption of carbon dioxide at low temperatures)

PERIODICAL: Zhurnal prikladnoy khimii, v. 34, no. 12, 1961, 2628 - 2633

TEXT: The static capacity of adsorbents at high pressures was found by absorption of carbon dioxide from compressed air, containing 0.0003 molar parts of CO<sub>2</sub>. Measurements were taken on an apparatus described by Ishkin and Katina (Ref. 1: Zh.P.Kh. XXXIV, 12, 2623, 1961) modified to deal with air under pressure. Compressed air passed slowly through the adsorber the pressure in the latter being controlled by high pressure microvalves placed in the air current before and after the adsorber; two microvalves, placed in series in front of the adsorber ensured accurate control of the air

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S/080/61/034/012/006/017

D243/D305

Statics of the differential ...

supply. On completion of adsorption the pressure was brought to atmospheric and desorption proceeded in the normal way, beginning at  $-80^{\circ}\text{C}$ . The differential adsorption capacity for KCM (KSM), No. 6 and KCK (KSK) silica gels and activated alumina were determined at  $-120^{\circ}\text{C}$  and in the pressure range 1-140 atm. KSM and No. 6 silica gel had the greatest static capacity and the differential adsorption isotherms for the substances were plotted. It was found that adsorbent capacity rises initially to a maximum between 15-25 atm. then slowly declines. The position of the maximum depends on the ratio of carbon dioxide concentration in the gaseous phase to its uniform concentration. Above 125 atm. the adsorption capacity remains constant and independent of pressure. The plotted isotherms satisfy von Antropoff's equation (Ref. 2: Koll. Z., 98, 249, (1942); 99, 35, 1942). It was found that data on the absolute absorption of  $\text{CO}_2$  at atm. pressure agree with those for the adsorption of  $\text{CO}_2$  at partial pressures of up to 0.0021 atm. There are 2 tables, 5 figures and 6 references: 2 Soviet-bloc and 4 non-Soviet-bloc. The reference to the English-language publication reads as follows: T. Y. Webster (Iz materialov VIII Mezhdunarodnogo kongressa po kholo-

Card 2/3

Statics of the differential ...

31472  
S/080/61/034/012/006/017  
D243/D305

dil'nomu delu -Data from the 8th International Congress on Refrigeration) 25) The Effect of Indifferent Gases on the Vapor Pressure of Carbon-Dioxide.

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut kislorodnogo mashinostroyeniya (All Union Scientific Research Institute of Oxygen Machine Construction)

SUBMITTED: August 4, 1960

Card 3/3

4

ISHKIN, I.P.; KATINA, N.F.

Dynamics of carbon dioxide adsorption from mixtures at atmospheric  
and low pressures. Zhur.prikl.khim. 35 no.1:104-111 Ja '62.  
(MIRA 15:1)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut kislородnogo  
mashinostroyeniya.

(Carbon dioxide) (Adsorption)

*KATINA, N. F.*

L 16473-65 EWG(j)/ENT(m)/EPF(o)/EPP(n)-2/EPR/LWP(t)/EHP(b) Pr-4/Ps-4/Pu-4  
IJP(o)/RPL/Pa-4/ESD(gs)/AEDC(a)/ASD(a)-5/ASD(p)-3/AFETR/APTC(a) JD/WW/JW

ACCESSION NR AM4049552

BOOK EXPLOITATION

S/

871

Yepifanova, V. I. (Candidate of Technical Sciences); Aksel'rod, L. S. (Doctor of Technical Sciences); Gorokhov, V. S. (Engineer); Dy'khno N. M. (Candidate of Chemical Sciences); Cherny'shev, B. A. (Engineer); Grushovskiy, V. M. (Engineer); Antipenkov, V. M. (Engineer); Gil'man, I. I. (Engineer); Mironlavokaya, IU. A. (Engineer); Sergeyov, S. I. (Candidate of Technical Sciences); Donishchuk, B. V. (Engineer); Kaganer, M. G. (Candidate of Technical Sciences); Vasyunina, G. V. (Candidate of Technical Sciences); Glebova, L. I. (Candidate of Technical Sciences); Denisenko, G. F. (Candidate of Technical Sciences); Katina, N. F. (Candidate of Technical Sciences); Morozov, A. I. (Candidate of Technical Sciences); Martyushov, B. I. (Engineer)

