S/022/59/012/05/05/009

AUTHOR: Arutynyan, F.R.

TITLE: Elastic Dispersion of Protons on Kernels

PERIODICAL: Izvestiya Akademii nauk Armyanskoy SSR. Seriya fiziko-matematicheskikh nauk, 1959, Vol. 12, No. 5, pp. 77-90

TEXT: The paper contains a detailed representation of the results announced by the author in (Ref. 1) on the dispersion of protons in lead- and copper plates in a cloud chamber.

The author thanks Professor A.I. Alikhanyan and M.L. Ter-Mikayelyan for discussion.

There are 7 figures, 2 tables, and 15 references : 4 Soviet and 11 American.

ASSOCIATION: Fizicheskiy institut AN Armyanskoy SSR (Physical Institute AS Armenian SSR)

SUBMITTED: September 28, 1958

Card 1/1

ARUTYUNYAN, F.R

S/022/59/012/06/06/009

AUTHOR: Arutynyan, F. R.

TITLE: Consideration of the Geometry of the Instrument for the Investigation of Scattering

PERIODICAL: Izvestiya Akademii nauk Armyanskoy SSR. Seriya fiziko-matematicheskikh nauk, 1959, Vol. 12, No. 6, pp. 109-120

TEXT: For the investigation of scattering in most cases the projections of the scattering angles are measured. This restriction to plane conditions leads to the fact that the probabilities of the measuring of different scattering angles are different, it was referred to in (Ref. 3) for the first time. Let θ be the scattering angle, θ_φ its projection in the plane in which the investigation is carried out, and θ_ψ the projection in a plane which is vertical to the plane of investigation. The influence of the geometry of the instrument leads to the correction function $C(\theta_\varphi) = C_1(\theta_\varphi) \cdot C_2(\theta_\varphi)$. Here $C_1(\theta_\varphi)$ gives the probability that the scattering angle θ_φ is observed, if there are no restrictions in the plane which is vertical to the plane of investigation. Inversely $C_2(\theta_\varphi)$ is the correction function which is necessary, if the measuring is bounded only in the vertical plane by the geometry of the

Card 1/2

VB

S/022/59/012/06/06/009

Consideration of the Geometry of the Instrument for the Investigation of Scattering

instrument. On the base of a general instrument scheme the author separately calculates $C_1(\theta_\varphi)$ and $C_2(\theta_\varphi)$. For $C_1(\theta_\varphi)$ he obtains the expression

$$(4) \quad C_1(\theta_\varphi) = \frac{P(\theta_\varphi)}{P(0)}$$

where $P(\theta_\varphi)$ is given by a certain integral. For vertically incident particles the result from (Ref. 3) is obtained. The mentioned integral is explicitly calculated in some special cases. For $C_2(\theta_\varphi)$ the author obtains a complicated multiple integral which, however, is approximately constant, so that the probability of the recording of different angles can be considered as constant in this case.
There are 5 figures, and 4 references: 2 Soviet, 1 Italian and 1 English.

ASSOCIATION: Fizicheskiy institut Akademii nauk Armyanskoy SSR
(Physical Institute AS Armenian SSR)

SUBMITTED: November 28, 1958

V/B

Card 2/2

ARUTYUNYAN, F.R.; ASATIANI, T.L.; KRISHCHYAN, V.M.; SHAKHATUNYAN, R.O.

Scattering of μ-mesons in copper. Dokl.AN Arm.SSR 28 no.3: 117-119 '59. (MIRA 12:7)

1. Fizicheskiy institut AN ArmSSR. Predstavleno akademikom AN ArmSSR A.I.Alikhanyanom.
(Mesons--Scattering)

24(5)

AUTHORS: Alikhanyan, A. I., Arutyunyan, F. R. SOV/56-36-1-6/62

TITLE: The Scattering of μ-Mesons in Lead (Rasseyaniye μ-mezonov v svintse)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959, Vol 36, Nr 1, pp 32-40 (USSR)

ABSTRACT: In the introduction several investigations carried out of muon scattering in lead in various meson energies are discussed. For the effective scattering cross section in energies of 100 to 300 MeV a $4.10^{-27} cm^2$/nucleon was found (Refs 1-3). For the effective scattering cross section of anomalous scattering a value of $\sigma_{an} = (1.5 \pm 1.0).10^{-27} cm^2$/nucleon was measured in a depth of 60 m equivalent of water at muon momenta of 100 - 600 MeV/c in photoemulsions. This agrees with the results obtained by Alikhanov and Yeliseyev (Ref 7) at muon-momenta of 200 - 800 MeV/c. Alikhanyan and Kirillov-Ugryumov (Ref 8) investigated some muon scatterings (80 - 140 MeV/c) in thin copper plates. The present paper investigates experimental results of muon scattering at momenta of $(1.0 - 1.8).10^8$ eV/c in 7 mm thick lead plates in a cloud chamber. Investigations were carried out with

Card 1/4

cosmic muons in an altitude of 3,200 m above sea level on Mount Aragats by means of a magnetic mass spectrometer and two cloud chambers with many plates. A description of the experimental device and data may be found in references 8, 12, 13. Particle analysis was carried out in the mass spectrometer according to momentum and range. The former was calculated from the radius of curvature of the particle orbit in the magnetic field, the range was determined from the material layer through which the particles penetrated. For 812 particles the masses were determined at 150 - 360 m_e with the following coordination: $m < 240\ m_e \rightarrow \mu$ -mesons; $m > 250\ m_e \rightarrow \pi$ -mesons. Average values: muons with 209 m_e + pions with 278 m_e. In the muon group there should be not more than 2 % pions and in the pion group not more than 12 % muons. Measurement of angles was carried out on the basis of photographs by means of a special protractor. Momentum measurement in the scattering point, if particle mass was known, was possible by two methods: 1) from the remaining range according to scattering, 2) from the momentum measured in the magnetic field. The lead plates in which scattering was investigated had impurities, the effect of which upon

the scattering angle and on the distribution function was determined. The effect produced by the geometry of the device upon the measurements was taken into account to the widest possible extent. 2337 muon scatterings and 818 pion scatterings were investigated in the lead plates with a total range of muons with $p = (1.0 - 1.8).10^8$ eV/c in Pb of 19 m and for pions at $p = (1.2 - 2.0).10^8$ eV/c of 6.7 m. Figure 2 shows the differential distribution of scattering angle projections for muons, for which purpose the measuring points and, for reasons of comparison, the curves of multiple Coulomb (Kulon) scattering according to Ter-Mikayelyan (Ref 11) are given. Agreement is good. Figure 3 shows the same for pions. The number of muon scatterings in dependence on the angle is given in a table together with the corresponding theoretical values. Agreement is good. The authors finally thank M. L. Ter-Mikayelyan for his discussions and help, B. A. Dolgoshein and B. I. Luchkov for assisting in evaluating

The Scattering of μ-Mesons in Lead SOV/56-36-1-6/62

measuring results, M. I. Dayon and V. G. Kirillov-Ugryumov for discussions. There are 3 figures, 1 table, and 18 references, 7 of which are Soviet.

ASSOCIATION: Fizicheskiy institut Akademii nauk Armyanskoy SSR (Physics Institute of the Academy of Sciences, Armyanskaya SSR)

SUBMITTED: July 14, 1958

Card 4/4

21(1), 21(7)

AUTHOR: Arutyunyan, F. R.

SOV/56-36-4-3/70

TITLE: Determination of the Mass of Charged Particles According to Scattering and Residual Range in Multi-Plate Cloud Chambers (Opredeleniye massy zaryazhennoy chastitsy po rasseyaniyu i ostatochnomu probegu v mnogoplastinnykh kamerakh Vil'sona)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959, Vol 36, Nr 4, pp 985-991 (USSR)

ABSTRACT: In continuation of an earlier paper (Ref 2) the present paper gives further measuring results of scattering angles and ranges of protons, muons, and pions for the purpose of verifying the method suggested by Annis et al. (Ref 1). Instead of operating with the scattering angles θ, the quantity η is used, where $\eta = \theta R^{\alpha}$ (R = residual range of the particle, $\alpha = 0.55$, a constant for all elements). The theoretical distribution curves coincide with the angular distribution curves in the case of corresponding normalization. According to Ter-Mikayelyan (Ref 3) it holds for the mean and the root-mean-square η-value that $\langle\eta\rangle = A_1(m_e/M)^{1-\alpha}$ and $\langle\eta^2\rangle^{1/2} = A_2(m_e/m)^{1-\alpha}$ respectively; A_1

and A_2 depend on the substance and thickness of the scattering plates and on the angular distribution function of multiple scattering. The A-values calculated for lead plates of 7 mm thickness are shown by table 1. p-, π-, and μ-scattering was already measured on 7 and 4 mm thick lead plates and 5 and 2 mm thick copper plates (Refs 5,6), and additional μ-scattering measurements in copper plates (4 mm) were carried out by Kirillov-Ugryumov (Ref 7). The author investigated in Pb 1500 protons, 465μ- and 169 π-mesons, and in lead 145 protons, 546μ-, and 103 π-mesons. The A-values calculated on the basis of measuring results partly show considerable deviations from the values given by table 1. Consideration of nuclear dimensions also influences the A-values. Thus, for 7 mm thick lead plates a calculation with point nucleus results in: $A_1 = 665$ and $A_2 = 849$, consideration of the finite nuclear dimensions leads to $A_1 = 593$ and $A_2 = 766$. Table 3 contains the mass values for muons, pions, and protons calculated by means of the measuring data. They were calculated partly according to the $\langle \eta^2 \rangle^{1/2}$ and

partly according to the $\langle\eta\rangle$-formula, either by using the scattering curves for finitely large nuclei, and partly for point nuclei; calculations were carried out both for scattering in lead and in copper plates. The values obtained partly show good agreement with real values. In the following the author investigates the distribution of a quantity ξ for the various kinds of particles and the curve $G_n(\xi,\varrho)$ first for low n-values (3÷6), and then for high values (20÷25 and 40÷50). It holds that

$$\xi = \left(\frac{n}{n-1}\right)^{1/2}\eta_2 = \left(\frac{1}{n-1}\sum_{i=1}^{n}\eta_i^2\right)^{1/2};$$

$$G_n(\xi,\varrho)d\xi = \left(\frac{n-1}{2\varrho^2}\right)^{1/2} F_n\left[\left(\frac{n-1}{2\varrho^2}\right)^{1/2}\xi\right]d\xi \qquad \varrho = A_2(m_e/m)^{1-\alpha};$$

$$F_n(\chi)d\chi = (2/\Gamma(n/2))\chi^{n-1}\exp(-\chi^2)d\chi$$

(n = number of scattering acts). The author finally thanks Professor A. I. Alikhanyan, M. L. Ter-Mikayelyan, and

Card 3/4

Determination of the Mass of Charged Particles According to Scattering and Residual Range in Multi-Plate Cloud Chambers

M. I. Dayon for their interest in this work and for discussing results. There are 2 figures, 4 tables, and 8 references, 4 of which are Soviet.

ASSOCIATION: Fizicheskiy institut Akademii nauk Armyanskoy SSR (Physics Institute of the Academy of Sciences, Armyanskaya SSR)

SUBMITTED: August 15, 1958

S/089/61/010/003/008/021
B102/B205

212300

AUTHORS: Arutyunyan, F. R., Karabekov, I. P.

TITLE: Production of monoenergetic beams of accelerated particles

PERIODICAL: Atomnaya energiya, v. 10, no. 3, 1961, 259-260

TEXT: The production of high-energy monochromatic beams of particles meets with technical difficulties when using both stabilized electrostatic accelerators and cascade generators. The present paper describes a method of producing intense monochromatic pulsed particle beams (energy spread $\leq 10^{-4}$ for sufficiently large oscillations of the grid voltage). A high-voltage or a cascade transformer are used as power source. A sinusoidal voltage U of frequency f is applied to the acceleration gap. The particles are accelerated during the time $\Delta t = t_2 - t_1$ (Fig. 1a); the beam exhibits an energy spread of $\Delta E = e\left[U(t_2) - U(t_1)\right]$; the pulse-repetition frequency is equal to the grid frequency. In order to warrant a constant energy spread from one pulse to the other with a change of the amplitude or frequency of

Card 1/5

X

S/089/61/010/003/008/021
B102/B205

Production of ...

the supply voltage, it is necessary that the phase at which the particles are injected into the acceleration gap be chosen in such a way that the acceleration voltage remains constant. A gas-discharge phase discriminator at 50 cps in the angular interval of 20-70° makes it possible to keep the phase of the periodic voltage constant with an error of ±1.5'. Depending on the voltage amplitude at the input, that phase will be kept constant, by the discriminator, at which $u = U_m \cdot \sin\varphi_{discr} = \text{const}$. This leads to a maximum energy spread of $\Delta E/E = \pm 10^{-4}$ from pulse to pulse. A block diagram of the unit is shown in Fig. 2. The current coming from the high-voltage transformer (1) is conveyed to the three-electrode gun. The voltage applied to the modulating electrode of the gun may be alternating (at a phase shift by 180° relative to that of the anode voltage - cf. Fig. 1,г). As soon as the voltage applied to the acceleration gap has reached a certain value, the gas-discharge phase discriminator forms a pulse of duration τ, which opens the gun (Fig. 1,б). The capacity C connected in parallel to the acceleration gap has a lower bound according to $C \geq \tau/R_i \Delta U_{acc}/U_{acc}$, where $\Delta U_{acc}/U_{acc}$ is the voltage spread, and R_i is the internal resistance of the gun. The method suggested here makes it possible to obtain practically

Card 2/5

Production of ...

monoenergetic intense beams of particles, the beam current being limited only by the focusing properties of the electron gun. The energy to which the particles can be accelerated is limited only by the possibility of connecting a large number of transformers in cascade. A transformer of 100 kv effective voltage and 30 kva power, and an 0.01-μf capacitor are required for generating a 100-kev particle beam ($\Delta E/E \approx \pm 10^{-4}$; current 1 a; pulse duration: 10^{-7} sec; pulse-repetition frequency: 50 cps). The principal advantages of the unit described here are its low energy spread, its simple circuit, and the possibility of generating several beams with exactly given energy ratios with the help of the same supply system. There are 2 figures and 5 references: 4 Soviet-bloc and 1 non-Soviet-bloc.

