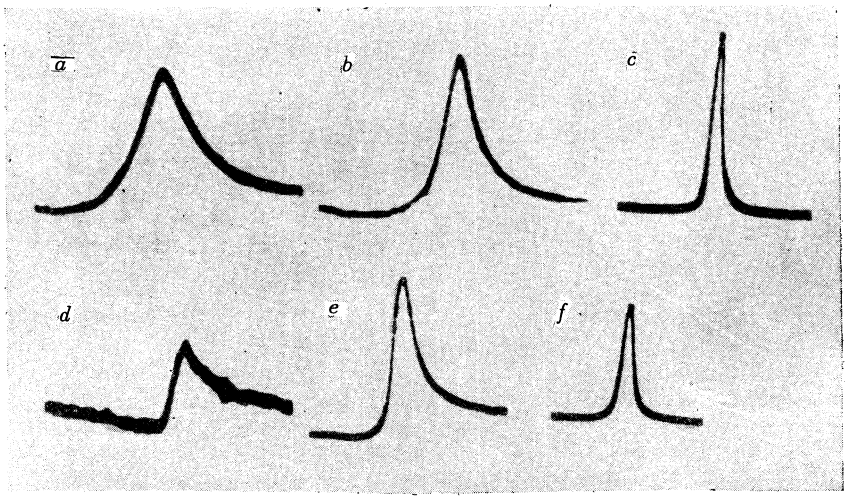
temperature dependence of the width ΔH in this sample is in good agreement with the data in Refs. 2 and 3.

We have not succeeded in trying to detect paramagnetic resonance in the potassium metal sample.



Temperature 300°K; *a*, *b*, *c* 225 mcs/sec; *d*, *e*, *f* – 9500 mcs/sec; size of lithium particles $a \sim 50$; $b \sim 30$; $c \sim 0{,}1$; $a \sim 30$; $e \sim 5$; $f \sim 0{,}1$ μ

* There was observed a widening of the absorption curves in all lithium samples at $T = 463°$K.

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Energy Spectrum of Cascade Photons in Light Substances

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BY the method of moments[1-8], it was possible to obtain a fairly complete description of a unidimensional development of an electron-photon cascade shower in light and heavy substances. The method is based on the calculation (with the aid of recurrence formulas) of the moment along the depth t by the distribution function $N(E_0, E^0, t)$ of the number of particles in the shower having energies higher than E^0, in a shower initiated by a primary particle of energy E_0^2.

In Ref. 3, a method was developed for the calculation of the energy spectra of cascade electrons, employing the system of polynomials, orthogonal in the interval $(0, \infty)$. In the present work, a similar method was used for the calculation of the energy spectrum of cascade photons in light substances. The results of the calculation of the number of photons $[N(E_0, E^0, t)]^{p,\Gamma}$ in a shower initiated by a primary electron or a photon in air for certain values of E_0, E^0 and t are given in Tables 1 and 2.

The accuracy of the method of calculation used was investigated in Refs. 3, 5 and 6. In addition, the values of the approximation curves agree, within the limits of 10%, with the values calculated by exact theoretical formulas at $E_0/\beta \gg 1$, where β is the critical energy for a given substance. The energy spectrum at the maximum of the curves is within the limit of 10 or less percent, in agreement with the "equilibrium" spectrum. Therefore, the calculated curves describe the real cascade process with an error of not more than 10 percent.

