

where

$$y = \frac{I_1}{I_0}$$

$$y = 1 - \frac{\xi^2}{4} - \frac{\xi^2 p^2}{45}$$

and

$$\delta = \frac{\xi^2 p^2}{12}$$

The graph of the equation y and α very closely follows the experimental curves obtained by me at various frequencies between 3 and 20 m.c. [The properties of the relation y and α have been discussed fully in Hardy's *Pure Mathematics*, p. 224 (1928), esp. compare figures 41 (b) and 41 (c), with the experimental curves above.] The experimental results are in good agreement with the Raman-Nath theory.

The form of this equation accounts for all the peculiarities of the curves observed under (a), (b), (c) and (d).

Further, for smaller values of $\frac{y}{\delta}$, which is the case for lower ultrasonic frequencies, one would expect a flat maximum, since the maximum will be separated by asymptotes, the distance between which (say x) will determine the extent of the maximum. The values of x as determined experimentally are as given below:—

	$x =$
at 20 m.c.	0
15 m.c.	0.41 a
10 m.c.	0.67 a

This explains well why the maximum gets flatter at lower frequencies.

In conclusion, it may be remarked that the experimental results obtained at oblique incidences on the diffraction of light by high-frequency sound-waves are in good agreement with the generalised Raman-Nath theory, as tested here between 3 m.c. and 20 m.c., provided the supersonic intensity is not great at high frequencies.

A detailed paper will be published elsewhere.

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November 5, 1937.

¹ S. Parthasarathy, *Proc. Ind. Acad. Sci.*, 1936, 3, 442, 594.

² C. V. Raman and N. S. Nagendra Nath, *ibid.*, 1936, 4, 221.

See also, "Der Ultraschall," by L. Bergmann (1937).

Cashew Nut Shell Oil as a Mosquito Larvicide.

This opinion of well-known malarialogists is not totally in favour of the heavy and light oil mixtures which are slow to act and tend to be blown away from the surface of the treated area before many larvae and pupae are killed. Our investigation was undertaken to discover a suitable toxic substance which, added to the oil film, produced rapid death in a large number of larvae and pupae within as short a time as possible. The details of our experiments would be published elsewhere but we have found that the addition of cashew nut shell oil to kerosene or "High Speed" Diesel oil enhances their killing power three times, when tested under laboratory conditions. This activation of the oil at the same time proportionately decreases the cost of the anti-mosquito measures.

Working with larvae and pupae of *Armigeres obturans*, a culicine mosquito commonly obtainable in Bombay, we found that while 3 ml. per square foot of kerosene oil alone was necessary to obtain a cent. per cent. kill, one ml. of a mixture of 5 parts of cashew nut shell oil and 95 parts of kerosene or H.S. Diesel oil was adequate for the purpose.

India at present holds a monopoly of cashew nut shell oil, which is obtained as a by-product during the production of cashew kernels. The tree *Anacardium occidentale*, originally introduced from South America, has well established itself in the coastal forests of India. The oil referred to above is used for painting wood, as a protection against insects and is exported to America and Europe for paint mixtures.

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Assimilation of Atmospheric Nitrogen by Germinating Peas.

ASSIMILATION of gaseous nitrogen by germinating legumes, non-symbiotically, has been the subject of numerous enquiries during recent years, but no conclusive results have so far been obtained.¹⁻⁴

In the course of our studies on the germination of certain legumes in enclosed