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BORISENKO, A.I., kandidat tekhnicheskikh nauk; YANTOVSKIY, Ye.I., inzhener.

Thermal resistance of the air gap in electric machines. Vest. elektroprom. 28 no.3:53-56 Mr '57. (MIRA 10:4)

1. Khar'kovskiy aviatsionnyy institut i Khar'kovskiy elektromekhanicheskiy zavod.

(Electric machines)

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001962120006-4"

YANTOVSKIY, E.I.

AUTHOR: Borisenko, A.I., Candidate of Technical Sciences and Yantovskiy, E.I., Engineer. 110-6-7/24

TITLE: Heat transfer in asymmetrically-heated ducts in electrical machines. (Teplootdacha v asimmetrichno nagrevayemykh kanalakh elektricheskikh mashin.)

PERIODICAL: "Vestnik Elektropromyshlennosti" (Journal of the Electrical Industry) 1957, Vol.28, No.6, pp.21-26 (U.S.S.R.)

ABSTRACT: The cooling of some parts of electrical machines may be considered as heat transfer from a uniformly heated wall to a flow of air or other gas along the wall. The conditions are always those of turbulent flow. If both the walls of the plane duct give out an equal quantity of heat the temperature distribution is symmetrical relative to the axis of the duct and heat transfer can be calculated by existing formulae. If the walls of the duct contain heat sources of different intensity or if one wall contains no heat sources the temperature distribution will not be symmetrical and the duct may be described as asymmetrically-heated. Such cases are often met in practice.

The article then considers steady turbulent flow of

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an incompressible gas between two stationary parallel walls. The pressure gradient along the duct, the intensity of the heat source (and therefore the temperature gradient) will be considered constant. In accordance with modern views on the flow of liquid and heat transfer in it, account must simultaneously be taken of the action of two physical processes; orderless mixing by the exchange of small volumes of liquid which depends on the conditions of flow and molecular mixing.

Since the mechanisms of internal friction and heat conduction are the same, expressions may be written for the tangential stress and heat flux density for laminar flow. Similar equations are then written for turbulent flow and for the total frictional stress and heat flux density normal to the direction of movement. An expression is then given for the quantity of heat transmitted in the direction of movement for unit time per unit sectional area and then an expression is written, the first term of which corresponds to the increase in internal energy of an element of gas flowing along the duct, and the second characterises the quantity of heat reaching the element of gas from neighbouring layers by turbulent and molecular conductivity. The equation will cover the case when the lower walls of the duct is heat-insulated and contains no source of heat and the other is heated. Other cases can be obtained by summating individual solutions. The appropriate equations are then derived and are finally expressed in terms of dimensionless magnitudes.

The distribution of the heat transfer coefficient across the canal is usually determined semi-empirically. For a long time it was supposed that turbulent thermal conductivity and viscosity passed through a minimum on the axis of the duct. However, calculations of temperature distribution based on this assumption lead to an obviously false conclusion. Recent careful experiments have shown that the minimum of turbulent properties on the axis of the duct is very smooth and differs very little from the maximum value. Therefore, proceeding from the approximate concept of turbulent viscosity in the form of a parabola with its maximum on the axis of the duct the assumption may be used to obtain a result in a form convenient for use which is, moreover, more accurate than the assumption made in some works, of a linear relationship between the turbulent viscosity and the distance to the wall. A relationship is then given in terms of semi-empirical theory of turbulence. After further development the author arrives at a logarithmic law of velocity distribution which differs from the usually accepted law in that it is valid right up to the wall and that the velocity does not have a discontinuity on the axis of the duct. A formula is then given for the law of velocity distribution and results calculated by this formula are compared in Table 1 with published results which are known to be in good agreement with careful experiments. Good agreement is shown between the two. Figure 3 shows a comparison between the temperature distribution in an asymmetrically-heated duct determined by calculation and from experiment. It is shown that the temperature distribution formula given is in good agreement with the experimental results. The greatest divergence occurs at the middle of the duct.

For practical applications it is necessary to determine the temperature difference between the cold and hot walls and a method of doing this is given. Fig. 5 is

Heat transfer in asymmetrically-heated ducts in electrical machines. (Cont.) 110-6-7/24

a graph that can be used in place of a formula to calculate the asymmetrical heating of ducts occurring in electrical machines. Unfortunately data is not available to permit verification of the formula and graph for high Reynolds numbers. In conclusion a practical example is worked out. It is the determination of the heating of the surface of the stator steel of an enclosed synchronous machine type MA36-7 2/4 above the surrounding air.

Card 5/5 There are 5 figures, and 3 references, 2 of which are Slavic.

ASSOCIATION: Kharkov Aviation Institute (Kharkovskiy Aviatsionnyy Institut) and KhEMZ.

SUBMITTED: December 30, 1956.

AVAILABLE:

YANTOVSKIY YE.I.

110-9-4/23

AUTHOR: Yantovskiy, Ye.I., Engineer.

TITLE: Mechanical Losses in the Gap of an Electric Motor filled with Liquid. (Mekhanicheskiye poteri v zazore elektrodvigatelya zapolnennogo zhidkost'yu)

PERIODICAL: Vestnik Elektropromyshlennosti, 1957, Vol.28, No.9, pp. 15 - 16 (USSR).

ABSTRACT: In designing submerged electric motors for artesian wells or for pumping oil, it is important to determine correctly the mechanical losses since they often exceed half the total losses in the machine. A source of high mechanical loss is the hydraulic resistance to rotation of the rotor. Since submerged motors are usually long and thin, the hydraulic resistance of the ends of the rotor is small and the main loss is caused by flow of liquid in the gap between the rotor and stator. This flow may be represented schematically as plane motion between two concentric cylinders when the inner cylinder rotates and the outer is stationary. Test results for this kind of flow can be used to calculate the mechanical losses in electric motors and an expression is written in terms of a dimensionless parameter. The formula given for this dimensionless coefficient of resistance is in good agreement with published experimental data. The losses are calculated and compared with experimental

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results for an electric motor type ПЭД-45-2. The motor characteristics are given and the losses are analysed. From measurements of the temperature drop between the frame of the machine and the air gap, a graph is obtained for the loss in the gap as a function of the temperature (Fig.2). The loss falls with increase of temperature because the viscosity of the (transformer) oil decreases (Fig.3). The convexity of the experimental curve probably occurs because the temperature conditions were not entirely stable. However, there is in general satisfactory agreement between the theoretical and test results. There are 3 figures and 2 non-Slavic references.

ASSOCIATION: Khar'kov Electronic-chemical Plant (KhEMZ)

SUBMITTED: May 22, 1956.

AVAILABLE: Library of Congress.

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001962120006-4"

SOV/144-58-9-15/18

AUTHORS: Borisenko, A. I., Candidate of Technical Sciences, Docent, and Yantovskiy, Ye. I., Engineer

TITLE: On the Question of Cooling Electrical Machines (K voprosu okhlazhdeniya elektricheskikh mashin)

PERIODICAL: Izvestiya Vysshikh Uchebnykh Zavedeniy, Elektromekhanika, 1958, Nr 9, pp 112-115 (USSR)

ABSTRACT: The need for some form of cooling, natural or forced, of electrical machines is first discussed in general terms in relation to its influence on performance and design. Natural cooling is defined as purely convective air-cooling which may be assisted by good geometric design but does not employ supplementary blowers. In forced cooling blowers or pumps are used to circulate the coolant, which may be either gas or liquid. The point is made that sharp temperature gradients, and frequent and large temperature fluctuations in time, rather than high temperatures themselves, often present the more difficult problems of machine operation, maintenance, wear and tear etc. Thus, a machine which generates a high running temperature may not necessarily require cooling, if it is run continuously at this

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temperature without frequent starting and stopping, and provided temperature gradients and fluctuations are minimized by good design. Alternatively, if a certain amount of cooling is still necessary this may often be achieved by natural convection alone, especially if the heat transfer surface can be maximized, e.g. by cooling fins. Close attention should also be given to the material of such heat transfer surfaces, if a choice exists, since materials having equivalent mechanical and/or electrical properties can differ quite markedly in their thermal conductivity and emissivity. If the above requirements are not met and forced cooling is necessary, the rival claims of gas and liquid coolant may be considered. The latter presents problems of containment and, usually, of corrosion also; however it is generally a more effective coolant because specific-heat, mass-flow products can be achieved. That would be impossible using gas coolants without the installation of excessively expensive blower power. If a small amount of forced cooling is required as an assist to natural convection, then a gas coolant is the

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obvious choice; otherwise the choice between gas and liquid will be determined by the peculiarities of construction, performance and maintenance of the particular machine under consideration. The paper includes a résumé of the salient characteristics of some typical gas-cooled and liquid-cooled machines, namely, air-cooled asynchronous motors, types MA36-52/4, MA36-52/8 and MA36-62/8 and submerged (deep well and oil drilling) motors PED-55 and MAPZ-273-54/2. The mass-flow characteristics for the air-cooled types exhibit a power law increase in cooling with flow velocity which, within limits, more than offsets the cost of achieving the extra flow. In the case of liquid cooling of the stator surface of an enclosed asynchronous motor, the temperature drop between the surface of the stator and the liquid is only 5 to 10% of the over-heating of the winding; the largest component of the temperature difference is the temperature gradient in the active steel. In this case efforts should be made to reduce the temperature gradient in the steel, for instance, by using Armco steel which has a higher thermal conductivity. If the

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On the Question of Cooling Electrical Machines

liquid cooling is applied on the stator surface as well as on the internal surfaces of the rotor (for instance, motors of electric oil drills), the heat fluxes are parallel and thereby the heat flux through the stator is reduced. In such machines the greatest temperature difference is that along the thickness of the insulation, which may amount to 70% of the total over-heating of the winding. In the latter case measures for reducing the thermal resistance of the steel of the stator and the rotor or of the boundary layer of the cooling liquid will have little effect and efforts should be mainly concentrated on reducing the thickness and increasing the thermal conductivity (for instance by impregnation with quartz-sand varnish) of the windings.