SUBMITTED: August 24, 1960

Legend to Fig. 1: 1) Threshold voltage.
Legend to Fig. 2: 1) High-voltage transformer. 2) Phase discriminator. 3) Forming device. 4) Electron gun. 5) Displacement transformer. 6) Grid; A - anode, K - cathode, M - modulating electrode, C_M - capacitor, R_M - load resistance of the modulator.

Card 3/5

Production of ...

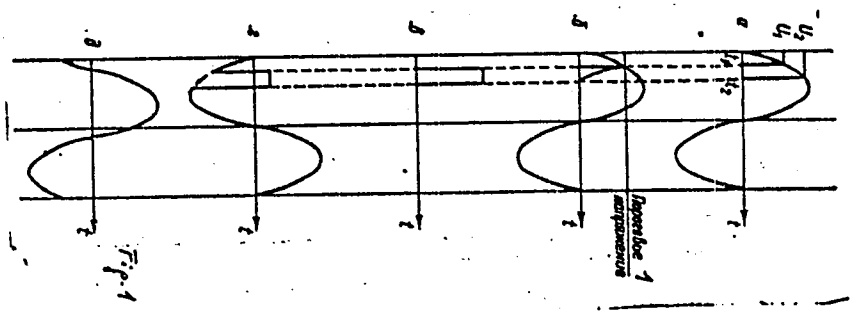


Fig. 1

Figs. 1 and 2

Card 4/5

Production of ...

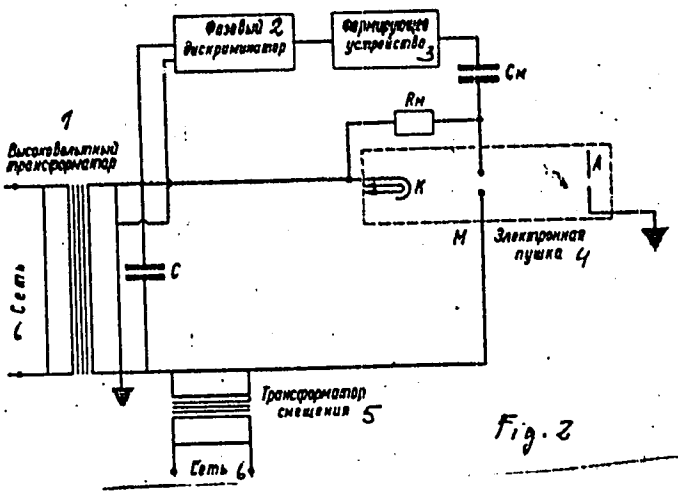


Fig. 2

Card 5/5

31.798
S/056/61/041/006/050/054
B109/B102

24.6800

AUTHORS: Alikhanyan, A. I., Arutyunyan, F. R., Ispiryan, K. A., Ter-Mikayelyan, M. L.

TITLE: A way of detecting high-energy charged particles

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 41, no. 6(12), 1961, 2002-2010

TEXT: The case is considered where a fast charged particle passes through a layer consisting of two different substances of thicknesses l_1 and l_2 and of electron densities N_1 and N_2, where $N_1 > N_2$. Then, the exciting particle can be detected by way of the resulting photon emission.

$$dm = \frac{4p^2(1+\alpha)}{137\pi l_1}\sum_{r=1}^{r_{max}}\frac{d\omega}{r^2\omega^{3/2}}\frac{\left[1-\frac{1}{4}(E_{1n}/E)^2\omega/r-\omega^{-2}\right]}{(1-p/\omega r)^2(1+p\alpha/\omega r)^2}\times$$
$$\times\sin^2\left[\left(\frac{\alpha}{1+\alpha}\right)\pi r-\frac{\pi}{\omega}\left(\frac{\alpha p}{1+\alpha}\right)\right]. \qquad (1.3)$$

Card 1/2

31798
S/056/61/041/006/050/054
B109/B102

A way of detecting high-energy...

is obtained according to M. L. Ter-Mikayelyan (DAN SSSR, 134, 318, 1960; Izv. AN ArmSSR, 14, 103, 1961) for the number of photons emitted in the frequency interval $d\omega$ per cm of layer thickness. The frequency is measured in terms of $\omega_{1\min} = l_1 r_e c(N_1+\alpha N_2)$. r_e is the classical electron radius, c - light velocity, $\alpha = l_2/l_1$, $p = (N_1 - N_2)/(N_1 + \alpha N_2)$,

$E_{1\pi} = mc^2 l_1 [\pi^{-1} r_e (1+\alpha)(N_1+\alpha N_2)]^{1/2}$. (1.6), $r_{max} \approx l_1 [\pi^{-1} r_e (1+\alpha)(N_1+\alpha N_2)]^{1/2}$. (1.7).

The photon spectrum is between $\omega_{\min}$ and $\omega_{\max}$, where

$$\omega_{\substack{\min \\ \max}}^{(r)} = (r \mp \sqrt{r^2 - (E_{1p}/E)^2})/(E_{1p}^2/2E^2). \qquad (1.8)$$

and is shown in Fig. 1 for the case of $E = 2.2\ E_{1\pi}$, $\alpha = 1$. Fig. 2 shows the total number of quanta (ml_1) as dependent on the particle energy for $\alpha = 1$ and for different ω. For ω, values between 1.2 and 1.6 are shown to be the most convenient as regards the attainable number of quanta. The energy

Card 2/

31798
S/056/61/041/006/050/054
B109/B102

A way of detecting high-energy...

of the exciting particles can be inferred from the energy of emitted quanta. The particle energy range of $2 \cdot 10^2 \leq E/mc^2 \leq 5 \cdot 10^3$ is covered by using proportional or scintillation counters (determined lines of a gaseous absorber are excited. The factors (bremsstrahlung effects) affecting the noise level, and problems of recording of cosmic radiation are discussed. There are 4 figures, 3 tables, and 7 references: 5 Soviet and 2 non-Soviet. The two references to English-language publications read as follows: J. A. Northrop, R. Nobles. Nucleonics, 14, 36, 1956; F. Reines, C. H. Cowan. Phys. Today, 10, 12, 1957.

ASSOCIATION: Institut fiziki Akademii nauk Armyanskoy SSR (Institute of Physics of the Academy of Sciences Armyanskaya SSR)

SUBMITTED: July 25, 1961

Card 3/4

S/048/62/026/006/011/020
B125/B102

9.6150

AUTHORS: Alikhanyan, A. I., Arutyunyan, F. R., Ispiryan, K. A., and Ter-Mikayelyan, M. L.

TITLE: The possibility of detecting charged particles of high energies

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya, v. 26, no. 6, 1962, 746-753

TEXT: The question is discussed whether resonance radiation resulting from fast particle passage through periodically (period l) alternating plates of thickness l_1 and l_2 ($l=l_1+l_2$, $\alpha=l_2/l_1$) can be used to detect fast particles and to measure their energy. The main contribution to the processes under consideration is that of the harmonics lying below a certain threshold. If the particle energy is much higher than threshold energy, the emitted frequencies ω of all harmonics lie somewhere between a maximum and a minimum, i.e. between $1/r$ and $4rE^2/E_n^2$; r is the order

Card 1/3

The possibility of detecting ...

of the harmonics. At energies which are not too high, but already relativistic, the particle radiates only on harmonics of large r. Radiations with new harmonics arise when the particle energy increases gradually. The energy loss due to resonance radiation depends only slightly on the thickness of the plates and decreases slowly with increasing α. The rapid decrease of the number of quanta beyond the maximum (for any harmonic) at $\omega \approx 1.5\ \omega_{min}$ makes it permissible to neglect the contribution of high frequencies to radiation intensity. The particle energy in the range $E/mc^2 = 2 \cdot 10^2 - 2 \cdot 10^3$ can be measured by the method of energy release. The method of characteristic radiation, applicable in the range $E/mc^2 = 5 \cdot 10^2 - 5 \cdot 10^3$, depends on the radiation in the layered medium being passed through an absorbing gas which thereupon emits radiation which is characteristic. Using the method of Compton scattering, which is suitable for a wide energy interval, the particle produced in the layer medium undergoes simple Compton scattering. The γ-quanta striking the lateral faces of the layer medium are recorded by liquid scintillators. The occurrence of resonance radiation is

Card 2/3

The possibility of detecting ...

accompanied by background radiation. Cosmic muons of $\sim 10^{11}$ ev can be detected with a coincidence circuit. Muons of $\sim 5 \cdot 10^{11}$ ev and above can be detected by the method of characteristic radiation. Adequate experiments are in preparation. There are 4 figures and 2 tables.

ASSOCIATION: Fizicheskiy institut AN ArmSSR (Physics Institute AS ArSSR)

4

Card 3/3

L 13398-63 BDS/EWT(1)/EWT(m) AFFTC/AFWL/ASD JT
ACCESSION NR: AP3003144 S/0056/63/044/006/2100/2103

59
57

AUTHOR: Arutyunyan, F. R.; Tumanyan, V. A.

TITLE: Compton effect on relativistic electrons and the possibility of obtaining beams of hard Gamma quanta

SOURCE: Zhurnal eksper. i teor. fiziki, v. 44, no. 6, 1963, 2100-2103

TOPIC TAGS: Compton effect, relativistic electrons, hard Gamma quanta, bremsstrahlung

ABSTRACT: It is shown that the energy distribution of hard photons obtained by the Compton effect on relativistic electrons will differ appreciably from the bremsstrahlung spectrum, and that at relatively low energies of the scattered photons there will be produced monoenergetic hard Gamma quanta to some degree. The fluxes of the Gamma quanta produced in this manner are comparable with the corresponding quantities for bremsstrahlung. It is suggested that the hard Gamma quanta obtained by using sources of photons harder than those of light will be useful in the solution of many problems in physics. "The authors are indebted to Prof. A. I. Alikhanyan for interest and attention to the work, and to V. M. Arutyunyan for valuable advice. Orig. art. has 3 figures and 4 formulas.

Card 1/2 ASSOCIATION: Physics Inst. GKAE, Yerevan

ACCESSION NR: AP3013324 S/0022/63/016/005/0119/0123

AUTHORS: Arutyunyan, F. R.; Ananova, L. A.; Grigoryan, N. G.

TITLE: Highly directional Cerenkov counter for relativistic particles

SOURCE: AN ArmSSSR. Izvestiya. Seriya fiz.-matem. nauk, v. 16, no. 5, 1963, 119-123

TOPIC TAGS: Cerenkov counter, relativistic Cerenkov counter, particle detector, charged particle detector

ABSTRACT: A highly directional Cerenkov counter has been designed for relativistic particles of threshold magnitude

$$\beta_{0\,\mathrm{thresh}} = (n_1^2 - n_2^2)^{-\frac{1}{2}},$$

using the principle of total reflection from the base of the radiator (detector) as well as from the side wall surfaces. The trapped radiation in the detector can then be used to detect particles with a $\beta > 0.995$, which, in terms of the angle γ between the normal to the radiator base and the incoming particle beam direction,

Card 1/2

ACCESSION NR: AP3013324

can be represented by $\beta_{thresh} = \frac{\beta_{0\,thresh}}{\cos\gamma + n_2 \cdot \beta_{0\,thresh} \sin\gamma}$,

where n_1 - reflective index of the radiator, and n_2 - the reflective index of the media surrounding the radiator. Orig. art. has: 2 equations and 2 figures.

ASSOCIATION: none

SUBMITTED: 14Mar63 DATE ACQ: 22Nov63 ENCL: 00

SUB CODE: PH NO REF SOV: 001 OTHER: 003

Card 2/2

L 16910-63 EWT(m)/BDS AFFTC/ASD AR

ACCESSION NR: AP3005285 S/0056/63/045/002/0312/0315

AUTHOR: Arutyunyan, F. R.; Gol'dman, I. I.; Tumanyan, V.A.

TITLE: Polarization phenomena in Compton effect on a moving electron and possibility of obtaining beams of polarized gamma quanta

SOURCE: Zhur. eksper. i teoret. fiz. , v. 45, no. 2, 1963, 312-315

TOPIC TAGS: gamma quantum polarization, Compton effect, relativistic electron , laser, polarized photon beam

ABSTRACT: The polarization of gamma quanta resulting from Compton scattering of soft photons by relativistic electrons is analyzed. This problem is of interest because the polarization of the primary photons can be chosen in arbitrary manner, for example primaries from lasers. It is shown that the degree of polarization of such photons can approach 100% both in the case of photons scattered at a given azimuth angle and in the case when the polarization state is averaged over this angle. This shows Compton scattering on relativistic electrons to be an efficient means of obtaining polarized gamma quanta, which can help in the solution of many problems such as photoproduction processes, and nuclear photodisintegration.
Orig. art. has 14 formulas.
ASSOCIATION: Physics Inst. Main Atomic Energy Comm.

Card 1/2

ARUTYUNYAN, V.M.; ARUTYUNYAN, F.R.; ISPIRYAN, K.A.; TUMANYAN, V.A.

