LETTERS TO THE EDITOR

	Page
On Theory of a New Method for Determining Young's Modulus. V. L. Talekar	337
New Methods of Obtaining Squares of Numbers. V. L. Talekar	337
A Note on the Occurrence of Spores Comparable to Rodelites dakshini *Sahni from the Deccan Intertrappean Beds of Vikarabad.* S. R. Sarma	338
Chemical Composition of Storage Organs of Plants A Factor in Photoperiodism. P. B. Mathur	338
Heat Conductivity and Molecular Complexity of Water. S. R. Mohanty ..	339
Production of Vitamins of the B-Group by B. subtilis *Grown on Synthetic Medium.* B. S. Lalla	339
Relative Efficiency of Bacteria and Protozoa in the Flocculation and Oxidation of Organic Matter Suspended in Water. S. C. Pillai, T. K. Wadhwani, M. I. Gurbaxani and V. Subrahmanyan ..	340
Respiration of Vorticella. S. C. Pillai, T. K. Wadhwani and V. Subrahmanyan	341
Utilisation of Sewage Farms for Growing Sugarcane and Production of White Sugar. S. C. Pillai, R. Rajagopalan and V. Subrahmanyan	342
Colouring Matter of the Flowers of Hibiscus esculantus. T. R. Seshadri and N. Viswanadham	343
Mercurochrome as an Indicator in Halogen and Silver Ion Titrations. J. W. Aiyar and N. D. Ghatage	343
Chemical Examination of the Leaves of Adenanthera pavonina *Linn.* C. S. Patel, C. C. Shah and H. P. Parikh ..	344
Some Benzene 1 : 4-*Disulphonic Acid Esters.* M. Raghavan, B. H. Iyer and P. C. Guha	344
Some Benzene 1 : 4-*Disulphonamides.* M. Raghavan, B. H. Iyer and P. C. Guha	344
Congo Red as Adsorption Indicator. R. C. Mehrotra	345
Effect of Storage on the Alkaloidal Content of Strychnos Nux-vomica *Seeds.* S. V. Puntambekar	346
Chemical Examination of the Seeds of Derris scandens. C. J. Dasa Rao and S. Sankara Subramanian	346
Mosaic Disease of Malvastrum coromandelianum *Garcke.* S. V. Venkatarayan	347
The Dermal Scutes of Mabuya dissimilis *Hallowell.* Syed Muzammil Ali ..	348
A Latent Virus in Tomato. R. S. Vasudeva and J. Sam Raj	348
A Case of Polyembryony in Wahlenbergia gracilis *Schrad.* K. Subramanyam ..	350
Live Fungi Culture Collection at the I.A.R.I. J. F. Dastur	350
Effect of Different Treatments on the Removal of Hydrocyanic Acid from the Burma Bean (Phaseolus lunatus *Linn.*). S. A. Rahman, S. S. De and V. Subrahmanyan	351
Assay of Globin-Insulin Preparations. H. Biswas, B. Mukerji and N. K. Iyengar	352
Ni-ThO$_2$-Kieselguhr (100 : 18 : 100) *Catalyst for the Fischer-Tropsch Reaction. Part II.* J. C. Ghosh, N. G. Basak and G. N. Badami	353

ON THEORY OF A NEW METHOD FOR DETERMINING YOUNG'S MODULUS

All the available methods for determination of the Young's modulus involve mechanical means for producing the strain. It is, however, well known that strains can be produced in the conducting material by electro-magnetic methods; but no use is made of the foregoing fact for designing a method leading to the determination of Y. The object of the present note is to give the theory of a possible simple method based on the above principle.

Let the conducting material, in the form of an anchor-ring, have a mean radius, r—large compared with the cross-sectional radius. Let it be traversed by a strong direct electric current i. On placing the ring in the field H of a powerful electro-magnet with its plane perpendicular to the field, the radius r will undergo a change by δr, the measurement of which finally leads to the value of Y for the ring.

Each line element ds of the ring is acted upon by a force of value '$Hids$' in the plane of the ring tending to increase or diminish the area of the loop depending on the direction of the current. Thus in the material of the ring a state of tension is set up, the value of which is given by,

$T = Hir$ ..... (1) as obtained by considering the equilibrium of the element ds. If A is the cross-sectional area of the ring then $\frac{T}{A}$ denotes the stress, and $\frac{\delta r}{r}$ the strain. Thus using (1) we get the value of Young's modulus

$$Y = \frac{Hir^2}{A\delta r} \qquad (2)$$

That the method is quite workable can be seen from what follows. Let us choose an arbitrary specimen, say a ring of copper wire, having $r = 1$ cm.; and $A = \cdot 002$ cm.^{2} (S.W.G. No. 25). For a moderate current and a field of about 10,000 Gausses which can be readily applied in a laboratory the δr will be of the order of about $\frac{1}{2}\ \mu$. This value of δr is quite within the range of interferometric methods of measuring small distances.

Department of Physics,
Dungar College, V. L. Talekar.
Bikaner,
July 22, 1947.

NEW METHODS OF OBTAINING SQUARES OF NUMBERS

Mr. A. A. Siddiqi under the above heading has published two notes[1,2] in your esteemed Journal, with a view to giving new, simple and ready methods for calculating the squares of numbers. He has done also some examples to illus-