There are 4 figures, 1 table and 2 references, 1 of which is Soviet, 1 German.

ASSOCIATIONS: Kafedra elektrotekhniki Khar'kovskiy aviatsionnyy institut (Chair of Electrical Engineering, Khar'kov Aviation Institute) and Khar'kovskiy elektromekhanicheskiy zavod (Khar'kov Electro-Mechanical Works)

SUBMITTED: August 12, 1958

Card 4/4

SOV/110-58-12-12/22

AUTHOR: Yantovskiy, Ye.I., Engineer

TITLE: The Flow of Gas in an Internally Cooled Conductor (Techeniye gaza v provodnike s vnutrennim okhlazhdeniyem)

PERIODICAL: Vestnik Elektropromyshlennosti, 1958, Nr 12, pp 43-47 (USSR)

ABSTRACT: In large high-voltage machines the electrical insulation, which is 6 to 10 mm thick, offers great thermal resistance to the flow of heat. The object of gas cooling in hollow conductors is to remove the heat generated in the conductors instead of passing it through the insulation. According to published data, in a gas-cooled rotor winding only 10% of the heat passes through the insulation and in a stator winding the proportion would be even less; accordingly the analysis given in this article assumes that all the heat developed in the conductor is transferred to the cooling gas. A formula is given for the mechanical resistance to turbulent flow of gas. The uniform flow of gas in a long channel where friction and heating occur is expressed by a previously published differential equation. A numerical method of solution has also been published but it is too

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complicated for practical application. In the work described in this article an approximate method of solution was obtained that is adequate for cases encountered in the practical design of turbo-generators. Eq (2) gives the relationship between the losses in the conductor, the gas pressure in the frame of the machine, the temperature rise of the gas and the pressure ratio developed by the compressor. The pressure is plotted as a function of the compression ratio in Fig 2. To verify Eq (2) and to elucidate the nature of the temperature distribution in the conductor and the gas, a series of tests were made on the rig illustrated in Fig 3 which represents a model of a conductor with internal cooling. The conductor was a copper tube with an internal diameter of 6 mm, 2,400 mm long with a wall thickness of 1 mm through which alternating current passed at low voltage. The tube was internally cooled by air from a compressor; the metal temperature was measured by a thermo-couple. To prevent heat loss, the conductor was enclosed in another tube which also carried current. The space between the tubes was filled with thermal insulating material. The current in the outer tube was adjusted until the thermo-couples on the inner and outer tubes gave the same readings. The tests showed that the temperature distribution in the gas is practically linear. Therefore, the gas temperature was measured only at the inlet and outlet, the inlet temperature being 37°C. The test results are tabulated and compared with calculated values of the parameter P. It is seen that even at high-compression-ratios the agreement is good. The connection between the compression-ratio and the load that can be carried by the conductor is discussed and graphs are given in Fig 4. In this graph 100% represents the load on a turbo-generator with a conductor length of 8 metres, the diameter of the gas channel being 8 mm. The gas temperature-rise is 80°C with a compression-ratio of 1.02 and a pressure in the frame of 1 atm. It will be seen from the graph that the load can be increased by a factor of 2.5 by increasing the pressure to 6 atm with a compression

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ratio of 1.02 and to 2 atm with a compression ratio of 1.1. A higher compression-ratio accelerates the flow of gas and, therefore, increases the windage losses. The windage and compression losses are then briefly calculated. The relationship between the dimensionless sum of the windage loss and the dimensions of the gas channel is plotted in Fig 5. For minimum losses in the machine, the channel dimensions for the cooling gas should lie somewhere near the dotted line. There are 5 figures, 1 table and 4 Soviet references.

SUBMITTED: 7th October 1957

110-58-5-7/25

AUTHORS: Borisenko, A.I., Candidate of Technical Sciences and
Yantovskiy, Ye.I., Engineer

TITLE: The Thermal Design of Enclosed Induction Motors Types MA-36 and PED (Teplovoy raschet zakrytykh asinkhronnykh elektrodvigateley tipov MA-36 i PED)

PERIODICAL: Vestnik Elektropromyshlennosti, 1958, Vol 29, Nr 5, pp 25 - 28 (USSR).

ABSTRACT: Heat-transfer in an electrical machine takes place by conductive and convective heat exchange to the cooling medium inside and outside the machine. The temperature drop in the gap between the rotor and the stator is determined from relationships derived from the theory of heat-transfer in a small gap between smooth concentric cylinders. The temperature drop in the insulation is calculated by the usual methods, as in a plane wall. The temperature drop along the teeth is determined as for a heat-conducting rod with uniformly-distributed internal heat sources. The temperature drop radially outwards through the stator is also determined as for a plane wall with uniformly distributed heat sources.
A diagram of the enclosed self-ventilated motors, types MA-36 and PED, that are considered in the article are illustrated

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diagrammatically in Figure 1, which shows their distinctive feature to be direct cooling of the stator core by the cooling medium, which can move at a high speed. An important but insufficiently studied magnitude is the velocity of cooling air between the core and the frame. This should be calculated and/for machines of the type considered an approximate semi-empirical formula gives satisfactory results. In calculating the heating of the ventilating air the axial component of the air velocity should be included in calculations. The assumptions that are made in the calculation are stated. The total heating of the part of the stator winding which is in the slots is determined as the sum of the temperature drops in the insulation, in the teeth, in the outward path through stator and in the cooling medium; the temperature rise of the cooling medium must be added and is taken as half the total temperature rise of the cooling medium. To calculate the temperature rise of the rotor windings, the temperature drop in the gap, in half the radial height of the rotor teeth and in the thickness of the rotor slot insulation must be added to the temperature rise for the stator. In loaded machines, calculation reveals a large temperature drop along the radial height of the stator teeth, The Thermal Design of Enclosed Induction Motors Types MA-36 and PED

which indicates that the stator conductors at the bottom of the slots are less heated than those near the air gaps. The design procedure and necessary auxiliary information are then given.
The initial data for the thermal calculations are then stated, including the dimensions, as indicated in Figure 1, the heating losses and the velocity; also the physical properties of the materials and cooling media, taken from published data. The sequence of calculation is then described - in particular, Nusselt's criterion may be determined either graphically, using Figure 2, or analytically. Then the special features of the design of liquid-filled machines (submersible types) and of machines with an internal fan are considered.
Test and design data for a number of machines are tabulated. The winding temperature was determined by resistance, with extrapolation to the instant of switching off. Usually the experimental temperature rise is greater than the calculated value. This is probably because the stray losses generally exceed 0.5% of the output. The procedure described in the article is used at the Khar'kov Electro-Mechanical Works for designing enclosed and submersible induction motors.

110-58-5-8/25

The Thermal Design of Enclosed Induction Motors Types MA-36 and PED

There are 3 figures. 1 table and 9 references, 6 of which are Soviet and 3 English.

ASSOCIATIONS: Khar'kovskiy aviatsionnyy institut (Khar'kov Aviation Institute) and KhEMZ

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Khar'kov Electro-Mechanical Plant (for YANTOVSKIY)

YANTOVSKIY, Ya. I., Cand Tech Sci -- (diss), "Flow of the cooling medium and distribution of temperature in implicit-pole electric machines." [Len], 1959 13 pp (Min of Higher Education USSR. Len Polytech Inst im M.I. Kalinin). (KL,37-59, 110)

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YANTOVSKIY, YE. I., ZIMIN, E. P. (Khar'kov)

"Electrically Conducting Gas Flow in a Channel with a Drifting (Moving) Magnetic Field."

report presented at the First All-Union Congress on Theoretical and Applied Mechanics, Moscow, 27 Jan - 3 Feb 1960.

YANTOVSKIY, Ye. I. (Kharkov)

"The flow of Thermally Ionized Gases in a Moving Magnetic Field."

report presented at the First All-Union Congress on Theoretical and Applied Mechanics, Moscow, 27 Jan - 3 Feb 1960.