Light scattering on light. Zhur. eksp. i teor. fiz. 45 no.4: 1270-1272 O '63. (MIRA 16:11)

1. Institut fiziki Gosudarstvennogo komiteta po ispol'zovaniyu atomnoy energii SSSR, Yerevan.

ARUTYUNYAN, F.R.; TUMANYAN, V.A.

High-energy quasi-monochromatic and polarized gamma quanta.
Usp. fiz. nauk 83 no. 1:3-34 My '64. (MIRA 17:6)

ACCESSION NR: AP4038548 S/0053/64/083/001/0003/0034

AUTHORS: Arutyunyan, F. R.; Tumanyan, V. A.

TITLE: Quasimonochromatic and polarized Gamma quanta of high energy

SOURCE: Uspekhi fizicheskikh nauk, v. 83, no. 1, 1964, 3-34

TOPIC TAGS: gamma quantum, high energy particle, bremsstrahlung, Compton effect, pair production, relativistic electron, scattered radiation, polarized radiation

ABSTRACT: The two most promising methods for producing quasi-monochromatic and polarized gamma rays are discussed -- bremsstrahlung or pair production in crystals, and scattering of light by relativistic electrons. Such gamma rays can be useful in research on pion photoproduction and pion-pion interaction, and there is no systematic exposition of their production in the literature. A theoretical analysis and a review of the experimental research are presented for each

Card 1/2

ACCESSION NR: AP4038548

method. The section headings are: I. Introduction. II. Bremsstrahlung and pair production in crystals. 1. Qualitative treatment of interference phenomena in crystals. 2. Theory. 3. The polarization of the radiation. 4. Experimental investigations. III. The Compton effect on a moving electron. 1. Production of high-energy gamma rays by the scattering of light on relativistic electrons. 2. Polarization effects. 3. Experimental investigations. Orig. art. has: 24 figures, 68 formulas, and 4 tables.

ASSOCIATION: None

SUBMITTED: 00 / DATE ACQ: 09Jun64 ENCL: 00

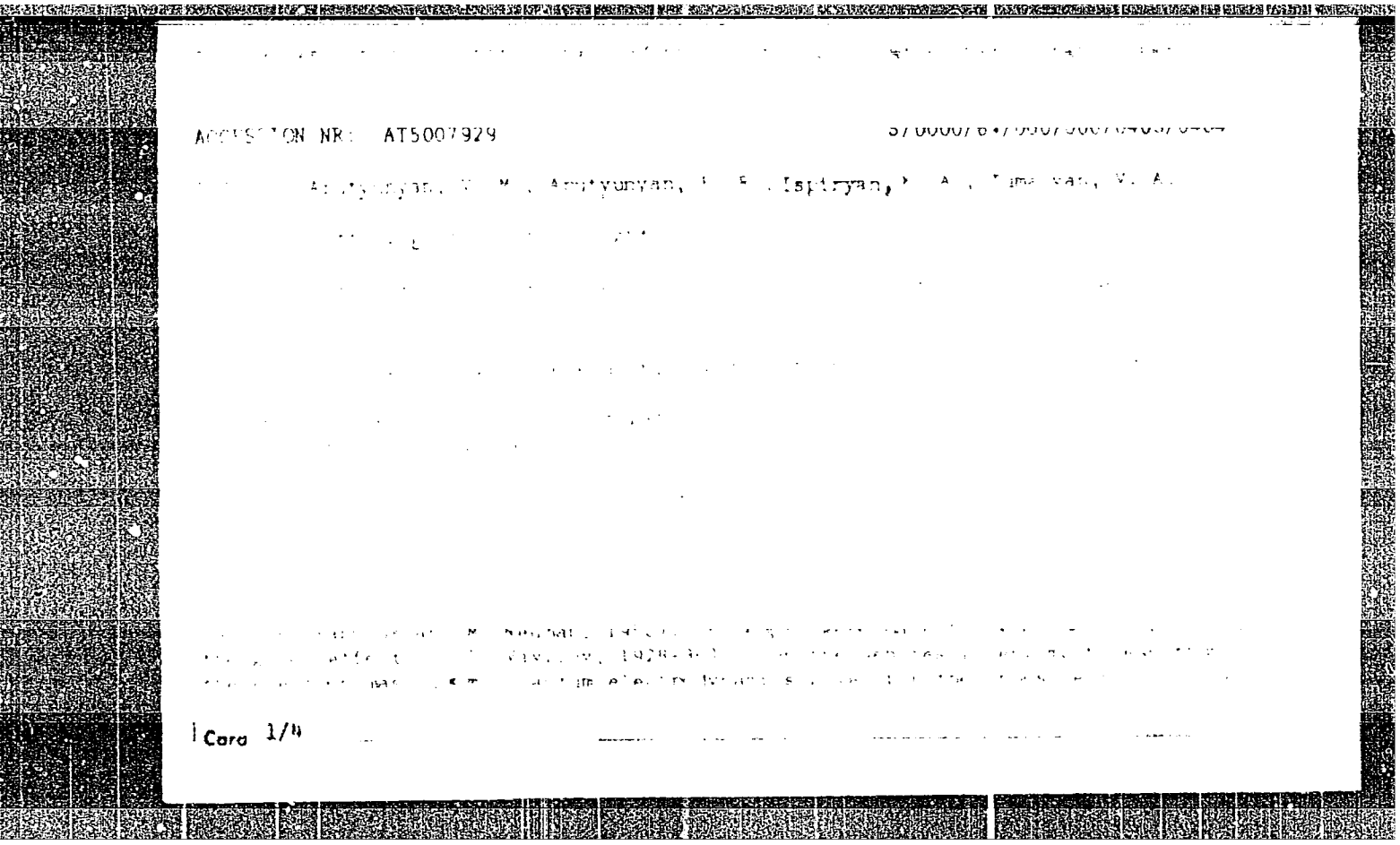
SUB CODE: NP / NR REF SOV: 010 OTHER: 038

Card 2/2

[redacted], K.A., [redacted]

Radiation of ~~ar~~high-energy μ-mesons in a layered medium.
Izv. AN SSSR. Ser. fiz. 28 no.11:1864-1865 N '64.
(MIRA 17:12)

1. Fizicheskiy institut Gosudarstvennogo komiteta po ispol'zovaniyu atomnoy energii SSSR.



ACCESSION NR: AT5007929

Card 1/4

L 46148-65

ACCESSION NR: AT5007929

system of the center of inertia the following value

$$d\sigma \frac{1}{(2\pi)^2} \cdot \frac{139}{900} a^4 \frac{1}{m^2} \left(\frac{\omega}{\tau}\right)^4 (3 + \cos^2\theta_0)^2$$

where [illegible] and θ_0 is the angle of scattering. The units are so chosen that [illegible] region of [illegible] existence of [illegible] cm^2, and therefore, regardless [illegible]

[illegible] mately [illegible] eV, [illegible] ties can be realized in the case of the scattering of γ-quanta of several GeV's [illegible] the energies of the

[illegible] the energy [illegible]

[illegible]

Card 2/4

ACCESSION NR: AT5007923

[illegible] = 6·10³ ev and [illegible] ev (the [illegible] energy of a ruby laser) the cross-section will be

$$\sigma = 2.56 \cdot 10^{-31} \frac{\omega_3}{\omega_1} \text{ cm}^2$$

The frequency of the scattered photon is expressed in terms of the scattering angle in the laboratory system in the following form

$$\omega_3 = \frac{\omega_1 \omega_2}{\omega_1 + \omega_2 - \omega_1 \cos\theta}$$

[illegible] events [illegible] electrons and the [illegible] intense beams of laser [illegible] the [illegible] the [illegible] lead equals

Card 3/4

L 46148-65
ACCESSION NR: AT5007929

ruby laser with duration of burst of 10^{-6} sec (the number of photons equals $2 \cdot 10^{21}$), then if the laser is operated with a frequency [illegible] is the frequency of repetition of γ-quanta with energy up to $\omega_3 = 500$ Mev will be equal to approximately two [illegible] Here the [illegible] of the beam of colliding

[illegible] examples such as [illegible] increasing [illegible] frequency [illegible] γ-quanta, etc. [illegible] has a [illegible]

L 4459-66 EWT(m)/FCC/T IJP(c)

ACC NR: AP5024657 SOURCE CODE: UR/0048/65/029/009/1769/1771

AUTHOR: Arutyunyan, F.R.; Ispiryan, K.A.; Oganesyan, A.G.

ORG: Physics Institute, State Committee on the Uses of Atomic Energy, SSSR (Fizicheskiy institut Gosudarstvennogo komiteta po ispol'zovaniyu atomnoy energii SSSR)

TITLE: Horizontal flux of muons with energies exceeding 700 BeV /Report, All-Union Conference on Cosmic Ray Physics held at Apatity 24-31 August 1964/

SOURCE: AN SSSR. Izvestiya. Seriya fizicheskaya, v. 29, no. 9, 1965, 1769-1771

TOPIC TAGS: secondary cosmic ray, muon, charged particle, electromagnetic radiation, inhomogeneous medium

ABSTRACT: The horizontal flux of high energy cosmic ray muons was employed to investigate the radiation, discussed by M.L.Ter-Mikayelyan and others (Zh. eksperim. i teor. fiz., 39, 1693 (1960); 41, 2002 (1961); Nucl. Phys., 24, 43 (1961)), produced by the uniform motion of a charged particle through a periodic laminated medium. The 300 cm long laminated medium consisted of 300 equally spaced 0.2 mm thick sheets of paper. Cosmic ray muons entering from a solid angle of 0.29 sterad at zenith angles between 73 and 90° were selected with a counter telescope. Electrons were discouraged by a total of 117 radiation units of matter disposed in two absorbers, and spurious counts due to cosmic ray showers were eliminated by several surrounding counters in anticoincidence. Photons emitted in the backward direction by muons traversing the laminated

Card 1/2

L 4459-65

ACC NR: AP5024657

medium passed through a 10 x 10 x 40 cm^3 chamber containing Xe (pressure not given) where they excited the 35 keV characteristic Xe x-radiation. The Xe x-radiation was recorded with eight 8 cm diameter 5 cm thick NaI:Tl crystals which could detect photons with energies between 20 and 100 keV. An event was recorded when at least two such x-rays were detected simultaneously with the passage of a muon. In 5465 hours 77 events were recorded, of which 9 are ascribed to background. The background was determined by recording events with a 11.5 g/cm^2 plastic shield between the laminated medium and the Xe chamber and is ascribed to direct excitation of Xe x-rays by passage of charged particles through the Xe chamber. This counting rate is compared with muon fluxes measured by others, and it is concluded that muons with energies above 700 BeV were recorded and that the hypothesis that muons radiate when traversing a laminated medium has been confirmed. The authors find it difficult to draw any definite conclusions from their data concerning the relative numbers of K- and π-mesons produced in primary nucleon-nucleon interactions. Orig. art. has: 5 figures.

SUB CODE: NP/ SUBM DATE: 00/ ORIG REF: 002/ OTH REF: 006

Card 2/2

ACC NR: AP6010432 SOURCE CODE: UR/0386/66/003/005/0193/0197

AUTHOR: Arutyunyan, F. R.; Petrosyan, Zh. V.; Oganesyan, R. A.

ORG: Physics Institute, Yerevan (Fizicheskiy institut)

TITLE: Transition radiation of nonrelativistic electrons in thin aluminum films

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki. Pis'ma v redaktsiyu. Prilozheniye, v. 3, no. 5, 1966, 193-197

TOPIC TAGS: metal film, aluminum, electron bombardment, transition radiation, angular distribution

ABSTRACT: The authors investigated the radiation produced when an electron beam (1--2 μa) with energy E up to 60 kev passes perpendicular to the surface through aluminum films (133--329 Å) at wavelengths from 3480 to 5500 Å and at angles θ from zero to 90° relative to the electron motion. The radiation was analyzed with polarization and interference filters and detected with a photomultiplier. The radiation turned out to be polarized in the radiation plane and its degree of polarization reached 98%. The experimental results showed a good linear dependence of the radiation intensity on $\sin^2\theta_0$ (θ_0 -- angle between the transmission plane of the polarization filter and the radiation plane). The polarization agrees with the value expected from the Ginzburg-Frank theory of transition radiation. The difference between the intensities in the radiation plane and in the plane perpendicular to it were compared with the transition-radiation theory and it was found that the absolute intensity of the ob-

Card 1/2

L 24388-66

ACC NR: AP6010432

served radiation exceeded the theoretical value by a factor 1.65. This discrepancy is connected with the uncertainties of some of the quantities involved in the determination of the efficiency of the system. The spectral distribution agrees with the theory for wavelengths 3400--5500 Å, but there is a greater spectral dependence in the region from 3480 to 3800 Å. The experimental angular distribution is also in fair agreement with the theory. The intensity depended on the time of electron bombardment and on the thickness of the prepared film, and could increase up to 30% in the case of long exposures. Orig. art. has: 3 figures.

SUB CODE: 20/ SUBM DATE: 21Dec65/ ORIG REF: 003/ OTH REF: 001

Card 2/2 ULR

L 05034-67 EWT(1)/EWT(m)/EWP(t)/ETI IJP(c) JD/JG/GG/AT

ACC NR: AP6032471 SOURCE CODE: UR/0056/66/051/003/0760/0772

49
B

AUTHOR: Arutyunyan, F. R.; Petrosyan, Zh. V.; Oganesyan, R. A.

