cesses, which answer the purposes of teeth. The penis of the male is solely appropriated to the passage of the semen, its external orifice being subdivided into several openings, so as to scatter the semen over an extent of surface, while the urine passes by a separate canal into the rectum. And lastly, the female has no common uterus, the tubes, which correspond to the horns of the uterus in other quadrupeds, receiving the semen immediately from the penis of the male.

Mr. Home concludes his paper with a conjecture, that more species of this extraordinary animal will be gradually discovered; a drawing having already been received from Van Diemen's Land of an individual similar to the Hystrix here described, only with the spines much shorter. And he thinks it probable that the class will in time be found to consist of various kinds, and that those hitherto known will be arranged under different genera.

A Method of examining refractive and dispersive Powers, by prismatic Reflection. *By* William Hyde Wollaston, *M.D. F.R.S.* Read June 24, 1802. [*Phil. Trans.* 1802, *p.* 365.]

The principle of this method depends on the reflection of light at the inner surface of a denser refracting medium. Its application in the first instance is deduced from a theorem, from which we gather, that since the range of inclination within which total reflection takes place, depends not only on the density of the reflecting prism, but also on the rarity of the medium adjacent to it, the extent of that range will vary according to the difference of the densities of the two media. And that hence when the refractive power of one medium is known, that of the rarer medium may be thence inferred, by ascertaining the angle at which the ray of light will be reflected from it.

Having exemplified this by several instances of different media, the author proceeds to give an account of an instrument he has contrived for the purpose of applying this principle to practice. Its object is to measure by mechanical means, which can only be understood by inspecting the drawing annexed to the paper, the sine representing the refractive power of the medium applied to the prism. One of the advantages which this method possesses above the usual mode of examining refractive powers is, that whereas hitherto it was necessary that the substances under examination should have two surfaces inclined towards each other under a known angle, this method enables us to deduce the results from only one surface, and without any computation. Hence also, as trials can be made by mere contact, may the refractive powers of opake bodies be easily determined. And these powers in different bodies may likewise be used as convenient tests in many philosophical inquiries.

This method applies also to media of which the refractive densities are not uniform, such as the crystalline lens in the eyes of animals, which is now known to be more dense in the centre than at its surface. It is here shown in what manner, by placing one of these varied media in contact with a prism, all its gradations of density,

from greatest to least, will become at once manifest by mere inspection. Lastly, a table is given containing a series of substances arranged according to their refractive powers, chiefly deduced from experiments made according to the method here described; some to which the machine for measurement would not apply, being obtained by other means, or borrowed from other authors.

The second part of the paper treats of the dispersion of light. The principles and observations on which the inductions here given chiefly depend, are these:—When a glass prism is placed in contact with water, and brought near the eye, in such a position that it reflects the light from the window, the extent of perfect reflection is seen to be bounded by a fringe of the prismatic colours in the order of their refrangibility. But it may happen that two media which *refract unequally* at the same incidence, may *disperse equally* at that incidence; and, under these circumstances, a pencil of rays passing from one of these media into the other, will be refracted without dispersion of its colours. The boundary of prismatic reflection will then be found a well defined line, free from colour, if the surface at which the reflected light emerges from the prism be at right angles to its course. Moreover, when the disparity of the dispersive powers of the media is still greater, it may also happen that the usual order of prismatic colours will be reversed, and then the red, or least refrangible ray, will appear strongest and lowest in the fringe, unless the colours so produced are counteracted by refraction at their emergence from the prism.

This doctrine is illustrated by examples of various, both simple and compound, substances, and especially by the effect of metallic solutions differently diluted in less dispersive media. Having compared several of these, each diluted till the limit of reflection appeared void of colour when in contact with a rectangular piece of plate-glass, he deduced thence a table of their refractive powers, in that state of dilution in which the eye could discern the disappearance of colour.

He likewise made experiments on dispersion by means of wedges, in the manner practised by Mr. Dollond, Dr. Blair, and others; and has reduced the substances thus examined into a second table, arranged according to the excess of their effect on violet above red light, at a given angle of deviation. By comparing this with the preceding table, it appears how little correspondence there is between them, and consequently how numerous are the combinations by means of which a pencil of rays that passes through two media, may be made to deviate without dispersion of its colours.

At the close of this paper the author remarks, that the colours into which a beam of white light is separable by refraction, appear to him to be neither seven, as they are usually seen in the rainbow, nor reducible to three, as some persons have conceived; but that by employing a very narrow pencil of light, four primary divisions of the prismatic spectrum may be seen, with a degree of distinctness which, he believes, has never been described nor observed before. These colours are red, yellowish green, blue, and violet, in the proportion nearly as the numbers 16, 23, 36, 25.