Purifying air by deep cooling; technology and apparatus, in two volumes. V. 2: Industrial plants, machinery and accessory equipment (Razdeleniye vozdukhha metodom glubokogo okhlazhdeniya; tekhnologiya i oborudovaniye, v dvukh tomakh. t. 2: Promy'shlennyye ustanovki, mashinnoye i vspomogatel'noye oborudovaniye). Moscow, Izd-vo "Mashinostroyeniye", 1964, 591 p. illus., biblio., index. Errata slip inserted. 3,000 copies printed.

TOPIC TAGS: oxygen generation, argon, crypton, neon, xenon, centrifugal

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compressor, pump, liquid oxygen, liquid nitrogen, air purification

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NR REF SOV: 060

OTHER: 029

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KATINA, N.F., kand. tekhn. nauk; MOROZOV, A.I., kand. tekhn. nauk;  
VAGIN, Ye.V., kand. khim. nauk

Adsorption purification of air with synthetic zeolites. Trudy  
VNIIMASH no.10:132-139 '65. (MIRA 18:9)

KATINA. Ye.P.

Development of Druskininkai Health Resort in the postwar period.

Sbor. nauch. rab. vrach. san.-kur. uchr. profsoyuzov no.1:13-17

'64.

(MIPA 18:10)

1. Litovskiy respublikanskiy sovet po upravleniyu kurortami  
professional'nykh soyuzov.

KATINA, Z.A.

Microscopic study of a ceramic body made of quartz-porphry. Izv.AN  
Azərbayc. SSR. Ser. geol.-geog. nauk no.5:65-76 '60. (MIRA 14:5)  
(Porphyry—Thermal properties)

KATINA, Z.A.

Hydrothermal quartz-porphyrries in the Koshgarchay-Shamkhorchay  
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geog.nauk i nefti. no.4:57-62 '61. (MIRA 15:1)  
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KATINA, Z. F.

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KATINA, Z.F.

New species of everlasting flower from the extreme southern part of the  
Ukrainian S.S.R. Bot.zhur.[Ukr.] 9 no.3:86-89 '52. (MLRA 6:11)

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(Ukraine--Everlasting flowers) (Everlasting flowers--Ukraine)

KATINA, Z.F.

Anatomical data on the localization of essential oils in certain species of  
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(Essences and essential oils) (Valerian)



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Interesting teratological variations in the Valeriana species.  
Ukr. bot. zhur. 14 no.1:70-74 '57. (MIRA 10:5)

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KATINA, Z.P.

Cultivation of common valerian (*Valeriana officinalis* L. sensu  
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(MIRA 14:11)

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[Wild tannin plants of the Ukraine] Dykorostuchi dubyl'ni  
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Biology of the reproduction of sea lavender. Bot. zhur. 47 no.5:  
693-697 My '62. (MIRA 16:5)

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BARBARICH, A.I. [Barbarych, A.I.], kand. biol. nauk; BRADIS, Ye.M.,  
doktor biol. nauk; VISYULINA, O.D., doktor biol. nauk;  
VOLODCHENKO, V.S.; DOBROCHAYEVA, D.M., kand. biol. nauk;  
KARNAUKH, Ye.D.; KATINA, Z.F., kand. biol. nauk; KOTOV,  
M.I., doktor biol. nauk; KUZNETSOVA, G.O. [Kuznetsova, H.O.],  
kand. biol. nauk; OLYANITSKOVA, L.G. [Olianits'ka, L.H.];  
OMEL'CHUK, T.Ya., kand. biol. nauk; POYARKOVA, O.M.;  
PROKUDIN, Yu.M., doktor biol. nauk; PROTOPOPOVA, V.V.;  
SLYUSARENKO, L.N.; SMOLKO, S.S.; KHRZHANOVSKIY, V.G.  
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[Key for the identification of plants in the Ukraine] Vyz-  
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1965. 876 p. / (MIRA 18:9)

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(for Zerov). 3. Moskovskaya sel'skokhozyaystvennaya akademiya  
im. K.A.Timiryazeva (for Khrzhanovskiy).