ORG: Joint Radiation Laboratory, Academy of Sciences Armenian SSR (Ob"yedinennaya radiatsionnaya laboratoriya Akademii nauk Armyanskoy SSR); Joint Radiation Laboratory, Yerevan State University (Ob"yedinennaya radiatsionnaya laboratoriya Yerevanskogo gosudarstevnnogo universiteta); Yerevan Institute of Physics (Yerevanskiy fizicheskiy institut)

TITLE: Study of nonrelativistic electrons in thin metal films

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 51, no. 3, 1966, 760-772

TOPIC TAGS: metal film, silver film, gold film, nonrelativistic electron, electron radiation, electron energy, polarized photon, optic radiation, bremsstrahlung, radiation polarization, transition radiation/Ginzburg-Frank theory

ABSTRACT: Optic radiation (λ, =3480 - 5500 Å) produced by 60 kev electrons traversing thin (d = 200 - 1340 Å) silver and gold films was investigated experimentally. The spectral and angular radiation distributions, and the radiation

Card 1/2

intensity dependence on electron energy and film thickness were investigated for the case of photons, polarized in planes containing the normals to the film surfaces and the directions of observation (emission planes), as well as in perpendicular planes. The properties of light polarized in the emission plane were in complete concordance with the Ginzburg-Frank theory of transition radiation. Light polarized in the perpendicular plane was identified as bremsstrahlung. Polarization of radiation was also analyzed. Orig. art. has: 12 figures. [Based on authors' abstract]

SUB CODE: 11, 20/ SUBM DATE: 08Apr66/ ORIG REF: 014/ OTH REF: 010/

L 04404-67 EWT(l)/EWT(m)/EWP(j)/T/EWP(k) IJP(c) WG/RTW/AT/RM
ACC NR: AP6034418 SOURCE CODE: UR/0386/66/004/008/0277/0282

AUTHOR: Arutyunyan, F. R.; Ispiryan, K. A.; Oganesyan, A. G.; Frangyan, A. A.

ORG: Joint Radiation Laboratory, AN ArmSSR and YeGU (Ob"yedinennaya radiatsionnaya laboratoriya AN ArmSSR i YeGU); Physics institute, Yerevan (Fizicheskiy institut)

TITLE: Resonance radiation of electrons of energy up to 600 Mev in a layered medium

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki. Pis'ma v redaktsiyu. Prilozheniye, v. 4, no. 8, 1966, 277-282

TOPIC TAGS: resonance scattering, bremsstrahlung, electron radiation, radiation spectrum, layered medium

ABSTRACT: The authors present experimental results on the characteristics of the radiation produced in different layered media by passage of high-energy electrons. The experiment was performed with the electron synchrotron of FIAN SSSR (maximum energy 680 Mev). Different layered media were used. Each consisted of n sheets of a paper of definite thickness l_1, placed in air at an equal distance al_1 from one another. The electrons were registered with a scintillation telescope consisting of two plastic scintillators located on the two sides of the layered medium. The radiation spectrum up to 100 kev was observed with a pulse-height analyzer. The measurements were made also for a solid medium, comprising the same layers compressed to $a = 0$. The quantity measured in this case was that part of the radiation in the layered medium, which was due to the electron bremsstrahlung in the layered medium itself and in the remaining

Card 1/3

matter on the path of the electron, and also due to secondary effects. The experimental data show that for relatively low γ-quantum energies the radiation intensity in a layered medium depends to a considerable degree on the energy of the electron and exceeds by many times the radiation intensity in the solid medium. With increasing γ-quantum energy the spectrum of the radiation in the layered medium gradually goes over into the spectrum of the solid medium, which does not depend on α, l_1, or E when the amount of matter remains constant. The difference in the radiation intensities in the layered and in the solid medium was compared with the results of the theory of resonance radiation with allowance for the γ-quantum absorption on their entire path. The experimental data exceeded by many times the corresponding theoretical ones even without allowance for the γ-quantum absorption. The experimental values exceeded the theoretical ones also for all the investigated layered media with different α, l_1, and n. The observed difference is attributed to the appreciable scattering of electrons in the layered medium itself. It is assumed that multiple scattering leads to the appearance of photons of relatively high energy, normally not appearing when scattering is not taken into account. It is concluded that the experimentally observed radiation of electrons in a layered medium, with an intensity that exceeds by many times in the x-ray region the intensity of the bremsstrahlung, and which depends strongly on the particle energy (like E^n, where $n \gtrsim 2$), can be used to determine the particle energy.
The authors thank Professor V. A. Petukhov and the staff of the High-energy Electron Laboratory of FIAN SSSR for the opportunity to perform the present experiment, and

L 04404-67
ACC NR: AP6034418

also Professor M. L. Ter-Mikayelyan for a discussion. Orig. art. has: 3 figures and 1 formula.

SUB CODE: 20/ SUBM DATE: 14Jul66/ ORIG REF: 007

Card 3/3 vmb

ACC NR: AP7005541 SOURCE CODE: UR/0252/66/043/002/0087/0090

AUTHOR: Ananova, L. A.; Arutyunyan, F. R.; Ogancsyan, R. A.; Petrosyan, Zh. V.

ORG: Physics Institute, AN ArmSSR (Fizicheskiy institut AN ArmSSR); Joint Radiation Laboratory of the Academy of Sciences of the Armenian SSR and of the Yerevan State University (Ob"yedinennaya radiatsionnaya laboratoriya Akademii nauk Armyanskoy SSR i Yerevanskogo gosudarstvennogo universiteta)

TITLE: Transition radiation in oblique passage of electrons through aluminum films

SOURCE: AN ArmSSR. Doklady, v. 43, no. 2, 1966, 87-90

TOPIC TAGS: metal film, aluminum, electron bombardment, transition radiation, electric polarization, angular distribution

ABSTRACT: This is a continuation of earlier work (ZhETF Pis'ma v redaktsiyu v. 3, 193, 1966), dealing with normal incidence of electrons on films of different metals. In the earlier investigation no radiation component polarized in the perpenducular plane was observed in the case of aluminum. The present article contains the results of an investigation of the transition radiation produced when electrons with energy 60 kev pass obliquely through films of aluminum of thickness 124 - 329 Å. It is shown that in the case of oblique incidence, a perpendicular radiation component appears, the magnitude of which increases with the angle as the altter rises from 0° to 45°. The polarization of the radiation is then no longer linear and the plane in which the maximum intensity is observed does not coincide with the plane containing the normal

Card 1/2

ACC NR: AP7005541

to the surface of the film and the observation direction. The component polarized in the direction of observation also exhibits an anomalous behavior. The absolute value of the perpendicular component is on the average one order of magnitude higher than predicted by theory, and the component in the observation direction is about half the value predicted by the thoery. However, the angular dependence agrees with the theoretical distribution. It is proposed that the discrepancy is due to the special structure of the aluminum film, but the lack of a theory of transition radiation in the case of inclined incidence of the particle in the crystal makes it impossible to draw any final conclusions. This report was submitted by Corresponding member AN ArmSSR M. L. Ter-Mikayelyan 20 April 1966. Orig. art. has: 3 figures.

SUB CODE: 20,11 / SUBM DATE: 00/ ORIG REF: 005/ OTH REF: 002

Card 2/2

GRIGORYAN, G.O.; GAZARYAN, S.A.; MOVSESYAN, V.A.; GRUTTSYAN, G.A.

Production of nitrosyl chloride by the reaction of hydrogen chloride with nitrosylsulfuric acid. Izv.AN Arm.SSR. Khim. nauki 18 no.4:408-414 '65. (MIRA 18:12)

1. Yerevanskiy nauchno-issledovatel'skiy institut khimii.
Submitted July 17, 1964.

ARUTYUNYAN, G. G. Cand Tech Sci -- (diss) "Emergency control of hydraulic turbines as a means for increasing the dynamic stability of water-power systems." Len, 1957. 13 pp 22 cm. (Inst of Electrical Mechanics, Acad Sci USSR), 100 copies (KL, 24-57, 117)

ARUTYUNYAN, G.G.

Emergency control of hydraulic turbines used as a measure for increasing the dynamic stability of hydroelectric power systems. Izv.AN Arm.SSR. Ser.tekh.nauk 10 no.1:49-63 '57. (MIRA 10:10)

1. Vodno-energeticheskiy institut AN Armyanskoy SSR.
(Hydroelectric power stations) (Hydraulic turbines)
(Automatic control)

AUTHORS: Arutyunyan, G.G., Candidate of Technical Sciences, Aslamazyan, A.A., Engineer, Buniatyan, B.L., Candidate of Technical Sciences, Ovsepyan, K.Kh., Engineer

SOV/105-58-10-22/28

TITLE: On Dynamic Models of Power Systems (O dinamicheskikh modelyakh energosistem)

PERIODICAL: Elektrichestvo, 1958, Nr 10, pp 91-91 (USSR)

ABSTRACT: This is an approach to several problems which are connected with the investigation of transient processes in hydroelectric power supply systems. The test runs were made at the dynamic model of the Vodno-energeticheskogo instituta AN Armyanskoy SSR (Institute of Water Power, AS Armyanskaya SSR). This complete model of a water-wheel power station, built under the direction of I.V.Yegiazarov, distinguishes itself from other models such as those of the Moskovskiy energeticheskiy institut (Moscow Institute of Power Engineering), the Institut elektromekhaniki AN SSSR (Institute of Electromechanics, AS USSR) and the Institut postoyannogo toka (Institute of Direct Current), by the use of a model waterwheel with a penstock as a primary driver. Papers coming from the Institute of Water Power (Refs 1-6) demonstrate that it is possible to model

Card 1/2

the hydraulic inrush and the torque characteristics of a number of actual water power stations with different design factors and characteristics without keeping to the rule of geometric similarity. The test runs showed that instead of specially designed machines for the compensation of the apparent resistance in the rotor circuit conventional off-the-assembly-line electrodynamical amplifiers (Ref 7) can be used. This paper concludes with the statement that a number of newly come up problems cannot be solved by a computer without a corresponding investigation on a dynamic model. There are 7 references, which are Soviet.

ASSOCIATION: Vodno-energeticheskiy institut Akademii nauk Armyanskoy SSR (Institute of Water Power, AS Armyanskaya SSR)

Arutyunyan, G. G. "Surgery during the Middle Ages in Armenia," (Abbreviated author's report), Trudy III Zakavkazsk. s"yezda khirurgov, Yerevan, 1958 (on cover: 1959), p. 62-67

SO: U-5240, 17 Dec. 53, (Letopis 'Zhurnal 'nykh Statey, No. 25, 1949).

ARUTYUNYAN, S. G.

34115. O zadachakh izucheniya istorii meditsiny. Trudy Sektora istorii arm. meditsiny i biologii (Akad. Nauk Arm. ssr), No. 2, 1949, s. 3-17. - Na arm. yaz. - Rezyume na rus. yaz.

SO: Knizhnaya, Letopis' Vol. 7, 1955

ARUTYUNYAN, G.G.

34222. Pravovoye Pocozheniye Zhenshchiny i materi V drevney i Srednevekovoy armenii v svyzi S Razvitiyem Akusherskikn Zaniy. Trudy Sektora istorii Arm. Meditsiny i Biologii (Akad. Nauk Arm.SSR) No. 2, 1949, c. 97-113.- Na Arm. yaz- Rezyume Na rus. yuz.

SO: Knizhnaya Letopis' No 6, 1955

ARUTYUNYAN, G. S.

ARUTYUNYAN, G. S. -- "Gynecology and Obstetrics in Armenia from Early Times to the Beginning of the 20th Century." Sub 13 May 52, Central Inst for the Advanced Training of Physicians. (Dissertation for the Degree of Doctorate in Medical Sciences).

SO: Vechernaya Moskva January-December 1952

MKHITHAR, 12th cent.; ARUTYUNYAN, G.G. [translator]; OGANESYAN, L.A., redaktor;

[Consolation in fevers. Translated from the Armenian] Utesheniе pri likhoradkakh. Perevod s armianskogo, vvedenie i kommentarii Arutiunian G.G.[i dr.] pod red. L.A.Oganesian. Erevan, Izd-vo AN Armianskoy SSR, 1955. 264 p. (MLRA 9:4)
(FEVERS)

ARUTYUNYAN, G.K.

Veterinary specialists of the Armenian S.S.R. in the campaign for a further rise in livestock production. Veterinariia 37 no.1:5-7 Ja '60. (MIRA 16:6)

1. Nachal'nik Veterinarnogo upravleniya Ministerstva sel'skogo khozyaystva Armyanskoy SSR (for Arutyunyan).
(Armenia--Veterinary hygiene)

ARUTYUNYAN, G.M.

Developing mineral resources in the Armenian S.S.R. Trudy Arm. geol.upr. no.1:3-10 '57. (MIRA 12:1)
(Armenia--Ore deposits)

ABOVYAN, S.B.; ARUTYUNYAN, G.M.

