



CABLE ADDRESS "RESEARCH"

IN YOUR REPLY PLEASE QUOTE

FILE No. M45-17-13C-3

NATIONAL RESEARCH COUNCIL
CANADA

RADIO AND ELECTRICAL
ENGINEERING DIVISION

OTTAWA 2.

2 March, 1961.

Mr. Grote Reber,
c/o Research Corporation,
405 Lexington Avenue,
NEW YORK 17, N.Y.

Dear Grote,

I read with much pleasure your recent letter in Proc. IRE concerning the history of the crossed antenna and the parallels which exist in the field of optics. I have always been intrigued by the connections which exist between the two areas, and although I do not have anything in direct answer to your letter, I have come across something which probably fits into the evolution of such things. It is an early reference of 1883 which refers to the production of light beats and could be regarded as analogous to the phase-switching technique introduced by Ryle. I found the reference to it in a footnote to an article in the Physical Review (vol. 99, page 1691; 1955). The reference is to: A Righi, J. Physique, 2, 437, 1883, and my notes read "Describes an ingenious production of light beats. Demonstrates that light which has passed through a rotating Nichol prism may be resolved into two circularly polarized beams, one increased in frequency and the other decreased in frequency. Author performed an experiment in which one slit was illuminated by light of reduced frequency and the other slit by the increased frequency. Both altered to be plane polarized in the same plane. The moving fringe pattern was observed and interpreted as beats. In principle, no different from those produced by moving a mirror of a Michelson interferometer."

It is interesting, I think, to realize that radio wave techniques grew out of the early optical experiments, and now with the introduction of the laser, the flow of ideas has returned once more to the investigations in the optical region. This has started completion of the circle, and perhaps we are now entering a new era in which there should be tremendous consolidation of scattered fields of experience.

With very best regards,

Yours sincerely,

AEC:HP

Arthur E. Covington,
Radio Astronomy Group,
Microwave Section.