S/179/60/000/004/022/027
E081/E141

26.1410

AUTHOR: Yantovskiy, Ye.I. (Khar'kov)

TITLE: One Dimensional Flow of an Electrically Conducting Gas with Constant Velocity in a Running Magnetic Field

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Mekhanika i mashinostroyeniye, 1960 No 4, pp 166-167

TEXT: In Ref 1 the flow was discussed of an incompressible electrically conducting liquid in a plane channel of finite width under the action of a running magnetic field created by a three-phase current in the walls of the channel. In the present paper, the particular case of a non-viscous compressible gas with constant electrical conductivity σ is discussed. The flow scheme is shown in Fig 1. The equations (1) describe the flow, where u is the gas velocity, v the velocity of the magnetic field, H* the r.m.s. magnetic field created by the current in the walls, Q the intensity of heat evolution, q the specific heat flow to the walls, J and A the mechanical equivalent of electrical and heat energy. The solution of Eqs (1) has the form of Eqs (2), (3) and (4). The increase in entropy is given by Eqs (5) and (6). The changes in pressure, temperature and entropy along the channel are

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shown in Fig 2, and the relationship of temperature to entropy in Fig 3. Eqs (4) and (6) show that isothermal expansion is obtained with $n = 0$ when the ratio of the field velocity to the gas velocity equals the ratio of the supply of heat per second to the power of the volume forces of interaction between the field and the current in the gas. This shows the possibility in principle of realising a generalised Carnot cycle for separation of energy from a gas current by a running magnetic field.

There are 3 figures and 1 Soviet reference.

SUBMITTED: January 22, 1960

Card 2/2

USTIMENKO, L.Yu. (Khar'kov); YANTOVSKIY, Ye.I. (Khar'kov)

Plane flow of a conductive fluid in an alternating magnetic field. Izv.AN SSSR. Otd.tekh.nauk.Mekh.i mashinostr. no.5:187-188 S-O '60. (MIRA 13:9)

(Magnetohydrodynamics)

24545

S/179/61/000/002/011/017
E081/E141

26.1410

AUTHOR: Yantovskiy, Ye.I. (Khar'kov)

TITLE: Radial flow of an electrically conducting gas in a magnetic field

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Mekhanika i mashinostroyeniye, 1961, No.2, pp. 114-115

TEXT: The paper discusses a problem connected with the choice of a rational scheme for a magnetic gas-dynamic machine transforming part of the energy of the high temperature flow into electrical energy. A diagram of the system is shown in Fig.1. The gas flows in the radial direction between shaped discs made of magnetic material. The magnetic field acts across the channel and moves with a velocity having a radial component v, thereby creating a variable single phase current in the conductors placed in the walls of the channel. On maintaining a constant voltage in the conductors and with a gas velocity $u > v$, a circumferential current arises in the gas, inducing an active current in the conductors which is passed on to the external circuit and brings

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Radial flow of an electrically S/179/61/000/002/011/017
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about a corresponding decrease in the total enthalpy of the gas (asynchronous generator with gas rotor). The approximate theory of the process is developed from the equations of one-dimensional steady flow of a gas, allowing for heat exchange. Assuming the reduction in enthalpy to be small, these equations are solved and the solution used to derive the variation of temperature and pressure with r and also the shape of the channel in the presence and absence of heat exchange. It is concluded that it is technologically feasible to produce effective energy by the method. Acknowledgements are expressed to L.M. Dronnik and L.Yu. Ustimenko for their assistance with the calculations.
There are 2 figures.

SUBMITTED: April 21, 1960

29073
S/179/61/000/004/017/019
E032/E514

26.1150

AUTHORS: Zimin, E.P. and Yantovskiy, Ye.I. (Khar'kov)

TITLE: The flow of an electrically conducting gas in a channel with a travelling magnetic field

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Mekhanika i mashinostroyeniye, 1961, No.4, pp.170-172

TEXT: The authors discuss the steady state flow of a perfect gas with a finite electrical conductivity in a circular channel with a radial periodic magnetic field. The field is assumed to be moving relative to the walls of the channel in the longitudinal direction. These calculations are of interest in connection with the possible replacement of the bladed turbine by a device in which the thermal energy released during the combustion process is partly transformed into mechanical energy or directly into electrical energy. It is stated that the possible types of flow have been discussed qualitatively by E. Resler and W. Sears (Ref.1: Prospects for magnetoaerodynamics. Correction and Addition, JAS/S, 1959, No.5, 318). A quantitative analysis is

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attempted by the present authors but the results are said to be inconclusive. The calculations do not, however, exclude the possibility of magneto-gasdynamic generators. It is pointed out that a more detailed theory is required, for example, the present authors neglect the release of heat due to combustion in the energy equation and the dependence of the electrical conductivity on the temperature (all the gas parameters are assumed to be constant). There are 3 figures and 3 references: 1 Soviet and 2 non-Soviet. The English-language references read as follows: Ref.1 (quoted in text); Ref.3: E. Resler and W. Sears, Magneto-Gasdynamic Channel Flow. Z.angev.Math.und Phys. 1958, v.IXb, Fasc.5/6, 509-518.

SUBMITTED: April 21, 1960

39059

26.2351
26.1410

S/024/62/000/003/001/011
E191/E481

AUTHORS: Yantovskiy, Ye.I., Tolmach, I.M. (Khar'kov)

TITLE: Contribution to the theory of the magneto-hydrodynamic induction generator with a rotating field

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye tekhnicheskikh nauk. Energetika i avtomatika. no.3, 1962, 32-41

TEXT: A magneto-hydrodynamic induction generator with a swirled flow of electrically conducting gas is considered. The gas, obtained by combustion of fuel in a chamber is introduced tangentially into the working space at a substantial velocity (about 1000 m/sec). The axial component of velocity, which determines the rate of mass flow, has a value at the inlet smaller by an order of magnitude. A rotating magnetic field produced by a three-phase winding in the stator connected to a powerful grid exists in the working gap of the generator. The tangential component of the gas velocity exceeds the linear velocity of the field so that currents interacting with the field in the gap arise in the gas. As a result of this, part of the total enthalpy in

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the gas is transformed into electrical energy and fed into the grid. In a previous paper by one of the present authors (AN SSSR. Izv. OTN. Energetika i avtomatika, no.6, 1961) equations describing the flow of the conducting gas were formulated. In the present paper these equations are generalized by taking into account the effects of temperature and density on the conductivity of the gas, eliminating the restriction to average values in time along the transverse coordinate and considering the voltage drop in the stator winding and the properties of the winding. The gap is assumed to be small in relation to both the length of the winding and the pole pitch. All the variables are averaged with respect to the radial coordinate across the gap but not with respect to time. Heat transfer by radiation is smaller than by convection and is covered by adjustment of the heat transfer coefficient. The friction forces are assumed applied at the boundaries of the gas layer. The ordinary equation of state of an ideal gas is assumed to hold. The viscous dissipation of energy is assumed absent as usual in the flow of gas in long channels where wall friction does not change the total enthalpy. The permeability of the magnetic circuit is infinitely large. The length of the working space is equal to the active length of the iron. The specific resistivity is a scalar quantity. It is a pronounced function of temperature but nearly independent of density. The magneto-hydrodynamic equations include the induction equation, the continuity equation, two components of the equations of motion and the energy equation. As a result of the analysis, the conception of a vector diagram for the magneto-hydrodynamic generator is introduced. The process of the direct transformation of part of the kinetic energy of the gas into electrical energy and its feeding into the grid is illustrated with the help of a local and a general vector diagram. There are 4 figures.

SUBMITTED: December 25, 1961

32067
S/024/61/000/006/019/019
E140/E335

26.2311

AUTHOR: Yantovskiy, Ye.I. (Khar'kov)

TITLE: Equations of an AC magnetohydrodynamic generator with a rotating magnetic field

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Otdeleniye tekhnicheskikh nauk. Energetika i avtomatika, no. 6, 1961, 142 - 151

TEXT: Previously proposed DC conduction-type magnetohydrodynamic generators have not been found practicable due to short electrode life and the difficulties connected with DC conversion. The author therefore considers the perspectives of direct conversion of the gas-stream energy to electrical AC energy in an electrodeless MHD induction-type generator, in particular - an asynchronous generator with rotating field. Such a generator can put out directly extremely high tensions, eliminating the need for step-up transformers. The generator is not limited by its design, but by the fuel-consumption rate; it can attain tens of millions of kW per unit. The author's attention was directed by L.A. Simonov to the possibility of developing a vane-

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Equations of an ...

control apparatus for gas flows at supersonic velocities for use in rotating field generators. The theory developed in the present article is also applicable to generators with rotating rotors or magnetic turbines. The problem analyzed is the following. An electrically conductive medium (gas) flows in a ring-shaped channel, whose walls have infinite magnetic permeability and zero electrical conductivity. Conductors laid in the walls of the channel carry a three-phase alternating current. The rate of rotation of the magnetic field is different from the initial velocity of the gas. Depending on the sign of the velocity difference energy will be transferred to the source of three-phase current or the reverse. Compared with ordinary electrical machines, the MHD generator with rotating field can be treated as the limit of an infinitely large number of infinitely short ordinary generators placed on a common axis, each of which has an independent rotor velocity, moment of rotation and slip with common magnetization current and common angular velocity of the rotating field. The steady state of the machine is defined by the equations of hydrodynamics. The phenomena in each

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cross-section of an MHD machine do not differ from those in an ordinary electrical machine and the variation from section to section of the shape and volume of the "rotor" opens the possibility of uniting the gas and electrical machines into a single whole. It is assumed in the present communication that the gap is substantially smaller than the length of a magnetic conductor and pole piece, and the magnetic-field leakage is neglected. The general equations of electromagnetic field and hydrodynamics are employed in the MKSA system. The initial equations constitute Maxwell's equations. The assumption is made of an isotropic medium for simplicity, although the tensor nature of σ is not always negligible, due to the Larmor frequency of the electrons and the mean time between collisions between electrons and neutral or ionized atoms. Therefore the conductance perpendicular to the field can be less than calculated under the above assumption. Furthermore, the initial equations are drawn from the equation of continuity, the conservation of motion, the energy balance and the equation of state of an ideal gas, valid at a low degree of dissociation and ionization. An essential factor influencing the character of