Magnesite formations from ultrabasic rocks in Armenia and their origin. Izv.AN Arm.SSR.Ser.geol.i geog.nauk 10 no.1:37-42 '57.
(MIRA 10:10)

1. Institut geologicheskikh nauk AN Armyanskoy SSR.
(Armenia--Magnesite)

24543

10.1500
26.2114

S/179/61/000/002/009/017
E191/E181

AUTHOR: Arutyunyan, G.M. (Moscow)

TITLE: Classification of flows in air shock tubes

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Mekhanika i mashinostroyeniye, 1961, No.2, pp. 106-111

TEXT: The possible types of flow at constant pressure behind the front of a shock wave are considered with arbitrary initial pressures in both sections of a shock tube and arbitrary geometric dimensions. It is assumed that the low-pressure section of the shock tube has an open end. Initially, the air in both sections is in equilibrium with the surrounding atmosphere. After a sudden breakdown of the diaphragm between the two sections, a shock wave propagates into the low-pressure section and a central rarefication wave into the high-pressure section. A contact discontinuity moving into the low pressure section has sudden changes of all parameters except the pressure and the particle velocity. When the rarefication wave reaches the closed end of the tube, it is reflected and the new wave front propagates with the

Card 1/ 3

24543
S/179/61/000/002/009/017
Classification of flows in air shock....E191/E181

velocity of small disturbances being the sum of the local sound velocity and of the particle velocity. When the shock wave reaches the open end of the shock tube, a rarefication wave forms whose front propagates with a velocity which is the difference between the particle velocity and the local sound velocity. Thus, two disturbances propagate towards each other starting from the closed and open ends, respectively. For a point at any given distance from the diaphragm, there is a certain duration of constant pressure between the instant of arrival of the shock wave front and the instant of arrival of the disturbance from either the closed or the open end of the tube. The magnitude of this duration is required in practical work with shock tubes. It is a function of five parameters, namely the initial high and low pressures, the total tube length, the high-pressure section length and the distance of the point under investigation from the diaphragm. Some general relationships applicable to shock tubes are formulated. Three classes of conditions are distinguished. In the first class, the particle velocity to the left (closed tube end) side of the contact discontinuity is smaller than, or equal to, the local sound

Card 2/ 3

velocity to the right of the discontinuity. In the second class, the above particle velocity lies between the local sound velocities to the right and to the left of the contact discontinuity and in the third class the same particle velocity is greater than, or equal to, the local sound velocity to the left of the discontinuity. It is found that the first class includes 12 flow conditions, the second class 11, and the third class 7. None but these 30 flow conditions can exist without violating some of the relationships derived. Non-dimensional quantities are defined whose values characterise each condition. Each quantity depends on the ratio of the initial high and low pressures in the shock tube. Ya.B.Zel'dovich, A.S.Kompaneyts and Kh.A.Rakhmatulin are thanked for advice. There are 12 figures and 2 Soviet references.

SUBMITTED: December 12, 1960

ARUTYUNYAN, G.M. (Moskva)

Propagation of weak shock waves. Izv.AN SSSR.Otd.tekh.nauk.Mekh.i mashinostr. no.5:170-172 S-O '62. (MIRA 15:10)
(Shock waves)

TER-KARAPETYAN, M.A.; AVAKYAN, Sh.A.; ARUTYUNYAN, G.S.

Effect of environmental conditions on the budding of Torulopsis armeniaca. Dokl.AN Arm. SSR 10 no.5:223-228 '49.
(MLRA 9:10)

1. Chlen-korrespondent Akademii nauk Armyanskoy SSR (for Ter-Karapetyan) 2. Institut zhivotnovodstva Akademii nauk Armyanskoy SSR, Yerevan. (Yeast)

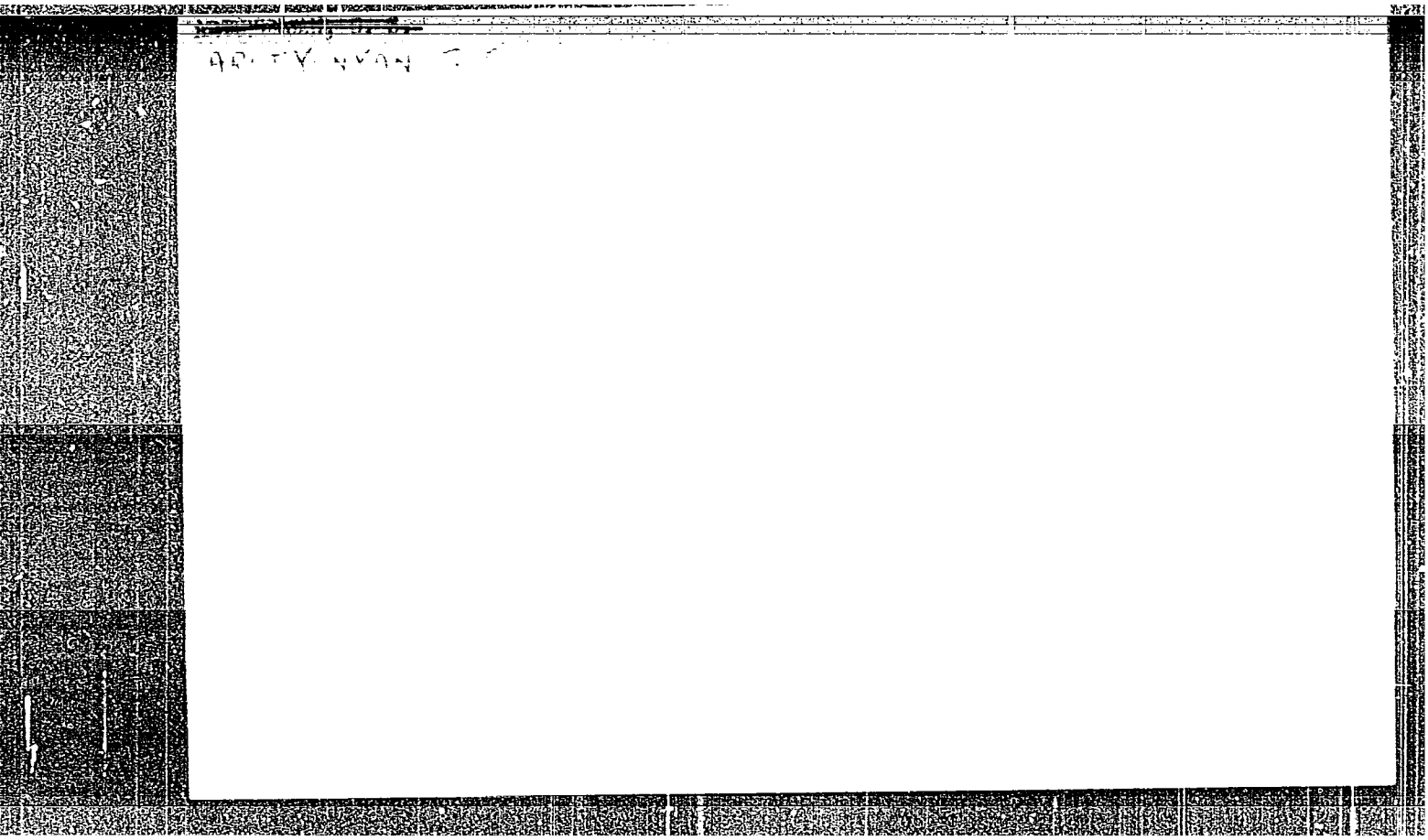
ARUTYUNYAN, G.S.

TER-KARAPETYAN, M.A.; AZARYAN, E.Kh.; AVAKYAN, Sh.A.; ARUTYUNYAN, G.S.

Technological systems for manufacturing yeast in small installations from agricultural wastes. Izv.AN Arm.SSR.Biol.i sel'khoz.nauki 8 no.1:45-56 Ja '55. (MLRA 9:8)

1. Institut zhivotnovodstva Ministerstva sel'skogo khozyaystva Arm. SSR.

(Yeast) (Feeding and feeding stuffs)



ARUTYUNYAN, G. S.

USSR/Pharmacology. Toxicology. Analgesics U-3

Abs Jour : Ref Zhur-Biol., No 7, 1958, 32878

Author : Kashkovskiy M. D., Arutyunyan G. S.
Inst : Not given
Title : Antorphin (N-Allylnormorphine) as an Antagonist of Promedol and Isopromedol.

Orig Pub : Farmakol. i toksilologiya, 1957, 20, No 1, 17-22

Abstract : Muscular relaxation, slowed respiration (from 180-130 to 20-12 per minute), and loss of pain sensitivity set in 10 to 15 minutes after promedol (I) and isopromedol (II) in doses of 10 mg/kg were administered to rabbits. The intravenous administration of antorphin (N-allylnormorphine; III) in a dose of 2 mg/kg removed the depressing effect of I and II on respiration, restored motor activity and pain sensitivity. Upon the simulta-

Card 1/3

USSR/Pharmacology. Toxicology. Analgesics U-3

Abs Jour : Ref Zhur-Biol., No 7, 1958, 32878

Abstract : dose of 250 mg/kg) did not reduce the number of fatal results caused by morphine. The subcutaneous administration of III in doses of 10 to 50 mg/kg produced no change in pain sensitivity in the animals, but reduced the pain relieving activity of I, II, and morphine. The intravenous administration of III to mice in a dose of 200 mg/kg caused no changes in the general condition of the animals. A dose of 300 mg/kg of III killed all the experimental animals. A drop in blood pressure and either stimulated respiration or no change in the latter were observed in cats anesthesized with urethan following the administration of III in a dose of 1 to 50 mg/kg.

Card 3/3

USSR/Pharmacology and Toxicology. Analgesics V-3

Abs Jour : Ref Zhur - Biol., No 10, 1958, No 47135

Author : Arutyunyan G.S.
Inst : -
Title : Anadol, a New Analgesic Preparation

Orig Pub : Med. prom-st' SSSR, 1957, No 4, 53-54

Abstract : In experiments conducted on rats, rabbits and dogs, Anadol (α -form of chloral hydrate 1,3-dimethyl-4-phenyl-4-propionoxypiperidine; nisentil; alphaprodine) (A) introduced subcutaneously in a dose of 2-3 mg/kg., produced an analgesic effect which was equally as strong, but more lasting, than that of promedol in a dose of 3-5 mg/kg. Simultaneously, general sedation, relaxation of skeletal musculature, drowsiness and sleep were produced. After the introduction of A, an insignificant decrease of the blood pressure and a decrease in the frequency of respiration were observed. In higher doses a depression of respiration occurred. The

Card : 1/2

TER-KARAPETYAN, M.A.; AZARYAN, E.Kh.; ARUTYUNYAN, G.S.

Ensiling ear corn with hydrochloric acid and sulfur dioxide.
Izv. AN Arm. SSR. Biol. i sel'khoz. nauki 11 no.7:55-61 Jl '58.
(MIRA 11:9)

1. Institut zhivotnovodstva i veterinarii Ministerstva sel'skogo khozyyastva ArmSSR.
(Ensilage) (Corn (Maize)) (Sulfur dioxide) (Hydrochloric acid)

MASHKOVSKIY, M.D., ARUTYUNYAN, G.S.

Antorphine and other morphine antagonists. Med.prom. 12 no.6:37-40 Je '58 (MIRA 11:7)

1. Vsesoyuznyy nauchno-issledovatel'skiy khimiko-farmatsevticheskiy institut imeni S. Ordzhonikidze.
(NORMORPHINE)

ARUTYUNYAN, G.S.

Limoran, an analegesic. Med.prom. 15 no.5:38-40 My '61.
(MIRA 14:6)

1. Vsesoyuznyy nauchno-issledovatel'skiy khimiko-farmatsevticheskiy institut imeni S.Ordzhonikidze.
(MORPHINAN) (ANALGESICS)

ARUTYUNYAN, G.S.

Properties of viadril, an intravenous narcotic of steroid structure. Mod. prom. 15 no.6:55-56 Je '61. (MIRA 15:3)

1. Vsesoyuznyy nauchno-issledovatel'skiy khimiko-farmatsevticheskiy institut imeni Ordzhonikidze.
(PREGNANEDIONE)

ARUTYUNYAN, G.S.; MASHKOVSKIY, M.D.

Pharmacological studies on N-oxides of nicotine. Farm. i toks. 24 no.5:534-540 S-O '61. (MIRA 14:10)

1. Laboratoriya farmakologii (zav. - prof. M.D.Mashkovskiy) Vsesoyuznogo nauchno-issledovatel'skogo khimiko-farmatsevticheskogo instituta imeni S.Ordzhonikidze.
(NICOTINE)

MASHKOVSKIY, M.D.; ARUTYUNYAN, G.S.

Pharmacology of 5-methoxytryptamine hydrochloride. Farm. i toks. 26 no.1:10-17 Ja-F '63. (MIRA 17:7)

1. Laboratoriya farmakologii (zav. - chlen-korrespondent AMN SSSR prof. M.D. Mashkovskiy) Vsesoyuznogo nauchno-issledovatel'skogo khimiko-farmatsevticheskogo instituta imeni S. Ordzhonikidze.

ARUTYUNYAN, G.S.; MASHKOVSKIY, M.D.; ROSHCHINA, L.F.

Pharmacological properties of melatonin. Farm. i toks. 26 no.6:650-655 N-D '63 (MIRA 18:2)

1. Laboratoriya farmakologii (zav. - chlen-korrespondent AMN SSSR prof. M.D. Mashkovskiy) Vsesoyuznogo nauchno-issledovatel'skogo khimiko-farmatsevticheskogo instituta imeni S. Ordzhonikidze.

ACC NR: AP6023942 (A,N) SOURCE CODE: UR/0390/66/029/003/0267/0270

AUTHOR: Arutyunyan, G. S.; Roshchina, L. F.

ORG: Pharmacology Laboratory [Head -- Corresponding member AMN SSSR Professor M. D. Mashkovskiy] All-Union Scientific Research Chemical-Pharmaceutical Institute (Laboratoriya farmakologii vsesoyuznogo nauchno-issledovatel'skogo khimiko-farmatsevticheskogo instituta im. S. Ordzhonikidze, Moscow)

TITLE: Action of mexamine on conditioned-reflex activity in rabbits and rats

SOURCE: Farmakologiya i toksikologiya, v. 29, no. 3, 1966, 267-270

TOPIC TAGS: drug, drug effect, conditioned reflex, cortical activity, inhibitory effect

ABSTRACT:

The effects of mexamine (5-methoxytryptamine) and serotonin (5-hydroxytryptamine) on food procurement reflexes in rabbits and rats were studied. Mexamine in small doses interrupts the conditioned reflex and in large doses inhibits cortical activity, whereas serotonin has little or no effect. [W.A. 50; CBE No. 10]

SUB CODE: 06/ SUBM DATE: 12Mar65/ ORIG REF: 005/ OTH REF: 008/

UDC: 615.711.44-017.8+612.825.1.014.46

Card 1/1

POSTNIKOV, I.S.; ARUTYUNYAN, K.G.; TUGUSHEVA, N.I.

