measurements show that quanta of long wave-length have an effective length (in the sense of Lawrence and Beams) which is very much shorter than the wave-length of the radiation.

In my experiments a glass prism spectrograph and a photographic plate were used instead of a photo-electric cell. A Kerr cell with nitrobenzol as material was operated by means of sustained oscillations of 30 metres wave-length. Spectra of various sources were photographed with the cell operated as described above, and these spectra were compared with those obtained by applying a small direct field to the cell. This field was adjusted by trial so as to give the same intensity as the high-frequency alternating field. In all cases the spectra were identical.

It was expected that if light quanta should have a length corresponding to the mean life of an atom, then since for an opening time of $T = \frac{1}{2} \times 10^{-7}$ some lines are longer and some shorter than T, a change in the relative intensity of lines would be observed. No such effect was observed. Further, if the nicols were crossed well, the direct field which had to be applied was the root mean square value of the alternating.

The spectrograph was a low-dispersion, large-aperture Zeiss instrument kindly loaned by Dr. Meggers of the Bureau of Standards. It was naturally impossible to observe the theoretical broadening by means of it.

Needless to say, the experiments of Lawrence and Beams and those of the writer are a continuation of the experiments of G. P. Thomson with canal rays.

G. BREIT.

Department of Terrestrial Magnetism,
Carnegie Institution of Washington.

A Polymorphic Oligochæte.

DURING a recent visit to North Wales an effort was made to increase our knowledge of its oligochæte fauna. The most interesting result was the discovery in three different localities of as many different forms of one worm, usually known as the Venetian worm (*Eisenia veneta* Rosa). In a rubbish heap near some gardens in Colwyn Bay I came across one specimen which closely resembles Rosa's type. Hitherto this has only been found at Kew, where it is probably an introduction. The Welsh specimen, however, has tubercula pubertatis on four segments on one side, while the normal two are on the other. This recalls the variety *zebra*. In a garden near by several specimens of a very different form occurred. In almost every British earthworm the girdle is much more fully developed dorsally than ventrally, but in these the conditions were exactly reversed. So characteristic is the appearance as to justify a distinguishing name, and this variety may be known as *tumida*. The third form was found under the bark of a tree along with several dendrobænic worms, and this closely resembles some of the other varieties which have been described.

We now have at least half a dozen well-marked varieties of this most unstable of all British worms, the list being as follows:

1. *Eisenia veneta* Rosa, *typica*. Kew Gardens, Sept. 1909. Colwyn Bay, Sept. 1926.
2. Var. *zebra* Mich. Ireland. Southern, 1909.
3. Var. *hibernica* Friend. Dublin, June 1892.
4. Var. *dendroidea* Friend. Malvern, 1909.
5. Var. *robusta* Friend. Kew, Oxford, Malvern and elsewhere, 1909.
6. Var. *tepidaria* Friend. Oxford, 1904.
7. Var. *tumida* Friend. N. Wales, 1926.

Some interesting problems present themselves in connexion with these facts, and a wide field for observation and investigation is opened up thereby.

HILDERIC FRIEND.

"Cathay," Solihull, Jan. 18.

Tuning-Forks with Parallel Prongs.

ATTENTION has been directed by Mr. Maxwell (NATURE, Jan. 22, p. 124) to an apparently extraneous overtone heard in tuning-forks, the pitch of which is one octave above the fundamental tone of the fork.

An explanation of the presence of this tone was supplied by the late Lord Rayleigh, who ascribed it to the action of unbalanced centrifugal force set up by the motion of the ends of the prongs in curved paths ("Collected Papers," vol. 1, p. 318).

A state of oscillatory tension thus comes into existence within each vibrating prong, and the frequency of this oscillation is double that of the transverse vibrations of the prongs themselves. The same holds for the bases of vibrating reeds and the ends of a vibrating wire.

Rayleigh obtained the octave tone by using a 256 fork on the box of a 512 fork. It may also be brought out by means of a Helmholtz or other resonator.

As Mr. Maxwell remarks, it is also heard when the butt end of the vibrating fork is placed on a table. With gentle pressure, the fundamental alone is heard, but with increased pressure, the octave above becomes audible, the pressure having to be increased as the amplitude of the prongs diminishes. By using a domestic spring-balance it may be found that the pressure required to bring out the octave of, say, a 512 fork with parallel prongs rises from 1 or 2 ounces to 6 or 7 ounces while the octave remains audible.

When the prongs are inclined to the stem, a component of the centrifugal force is not transmitted to the stem, and the vibration of the butt end due to this cause is of smaller amplitude.

G. E. ALLAN.

Department of Applied Physics,
University of Glasgow.

[Mr. W. Anderson, College of Technology, Manchester, writes to point out that the effect described by Mr. Maxwell is also referred to by Lord Rayleigh in his "Theory of Sound," vol. 2, p. 463.—EDITOR, NATURE.]

Adsorption of Dyes to Silver Halides: a Correction.

IN a letter on this subject (NATURE, Dec. 25, p. 913), the number of dye molecules adsorbed at saturation to the surface ions of silver bromide crystal was given as about 1 dye molecule to 20 ions at pH 5·5. An error in the calculations has been found, which shows that the adsorption should be just ten times as great, namely, 1 dye molecule to about 2 ions of the lattice surface. Inasmuch as the dye adsorption increases with increased pH, it is probable that the limiting adsorption density occurs at the formation of a complete monomolecular layer. It may be possible to test whether the maximum sensitising effect is reached before this layer is completed.

S. E. SHEPPARD.

Eastman Kodak Company,
Rochester, N.Y., Jan. 12.

George Henry Lewes.

I SHOULD esteem it a great favour if any one possessing a photograph, however small, of George Henry Lewes about 1875, would allow me to have it copied.

E. SHARPEY-SCHAFER.

University New Buildings,
Edinburgh, Feb. 7.