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the flow is the dependence $\sigma(p, T)$. Curves of $\sigma_0(p, T)$ have been calculated for heated gas with admixtures of alkali metals and are given in the work. The degree of ionization of the admixture was determined from Sah's equation and the electrical conductivity σ_0 was taken as the mean between values obtained from formulae for weakly and strongly ionized gases. The calculated curves of σ are not sufficiently accurate, due to the lack of information on the collision cross-sections of low energy electrons with neutral molecules, and certain gaps in the theory. However, experimental information on σ_0 confirms the data given in the article in a general way. Making certain simplifying assumptions from physical considerations, the author obtains the equation of induction and the slip of the system. Comparing the equations with those for ordinary rotary machines, it is seen that the slip is not constant but a variable, to be determined by the use of the equations of hydrodynamics. As the equation of induction is complex, it may be considered as two independent equations. These, with the equation of slip and the

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equations of magnetohydrodynamics and the ideal gas equation constitute a system of nine equations for the machine. Solving this system, the following parameters of the MHD-generator are determined: the power factor; the real power; the minimum magnetization current; the stator efficiency; the turbine or adiabatic efficiency and the fraction of energy converted. The gas dynamics are calculated on the assumption of an incompressible gas, to complete the work. The results are useful for systems using liquid metal and give a qualitative idea of MHD-systems at supersonic velocities.

Acknowledgments are expressed to I.M. Tolmach, A.I. Bertinev and A.I. Vol'dek for their comments.

There are 2 figures and 14 references: 7 Soviet-bloc and 7 non-Soviet-bloc. The four latest English-language references mentioned are: Ref. 1: P. Sporn, A. Kantrovitz, Magnetohydrodynamics, Future Power Process. Power, 1959, no. 11; Ref. 2: Prod. Engng., 1961, v.32, no. 13; Ref. 3: S. Way, Future Power Sources. Westinghouse Eng., 1960, no. 4; Ref. 4: L. Steg, G. Sutton. Astronautics, 1960, no. 8.

SUBMITTED: July 27, 1961

ACCESSION NR: AT4042318 S/0000/63/003/000/0389/0393

AUTHOR: Tolmach, I.M., Yantovskiy, Ye. I.

TITLE: The basic ratios of an ideal induction motor, expressed through the magnetic Reynolds number

SOURCE: Soveshchaniye po teoreticheskoy i prikladnoy magnitnoy gidrodinamike. 3d, Riga, 1962. Voprosy* magnitnoy gidrodinamiki (Problems in magnetic hydrodynamics); doklady* soveshchaniya, v. 3. Riga, Izd-vo AN LatSSR, 1963, 389-393

TOPIC TAGS: induction motor, magnetic Reynolds number, magnetohydrodynamic generator

ABSTRACT: By an "ideal induction motor" the authors understand an electric motor with a travelling field of constant amplitude, in the clearance of which, moving with a constant velocity v_x, is a continuous electroconductive medium (See Figure 1 of the Enclosure). The dimensions of the motor in the direction of the x and y axes are assumed to be infinite, with the result that boundary effects (longitudinal and transverse) are absent. A motor of this type is a particular example of an induction magnetohydrodynamic engine in which the velocity v_x is given as a function of the coordinates and other velocity components are

ACCESSION NR: AT4042318

present. The authors show that the fundamental characteristics of this motor can be expressed through three parameters: the frequency ω, the amplitude of the intensity of the resultant field H_r, and a dimensionless parameter called the magnetic Reynolds number. In this formulation, the process in the motor is described by a single induction equation having, in the given case, the following form:

$$-(\alpha^2 + i\mu\sigma\omega s)\dot{h} = i\mu\sigma\omega s\dot{H}_m, \quad (1)$$

since there is no change in variables along the y axis. The following expression is obtained for the resultant intensity in the clearance

$$\dot{H}_p = \dot{H}_m + \dot{h} = \frac{\dot{H}_m}{1+R_m^2}(1 - iR_m). \quad (2)$$

Here $\dot{h}$ is the complex amplitude of the intensity in the clearance of the motor created only by the currents of the conducting medium; $\dot{H}_m$ is the amplitude of the external intensity created by the currents in the stator winding. The last equation is graphically illustrated by the vector diagram of the motor shown in Fig. 2 of the Enclosure. Expressions are found for ρ and the angle θ between vectors $\dot{H}_m$ and $\dot{h}$. The authors show

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ACCESSION NR: AT4042318

that in the formulation of the problem considered in this paper the vertical straight line AA' is the hodograph of vector $\bar{H}_m$. Allowance for the dissipation of the stator coil would give the circumference BB' as the hodograph; that is, the normal circular diagram of an asynchronous motor. For this reason, the authors admit that the approximation presented in the paper reflects the real process only at small values of R_m (in the no-load running zone of the motor). Another important criterion is the specific electromagnetic power p' generated in the stator coil by a unit volume of the electrically conducting medium. An expression for this value is obtained. Orig. art. has: 2 figures and 14 formulas.

ASSOCIATION: none

SUBMITTED: 04Dec63 ENCL: 02 SUB CODE: EM, IE

NO REF SOV: 001 OTHER: 000

Card 3/5

KOBZAR', A.I. (Khar'kov); YANTOVSKIY, Ye.I. (Khar'kov); TOLMACH, I.M. (Khar'kov)

Flow of a two-phase mixture in a channel with varying cross section. Izv. AN SSSR. Energ. i transp. no.4:522-528 Jl-Ag '64. (MIRA 17:10)

L 10217-66 EWT(1)/EWP(m)/T-2/EWA(m)-2 IJP(c)

ACC NR: AP5028470 SOURCE CODE: UR/0286/65/000/020/0043/0044

AUTHORS: Garbuzov, V. N.; Parkhomenko, V. A.; Strizhak, V. Ye.; Yantovskiy, Ye. I.
44,55 44,55 44,55 44,55

ORG: none

85
B

1,44,55

TITLE: A magnetohydronynamic generator. Class 21, No. 175583 [announced by Scientific Research Electrical Engineering Institute (Nauchno-issledovatel'skiy elektrotekhnicheskiy institut)] 44,55

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 20, 1965, 43-44

21,44,55

TOPIC TAGS: mhd generator, Hall effect

ABSTRACT: This Author Certificate presents a conduction-type magnetohydrodynamic generator. The generator employs the Hall effect. In order to increase reliability, the channel is made of alternate metallic and insulating frames at an angle

Card 1/2 UDC: 538.4;621.313.12.024

2

L 10217-66

ACC NR: AP5026470

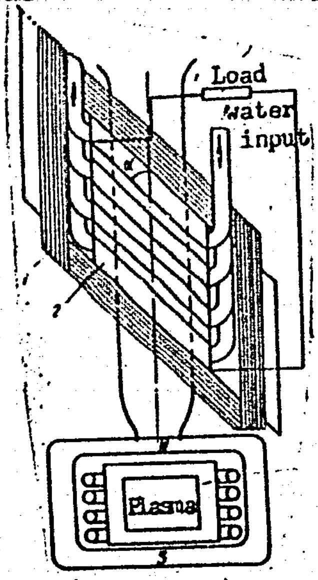

Fig. 1. 1 - Metallic frames; 2 - insulating frames.

to the axis of the generator (see Fig. 1). Orig. art. has: 1 figure.

SUB CODE: 10/ SUBM DATE: 05Jun64

Card 2/2

L 15653-66 EWT(1)/EWP(m)/EWT(m)/EPF(n)-2/EWA(d)/EWP(t)/ETC(m)-6/EWA(1) JD/WW/JG

ACC NR: AP6003204 SOURCE CODE: UR/0382/65/000/004/0053/0056

42
41
B

AUTHOR: Yantovskiy, Ye. I.

ORG: none

TITLE: Self-induced magnetic field in one-dimensional flow of an electrically conducting fluid 18

1,55

SOURCE: Magnitnaya gidrodinamika, no. 4, 1965, 53-56

TOPIC TAGS: MHD flow, external magnetic field, conductive fluid, fluid flow

ABSTRACT: A conducting fluid flowing in a narrow channel with the applied magnetic field perpendicular to the flow is described with the aid of the usual magnetohydrodynamic equations. The equations employed take account of the induced magnetic field which is significant when fluid conductivity is sufficiently high. Two cases, namely, flows with constant velocity and flows with constant pressure are examined in detail. In both cases the fluid energy is transformed into electric energy which is extracted in an external load. In the constant velocity case, it is the potential energy which is transformed. In the constant pressure case, the kinetic

UDC: 538.4

2

Card 1/2

L 15653-66

ACC NR: AP6003204

energy of the fluid is transformed. The induced magnetic field is plotted for both cases as a function of the channel position. Additional conditions allowing the acceleration of the flow are also briefly considered. The author is grateful to Ye. I. Khanzhina for making the graphs. Orig. art. has: 2 figures, 18 formulas.