Laboratory investigation of the process of waste water purification with the separate regeneration of active sludge. Nauch. trudy AKKH no.20:40-54 '63. (MIRA 18:12)

ARUTYUNYAN, K.G., inzhener.

Mechanized tie repair. Put' i put.khoz.no.8:24-25 Ag '57. (MLRA 10:9)
(Railroads--Ties)

ARUTYUNYAN, K.G., inzh.

Mechanized laying of rail lengths. Put' i put. khoz. 5 no.1:4-5 Ja '61. (MIRA 14:5)
(Railroads--Tracklaying machinery)

ARUTYUNYAN, K. G. Cand Tech Sci -- (diss) "Purification of sewage in cesspool drainage wells airtanks." Mos, 1959, 14 pp (Acad of Economy im K. D. Panfilov), 150 copies (KL, 52-59, 120)

ARUTYUNYAN, K.G.

Purification of waste waters in a combined aeration and settling tank. Sbor. nauch. rab. asp. AKKH no.1:5-20 '59. (MIRA 14:7)
(Sewage—Purification)

ARUTYUNYAN, K.G.

Patterns of the process of sewage purification in air tanks with uniform speed of oxidation. Sbor. nauch. rab. AKKH no.6:3-14 '61. (MIRA 15:3)

(Sewage--Purification)

POSTNIKOV, I.S.; ARUTYUNYAN, K.G.; TUGUSHEVA, N.Yu.; EL', M.A.; KARYUKHINA, T.A.

Semi-industrial studies of air tanks or clarifiers developed by the Academy of Municipal Economy at the Kur'ianovskii aeration station. Sbor. nauch. rab. AKKH no.6:15-35 '61. (MIRA 15:3)
(Sewage--Purification)

ARUTYUNYAN, Karlen Gaykovich, inzh.; PROKOF'YEV, P.F., inzh., retsenzent; NEKLEPAYEVA, Z.A., inzh., red.; USENKO, L.A., tekhn. red.

[Mechanized laying of rail lengths; work experience of track machinery stations] Mekhanizirovannaia ukladka rel'sovykh pletei; opyt raboty putevykh mashinnykh stantsii. Moskva, Transzheldorizdat, 1963. 76 p. (MIRA 16:5)
(Railroads--Tracklaying machinery)

USSR / General and Specialized Zoology - Insects. P

Abs Jour : Ref Zhur - Biologiya, No 5, 1959, No. 20880

Author : Arutyunyan, Kh. M.
Inst : Armenian Scientific Research Institute of Agriculture
Title : Some Data on the Biology of the Mallow Moth

Orig Pub : Byul. nauchno-tekhn. inform. Arm. n.-i. in-t zemledeliya, 1957, No 3, 30-32

Abstract : From the entire number of butterflies caught on a mercury lamp PRK-4, there turned out in the hibernating generation, in 1955, 45% females, and in the summer generation - 44%; in 1956, respectively - 44.5 and 41%, and when caught on a kerosene lantern - 49 and 77%. In the beginning and at the end of the flight males predominate in both generations of

Card 1/2

POSTNIKOV, I.S.; ARUTYUNYAN, K.G.; TUGUSHEVA, N.I.; EL', M.A.; KARYUKHINA, T.A.

Investigating the operation of an air sedimentation tank at the Kur'yanovo aeration station. Nauch. trudy AKKH no.20:80-96 '63. (MIRA 18:12)

ARUTYUNYAN, L., inzh.

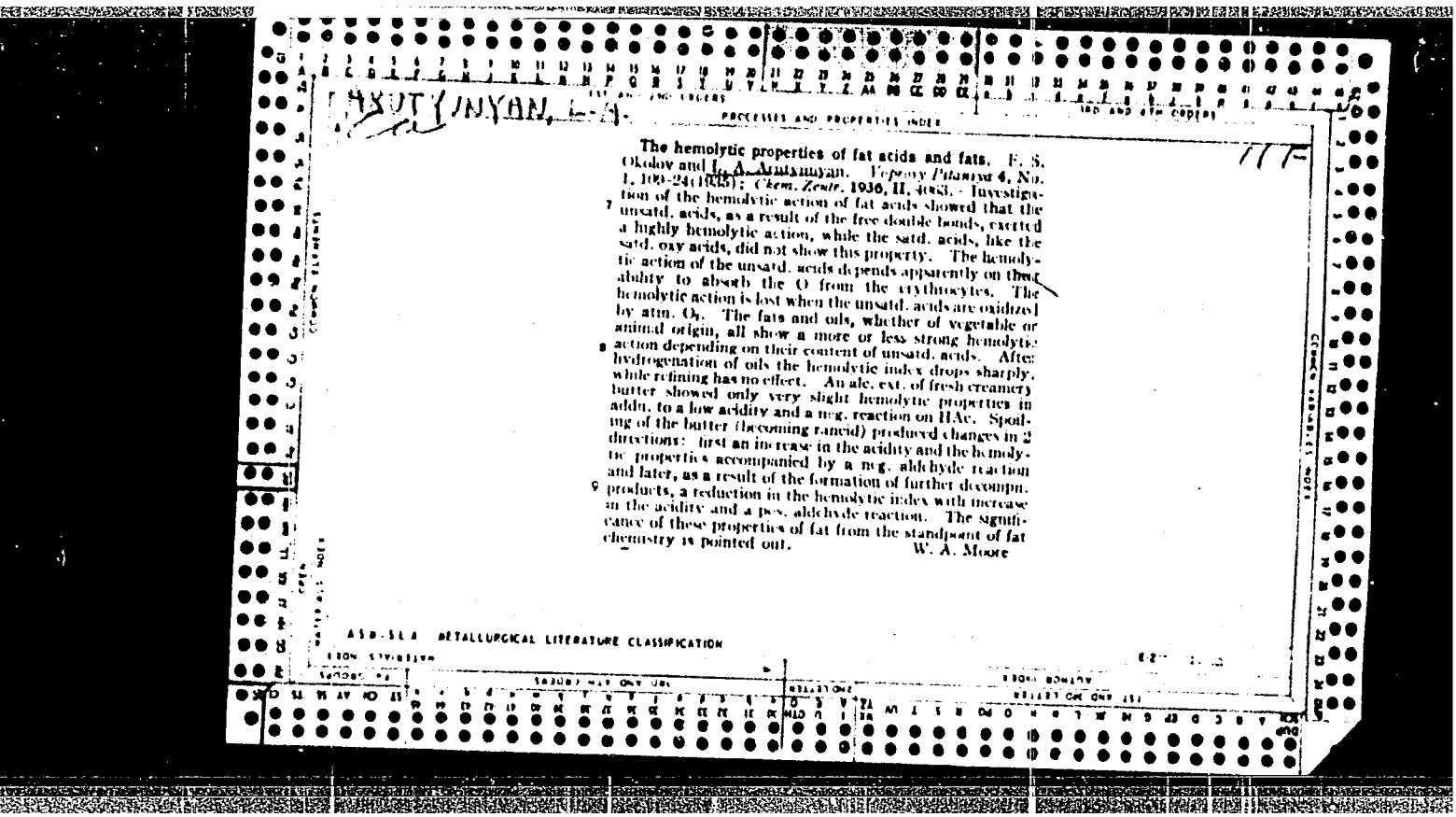
Intensifying the electrolysis of aluminum. Prom.Arm. 4 no.1:23-25 Ja '61. (MIRA 14:6)

1. Yerevanskiy alyuminiyevyy zavod.
(Erivan—Aluminum—Electrometallurgy)

ARUTYUNYAN, L.

Some problems in the increase of aluminum production. Prom.Arm. 5 no.5: 27-29 My '62. (MIRA 15:7)

1. Yerevanskiy alyuminiyevvy zavod.
(Krivan—Aluminum industry)



AKUT'YINYAN, L. A.

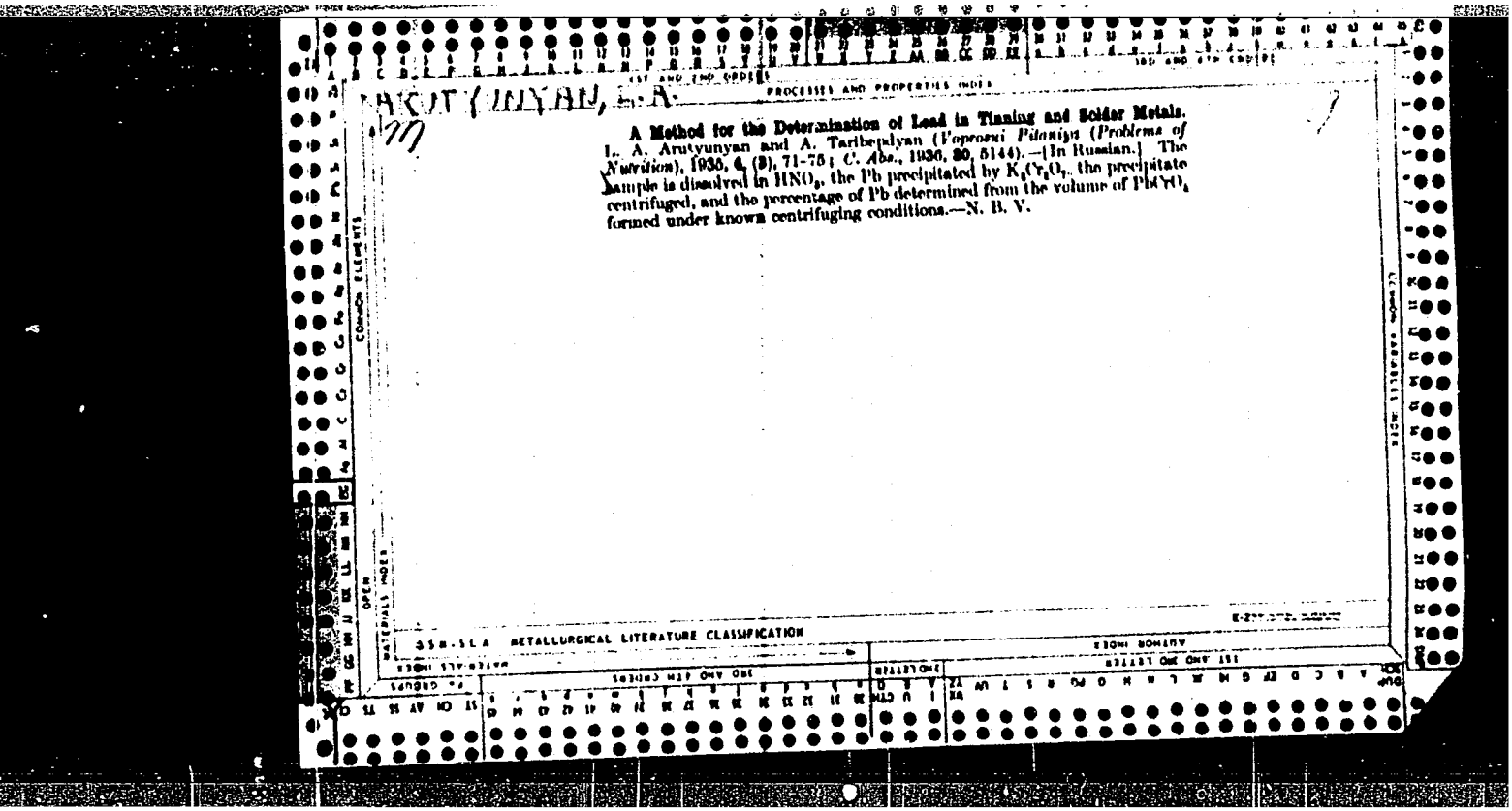
PROCESSES AND PROPERTIES INDEX

111

The hemolytic properties of fat acids and fats. F. S. Okolov and L. A. Arutyunyan. *Voprosy Pitaniya* 4, No. 1, 109-24 (1935); *Chem. Zentr.* 1936, II, 4063.—Investigation of the hemolytic action of fat acids showed that the unsatd. acids, as a result of the free double bonds, exerted a highly hemolytic action, while the satd. acids, like the satd. oxy acids, did not show this property. The hemolytic action of the unsatd. acids depends apparently on their ability to absorb the O from the erythrocytes. The hemolytic action is lost when the unsatd. acids are oxidized by atm. O_2. The fats and oils, whether of vegetable or animal origin, all show a more or less strong hemolytic action depending on their content of unsatd. acids. After hydrogenation of oils the hemolytic index drops sharply, while refining has no effect. An alc. ext. of fresh creamery butter showed only very slight hemolytic properties in addn. to a low acidity and a neg. reaction on HAc. Spoiling of the butter (becoming rancid) produced changes in 2 directions: first an increase in the acidity and the hemolytic properties accompanied by a neg. aldehyde reaction and later, as a result of the formation of further decompn. products, a reduction in the hemolytic index with increase in the acidity and a pos. aldehyde reaction. The significance of these properties of fat from the standpoint of fat chemistry is pointed out.

