$$\frac{dE_1}{dt_1}\frac{dt_1}{ds} + \left(\frac{\partial\chi}{\partial t_1} + \frac{d\mathbf{P}_1}{dt_1}\frac{\partial\chi}{\partial\mathbf{P}_1}\right)\frac{dt_1}{ds} + \left(\frac{\partial\chi}{\partial t_2} + \frac{d\mathbf{P}_2}{dt_2}\frac{\partial\chi}{\partial\mathbf{P}_2}\right)\frac{dt_2}{ds} + \frac{dE_2}{dt_2}\frac{dt_2}{ds}.$$

This is zero, independently of the relations between t_1, t_2 and s. Thus $(E_1 + \chi + E_2)$ is constant for any fundamental observer, no matter what definition of simultaneity he adopts.

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Milne, *Proc. Roy. Soc.*, A, **160**, 12 (1937).
Schild, *Phys. Rev.*, **66**, 340 (1944).

I AM in general agreement with the content of Dr. Camm's letter. The fact which he independently arrives at, that the energy integral in the problem of two bodies (or indeed, of any number of particles) is independent of the simultaneity convention adopted, I had already encountered in my own work. I may point out here that until *some* simultaneity convention is adopted, a conservation law applying to a number of different particles has no meaning; for the essence of a conservation law is that we pick out some attribute of the motion of each particle, and add them all together. If these attributes are varying in time, as in gravitational problems, it is essential to decide at what epoch to evaluate each attribute, and so to adopt a standard of simultaneity. It is therefore very satisfactory that the conservation of energy comes out independently of the standard of simultaneity adopted. Similar considerations apply to the conservation of linear and angular momentum, to which I hope to return on a future occasion.

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Thermal Stability of D.D.T.

IT appears that on certain information obtained from America the belief has become current that D.D.T. decomposes and loses hydrogen chloride at relatively low temperatures, for example, of the order of 107–130° C.

Recently, Fleck and Haller[1] have shown that iron and aluminium compounds catalyse this decomposition very readily at 110–120° C., in 15 minutes to the extent of 99 per cent with the formation of the corresponding dichloroethylene (m.p. 88–89° C.). We have now examined the thermal stability of D.D.T., and find that this substance, whether it be pure or the commercial quality, is only decomposed at relatively high temperatures.

We have confirmed Fleck and Haller's observations that metal salts, even in very small amounts, enhance the onset of this decomposition.

Our experiments were carried out by placing samples of D.D.T. in a tube fitted with a thermometer and an air-bubbler, and heating in a glycerine bath. The air was drawn through a short air condenser and passed into 1 per cent silver nitrate solution, acidulated with nitric acid. The sample (*c.* 40 gm.) was melted at 110–115° C., and the temperature raised at the rate of 1·2–1·4° C./minute. The decomposition point was noted as the temperature at which a definite turbidity appeared in the silver nitrate solution.

In sample No. 2, rapid evolution of hydrogen chloride set in with consequent precipitation of silver chloride.

No.	D.D.T. sample taken : m.p. in ° C.	Decomposition point (° C.)	m.p. of recovered material (° C.).
1	Batch 50; 80% $p:p'$; m.p. 96–102; setting pt. 96	200	98–100
2	As above + 0·1% $FeCl_3$	120	81–91
3	As above + 0·005% $FeCl_3$	150	94–100
4	MBL/204/2; 71% $p:p'$; m.p. 89–100	188	—
5	Batch 203; 75% $p:p'$; m.p. 82–94	170	82–92
6	D.D.T. m.p. 108·5–109·5 (corr.); setting pt. 107·5	195	106–107·5 (corr.)

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[1] Fleck and Haller, *J. Amer. Chem. Soc.*, **66**, 2095 (1944).

Effect of Pretreatment on the Toxicity of Insecticidal Films on Building Surfaces

INSECTICIDAL films, formed by the deposition of a solution of pyrethrins in a heavy refined mineral oil of very low volatility, for example, Shell Oil P.31, have been used in warehouses for the control of *Ephestia* and *Plodia* moths and caterpillars[1]. These films were formed on wooden boxes. There has more recently been a considerable increase in scope for the use of such films for controlling other pests of stored foodstuffs, especially beetles, which are more resistant than the moths and their caterpillars to most insecticides, including the pyrethrins. We have found, however, that, other things being equal, the toxicity of films of pyrethrins in a heavy oil differs widely according to the material upon which the insecticide is deposited.

In laboratory experiments at 25° C. and 70 per cent relative humidity, samples of different building materials were sprayed with 1·6 per cent w./v. pyrethrins in P.31 oil at a rate of 4 mgm./sq. cm.; this deposit is much greater than that applied in practice. Twenty-four hours after spraying, batches of flour beetles, *Tribolium castaneum* Herbst., were confined on the samples. The percentages of insects knocked down and dead after six days exposure to the insecticide are shown in the accompanying table.

Surface	Knock-down (%)	Dead (%)
Rough deal	100	59–77
Brick	100	15–31
Limewashed brick	0–12	0– 8
Concrete	0–16	0–16
Cement	0–10	0–10

Thus, oil films incorporating pyrethrins as the toxic agents were of moderate toxicity when deposited on deal, of low toxicity on brick, and virtually non-toxic on limewash, concrete and cement. A trial under practical conditions has confirmed the differ-