SUB CODE: 20/ SUBM DATE: 19Mar65/ ORIG REF: 000/ OTH REF: 001

Card 2/2

L 22556-66 EWT(1)/EWP(m)/T-2/FWA(1) IJP(c)

ACC NR: AP6003221 SOURCE CODE: UR/0382/65/000/004/0153/0154

AUTHOR: Yantovskiy, Ye. I.

ORG: none

57 B

TITLE: Determining magnetic Reynolds number

SOURCE: Magnitnaya gidrodinamika, no. 4, 1965, 153-154

TOPIC TAGS: Reynolds number, MHD flow, magnetic field, plasma effect

ABSTRACT: The magnetic Reynolds number as a criterion in MHD for estimating the ratio of induced to applied magnetic fields is used by the author to point out that H. A. Popov and V. B. Tikhonov (*Voprosy magnitnoy gidrodinamiki*, 3, Izd. AN LatvSSR, Riga, 1963, 5) are not justified in their criticism of the work of E. L. Resler and U. R. Sears (Sb. perevodov *Mekhanika*, 1958, 6, 11). In addition, Popov and Tikhanov apply a new parameter relating the magnetic Reynolds number to problems where the fluid velocity is close to drift velocity. It is judged by the author that this parameter is not an indispensible one. Similar criticism of L. P. Harris' work (*Magnitogidrodinamicheskiye techeniya v kanalakh*. M., IL, 1963) by N. M. Okhremenko (*Voprosy magnitnoy gidrodinamiki*, 3, Izd. AN LatvSSR, Riga, 1963, 119) is judged by the author to be invalid on the grounds that the critic has not considered the appearance of drift velocity correctly. Orig. art. has: 6 formulas.

SUB CODE: 20/ SUBM DATE: 05Jun65/ ORIG REF: 004/ OTH REF: 001

UDC: 538.4

Card 1/1 BK

L 05898-67 EWT(l) IJP(c) WW

ACC NR: AP6008137 SOURCE CODE: UR/0281/66/000/001/0151/0155

AUTHOR: Yantovskiy, Ye. I. (Khar'kov)

ORG: None

TITLE: Flow of a conductive fluid in a channel with a rotating magnetic field

SOURCE: AN SSSR. Izvestiya. Energetika i transport, no. 1, 1966, 151-155

TOPIC TAGS: conductive fluid, MHD flow, rotating magnetic field, Reynolds number, numeric integration

ABSTRACT: The article is a continuation of previous works by the author in which general equations of magnetohydrodynamics were used for derivation of expressions describing the motion of a conductive fluid in a narrow channel of annular cross section with a rotating magnetic field. This system is numerically integrated in the present paper and results are given showing the distribution of velocity, magnetic field and pressure in the channel as well as indices describing energy transformation as a function of geometric parameters, the magnetic Reynolds number and the Alfven number. The system of equations was numerically integrated by V. G. Sologub at the Computing Center AN SSSR for various parameter values. The results are given in graphs. Orig. art. has: 7 figures, 12 formulas.

SUB CODE: 20/ SUBM DATE: 12Aug65/ ORIG REF: 002

Card 1/1 KH UDC: 532.51:538.122:538.552

ACC NR: AP7000052 SOURCE CODE: UR/0207/66/000/005/0101/0103

AUTHOR: Bolislavskiy, A. I. (Khar'kov); Yantovskiy, Ye. I. (Khar'kov)

ORG: none

TITLE: Flow of liquid in a tube with grid electrodes in a regime of weak magnetohydrodynamic interaction

SOURCE: Zhurnal prikladnoy mekhaniki i tekhnicheskoy fiziki, no. 5, 1966, 101-103

TOPIC TAGS: MHD flow, incompressible flow, magnetic permeability

ABSTRACT: Stationary flow of incompressible and nonviscous fluid in a round nonconducting tube is considered. The flow is weakly interacting with the grid electrodes in the tube. The hydrodynamic equations describing this system are written out for the case of constant potential on the electrodes. These equations are recast into dimensionless form and simplified by assuming the dynamic pressure to be much greater than the magnetic pressure. The resulting equation for the magnetic field is of the second order and its solution is written out in the form of an infinite series. The radial distribution of the field at the position of both electrodes as well as at mid-point is shown in Figure 1. It indicates the presence of internal currents disconnected from the electrical circuit. A solution for the potential distribution is also derived and graphically portrayed in Figure 2. The potential difference is inversely pro-

ACC NR: AP7000052

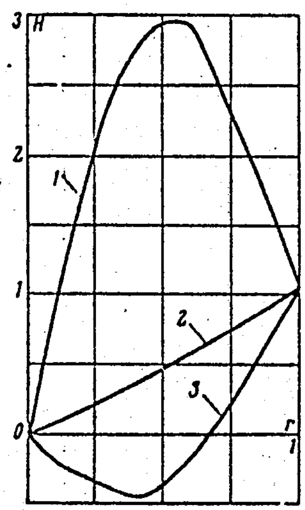

Fig. 1.

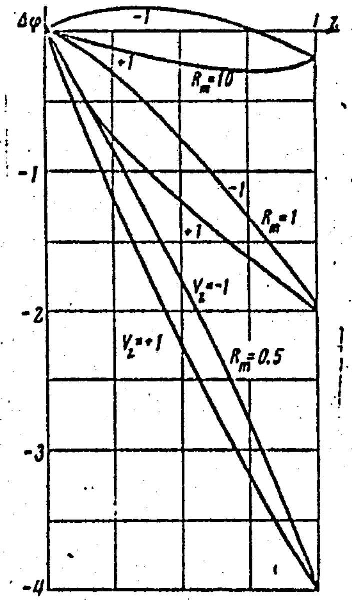

Fig. 2.

portional to conductivity and can be positive or negative depending on the value of the conductivity and magnetic permeability. Orig. art. has: 4 figures, 7 formulas.

SUB CODE: 20/ SUBM DATE: none

Card 2/2

YANTOVSKIY, Z.

Yantovskiy, Z. "Asbestos (Development of the asbestos industry in Sverdlovsk oblast. Synposis)," Ural'skiy sovremennik, No. 13, 1948, p. 175-87

SO: U-3264, 10 April 53, (Letopis 'Zhurnal 'nykh Statey, No. 4, 1949).

BORISOV, Yu.S., kand. tekhn. nauk; KORNEV, V.K., inzh.; PUSHKASH, I.I., inzh.; YANTSEN, B.D., inzh.; PAREN'KOV, A.Ye.; ZAVARNITSYN, D.A.

Using liquid fuel in bl~st furnaces of the Nizhniy Tagil metallurgical combine. Stal' 25 no.6:497-503 Je '65. (MIRA 18:6)

1. Nizhne-Tagil'skiy metallurgicheskiy kombinat i Ural'skiy nauchno-issledovatel'skiy institut chernykh metallov.

KICHIGIN, A.F., inzh.; KAZAK, Yu.N., inzh.; YANTSEN, I.A., inzh.;
SALTANOV, A.D., inzh.

Mechanical hydraulic mining machine. Izv. vys. ucheb. zav.; gor. zhur. no.12:72-75 '61. (MIRA 16:7)

1. Karagandinskiy politekhnicheskiy institut. Rekomendovana kafedroy gornykh mashin i rudnichnogo transporta.
(Mining machinery)

YANTSEN, M. T.

USSR/Medicine - Infectious Diseases Nov 51

"Effectiveness of Penicillin Therapy in Jaundice-Free Leptospirosis," A. A. Varfolomeyeva, M. T. Yantsen, E. Ye. Estrina, Moscow Oblast Inst of Epidemiol, Microbiol, and Infectious Diseases imeni I. I. Mechnikov; Sychevsk Rayon Hosp.

"Sov Med" Vol XV, No 11, pp 29-32

Penicillin was found to be very effective in the therapy of jaundice-free leptospirosis.

204T57

TIKHOMIROVA, M.F., inzh.; NAUMENKO, A.S., inzh.; YANTSEN, T.G., inzh.

Mixed lime-ash cement on a base of ash from electric stations in the Middle Ural Economic Region. Sbor. trud. Sverd. nauch.-issl. inst. po stroi. no.10:34-50 '63.

(MIRA 17:10)

YANTSEN, V.I., gornyy inzh.:

Blocking mine shaft gates by means of the brakes for hoisting machine operations. Gor. zhur. no. 12:75 D '65. (MIRA 18:12)

1. Achisayskiy polimetallicheskiy kombinat.

KOCHUGOVA, A.P., inzh.; YANTSEN, V.I., inzh.

Mine shaft signaling with signal transmissions from a cage. Gor. zhur. no.7:70-71 Jl '63. (MIRA 16:8)

1. Leninogorskiy polimetallicheskiy kombinat.

KLIMENOK, B.V.; KONDRAT'YEV, A.A.; Prinimali uchastiye: BASYROVA, Z.V.; YELEPINA, V.I.; ZEMLYANSKIY, A.T.; PIHKIS, L.N.; STARTSEVA, T.K.; YANTSEN, Ya.Ya.

Counter-current horizontal extractor for processing hard materials. Izv. vys. ucheb. zav.; neft' i gaz 4 no.2:75-77 '61. (MIRA 15:5)

(Paraffins) (Diesel fuels)

AUTHORS: Pyatkin, S.F., Yantsev, P.G.

