self authorized to assert, without hesitation, that radiant light consists in undulations of the luminiferous æther. The general inferences he draws from his arguments are, that it is clearly granted by Newton that there are undulations, although he denies that they constitute light; and that it being shown in the three first corollaries of the Eighth Proposition, that all cases of the increase or diminution of light are clearly referable to an increase or diminution of such undulations, and that all the affections to which the undulations would be liable are distinctly visible in the phænomena of light, it may therefore be very logically inferred that the undulations are light.

Dr. Young proceeds to attempt the removal of some apparent difficulties in the system which he has adopted; and concludes with a summary comparison of light with heat, which he supposes to differ from it only in the magnitude and frequency of its undulations or vibrations.

An Analysis of a mineral Substance from North America, containing a Metal hitherto unknown. *By* Charles Hatchett, *Esq. F.R.S.* Read November 26, 1801. [*Phil. Trans.* 1802, *p.* 49.]

This substance, which was lately found among the minerals in the British Museum, appears by an entry in Sir Hans Sloane's Catalogue, to have been sent to him with various specimens of iron ores, by Mr. Winthrop of Massachusetts, whence it is conjectured that it is the produce of that province. Its resemblance to the Siberian chromate of iron first attracted Mr. Hatchett's notice. It is of a dark brownish gray; its longitudinal fracture is imperfectly lamellated, and the cross fracture shows a fine grain. Its lustre is vitreous; it is moderately hard, and very brittle.

The analysis was conducted with all the chemical agents usually applied upon those occasions; and the whole process is minutely described in the paper. From these experiments we learn that this ore consists of about one quarter of iron, and three quarters of a substance hitherto unknown, but now proved to be of a metallic nature, both by the coloured precipitate which it forms with prussiate of potash and with tincture of galls, and by the colour which it communicates to phosphate of ammonia, or rather to concrete phosphoric acid when melted with it.

From the experiments made with the blowpipe, it seems to be one of those metallic substances which retain oxygen with great obstinacy, and are therefore of difficult solution. That it is an acidifiable metal appears from the circumstance of the oxide turning litmus paper red, expelling carbonic acid, and forming combinations with the fixed alkalies; but in many points which are enumerated, it is manifestly very different from the acidifiable metals hitherto known, such as arsenic, tungsten, molybdena, and chromium, and it appears to differ still more from the lately discovered metals known by the names of uranium, titanium, and tellurium.

The iron contained in this ore is in the same state as it is found in Wolfram, namely, brown oxide; and this oxide is mineralized by the new metallic acid in the same manner as the oxides of iron and manganese are mineralized by the tungstic acid, or rather oxide. Several facts which have appeared in the course of this investigation seem to prove that this new metal differs from tungsten and the other acidifiable metals by a more limited extent of oxidation; for, unlike these, it seems to be incapable of retaining oxygen sufficient to enable the total quantity to combine with fixed alkalies.

All that can be said at present as to the uses of this metal is, that an olive-green prussiate, and an orange-coloured gallate they yield, are both very fine colours, which, as they do not appear to fade when exposed to light and air, may probably be employed with advantage as pigments. The author lastly hazards a conjecture, that several of the newly discovered metals and other substances, which are now considered as simple, primitive, and distinct bodies, will, upon further examination, turn out to be compounds. Meanwhile as the new metal here described appears hitherto distinct from all the others, it cannot but be expedient to distinguish it by a proper appellation; and the least objectionable that has hitherto occurred, is that of Columbium.

A Description of the Anatomy of the Ornithorhynchus paradoxus. *By* Everard Home, *Esq. F.R.S.* Read December 17, 1801. [*Phil. Trans.* 1802, *p.* 67.]

Two specimens of this curious animal, lately brought from New South Wales, the one male and the other female, and both full grown and perfect, having been submitted to the inspection and close examination of Mr. Home, by Sir Joseph Banks, this gentleman has availed himself of the favourable opportunity to draw up the full account of all that is hitherto known concerning its habits, of its external appearance, and internal structure now before us.

The animal has hitherto been only found in the fresh-water lakes in the interior parts of the above-mentioned country. It does not swim upon the surface of the water, but comes up occasionally to breathe. It chiefly inhabits the banks of these lakes, and is supposed to feed in the muddy places which surround them; but the particular kind of food on which it subsists is not known.

As in its anatomical structure this animal differs in many respects from other quadrupeds, those who interest themselves in inquiries of this nature will be gratified to find in this paper a comparative view of those deviations; and when they have satisfied themselves in this respect, they will probably allow that it is long since facts so singular and novel have been brought to light respecting the science of comparative anatomy. Being obliged, as is usual in all descriptive communications of this kind, to refer to the paper itself for an adequate estimate of ts merits, we shall dwell briefly upon a few of