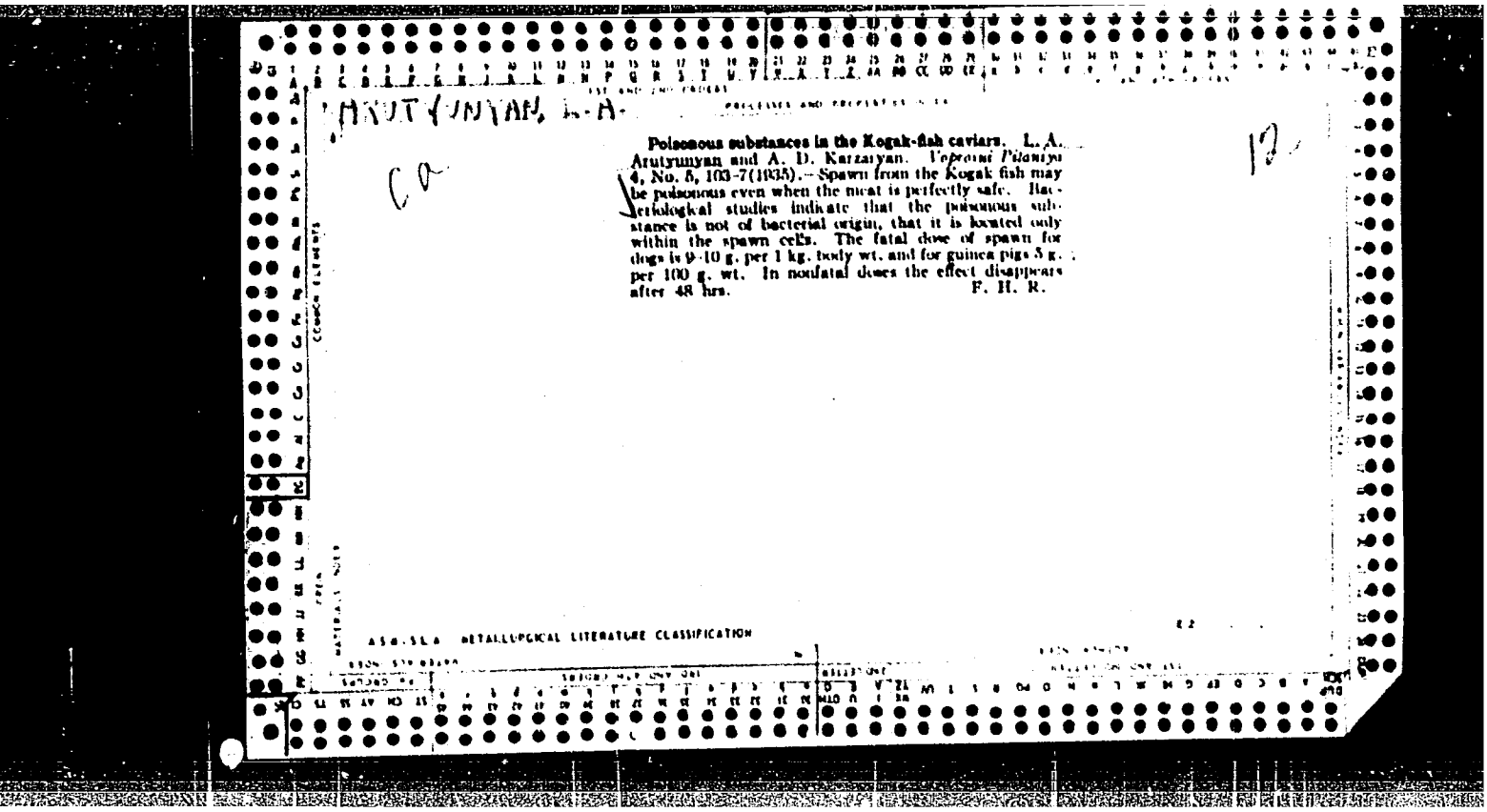
W. A. Moore

ASD-SLA METALLURGICAL LITERATURE CLASSIFICATION



ARUTYUNYAN, L. A.

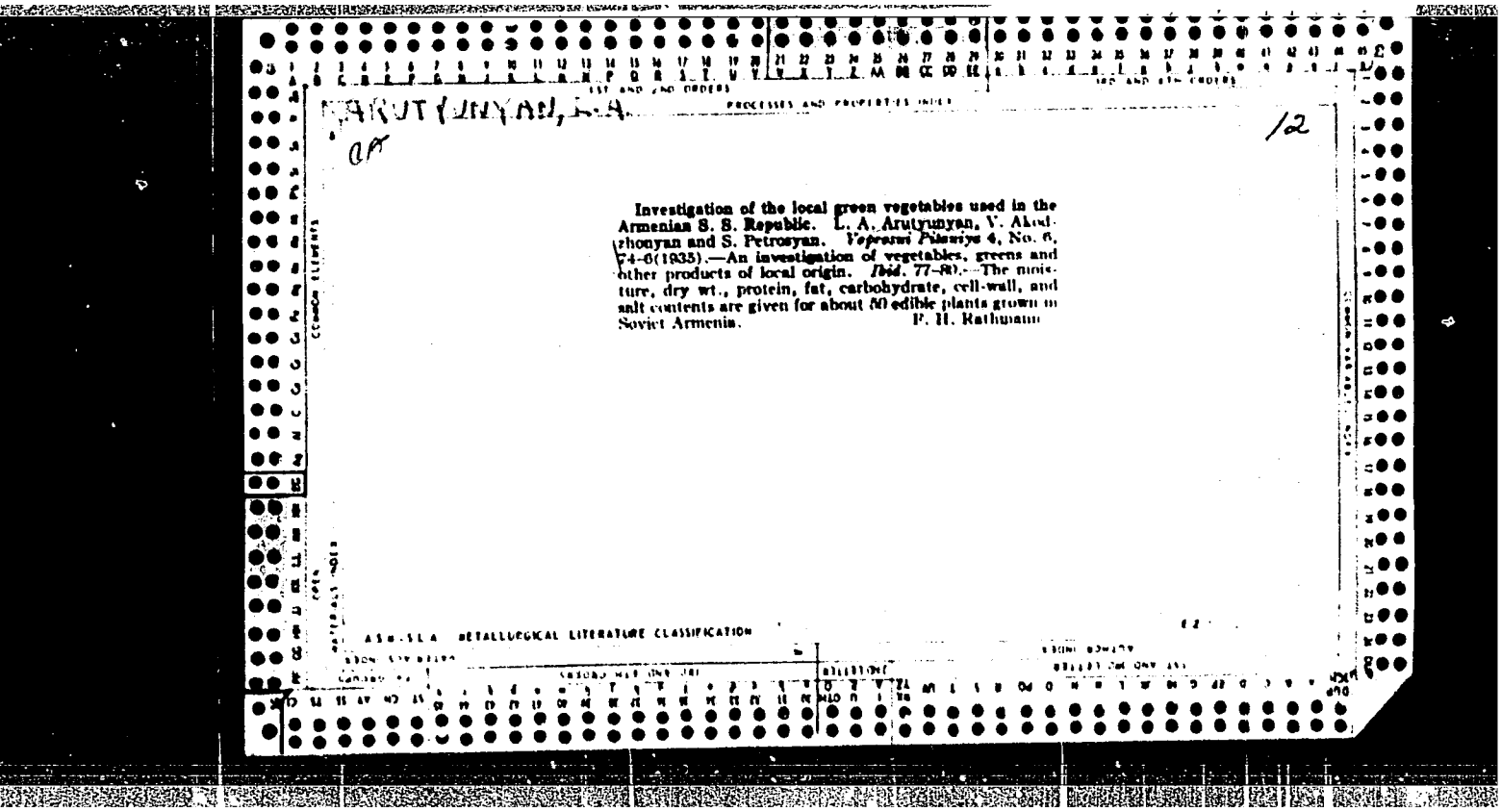
A Method for the Determination of Lead in Tinning and Solder Metals. L. A. Arutyunyan and A. Tarbeqlyan (*Voprosui Pitaniya* (*Problems of Nutrition*), 1936, **5**, (3), 71-75; *C. Abs.*, 1936, **30**, 5144).—[In Russian.] The sample is dissolved in HNO_3, the Pb precipitated by $K_2Cr_2O_7$, the precipitate centrifuged, and the percentage of Pb determined from the volume of $PbCrO_4$ formed under known centrifuging conditions.—N. B. V.



ARUTYUNYAN, L. A.

Poisonous substances in the Kogak-fish caviars. L. A. Arutyunyan and A. D. Karzaryan. *Voprosi Pitaniya* 4, No. 5, 103-7(1935).—Spawn from the Kogak fish may be poisonous even when the meat is perfectly safe. Bacteriological studies indicate that the poisonous substance is not of bacterial origin, that it is located only within the spawn cells. The fatal dose of spawn for dogs is 9-10 g. per 1 kg. body wt. and for guinea pigs 5 g. per 100 g. wt. In nonfatal doses the effect disappears after 48 hrs. F. H. R.

ASA-SLA METALLURGICAL LITERATURE CLASSIFICATION

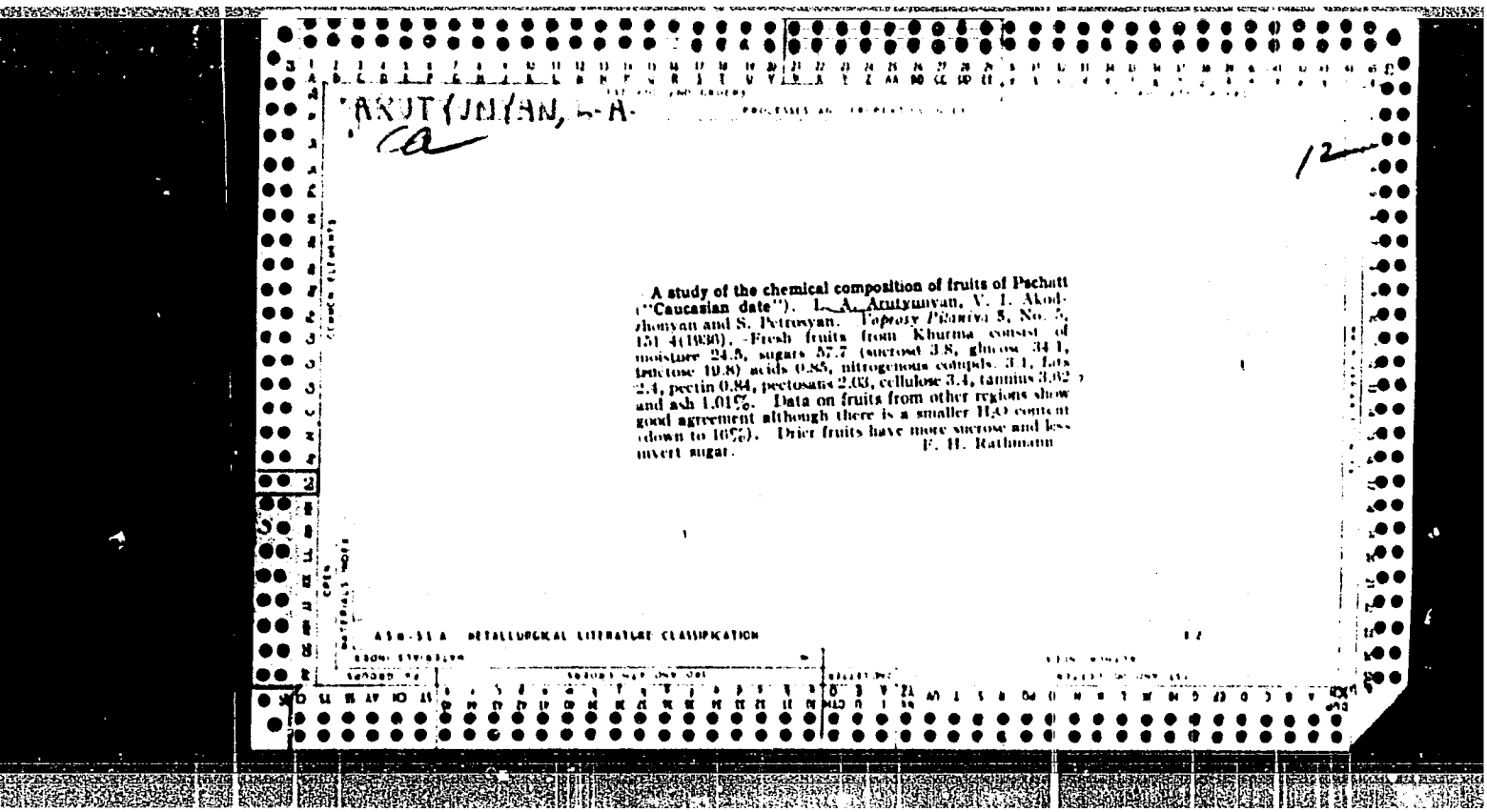


ARUTYUNYAN, L. A.