SOV/72-58-10-9/18

TITLE: Contactless Method of Automatic Stabilization of the Temperature of Electric Furnaces (Beskontaktnyy sposob avtomaticheskoy stabilizatsii temperatury elektropechey)

PERIODICAL: Steklo i keramika, 1958, Nr 10, pp. 35 - 36 (USSR)

ABSTRACT: In the industrial manufacture of endless glass fibers the regulation of temperature of the platinum-rhodium melting-pots is performed by means of an electronic control-millivoltmeter of the ЗЕПМ -47 type. The millivoltmeter controls the autotransformer of the АОБК 10/0,5 type by control mechanism PR -1. The electric furnace in which the glass-melting pot is installed shows constant heat balance at stable temperature conditions. Any change of temperature of the pot is accompanied by a change of the power consumption. Thus, also constant temperature of the electric furnace can be obtained by stabilization of the supply voltage which is supplied to the terminals. NIIsteklovolokna, together with kafedra elektrooborudovaniya Moskovskogo aviatsionnogo instituta imeni Ordzhonikidze (Chair of Electric Equipment of the Moscow

Card 1/2

Contactless Method of Automatic Stabilization of the Temperature of Electric Furnaces SOV/72-58-10-9/18

Institute of Aviation imeni Ordzhonikidze) have developed and tested a contactless scheme of automatic stabilization of the supply voltage of the furnace (Fig 1). In figure 2 the time course of voltage at the terminals is given. Autotransformers of the LATR-1 type with electric drive and an automatic regulator of the EPV-01 or EPD-12 type, respectively, (Fig 3) can be used for the purpose of stabilizing the voltage. There are 3 figures.

Card 2/2

YANTSEVICH, A.F.

SENYUSHKIN, A. E.; YANTSEVICH, A. F.

Tomatoes

Mastering the method of cultivating tomatoes without seedlings in territory of a Krasnodar canning combine; Sad i og. no. 2, 1952.

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

YANTSEVICH, A.F.

Preparing the supply area of the Mikoian Canning Combine for the growing season. Kons. i ov. prom. 13 no.2:21-22 F '58. (MIRA 11:2)

1. Konservnyy kombinat imeni Mikoyana.
(Canning industry)

YANTSEVICH, A.F.

Experience in the storing of carrots in the climate of the canning plant at Krymsk. Kons. i ov. prom. 13 no.8:35-37 Ag '58. (MIRA 11:9)

1. Konservnyy kombinat v Krymske.
(Kuban--Carrots--Storage)

YANTSEVICH, A.F.

Raising seedlings under transparent plastic cover. Kons. i ov. prom. 13 no.11:28-29 N '58. (MIRA 11:11)

1. Konservnyy kombinat v Krymske.
(Vegetable gardening) (Vinidur)

YANTSEVICH, A.F.

Practices of F.I. Lazutko's crew in producing high yields of early tomatoes. Kons. i ov. prom. 14 no.5:18-19 My '59. (MIRA 12:6)

1.Konservnyy kombinat v Krymske.
(Krymsk--Tomatoes)

YANTSEVICH, A.F.

Rannii Krymskii, a local tomato variety. Kons.i ov.prom. 15 no.9:32-33 S '60. (MIRA 13:9)

1. Konservnyy kombinat v Krymske.
(Crimea--Tomatoes--Varieties)

YANTSEVICH,V.B., inzhener

Simultaneous testing of several samples of transformer oil in one oil testing cell. Elek.sta. 26 no.7:56 Jl'55. (MIRA 8:10)
(Insulating oils--Testing)

YANTSOV, A. I.

Specific Gravity

Studying "specific gravity" in the 6th grade. Fiz.v shkole, no. 4, 1952.

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

YANTSOV, A.I.; TSVETKOV, I.L., redaktor; GARNEK, V.I., tekhnicheskiy redaktor.

[Teaching physics in classes 6 and 7 of schools for young workers.] Prepodavanie fiziki v VI i VII klassakh shkoly rabochei molodezhi. Moskva, Izd-vo Akademii pedagogicheskikh nauk RSFSR, 1954. 209 p. (MLRA 8:3)
(Physics--Study and teaching)

YANTSOV, A.I., otv.red.

[Materials of the Novosibirsk scientific conference of the Academy of Pedagogical Sciences on technical education, May 13-16, 1957] Materialy Novosibirskoi nauchnoi konferentsii Akademii pedagogicheskikh nauk po voprosam politekhnicheskogo obucheniia, 13-16 maia 1957 goda. Moskva, 1958. 430 p. (MIRA 12:10)

1. Akademiya pedagogicheskikh nauk RSFSR, Moscow.
(Technical education--Congresses)

SHKREBEL', M.Ya.. Prinimali uchastiye: BLAGOVESHCHENSKAYA, K.A.; DZYUBENKO, G.F.; FRAGAYLOVA, V.I.; ZALESSKAYA, L.O.; KOTSERUBA, L.P.; KOVBASENKO, L.A.; LYAUDANSKAYA, B.Ye.; MILOVZOROV, P.Z. [deceased]; NEZHURBEDA, M.P.; SNITKO, K.I.; YANTSOVA, A.V.. KRESHCHENSKIY, Ye.S., tekhn.red.

[Economy of Kiev Province; a statistical manual] Narodnoe khoziaistvo Kievskoi oblasti; statisticheskii sbornik. Kiev, Gos. stat.izd-vo, 1959. 255 p. (MIRA 13:3)

1. Kiev (Province) Statisticheskoye upravleniye. 2. Nachal'nik statisticheskogo upravleniya Kiyevskoy oblasti (for Shkrebel').
(Kiev Province--Statistics)

11(0) SOV/93-58-11-6/15

AUTHOR: Aslanov, S.A. and Yanttsen, B.F.

TITLE: About Planning the Rates of Drilling (O planirovanii skorostey v burenii)

PERIODICAL: Neftyanoye khozyaystvo, 1958, Nr 11, pp 30-33 (USSR)

ABSTRACT: Planned commercial drilling rates are primarily based on statistical analysis and inadequately relate to planned increases in labor productivity. This method is faulty and it is suggested that the planned commercial drilling rate be based on labor productivity and standard drilling rate. The new method requires that the planned commercial drilling rate satisfy two conditions expressed by the following formulas: 1) $Y_{pl} = \frac{R_{pl}N}{12}$ and 2) $Y_{pl} = \frac{Y_n}{K_p}$, where Y_{pl} is the planned commercial drilling rate,

R_{pl} - labor productivity or planned output per driller per annum, N - planned number of workers per rig-month, 12 - number of months per year, Y_n - conventional drilling rate based on prevailing technical standards, and K_p - the coefficient of excess in conventional over planned drilling rate. A correspondence of the results from the two equations will signify that the ratio of commercial drilling rate to labor productivity is maintained.

Card 1/2

About Planning the Rates of Drilling SOV/93-58-11-6/15

A correspondence in the planned commercial drilling rates will signify that the existing drilling rate standards are suitable to the level of labor productivity at the given excess in conventional over planned drilling rate, but noncorrespondence will signify that the drilling rate is below the conventional standards. The practical application of this method is demonstrated by a specific example based on initial data (Table). There is 1 table.

Card 2/2

YANITSEN, Boris Fedorovich; VAYNER, I.Ya., red.; LATUKHINA, Ye.I., ved. red.; VOROB'YEVA, L.V., tekhn. red.

[Planning and analyzing basic technical and economic drilling indices] Planirovanie i analiz osnovnykh tekhniko-ekonomicheskikh pokazatelei bureniia. Moskva, Gostoptekhizdat, 1962. 74 p. (MIRA 15:7)
(Oil well drilling)

YANTUSH, D. A.

Yantush, D.A., Question on the utilization of photometric properties of aerial surveys ∅ for determining the depths of shallow seas, Zh. nauchn. i prikl. fotogr. i. kinematogr. (Journal of Scientific and Applied Photography and ∅/ Cinemato/graphy) Vol 2, No 6, 1957, p 450-458; (RZhGeofiz 1/59-271)

YANTUSH, D. A.

Yantush, D. A., Method of photometric processing of aerial photographs in determining the depths of reservoirs, Probl. Arktiki (Problems of the Arctic), No 5, 1958, p 99-110; (RZhGeofiz 8/59-7744)

YANUKOVICH, V.A.

Reflex epilepsy. Zdrav. Bel. 7 no.9:71 S '61. (MIRA 14:10)

1. Iz Starobinskoy rayonnoy bol'nitsy (glavnyy vrach P.A.Get'man).
(EPILEPSY)

APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R001962120006-4"

YANULENIS, I. A.

YANULENIS, I. A. -- "Experiment in the Roentgenotherapy of Postpuerperal Mastitis." Moscow, 1956. (Dissertation for the Degree of Candidate in Medical Sciences).

So.: Knizhnaya Litopis', No. 7, 1956.

YANULEVICH, A.I.

Seminar of the workers of knit goods factories. Tekst.prom. 25 no.2:87-88 F '65. (MIRA 18:4)

1. Nachal'nik otdela truda i zarabotnoy platy Chernovitskoy trikotazhnoy fabriki No.1.

YANULIS, A. P.

SOV/77-4-2-15/18

23(4) 23 (5)

AUTHOR: Lyalikov, K.S.

