sounds including speech, music, metronome clicks, noise and tones located at 0.75, 2.37 and 7.50 m. Although the intensity of the sounds at the ear varied with their distance, loudness changed less than predicted from the stimulus. This auditory loudness constancy occurred either in the dark without prior acquaintance with the laboratory, or with blindfolded subjects who viewed the laboratory between tests, or with subjects who viewed the laboratory throughout. Thus, even without visual information, the loudness of sounds is relatively constant as stimulus intensity varies with source distance. It is conceivable that in the Engel and Dougherty experiment the constancy of apparent flash–click simultaneity was secondary to the loudness constancy of the click. That is, constant loudness may have provided a basis for judgments of stimulus timing. Such an interpretation seems more plausible than one attributing both forms of constancy to a common base, as loudness constancy is probably correlated with the streaming velocity of the sound[3]. It would be of interest to compare the degree of auditory loudness constancy with that of flash–click constancy at different distances to establish whether the functions are similar.

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[3] von Békésy, G., *Experiments in Hearing* (McGraw-Hill, 1960).

Reply to Engel and Dougherty

While examining the results found by Engel and Dougherty in their investigations of visual–auditory distance constancy[1], we noticed a simpler explanation than the one which they suggest. Broadly, their results (ref. 1, Fig. 1) lie parallel to the line which would apply if no account were taken of propagation time, but 50 ms lower. This suggests that, while observers have the ability to assess relative time of arrival of the stimuli, they have not developed the skill for interpreting this information; 50 ms, corresponding to 17 m, could be some sort of average based on the relative delays met in everyday life.

The suggested lack of skill is borne out by the experience of those who watch cricket only rarely. The delay in the click of bat hitting ball always comes as a slight surprise. With reference to even larger distances, many people do not realize that the flash of lightning and the crack of thunder originate simultaneously: usually, these things just do not matter to us. The acquired intellectual skill of those who count off the seconds as thirds of a kilometre, or fifths of a mile, is, of course, a different matter altogether.

Calculation of the optimal auditory–visual delay for a large cinema could, in principle, be a very complex matter, according to whether each member of the audience is considered as seated in the theatre and seeing either a picture on a screen or a view through a window, or as seated at the position of the original camera. The fact that no extensive study seems ever to have been made, or needed, is further evidence of the fortunate fact that people are generally uncritical on this matter.

The objection to our suggestion lies in the measurements shown at a very short distance in Fig. 1 of ref. 1. Although we cannot explain this result, we can quote other data which suggest that it should be treated with reserve. The matter has been of interest in telecommunications, because the sound and vision signals in television may be sent by different means, possibly with markedly different propagation times. Three separate investigations, using differing methods, have led to the general conclusion[2] that a fairly wide tolerance is permissible, equal to a range of about ± 100 ms referred, not to zero, but to a delay of sound relative to vision in the vicinity of 35 ms. This result, obtained at distances around 2 m, gives a data point at $+2$, -35 on Fig. 1 (of ref. 1), which lies conveniently close to a line projected from the larger distances.

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Mortality of Vultures caused by Electrocution

In the south-western Transvaal in South Africa, Cape vultures, *Gyps coprotheres*, have been accidentally electrocuted by contact with 88 kV high tension power lines; it is possible that, occasionally, individuals of other vulture species may be involved as well. It is not known whether these large birds are killed trying to perch or when flying off, or both.

Table 1 Minimum Numbers of Vultures Electrocuted 1970–71 *

Month	1970	1971	Total
January	1	4	5
February	4	3	7
March	10	16	26
April	5	33	38
May	3	11	14
June	3	2	5
July	0	2	2
August	0	0	0
September	0	0	0
October	0	2	2
November	2	8	10
December	7	13	20
Totals	35	94	129

* Figures for early 1972 are: January, 5; February, 4; March, 10.

From January 1, 1970, to March 31, 1972, at least 148 vultures were killed. Table 1 shows that there is a quiet period at the time of year when *G. coprotheres* has eggs and young in the nest in the Transvaal. Presumably the concentration of vultures in an area at any one time would depend on the amount of food available. The figure 148 relates to the number of bodies found during inspections, frequently carried out to determine the cause of line faults: vultures have proved to be troublesome in this regard. As the power lines pass through both densely populated areas of human habitation and rural scrub country, additional corpses could easily have been removed by man or scavengers, disappeared as a result of decomposition, or have been overlooked. Thus the actual number of deaths was no doubt greater.

It would be of value to know if vultures are also electrocuted in other areas, particularly those where there are relatively few large trees for them to perch in, as is the case in the SW Transvaal. Birds with a low reproductive rate, like vultures, usually have a correspondingly low death rate, and accidental electrocution on a large scale might have a significant impact on vulture populations.

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