12

Investigation of the local green vegetables used in the Armenian S. S. Republic. L. A. Arutyunyan, V. Akul-zhonyan and S. Petrosyan. *Voprosui Pitaniya* 4, No. 6, 74-6(1935).—An investigation of vegetables, greens and other products of local origin. *Ibid.* 77–81.—The moisture, dry wt., protein, fat, carbohydrate, cell-wall, and salt contents are given for about 60 edible plants grown in Soviet Armenia. P. H. Rathmann

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION



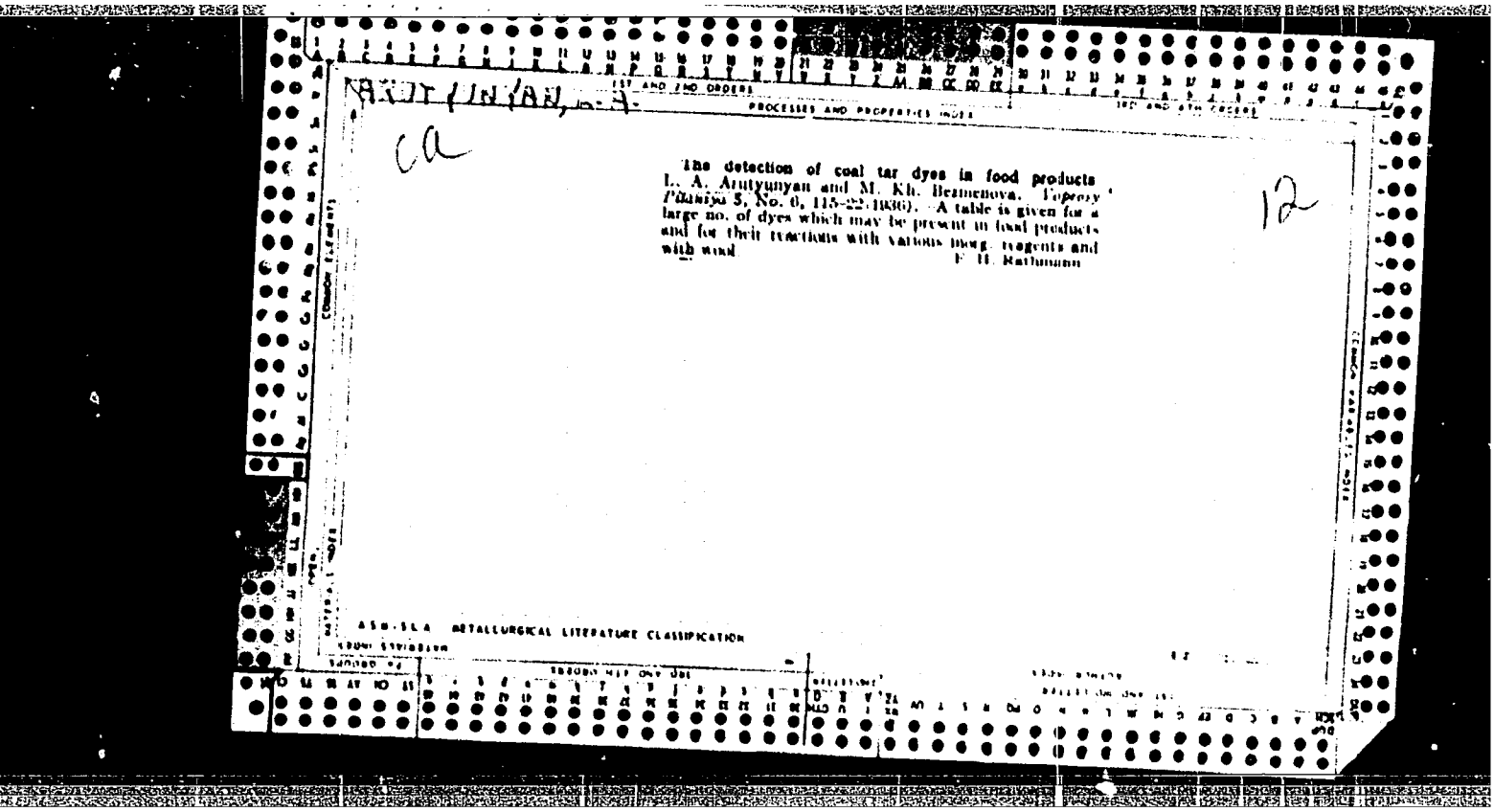
ARUTYUNYAN, L. A.

12

A study of the chemical composition of fruits of Pachatt ("Caucasian date"). L. A. Arutyunyan, V. I. Akodzhonyan and S. Petrosyan. *Voprosy Pitaniya* 5, No. 5, 151-4(1936). Fresh fruits from Khurma consist of moisture 24.8, sugars 57.7 (sucrose 3.8, glucose 34.1, fructose 19.8) acids 0.85, nitrogenous compds. 3.1, fats 2.4, pectin 0.84, pectosate 2.03, cellulose 3.4, tannins 3.02 and ash 1.01%. Data on fruits from other regions show good agreement although there is a smaller H_2O content (down to 16%). Drier fruits have more sucrose and less invert sugar.

F. H. Rathmann

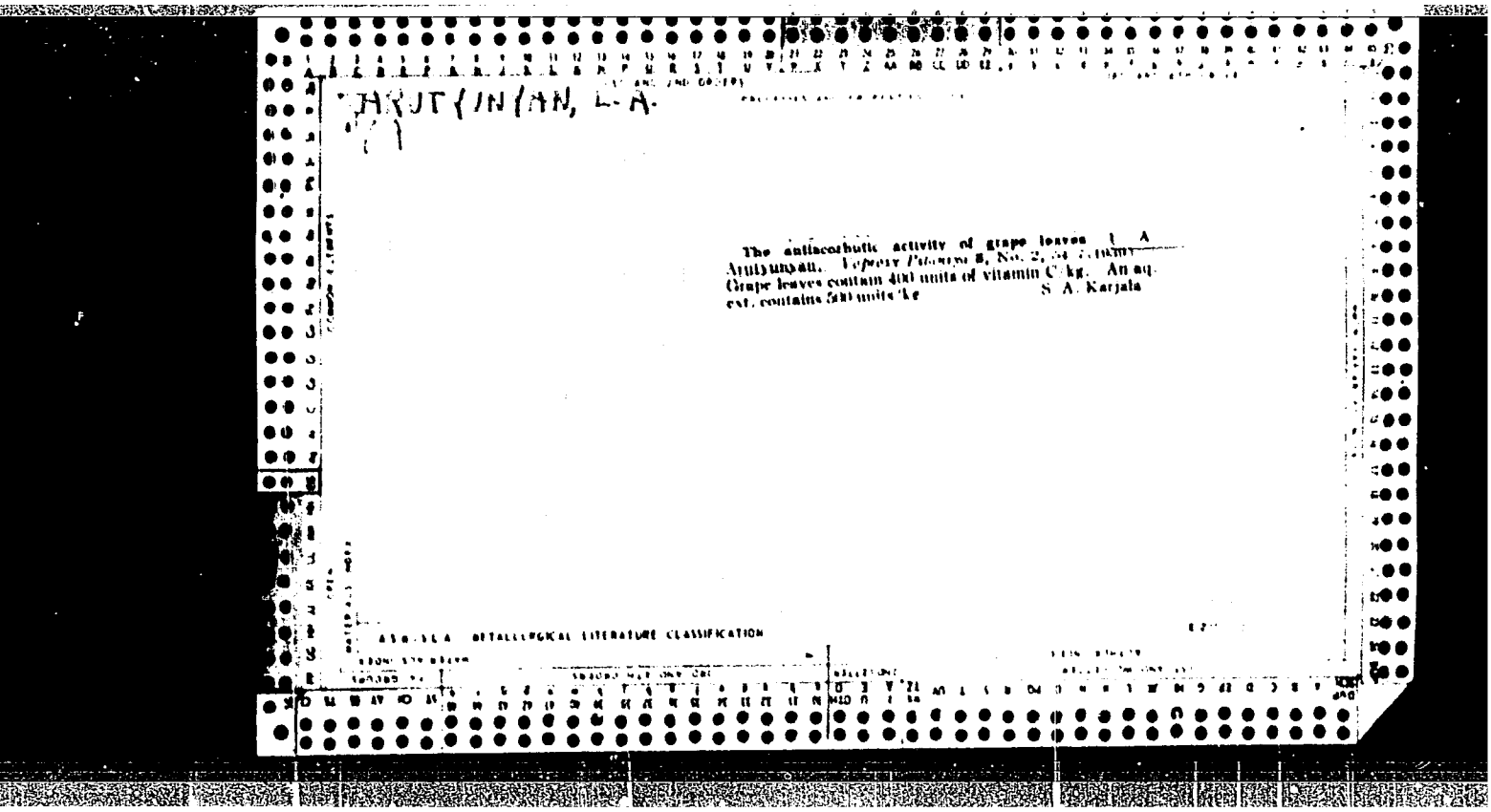
ASM-STA METALLURGICAL LITERATURE CLASSIFICATION

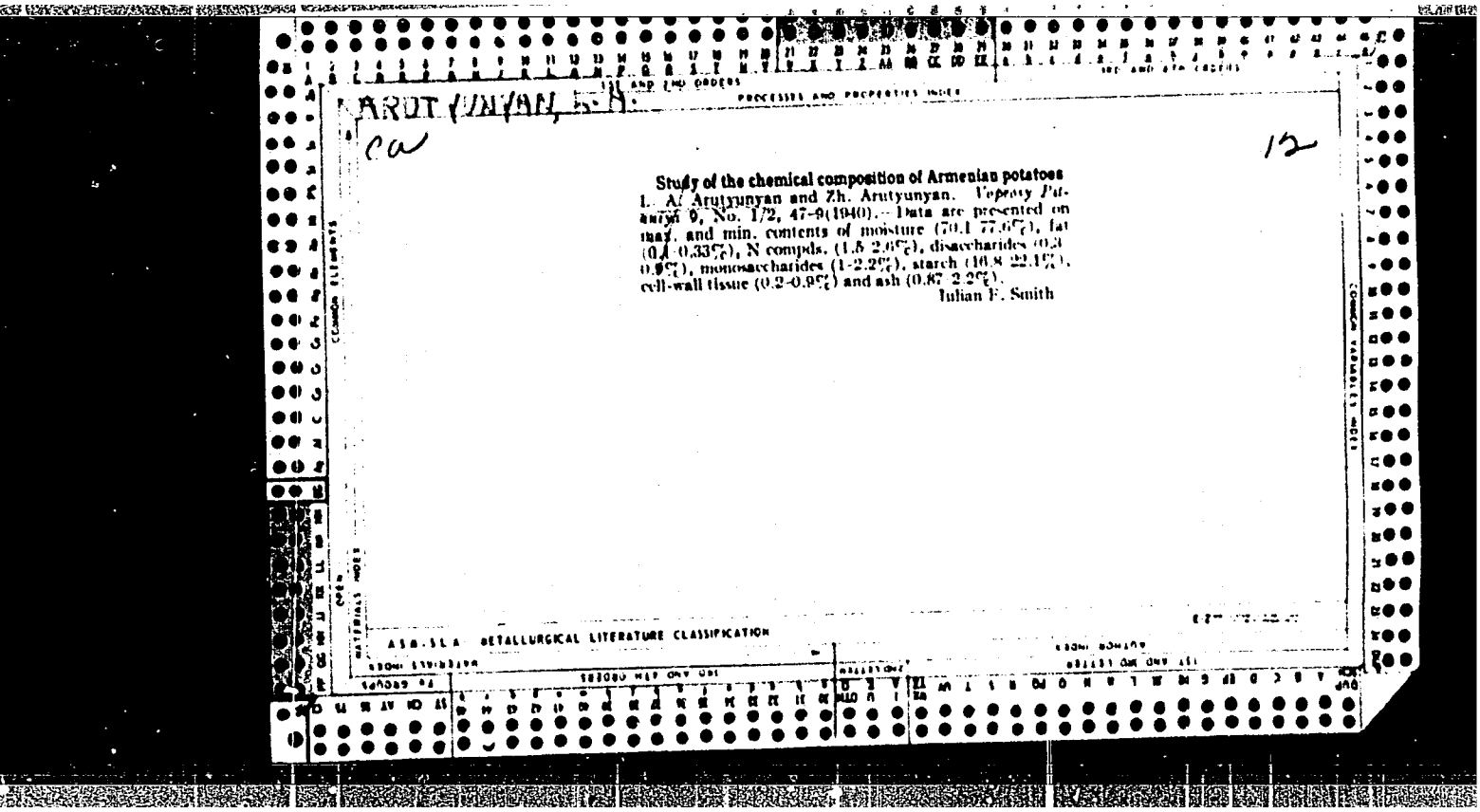


CA

12

The detection of coal tar dyes in food products. L. A. Arutyunyan and M. Kh. Bezmenova. *Voprosy Pitaniya* 5, No. 6, 115-22 (1936). A table is given for a large no. of dyes which may be present in food products and for their reactions with various reag. reagents and with wool.
F. H. Rathmann





ARUTYUNYAN, L. A.

ca

12

Study of the chemical composition of Armenian potatoes

L. A. Arutyunyan and Zh. Arutyunyan. *Voprosy Pitaniya* 9, No. 1/2, 47-9(1940).—Data are presented on max. and min. contents of moisture (70.1-77.6%), fat (0.1-0.33%), N compds. (1.5-2.6%), disaccharides (0.2-0.9%), monosaccharides (1-2.2%), starch (10.8-22.1%), cell-wall tissue (0.2-0.9%) and ash (0.87-2.2%).

Julian F. Smith

ASB-SLA METALLURGICAL LITERATURE CLASSIFICATION

Chemical Abstracts
Vol. 48 No. 5
Mar. 10, 1954
Biological Chemistry

Some summaries of the physiological evaluation of food products under conditions of a chronic experiment. L. A. Arutyunyan (Med. Inst. and Zootech.-Vet. Inst., Erevan). *Voprosy Pitaniya* 12, No. 5, 23-9 (1953).—The addn. of various common spices (in the form of the plants added to the diet) to the diets of expti. dogs leads to increased motor activity of the stomach and increased gastric secretion; the expts. were run with animals provided with various forms of Pavlov pouch. Mutton causes less active gastric secretion in dogs than does beef; the diet of meat as such causes less prolific gastric secretion than does a diet of internal organs of the animals. Thus the gastric activity is a delicate physiol. function which is affected readily by the nature of the stimulus. G. M. Kosolapoff

[redacted], I.

419

Gigiyena khleba yerevan'. Aypetrat, 1954. 30s. s ill. 20 sm. (M-vo zdravookhraneniya ARM. SSR). 5.000 ekz. 35k.--Na aym. yaz.--(54-48579) 614.31:664.6.

SO: Knizhnaya, Letopis, Vol. 1, 1955