TITLE: Successes of Soviet Electrophotography (Uspekhi sovetskoy elektrofotografii) A Scientific and Technical Conference on Questions of Electrography (Nauchno-tekhnicheskaya konferentsiya po voprosam elektrografii)

PERIODICAL: Zhurnal nauchnoy i prikladnoy fotografii i kinematografii, 1959, Vol 4, Nr 2, pp 149-152 (USSR)

ABSTRACT:
This is an account of a scientific and technical con-
ference on electrography, the first to be held in the
Soviet Union and evidently in the world. It was organ-
ized in Vil'nyus on December 16-19, 1958 by the Soviet
narodnogo khozyaystva Litovskoy SSR (Council for
National Economy of the Lithuanian SSR), the Gosudarst-
vennyy nauchno-tekhnicheskiy komitet Soveta ministrov
Litovskoy SSR (State Scientific and Technical Committee
of the Council of Ministers of the Lithuanian SSR) and
the Nauchno-issledovatel'skiy institut elektrografii
(Scientific Research Institute of Electrography).
The conference, attended by over 300 scientific wor-
kers, was opened by the Deputy Chairman of the Council
for National Economy of the Lithuanian SSR P.A.
Kul'veta, after which the director of the Institute
for Electrography, I.I.Zhilevich, reviewed the state
and prospects for development of electrography in the
USSR. He stated that research in this field should be
carried out along the following lines: a) a search
for new photo-active materials with high dark resitance;
b) physical research into the internal photoeffect;
c) development of photosemiconductor layers; d) de-
velopment of the theory of the electrophotographic
process. K.S. Lyalikov (speaking also for O.G. Popova)
gave a report in which he suggested determining the
light sensitivity of electrophotographic layers in GOST
units. N.Z. Plavina (speaking also for I.I.Zhilevich,
L.I.Kyun'ko, V.K.Markevich, P.I. Kalinauskens and O.N.
Suveyzdis) reported on some research on the sensitization
of a semiconductor in electrophotographic layers. V.M.
Fridkin gave a report on highly sensitive electrophoto-
graphic layers and an electrophotocopying device, and
reviewed the formation process of the latent electro-
photographic image on the basis of the zonal theory.
He also described the design of an electrosensitometer
for determining sensitivity by the relaxation period of
a charge on the surface of the layer, and the circuit
of an electrophotographic copying device. Anfilov
finished describing the latter and then spoke on the
mechanics and kinetics of the development of the latent
electrophotographic image in liquid developers.

Card 3/10

Successes of Soviet Electrophotography; A Scientific and Technical Conference on Questions of Electrography

K.N. Vinogradov described some of the features of the cascade and liquid methods of electrophotographic development. Yu.Ye. Karpeshko devoted his report to the criterion of light sensitivity of the elctrophotographic process. After the reports, a discussion took place on methods of determining the light sensitivity of electrophotographic layers. A.N. Chernyshev spoke on the prospects of developing polygraphic processes using electric and magnetic forces. O.V. Gromov (speaking also for I.I. Zhilevich, A.A. Sukhiy, V.A. Gordeyeva, A.S. Pauzha and Yu. I. Kevalaytis) reported on the development of elctrophotographic reproducing equipment. A.S. Pauzha (speaking also for I.I. Zhilevich, A.S. Borisovich, N.M. Gal'vidiks and M.I.Rautkauskas) reported on the use of electrographic methods in recording oscillographs and other recording instruments.

V.P. Yurchenko (speaking also for L.N.Salin) spoke on the possibility of electrophotographically recording images from electron-beam tubes. L.S. Korol' (speaking also for M.K. Markevich, T.I. Kozlovskaya, B.I. Kalinauskene, M.K. Naynens, I.I. Zhilevich and E.A. Montrimas) gave a detailed description of laboratory and machine methods of producing photosemiconductor papers (zinc oxide was used). A.A. Sukhiy (speaking also for I.I. Zhilevich, O.V. Gromov, V.A. Gordeyev , E.V. Fedotov and T.N. Ger) described a laboratory and industrial machine for producing photosemiconductor papers. T.A. Shishkina (speaking also for Ya.A. Ckman) reported on a method of examining electrophotographic materials using an a/c bridge. S.I. Khotyanovich (speaking also for A.I. Gikens and I.S. Shilevkens) spoke on developing materials for electrophotography and fermmagnitography, including developers giving a "reverse" image. B.I. Tikhonov reviewed methods of measuring the electrostatic potentials of electrophotographic layers, stressing that the oscillating electrode should not be placed above a layer with varying potential as this causes self-discharge. E.V. Krukovskis (speaking also for R.G.Gorevoy, A.V.Osipov and Ye. S. Kheyfets) spoke on the practice of producing velveteen papers in an electrostatic field, and showed samples produced by the Grigishskaya paper factory. Ye.L. Nemirovskiy then gave a historical review of the development of electrographic methods in which he paid tribute to the work of the Scientific Research Institute of Electrography in Vil'nyus and the Institut poligraficheskogo mashinostroyeniya (Moskva)-(Polygraphic Machine-Building Institute (Moscow)). Debates were then held on methods of measuring the potential of charged electrophotographic layers; the vibration pick-up most-used was shown in B.I. Tikhonov's report to be not always accurate. S.G.Grenishin stated that the bad influence of the oscillating electrode can be eliminated if the electrode probe above its surface is fixed and the pick-up is connected to it by a shielded cable. In the debate on Ye.L. Nemirovskiy's report it was stated that the research of Academicians A.N. Terenin and Ye.K. Putseyko should be considered as the basis of all work on electrophotographic papers with ZnO, as they were the first to show the possibility of optical sensitization of the internal photoeffect in ZnO. M.M.Gol'vidis then gave a report on the depositing of charges by a corona discharge. A.I. Kaminskas and A.P. Yanulis reviewed some of the results of the use of electrographic methods in radiography. L.I. Nyun'ko (speaking also for I.I. Zhilevich, I.Z. Plavin, Yu.K. Vishchakas and Yu.A.Zibuts) reported on relaxation processes in semiconductor layers, using a vibration electrometer. Yu.K.Vishakas gave a report on research on some physical properties of the polycrystalline layers of selenious cadmium. K.P. Mikalkyavichyus spoke on some of the photoelectric properties of Sb_2S_3 and Sb_2Se_3: the absorption maximum of the latter is about 900 mμ. S.M. Heyman reported on methods of obtaining selenium light-sensitive layers, including sublimation and thermal treatment; it was also found that the sensitivity of the layers increased after storage for 1.5 to 2 months at room temperature. P.M. Podvigalkin (speaking also for S.G.Grenishin) spoke on research into the electrical properties of electrophotographic layers of amorphous selenium and powdered zinc oxide. N.K. Shiktorov (speaking also for A.S. Tauraytis) discussed the production of selenium layers and some of their properties. Finally the following reports on ferromagnetography were delivered: 1) B.Ya. Kaznacheyev, V.M.Zhogina, "Electrodeposition of Magneto-Hard Alloys with Given Magnetic Characteristics" 2) M.T.Arutyunov, "Visualization of Magnetic Oscillograms by the Ferrographic Method" 3) V.S.Patrunov, "Ferrographic Recording of Facsimile Images" 4) I.I.Zhilevich, I.I. Gikis, B. Ye. Buchek, I.I. Kaynise, A.K.Kirhis, "Mock Experiments in Non-Pressure Ferromagnetic Printing". There was also an exhibition showing the work of the Electrographic Institute. The most important conclusion of the conference was that a solid approach had been made to the possibility of wide technical use of the methods of electrography. It was considered that although work in this field actually started only in 1955-56 it has covered as much ground as the USA in 10 years. While admitting that it was easier to reproduce results already achieved than to be the first to arrive at them, the conference observed that the Americans took good care that no important information appeared in the literature available.

Card 10/10

YANULOV, K.P.

Reproduction of the grenadier Macrurus berglax Lacepede. Zool.zhur. 41 no.8:1259-1262 Ag '62. (MIRA 15:9)

1. Polar Research Institute of Fishery Projecting and Oceanography, Murmansk.

(Atlantic Ocean--Greanadiers (Fish))

PA 29/49T80

YANULOV, K. P.

1948

USSR/Minerals
Sillimanite
Mineral Deposits

"Sillimanite From the Ensk Pegmatite Deposits," K. P. Yanulov, M. K. Yanulova, 5 pp

"Zapiski v-s Mineral Obshch" No 4

Describes various forms of sillimanite found in subject region. Notes that it is always found with or close to muscovite deposits. Gives percentage chemical and mineral composition. Mineral has a high Al_2O_3 content and is rare in the USSR. Claims it can be considered a postpegmatite mineral from standpoint of its formation characteristics.

29/49T80

1ST AND 2ND ORDERS

PROCESSES AND PROPERTIES INDEX

Limits of the laws of regular intergrowths. K. P. Yanulov. *Doklady Akad. Nauk S.S.S.R.* 62, 517-11 (1948).—According to Royer (C.A. 24, 3080), regular intergrowths can only occur if the parameters of the faces on which the intergrowth takes place do not differ more than 15-17%. Y. studied systematically the intergrowths of K and NH_4 halides on (001) of mica (muscovite and biotite). NH_4Cl and NH_4Br formed such intergrowths with difficulty since they form dendrites. The similarity of the (111) faces of the salts with (001) of mica dets. the intergrowth; the rays of the percussion figure of mica are parallel to (011) of the halides. By enumeration of oriented and unoriented crystals (at least 200 for each series), a diagram was plotted which shows the no. of oriented intergrowths as a function of the percentage difference of the parameters of both kinds of crystal lattices. For NH_4I this difference is only 0.39%, for KCl about 17%; in the first case the regular intergrowths are nearly 100%, in the latter case nearly 0. For the other salts the no. of oriented intergrowths was intermediate, the function being approx. linear. W. Eitel

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

CA YAMULOV, K.P.

