



# Aberration problems

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were deposited in the Lithgow district, but it is doubtful if they ever extended to Bathurst. There is nothing to show what happened in this region during Mesozoic and early Tertiary times. The Hawkesbury Sandstone (probably Triassic) may have approached nearer to Bathurst than it does now. In late Tertiary times stream-deposits were formed on the granitic rocks, and afterwards covered with thick basaltic lava-flows, which have since undergone much denudation.

2. 'The Geology of Matto Grosso (particularly of the region drained by the Upper Paraguay).' By J. W. Evans, D.Sc., LL.B., F.G.S.

The district includes a portion of the Brazilian hill-country, and also of the low-lying plains to the south-west.

The rocks principally dealt with are unfossiliferous, and of unknown age, except that they appear to be older than the Devonian. They may be classified as follows:—

5. Matto Shales.  
(Relations not shown.)
4. Rizama Sandstone.  
(Perhaps some unconformity.)
3. Curumbá and Arara Limestones.  
(Very marked unconformity.)
2. Cuyabá Slates.  
(Strong unconformity.)
1. Ancient crystalline rocks.

The Devonian and later rocks are briefly described.

3. 'Notes on the Occurrence of Mammoth-remains in the Yukon District of Canada and in Alaska.' By George M. Dawson, C.M.G., LL.D., F.R.S., F.G.S.

## LVI. *Intelligence and Miscellaneous Articles.*

### ABERRATION PROBLEMS.

*To the Editors of the Philosophical Magazine and Journal.*

GENTLEMEN,

**N**OW that my paper of March 1892 on Aberration and Ether Motion has been published by Messrs. Kegan Paul & Co. for the Royal Society (Phil. Trans.), I ask permission to state that reference to an experimental investigation made at Leipzig in 1889 by Th. des Coudres was unwittingly omitted (Wied. *Ann.* vol. xxxviii. p. 73).

It consisted in observing the mutual inductance of a pair of coils when their common axis made different angles with the Earth's motion through space; the apparatus used being a kind of induction-balance. So far as I remember it is the first electrical experiment

in this subject actually tried, and its result is as negative as all the optical ones have been. I am not prepared to admit that there ought to be a first-order effect; but, anyhow the experiment is an interesting modification of the thermopile experiment suggested in 1833 by Fizeau, which so far as I know has not yet in that form been attempted.

It happens that Herr des Coudres in the same communication suggests the possible aberration of a mountain-top as seen from a valley, referred to in a footnote to § 32 of my paper.

I would also take this opportunity of mentioning a mathematical memoir by Professor H. A. Lorentz, "La Théorie Electro-magnétique de Maxwell, et son application aux corps mourants," which appeared in the *Archives Néerlandaises*, vol. xxv. in 1892. There are also various short communications by Mr. Heaviside on the same subject in his collected papers.

Yours faithfully,

OLIVER J. LODGE.

October 28th, 1893.

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ON A SIMPLE METHOD OF INVESTIGATING THE CONDUCTING  
POWER OF DIELECTRIC LIQUIDS. BY K. R. KOCH.

In recent times many investigations have been made as to the coexistence of dielectric power and electrical conductivity. Engaged myself on an investigation in which I desired to ascertain qualitatively the power of insulation, I have found the following method very useful and rapid in its execution.

If it be assumed that electrical conductivity in dielectric liquids is of the nature of electrolysis, we must look for galvanic polarization in two electrodes inserted in it and connected with a galvanic battery. In ordinary circumstances this could not of course be galvanometrically or electrometrically measured. Yet a capillary electrometer, in which the electrolyte is the liquid itself to be investigated, may in a suitable manner be made so sensitive that the existence of a polarization, and therewith of electrolytic conductivity, may be demonstrated. An ordinary Lippmann's capillary electrometer could not be used for this purpose; Dewar's\* form is much more sensitive. This consists of a horizontal tube about 1 mm. in the clear, which on each side is connected with mercury cups; the mass of mercury in the tube is separated by a drop of dilute sulphuric acid, if the instrument is to be used in the ordinary way for measuring electrolytic forces; in the present case the dilute acid was replaced by a drop of the substance to be investigated. If, now, the two mercury cups are connected with the poles of a battery the drops move in one way or the other, according to the direction of the current, if the liquid conducts electrolytically, and thus when polarization takes place at the opposite surfaces of the mercury.

\* 'Nature,' vol. xv. p. 210 (1877).