KATINAS, E., med.m. kand.; KONTRAUSKAS, R.

Treatment of incompetent sutures following gastric resection.  
Sveik.apsaug. 8 no.7:27-30 Je '63.

1. Respublikinis onkologijos dispanseris. Vyr.gyd. - P.Makariunas.

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USSR/Human and Animal Morphology. Circulatory System

S-2

Abs Jour : Ref Zhur - Biol., No 7, 1958, No 31291

Author : Katins G.S.

Inst : Not Given

Title : Arteries of the Scapular and Subscapular Muscles of Animals and Man of Different Age.

Orig Pub : Izv. Akad. nauk RSFSR, 1957, vyp. 84, 155-160

Abstract : By the methods of injection, dissection, roentgenographic review, autoradiograph serial sections, stereoreontgenography, clarification and corrosion, the blood-supply of 1500 muscles (M) of man and 20 types of animals was studied. The sources of the nourishment of M in the majority of cases is the artery near to them, which give off r.r. musculares. Isolated groups of muscle clusters get independent branches. Major arterial trunks are located in the enclosed sections of M; additionally, these can also be found in the outer surface of M. Major arteries are spread in M in the greatest expanse, and form the greatest number of anastomoses with other arteries. The

Card : 1/2



USSR/Human and Animal Morphology. Circulatory System

S-2

Abs Jour : Ref Zhur - Biol., No 7, 1958, No 31292

Author : Katines G.S.

Inst : Not Given

Title : Construction of the Arterial Channel of Some Muscles of the Shoulder and the Subscapularis Depending on Their Functional Peculiarities.

Orig Pub : Izv. Akad. ned. nauk RSFSR, 1957. vyp. 84, 161-174

Abstract : In 20 types of mammals (of 6 orders) and of man, regenerations of intramuscular arterial channels are traced depending on the peculiarities of the construction of muscles related to the type of locomotion. The degree of development of the muscles influences the development of the muscular arteries. The division of the muscle into parts, the separation of its major elements involves the separation of corresponding arterial channels. The unification of the muscles or of their parts is accompanied by the formation of a single vascular network, the architecture of which reflects the basic features

Card : 1/2

USSR/Human and Animal Morphology. Circulatory System

S-2

Abs Jour : Ref Zhur - Biol., No 7, 1958, No 31299

Author : Katinas G.S., Stepantsov V.I.

Inst : Not Given

Title : Method of Evaluation of Some Data Which Characterizes the Capacity of a Vascular Channel.

Orig Pub : Izv. Akad. ped. nauk RSFSR, 1957, vyp. 84, 175-176

Abstract : For the objective measurement of the thickness of a vascular channel on a roentgenogram a direct line is drawn that intersects the image of all of the vessels that proceed through the diameter of the organ in the given instance. The number of vessels is computed, and with the ocular micrometer the diameter of the lumen of each of them is measured; after this, the area of the transverse section of the vessels is found. Considering the area of the diameter of the organ itself, one can obtain an idea of the thickness of the vascular network and of the capacity of the vascular channel.

Card : 1/1

USSR/Human and Animal Morphology. Circulatory System

S-2

Abs Jour : Ref Zhur - Biol., No 7, 1958, No 31289

divided into branches according to the number of trunks.  
Intraorgan A of the third and subsequent orders parallel  
the clusters of nerve fibers. The intraneural trunks of A  
of all orders among themselves, forming a single network.

