The rubber vulcanizate obtained by formula 4 has good physico-mechanical properties, *e.g.* samples vulcanized at 160°C for 10 minutes give tensile strength 106 kg/cm^2, elongation 730%, modulus 300% elongation 9kg/cm^2 and permanent set 5%.

The effect of cure time on ϵ' and ϵ'' was also studied. Three cure times were used namely 10, 15 and 25 minutes. As shown in figure 2, ϵ' does not change with the cure time, while ϵ'' is changes slightly. Since the cure time affects mainly the physico-mechanical properties of vulcanizates, it is recommended to use the cure time which gives optimum physico-mechanical properties, as its effect on the dielectric properties is negligible.

This study leads to the conclusion that the ingredients which are normally added to improve the physical properties of raw rubber, specially in the described proportions, do not practically change the dielectric properties

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Comparison of experimental and theoretical pair cross-sections near the thershold

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It is well known that the experimental pair cross-sections of gamma rays very near the threshold are not in agreement with the predicted values from Bethe-Heitler theory (1934) or with the extrapolated values from Jaeger & Hulme (1936) calculations. Recently, however, more accurate theoretical pair cross-sections are reported by Overbo *et al* (1968) claiming a better agreement with the experimental values near the threshold In the present communication a comparison is made of experimental cross-sections at 1.119 MeV reported by

Rama Rao *et al* (1963) with Overbo's (1968) theory. In addition, the pair cross-sections in germanium recently reported by Yamazaki *et al* (1965) are compared with Overbo's theory with a view to test its validity near the threshold.

Rama Rao *et al* (1963) measured the pair cross-sections absolutely at the energy 1.119 MeV in eight elements from copper to lead, using a coincidence method. Yamazaki *et al* (1965) determined the pair cross-sections in germanium in the energy range 1.007 to 2.754 MeV by using a Ge(Li) crystal both as the target as well as detector. These latter cross-sections were measured relatively and then normalized to the Jaeger & Hulmes' (1936) value at 2.754 MeV which is 4% higher than the Bethe-Heitler (1934) value. It must be noted that this method implies the agreement between the experimental value and the theoretical value of Jaeger & Hulme at 2.754 MeV in germanium. The experimental values of Yamazaki *et al* and those of Rama Rao *et al* along with the theoretical values of Overbo *et al* are given in tables 1 and 2.

It can be seen from the table 1 that the agreement between theory and experiment is satisfactory from 2.754 MeV down to 1.5 MeV. Below this energy there is deviation. The deviation cannot, however, be ascribed to an error arising from normalization procedure since the discrepancy increases with atomic number. It may also be noted that the theoretical values are always smaller than the experimental values wherever there is a discrepancy. The inclusion of screening correction, neglected in the theory of Overbo *et al*, would however, still decrease the theoretical cross-section. The trend of deviation, increasing with atomic number toward the pair threshold, suggests that adequate refinements are necessary in the theory of Overbo *et al* in these directions.

TABLE 1 Experimental pair cross-sections in germanium (millibarns per atom)

Energy (MeV)	Experimental Value	Theoretical Value (Overbo *et al* 1968)
1.007	0.342±0.029	0.266
1.115	1.38±0.10	1.14
1.173	4 66±0.17	3.85
1.278	15.0±0.5	13.5
1.332	24.8±0.8	21.9
1.368	30.7±1.0	26.6
1.407	37.7±2.1	33.1
1.477	55.7±2.5	47.3
1.596	78.3±4.2	75.0
1.837	153±7	145.0
2.185	263±10	246.0
2.318	284±8	282.0
2.754	451±14	447.0

TABLE 2. Pair cross-sections of 1.119 MeV gamma rays (millibarns per atom)

Element	Experimental Value	Theoretical Value (Overbo *et al* 1968)
Cu	1.42±0.09	1.02
Zr	2.95±0.18	2.16
Rh	3.90±0.23	2.79
Sn	5.00±0.3	3.43
Ta	11.40±0.6	6.3
Pt	13.20±0.7	6.92
Au	13.40±0.7	7.0
Pb	14.80±0.7	7.24

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Some comments on exact partition function of Ising model in Magnetism in one, two and three dimensions in non-zero field

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In a recent paper on Ising model, Das (1970) comes to the surprising conclusion that Onsager's (1944) and Yang's (1952) results of two dimensional Ising model are not reliable ! A closer look at the paper reveals that Das's approach to the problem is basically erroneous. The basic fallacy in