Isomorphic intergrowth of sodium nitrate on calcite. K. P. Yamulov. (Kabinet Kristallogr. Leningrad Gosudarst. Ordena Lenina Univ.). *Zapiski Vsesoyuz. Mineral. Obshchestva* (Mém. soc. russe minéral.) **77**, 104-5(1948). —$NaNO_3$ and calcite are not isomorphic; the parallel orientation of $NaNO_3$ rhombohedrons on a cleavage rhombohedron of calcite is brought about by an adsorption of nuclei of $NaNO_3$ from the supersatd. soln. which are attracted by the crystal structure of the calcite. If the calcite crystal is continuously moved, the probability of such an incidental orientation effect is about zero, and no intergrowth is observed. The application of calcite as seed crystals for the crystn. of $NaNO_3$ monocrystals is ruled by addnl. conditions which make the process complicated and impracticable. In its mechanism the process is similar to epitaxy, and it is more suitable to classify it as an epitaxy growth of $NaNO_3$ on calcite.

W. Eitel

CA YANULOV, K. P.

Sillimanite from pegmatite veins of the Ena occurrence.
K. P. Yanulov and M. K. Yanulova. *Zapiski Vsesoyuz.*
Mineral. Obshchestva (Mém. soc. russe minéral.) 77,
280-4(1948).—Sillimanite is rather wide-spread in peg-
matites of Northern Karelia, especially in Ena, in the
following paragenetic assocns.: (1) pegmatites of kyanite-
garnet-biotite gneisses; (2) quartz-kyanite agglomerates
("schlieren"); (3) sillimanite veins, nearly monominer-
alic; (4) in oligoclase pegmatites, with muscovite, garnet,
apatite, tourmaline, etc. In (2), the regular inter-
growths of sillimanite with kyanite are particularly typi-
cal, with the (001) directions in common. These inter-
growths are in reality paramorphs, kyanite being changed
to sillimanite. The agreement of the crystallographic
orientation in *c* is brought about by the structural agree-
ment of the [AlO_6] chains. The chem. analysis shows a
slight excess of SiO_2 over the theoretical ratio Al_2O_3:-
SiO_2 = 1:1. Spectral analysis showed V, Na, K, Sr in
the sillimanite. The optical properties are characterized
by lower *n* than that given by Larsen; γ = 1.64 to
1.66; α = 1.630 to 1.645; d. 3.080 (at 4°). The regular
intergrowth of sillimanite with muscovite is particularly
interesting which is observed as 12-rayed stars, the rays of
which correspond to the rays of the percussions and
pressure figures of the mica, in about equal frequency.
An attempt to explain these intergrowths by structural
analogies shows an approx. agreement of the parameters
in muscovite [010] (5.18 A.) with sillimanite [001]
(5.7 A.), and muscovite [100] (18.01 A.) with sillimanite
[001] (17.1 A.). The intergrowths bring about a typical
asterism phenomenon like that with inclusions of hema-
tite, rutile, etc. in mica. W. Eitel

YANULOV, K.P.

"Principles of crystallography." O.M.Anshelos. Reviewed by K.P.IAnulov. Vest.Len.un.9 no.1:220-221 Ja '54.(MLRA 9:7) (Crystallography) (Ansheles, Osip Markovich)

TATARSKIY, V.B.; FRANK-KAMENETSKIY, V.A.; BURAKOVA, T.N.; NARDOV, V.V.; PETROV, T.G.; KONDRAT'YEVA, V.V.; KAMENTSEV, I.Ye.; CHERNYSHEVA, V.F.; ALEKSEYEVA, N.P.; ARTSYBASHEVA, T.F.; BARANOVSKAYA, N.I.; BUSSEN, I.V.; VEREMMETSKO, I.A.; GNEVUSHEV, M.A.; GOYKO, Ye.A.; KOMKOV, A.I.; KOTOVICH, V.A.; LITVINSKAYA, G.P.; MIKHEYEVA, I.V.; MOKIYEVSKIY, V.A.; PETROVA, L.V.; POPOV, G.M.; SAFRONOVA, G.P.; SOBOLEVA, V.V.; STULOV, N.N.; TUGARINOVA, V.G.; SHAFRANOVSKIY, I.I.; SHTERNBERG, A.A.; YANULOV, K.P.

O.M. Anshelee; obituary. Vest. LGU 12 no.18:152-154 '57. (MIRA 11:3)
(Anshelee, Osip Markovich, 1885-1957)

YANULOV, K.P.

Isomorphism and epitaxy. Izv.Otd.est.nauk AN Tadzh.SSR no.2:41-51 '58. (MIRA 13:4)

1. Institut geologii AN Tadzhikskoy SSR.
(Crystallization)

YANULOV, K.P.

The scope of the concept of isomorphism. Trudy AN Tadzh.SSR 104 no.1:139-147 '59. (MIRA 15:4)

1. Institut geologii AN Tadzhikskoy SSR.
(Isomorphism)

BARATOV, R.B.; YANULOV, K.P.

"Magmatism and postmagmatic processes in western Uzbekistan" by I.Kh. Khamrabaev. Reviewed by R.B. Baratov, K.P. IAnulov. Izv. Otd. est. nauk AN Tadzh. SSR no.3:141-143 '59. (MIRA 15:5)
(Uzbekistan—Petrology)
(Khamrabaev, I.Kh.)

YANULOV, K.P.; CHULKOVA, I.V.

Oriented pseudomorphoses of rutile after ilmenite. Dokl. AN SSSR 140 no.1:215-217 S-O '61. (MIRA 14:9)

1. Institut geologii Komi filiala AN SSSR. Predstavleno akademikom N.V.Belovym.

(Rutile) (Ilmenite) (Metasomatism)

YANULOV, K.P.; CHULKOVA, I.V.

Leucoxene of Devonian sandstones in the southern Timan Ridge. Trudy Inst.geol.Komi fil. AN SSSR no.3:157-169 '62. (MIRA 16:9)
(Timan Ridge--Leucoxene)

YANULOV, K.P.

Urolithiasis in the sea bass (Sebastes marinus L. and sebastes mentella Travin). Dokl. AN SSSR 144 no.5:1196-1199 Je '62. (MIRA 15:6)

1. Polyarnyy nauchno-issledovatel'skiy i proyektnyy institut morskogo rybnogo khozyaystva i okeanografii imeni M.N.Knipovicha. Predstavleno akademikom Ye.N.Pavlovskim.
(SEA BASS--ANATOMY) (CALCULI, URINARY)

YANULOVA, M. K.

1948

USSR/Minerals
Sillimanite
Mineral Deposits

"Sillimanite From the Ensk Pegmatite Deposits," K. P. Yanulov, M. K. Yanulova, 5 pp

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PA 29/49T80

CA YANULOVA, M.K.

Sillimanite from pegmatite veins of the Ena occurrence
K. P. Yanulov and M. K. Yanulova. *Zapiski Vsesoyuz. Mineral. Obshchestva* (Mém. soc. russe minéral.) 77, 280-4(1948).—Sillimanite is rather wide-spread in pegmatites of Northern Karelia, especially in Ena, in the following paragenetic assocns.: (1) pegmatites of kyanite-garnet-biotite gneisses; (2) quartz-kyanite agglomerates ("schlieren"); (3) sillimanite veins, nearly monomineralic; (4) in oligoclase pegmatites, with muscovite, garnet, apatite, tourmaline, etc. In (2), the regular intergrowths of sillimanite with kyanite are particularly typical, with the (001) directions in common. These intergrowths are in reality paramorphs, kyanite being changed to sillimanite. The agreement of the crystallographic orientation in c is brought about by the structural agreement of the [AlO_6] chains. The chem. analysis shows a slight excess of SiO_2 over the theoretical ratio Al_2O_3:SiO_2 = 1:1. Spectral analysis showed V, Na, K, Sr in the sillimanite. The optical properties are characterized by lower n than that given by Larsen; γ = 1.64 to 1.66; α = 1.639 to 1.645; d. 3.080 (at 1°). The regular intergrowth of sillimanite with muscovite is particularly interesting which is observed as 12-rayed stars, the rays of which correspond to the rays of the percussions and pressure figures of the mica, in about equal frequency. An attempt to explain these intergrowths by structural analogies shows an approx. agreement of the parameters in muscovite [010] (5.18 A.) with sillimanite [001] (5.7 A.), and muscovite [100] (18.04 A.) with sillimanite [001] (17.1 A.). The intergrowths bring about a typical asterism phenomenon like that with inclusions of hematite, rutile, etc. in mica. W. Eitel

YANULOVA, M.K.

Laumontite of the Karagaylinskoye deposits in Kazakhstan. Zap. Vses.min.ob-va 85 no.3:424-428 '56. (MLRA 9:11)
(Kazakhstan--Lamontite)