5. Sketch general outline, rays (steamers), and rifts.
Near end of totality.

6. Sketch general outline and any rays of streamers or rifts.

7. Note if there be a blaze of light or glare where the sun is about to reappear.
After totality.

8. Sketch any rays that may be visible; give length, colour, and structure, as well as position.

Questions to be answered in writing immediately totality is over.

a. Has there been any change? if so, specify what change.

b. Have especially the *dark rays* or rifts changed?

c. Describe what has been constant throughout, and define its structure.

d. State the colours you observed outside the red prominences.

e. Were the colours anywhere arranged *in layers* round the sun?

f. Were the colours anywhere arranged *radially?*

g. As the moon passed over the sun were the colours similar to those successively thrown over any one portion of the landscape?

h. State colours of rays and of spaces between them.

i. Did the dark rifts extend down to the moon, or did they stop short above the denser layers of the chromosphere?

k. Were the rays brightest near or far away from the moon?

l. What was the comparative brightness of the rays, chromosphere, and outer corona?

N.B.—Cards should be prepared, 8 inches square, with a circle 2 inches in diameter, filled in with some dark colour, in the centre. Round this circle the sketches should be made, the north point (or the vertex, as the case may be) being shown, and whether the sketches were made by means of an inverting telescope or with the naked eye.

SUGGESTIONS FOR TIMING THE PROGRESS OF THE ECLIPSE.—In Sicily, last year, the following method of recording the lapse of time during totality was found to prevent all excitement, and made the 80 seconds seem a very long time.

Determine the number of seconds of totality at the station—say 120.

Then, at the moment of totality, let one person attached to each party of observers, carefully observing the face of a chronometer or watch, say—

"You have now 120 seconds."

After 5 seconds,

"You have still 115 seconds."

After another 5 seconds,

"There are still 110 seconds remaining;"

and so on.

This may be done in a very steadying manner.

The times at which any of the phenomena occur must be noted by another observer. J. N. L.

HISTOLOGY

The Auditory Organ of Gasteropoda

DR. F. LEYDIG, of Tübingen, gives an interesting account of the Auditory Organ of Gasteropoda in the last part of Max Schultze's *Archiv für Mikroskopische Anatomie*. After a short historical introduction, in which the labours of previous observers are referred to, Prof. Leydig describes the form and divisions of the brain or cerebral ganglia in this class, and shows that these are fundamentally the same in *Limax, Arion, Vitrina, Helix, Clausilia, Carychium, Succinea, Physa, Planorbis, Ancylus.* This supra-œsophageal or cerebral ganglion in these animals consists of two superior ganglionic lateral masses united by a commissure. The subœsophageal ganglion consists of an anterior portion, the ganglion pedale, and a posterior, the ganglion viscerale, which again are connected with the supraœsophageal ganglion by commissural bands. The ring thus formed is traversed by the œsophagus, the excretory ducts of the salivary glands, and the aorta. The anterior lobes of the cerebral ganglion give off the nerves of the tentacles and the optic nerves, and four other pairs. The auditory organ is *apparently* connected with the anterior division of the subœsophageal ganglion. It varies but little in size in different species, whatever may be their difference in magnitude. The organ is of spherical form, as seen from above, but flattened when seen in profile, where it is in contact with the ganglion. It is composed of a connective tissue capsule, made up of two layers—an outer looser investment, and an inner firmer tissue; between the two is a plexiform arrangement of muscular fibres and fasciculi. The inner capsule is lined by a layer of epithelium, which is thicker opposite the point of attachment of the nerve than elsewhere, and when perfectly fresh presents a very indistinct division into cells; of these there appear to be two varieties characterised by their nuclei; one form of nucleus being small, and lying near the attached surface of the cells, that is to say, externally; the other large and round, with a fusiform nucleus. Cilia appear to be always present, but are so extremely fine as to be occasionally scarcely visible. It is most distinct in *Ancylus fluviatilis*, and in this animal the trembling movement of the otoliths is most perceptible. He has seen appearances in *Helix hortensis* and *Clausilia similis*, which lead him to think that the large nucleated cells have bristles attached to them, instead of cilia like the smaller cells. The otoliths exhibit some, though insignificant, variations in size, form, and number. The majority approximate to an oval form, as in the *Helicinidæ;* they are more pointed in *Ancylus* and *Planorbis.* Smaller animals, as *Carychium minimum*, have very small otoliths. They are rounder in young than in older specimens of *Helix*, and at a later period they assume a cell-like appearance, the central part being clearer than the periphery, or a space forming in it which resembles a nucleolus; but he has no doubt, from his previous observations on the embryos of *Paludina vivipara*, that they crystallise out from the fluid of the auditory vesicle; being at first punctiform bodies, then become pointed at their extremities, and increasing by the deposition of successive laminæ on their surface. The idea suggested that they gain entrance from without is quite erroneous. His examinations of the real connections of the auditory nerve succeeded best in *Vitrina diaphana*, and these showed that the lateral commissures of the brain connecting the supra- and infra-œsophageal masses consist of the two commissures themselves, of a sympathetic nerve, of the auditory nerve or canal, and a blood vessel, all connected together by loose connective tissue. The auditory nerve, after leaving the capsule, first runs obliquely outwards to follow the curvature of the anterior division of the infra-œsophageal ganglion, then suddenly bends upwards, and thus ultimately reaches, not the infra-, but the supra-œsophageal ganglion with which it is really in connection. Though holding the same relation to the ear that the optic nerve does to the eye, it differs from ordinary nerves in being hollow; hence its name of ear canal. The wall consists, like that of a nerve, of a homogeneous membrane, surrounded by looser connective tissue, and lined by epithelium. The interior is not filled with nerve fibrillæ. Prof. Leydig then notices the relations of this nerve to the passage leading from the ear towards the skin in *Cephalopoda*, in connection with which, however, no external opening has been found, though searched for, by Owsjannikow, Kowalewsky, and Boll.

SCIENTIFIC SERIALS

IN the *Quarterly Journal of Science* for October, three of the articles are continuations of papers which have appeared in previous numbers of the Journal. Mr Mungo Ponton concludes his discussion of "Molecules, Ultimates, Atoms, and Waves." Lieut. S. P. Oliver gives another paper "On Modern British Ordnance and Ammunition," detailing the structure of some recently manufactured ordnance; and from the editor we have "Some further Experiments of Psychic Force." After replying to adverse criticisms on his previous paper, Mr. Crookes details some fresh experiments which he considers to "confirm beyond doubt the conclusions at which he arrived in his former paper, namely the existence of a force associated in some measure not yet explained, with the human organisation, by which force increased weight is capable of being imparted to solid bodies without physical contact." The experiments detailed were all performed in the presence of Mr. D. D. Home, or of a lady in whom this force is stated to be remarkably developed; the accordion is no longer employed, while in the balance experiments the operator's hands, instead of lying on the board attached to the balance, are placed in a vessel of water laid on the board. Mr. W. Mattieu Williams gives a useful abstract of the views advanced in his "Fuel of the Sun," for the benefit of those who have not time to read the larger work. The author of an anonymous paper "On the recent Gun-cotton Explosion" condemns the reaction against the use of gun-cotton, which has set in since the Stowmarket catastrophe, and attributes the explosion to culpable carelessness in the process of washing the free acid out