Card : 2/2

KATINAS, G.S. (Leningrad, D-25, Kolokol'naya ul., 11, kv. 21)

Age characteristics of the structure of the abdominal muscles.

Arkh.anat.gist.i embr. 37 no.12:71-80 D '59.

(MIRA 13:5)

1. Laboratoriya funktsional'noy morfologii cheloveka i zhivotnykh  
(rav. - kand.biol.nauk A.K. Koveshnikova) Zoologicheskogo instituta  
AN SSSR imeni P.F. Lesgafta.

(ABDOMINAL WALL anat. & histol.)

(AGING off.)

KATINAS, G.S. (Leningrad, D-25, Kolokol'naya ul, 11, kv. 21)

Use of a roentgenological method for a comparative anatomical study of the motor apparatus. Arkh. anat. gist. i embr. 40 no. 1:96-98 Ja '61. (MIRA 14:2)

1. Laboratoriya funktsional'noy morfologii im. P.F. Lesgafta (zaveduyushchiy - kand.med.nauk Ye.A. Klebanova) Zoologicheskogo instituta AN SSSR.

(BONES--RADIOGRAPHY) (MUSCLES--RADIOGRAPHY)

KATINAS, G.S. (Leningrad, D-25, Kolokol'naya ul., 11, kv.21)

Use of the RA-4 drawing apparatus for sketching anatomical preparations. Arkh. anat., gist. i embr. 42 no.5:98 My '62.

(MIRA 15:6)

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(ANATOMY, ARTISTIC-EQUIPMENT AND SUPPLIES)

KATINAS, G.S. (Leningrad); SOLOV'YEV, N.A. (Leningrad)

Manufacture of corrosion preparations. Biol. v shkole no.1:  
73-75 Ja-F '63. (MIRA 16:6)

(ANATOMY--AUDIO-VISUAL AIDS)

KATINAS, G.S.

Correlation of the wall layers in intra-organ arteries of the long head of the triceps muscle of the shoulder in some representatives of Sciuridae. (MIRA 17:12)  
Arkh. anat., gist. i embr. 8:67-74 '63.

1. Laboratoriya funktsional'noy morfologii (ispolnyayushchiy ob'yazanosti zav. Ye.A.Klebanova) Zoologicheskogo instituta AN SSSR, Leningrad.



KATINAS, G.S.

Functional evaluation of skeletal muscles. Fiziol. zhur. 51 no.8:  
997-1004 Ag '65. (MIRA 18:7)

1. Otdel sravnitel'noy fiziologii i patologii Instituta eksperimental'noy meditsiny AMN SSSR, Leningrad.

JUKNEVICIUS, J.; KARVELIS, Vyt.; KATINAS, J.; MEDONIS, Ar., red.

[Anyksčiai and vicinity] Anyksčiai ir ju apylinkės.  
Vilnius, Valstybine politines ir mokslines lit-ros  
leidykla, 1959. 25 p. [In Lithuanian] (MIRA 18:1)

KATINAS, V.Ya.

Modification of conditioned and unconditioned food reflexes  
in pregnancy in dogs. Zhur.vys.nerv.deiat. 5 no.3:376-384 My-  
Je '55. (MLRA 8:10)

1. Laboratoriya normal'noy i patologicheskoy fiziologii Insti-  
tuta akusherstva i ginekologii i fiziologicheskoy otdel im.  
I.P.Pavlova Instituta eksperimental'noy meditsiny ANN SSSR  
(PREGNANCY, physiology,  
conditioned & unconditioned digestive reflexes in dogs)  
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in dogs in pregn.)  
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unconditioned digestive, in pregn. in dogs)

KATINAS, V. Ya. Cand Med Sci -- (diss) "Unconditioned and conditioned salivation reflexes of pregnant dogs." Len, 1956. 11 pp 19 cm. (1st Len Med Inst im Academician I. P Pavlov), 100 copies  
(KL, 7-57, 109)

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