of adaptation. An instrument-maker, by employing a microscope, for the purpose of dividing with accuracy for several days together, is afterwards able to read without spectacles for a few weeks, but his sight then gradually elongates, till he again has occasion to employ himself in dividing.

Two other cases are also mentioned, of long-sightedness reduced to vision at a moderate distance, both arising from disease, and both speedily relieved by evacuating remedies.

The Bakerian *Lecture. On the elementary Particles of certain Crystals. By* William Hyde Wollaston, *M.D. Sec. R.S.* Read November 26, 1812. [*Phil. Trans.* 1813, *p.* 51.]

In this lecture the author undertakes to explain a difficulty that has occurred in crystallography, respecting the primitive molecule of those bodies that assume the octohedral and tetrahedral forms, when broken in the direction of their natural fractures.

The substance that he selects as most convenient for experiment is fluor spar, which may very readily be divided into any number of acute rhomboids, having the angles of their surfaces 60° and 120°.

These might be regarded for all the practical purposes of crystallography as the integral molecule, and from thence all the other modifications of these solids might very simply be derived.

But it is observed, that each acute rhomboid thus obtained may be again split in a new direction at right angles to its axis, so that a tetrahedron may be detached from each extremity, leaving from between them a regular octohedron.

Consequently this rhomboid cannot be considered as the primitive, and we are left in doubt not only which to prefer of the two last-named solids, but even whether either of these can be primitive; since no possible arrangement of tetrahedra alone, or of octohedra alone, will fill any space without leaving vacuities.

The author having observed that both these forms would result from the arrangement which spheres would most naturally assume by mutual attraction, proposes a theory founded on that observation, which he thinks is not liable to objection, and endeavours to extend this hypothesis, by showing that with some modifications a corresponding theory may be applied to other forms well known to crystallographers.

With regard to the triangular arrangement of balls in a plane, and their tetrahedral grouping in solidity also, he finds that he has been anticipated by that universal genius Dr. Hooke: but he observes, that Dr. Hooke's ideas upon this, as upon many other subjects, are but imperfectly developed; and that he takes no notice of the octohedral group, formed by placing four balls in a square, with one above and one beneath them. Accordingly, Dr. Hooke could know nothing of that which forms the principal novelty of the present observation, namely, that when a mass of spheres has been formed wholly according to the triangular or tetrahedral arrangement, then certain sections

of the same mass present also the square arrangement, and accordingly certain portions of it exhibit the octohedral group.

The author remarks, in support of this theory, that a large proportion of those substances which assume the octohedral form, are considered by chemists as simple bodies, and are therefore more likely to have the simple form of spheres than such as consist of more than one element. Since the supposition of spherical particles appeared to him to afford so satisfactory an explanation of an acknowledged difficulty in crystallography, he was led to consider what other forms would result from the union of solids most nearly allied to spheres; and he observed that obtuse rhomboids, like those of carbonate of lime and other substances, would be formed by the union of oblate spheroids, as indeed Huyghens had long since observed; and that by the union of oblong spheroids, the natural result would be triangular and hexangular prisms, as are found in beryl and phosphate of lime.

But the most singular arrangement noticed, is that which affords an explanation of the origin of cubes in crystallography. These, he supposes, may consist of spherical particles, of two different kinds, regularly intermixed in equal numbers (in conformity to the most recent views of binary combination in chemistry); for these, he observes, will not tend, as before, to the octohedral arrangement, but will be perfectly in equilibrio when every group of eight balls composes a cube, according to the most obvious course of alternation of the two elements. For in that case all similar balls will be equidistant from each other, and will also be equally distant from all adjacent balls of the opposite denomination.

In a note are subjoined some observations on a theory of crystallization proposed by M. Prechtl, who imagines that a mass of soft spheres may all be compressed into tetrahedra, which is demonstrably impossible. That by another degree of softness or of attraction, spheres, each surrounded by five others, may be compressed into triangular prisms, without regard to the different degree of compression that must take place in the direction of the axis; that other spheres again less compressible than before, and consequently surrounded by as many as six others, may be formed into cubes, which indeed is admitted to be a very possible supposition.

It is observed, however, that M. Prechtl denied that a sphere can be surrounded by more than six, although, in fact, the most probable supposition is, that each soft sphere would be surrounded by twice that number, and would form a mass of regular dodecahedra.

On a Substance from the Elm Tree, called Ulmin. *By* James Smithson, *Esq. F.R.S.* Read December 10, 1812. [*Phil. Trans.* 1813, *p.* 64.]

The substance here examined by the author, we are told, was first made known by the celebrated Klaproth. It has been ranked as a distinct principle, soluble in water, but insoluble in alcohol or ether, and convertible, by the action of nitric or oxymuriatic acids, into a