Transmission Gears, Mechanical, Electric, and Hydraulic, for Land and Marine Purposes. By E. Butler. Pp. xii+164. (London: Charles Griffin and Co., Ltd., 1917.) Price 8*s.* 6*d.* net.

THIS book is intended for engineers engaged in the application of internal-combustion engines for automobile, marine, and other purposes, and provides a fairly exhaustive treatment of friction-clutches, change-speed gears, and reversing methods. The book contains a large number of illustrations taken from working drawings; these drawings, together with the accompanying descriptions, constitute the most valuable part of the work, and should be very useful from the designer's point of view. The author is by no means so happy in the sections introducing calculations, and in some parts has produced so much confusion as to render these portions almost unreadable. Thus the terms "torque" and "driving effort" have entirely different meanings, but the author uses them indiscriminately in his calculations on friction-clutches. The result is that there are many errors in this section of the book, which should be revised thoroughly in the second edition. Further, calculations which "run on" in the text are difficult to follow; these are much more likely to be read and understood if displayed properly. There is also need for the introduction of clear methods of calculating epicyclic gears; those given are not likely to be of much assistance to the designer. As stated above, the value of the book consists in its collection of working drawings, and its value could be greatly enhanced by thorough revision.

LETTERS TO THE EDITOR.

[*The Editor does not hold himself responsible for opinions expressed by his correspondents. Neither can he undertake to return, or to correspond with the writers of, rejected manuscripts intended for this or any other part of* NATURE. *No notice is taken of anonymous communications.*]

Construction for an Approximate Quadrature of the Circle

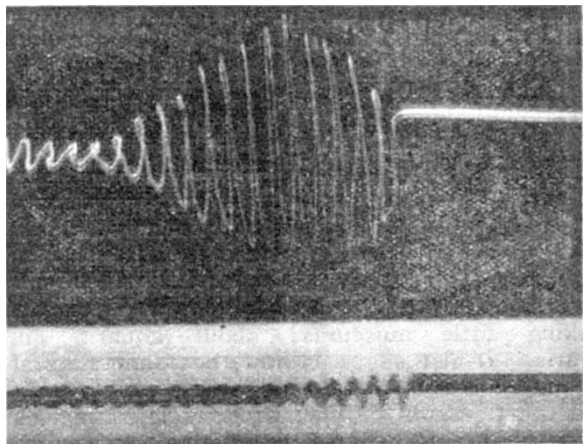
DR. ROUSE BALL'S interesting account, in NATURE of May 23, of M. de Pulligny's constructions reminds me of another simple one which I do not think known. If OA, OB are perpendicular radii of a circle of radius 1, and if BCD is a line cutting OA in C and the circle in D and representing the side of the square in question, then $OC=\sqrt{(4/\pi-1)}=0{\cdot}52272321$, which, put into the form of a continued fraction, has for convergents $\frac{1}{2}$, $\frac{11}{21}$, $\frac{12}{23}$, $\frac{23}{44}$, $\frac{2910}{5567}$, etc. The convergent $\frac{23}{44}$, or 0·52272727, differs (in excess) from the real magnitude only by 1 in 128750; hence if we take C such that $OC=\frac{23}{44}OA$, which can be done easily and with great accuracy, the line BCD represents the required side with all the accuracy which any graphic construction can be expected to give. Theoretically, this method is 121 times more accurate than M. de Pulligny's construction with the Archimedes ratio, but thirty-seven times less accurate than that with the Metius ratio. In practice, however, this relative inaccuracy is absolutely unnoticeable, and the method here described is the easier to carry out.

ROBERT E. BAYNES.

Christ Church, Oxford.

The "Wolf-note" in Pizzicato Playing.

THE accompanying photograph, showing the simultaneous vibration curves of the G string and bridge of a 'cello played *pizzicato* at the "wolf-note" pitch, presents some noteworthy features which may be of interest to readers of NATURE. One of the striking features is the extremely rapid dissipation of energy. The other feature is the effect of the motion of the bridge on the vibration of the string. The photograph may, in fact, be briefly described as showing a strongly



damped *coupled* vibration of the string and bridge, in many respects differing from the cyclical vibrations excited by *bowing* at the "wolf-note" pitch described by me in previous communications to NATURE. At pitches slightly different from that of the "wolf-note," the dissipation of energy is far less rapid, and the motion of the string approximates to that of an ordinary damped harmonic vibration. C. V. RAMAN.

Calcutta, April 12.

The "Hay-box" Principle in Cooking.

IT happened last week that about 1 lb. of fresh lamb was put into an oven at night in order that it might be cooked by morning on the "hay-box" principle. It was in a casserole, with a little water. Similar treatment in the same oven on previous occasions had been very successful. At about 5 a.m. the casserole was examined, and the broth was found to be very well tasted, and the whole smelt fresh and good, but the meat when tested with a fork was not tender, and the fat (of which there was a good deal) was *entirely* unmelted. The casserole was returned to the oven (then quite cool) and taken out again after breakfast. The contents were then found to be smelling most offensively, as if extremely "high." The fat was melted. The meat and broth were judged quite unfit for human food.

I wonder if any of your readers would explain this curious development. AN INQUIRER.

May 30.

British Oligochæt Worms.

I AM now engaged on the MS. of my monograph of British Oligochæts for the Ray Society. The first volume will be devoted to the Enchytræids or white-worms. Though the country has been well worked, no doubt there still remain indigenous species which have not yet been recorded; and I shall be glad to aid other workers in making them known.

HILDERIC FRIEND.

Cathay, Solihull, Birmingham.