TABLE 1

$\{N_\Gamma(\varepsilon_0, \varepsilon, t)\}^\Gamma$

ε_0 \ t	0.5	1	2	3	4	5	7	10
				$\varepsilon = 0.11$				
0.6	0.71	0.51	0.26	0.13	0.064	0.032	0.008	0.001
1	0.76	0.58	0.33	0.18	0.10	0.053	0.014	0,002
5	1.12	1.24	1.24	1.00	0.70	0.45	0.155	0.024
11	1.23	1.78	2.45	2.33	1.85	1.30	0.52	0,100
20	1,29	2.24	3.80	4,11	3,57	2,74	1,27	0,295
30	1.50	2,62	4,84	5,72	5.40	4,43	2.30	0,594
50	2,54	3.43	5,92	8,07	8,70	7,93	4.72	1.378
				$\varepsilon = 0.2$				
0.6	0.69	0.48	0.23	0.110	0.053	0.025	0.006	0.001
1	0.72	0.52	0,27	0.140	0.073	0,038	0.009	0,0015
5	1,05	1,07	0,97	0,74	0.50	0,320	0.106	0,016
11	1,14	1,51	1,98	1.78	1.38	0,95	0,35	0,068
20	1,21	1,93	3,11	3,18	2.94	2.25	0,92	0,186
30	1,34	2,26	4,07	4,49	4,13	3,32	1,67	0,42
50	2,02	2,86	4,98	6.48	6,75	5,98	3,45	0.98
				$\varepsilon = 0.6$				
1	0,68	0,46	0,22	0.101	0,047	0,022	0,005	
5	0,85	0,74	0,55	0.37	0,24	0,144	0,045	0,006
11	0.94	1,03	1.12	0,96	0.70	0.46	0.164	0.025
20	0.99	1,33	1.84	1.79	1.44	1.03	0.42	0.084
30	1,02	1.55	2,48	2.62	2,25	1.71	0.78	0,177
50	1,18	1.86	3.36	4.00	3.82	3,16	1.65	0.43
				$\varepsilon = 1$				
5	0,77	0,62	0,40	0.256	0,156	0 090	0.026	0.03
11	0.89	0.88	0,82	0,607	0.428	0 284	0,102	0.018
20	1.02	1.19	1,35	1.22	0.74	0,662	0,275	0,064
30	1,05	1,37	1,86	1 73	1.54	1.03	0.545	0.129
50	1,16	1,72	2.66	2.99	2.69	2,14	1.11	0.150

The curves obtained were used for the calculation of the altitude course of differing in energy photons of the soft component portion, initiated by π^0-mesons. The spectrum of the primary photons was taken from the data by Carlson and others[9]. The calculated and experimental spectra at the height of 45 g/cm^2 differ considerably. This difference, apparently, may be explained by the fact that in Ref. 9 a large number of soft photons was not taken into account.

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TABLE 2

$\{N_\Gamma(\varepsilon_0, \varepsilon, t)\}^P$

ε_0 \ t	0.5	1	2	3	4	5	7	10
				$\varepsilon = 0.11$				
0.6	0.125	0.14	0.073	0.023	0.007			
1.0	0.28	0.30	0.172	0.060	0.020			
5	1.33	1.67	1.30	0.77	0.405	0.205	0.053	0.009
11	1.98	2.82	2.73	2.10	1.37	0.84	0.295	0.042
20	2.33	3.83	4.73	4.11	3.04	2.05	0.81	0.146
30	2.59	4.63	6.47	6.15	4.90	3.53	1.55	0.327
50	3.01	5.72	9.13	9.76	8.61	6.75	3.36	0.83
				$\varepsilon = 0.2$				
0.6	0.063	0.068	0.036	0.011				
1.0	0.172	0.189	0.105	0.035	0.015			
5	1.09	1.33	0.98	0.538	0.265	0.126	0.032	0.007
11	1.64	2.27	2.16	1.56	1.00	0.591	0.203	0.029
20	1.93	3.07	3.63	3.06	2.21	1.46	0.562	0.096
30	2.16	3.79	5.14	4.75	3.70	2.61	1.11	0.222
50	2.54	4.77	7.35	7.67	6.55	5.03	2.43	0.578
				$\varepsilon = 0.6$				
1	0.025	0.028	0.015	0.008	0.002			
5	0.582	0.69	0.480	0.244	0.108	0.045	0.016	0.003
11	1.00	1.34	1.19	0.80	0.472	0.262	0.079	0.019
20	1.32	1.97	2.12	1.66	1.13	0.70	0.246	0.036
30	1.50	2.45	3.02	2.60	1.91	1.28	0.493	0.087
50	1.66	3.09	4.51	4.37	3.53	2.56	1.12	0.240
				$\varepsilon = 1$				
5	0.382	0.452	0.308	0.152	0.063	0.024	0.004	0.001
11	0.78	1.00	0.83	0.514	0.287	0.152	0.040	0.009
20	1.08	1.53	1.52	1.12	0.732	0.442	0.129	0.027
30	1.28	1.96	2.21	1.80	1.274	0.83	0.299	0.052
50	1.52	2.57	3.38	3.09	2.40	1.69	0.706	0.148

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Heat Capacity of KCl

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WE have calculated the heat capacity of the KCl crystal for 16 temperatures in the range from $T = 10.89°$ to $T = 267.6°$K. In the determination of the heat capacity, the values of the natural frequencies of KCl were used, calculated by the author in previous work[1,2] by taking into account the deformation of the lattice ions, as well as the