## TV CAMERAS

After reading Pat Hawker's sad news (June, 1984) about the way we have lost our lead in the field of automated tv cameras, I cannot help wondering whether our national broadcasting organisation has done all it might to help British manufacturers in one way or another.

For many years now I have been accompanying parties of final-year degree students on conducted tours of the Television Centre at White City, but I have never seen a Marconi Mark VIII in use there, or its even more sophisticated successor. A further surprise for me on my most recent visit was in the News studio, where the pre-automatic British cameras have now been replaced by German equipment.

I know that it is not the function of the BBC to act as a shop-window for British manufacturers, and I know that they claim to always buy the most suitable apparatus for the job regardless of its origin. Surely, however, they have some obligations in this respect by virtue of their high international profile, which makes a visit to White City a 'must' for all visitors from foreign broadcasting organizations. What is so special about the News studio that its requirements could not have been met by either of the two home manufacturers? The great publicity boost of having Fernseh cameras on display at our most prestigious television complex is all the more regrettable when one remembers the notorious chauvinism and penetration-difficulty of the German broadcasting market.

I have not been to Washington for many years. Maybe the British Ambassador is now using a Mercedes. (Or is it a Datsun?)

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## ROOTS OF RELATIVITY

Four letters referring to Special Relativity theory appeared in the July issue of *Wireless World*. Three of these admit or imply that serious imperfections exist in the theory, while the fourth is neutral. Equally interesting is the spectrum of attitudes of the four contributors.

C.B.V. Francksen of Farnborough provides an excellently balanced and informative review of the status of Einstein's second postulate (that the velocity of light is the same for all observers despite their mutual relative motions), and the logical difficulties that the postulate failed to overcome concerning media for electromagnetic wave propagation, that is, "aethers". He points out correctly that "Einstein raised his 1905 paper in an attempt to show that we can have as many aethers as we like"; this is the opposite of the popular legend that Einstein "abolished" the luminiferous aether. (He just refused to mention it). Not least of Mr Francksen's virtues is that he advocates *practical experimental tests* in five areas of fundamental concern, which he identifies. The sting of his letter lies at its tail.

G.Blondeau of Ottawa affirms that Special Relativity as a theory is incomplete, and that "since it is basically a correction to classical electrodynamics" it does not have a microbasis. He than warms my heart further by concentrating on *physics* rather than mathematics or mythology, and asks six questions in physics to which the theory, if it is a physical theory, ought to be able to provide answers. Many of us will no doubt be watching in amused anticipation to see whether any Relativist will try to answer those questions, and how credible his answers will be.

J.G.D.Pratt of Leatherhead takes the soft line that we ought not to expect much from our fundamental theories anyway: "their truth cannot be inferred from other theories and facts". But he goes on to say (with Sir Karl Popper) that a fundamental theory nust be refutable by established facts. The idea is that what distinguishes a scientific theory from a faith or dogma is that it can be *disproved.*

Mr Pratt then goes on to say that "It is not a valid objection to a fundamental theory to say that it embraces a concept which clashes with your old preconceived ideas, or that it cannot be derived from something else". I'm sure every scientist will agree with that. Fortunately, many students of physics won't accept that Special Relativity can contain gross logical inconsistencies within itself and still be valid as a theory in physics. If some person says to me, "Black is the opposite of white, while at the same time black is the same as white", I will believe that person to be mistaken; my own ideas, whether preconceived or otherwise, don't enter into that argument. A group of propositions ("theory") may carry the seeds of its own disproof. If it does it should not survive.

E.R.R.Holmberg of Barnes finds my articles embarrassing; I'm sorry about that, because I have no wish to give anybody offence. But I am, unashamedly, trying to wake people up and encourage them to think with their heads. Any conscientious Natural Philosopher nowadays *ought* to be embarrassed by the abysmal situation that fundamental physics has been allowed to get into, partly through negligence and partly through unprotested intellectual dishonesty. "It is true that there are serious imperfections in both Relativity and Quantum Mechanics" admits Dr Holmberg, "and if Dr Murray confined himself to explaining tham to your readers one could not object". Perhaps he would care to join me in listing, for your readers, a few more of the logical crimes that these theories continue to perpetrate so glaringly? My surveys have not been exhaustive!

I think Dr Holmberg summarizes the difference in our attitude most aptly when he says, by way of throwaway, "...but then common sense has never been of much help in theoretical physics". That is probably true of the mathematically-dominated physics which has grown up since 1905, when the mystical rot set in, but would Sir Isaac Newton, Dr Holmberg's hero (and mine), have accepted it as criticism of his approach? I hold that the self-disciplines of common sense and logic *do* count, and that nobody has ever proved the contrary; hence I can manage without quarks, tachyons, virtual photons, time that runs backwards, black holes, and multiple parallel universes. Flights of fancy of that kind, when they are trotted out seriously in public as the latest "discoveries" that our theoretical physics has to offer, are what embarrass *me.*

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*Kippford*
*Galloway*

## ROOTS OF RELATIVITY

NO, Dr Murray (May, 1984) is wrong. AM' is not equal to BM'. Dr Murray forgets that the coordinates of distant events are not directly observed but are based on mathematical reference. He also, unfortunately, presents the problem in a way which suggests an a priori causal connection between events A and B where there is none. The only link between them is the *a posteriori* observation of the simultaneous arrival of their signals at M and M' when both observators lie precisely midway between the milestones struck by the lightning flashes. There is no contradiction here.

If M registers the events at $\pm X$ and their signals reach him at $t=0$ then, according to the Lorentz transformation, M' places them at

$$x'_A = -X\sqrt{\frac{c-v}{c+v}}\, t_A = -\frac{X}{c}\sqrt{\frac{c-v}{c+v}}$$

$$x'_B = X\sqrt{\frac{c+v}{c-v}}\, t_B = -\frac{X}{c}\sqrt{\frac{c+v}{c-v}}$$

from where their signals reach him simultaneously at $t'=0$. Meanwhile milestone A is moving away from M' at speed v and milestone B towards him at the same speed, so that at $t'=0$ the positions of the milestones are

$$S'_A = -X\sqrt{\frac{c-v}{c+v}} - \frac{vX}{c}\sqrt{\frac{c-v}{c+v}}$$

$$= -X\sqrt{1-\frac{v^2}{c^2}}$$

$$S'_B = X\sqrt{\frac{c+v}{c-v}} - \frac{vX}{c}\sqrt{\frac{c+v}{c-v}}$$

$$= X\sqrt{1-\frac{v^2}{c^2}}$$

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