fragments of which are held together by the mineral crusts. If, on the plane of a given section, there appear no points of contact between the fragments, it must not be concluded that they originally hung free in the vein-space, or that they have been pressed apart at a later period by the force of crystallization of the mineral crusts, for the actual points of contact can be found in a parallel section, at least.

The frequent preparation of sections and slides of such apparently complicated structures is recommended, as by them the seeming contradictions and difficulties would be simply explained thereby. It is only a question of correct observation and representation, for which, it must be confessed, the use of colouring may be necessary. In this connection, illustrations, erroneous in this respect, have found their way even into text-books, as, for instance, the picture of cocarde-ore given by Cotta, which is taken from a careful but uncoloured drawing by Weissenbach, a part of which is reproduced in Fig. 17. Fragments of mica-slate are crusted with layers of quartz and pyrite, and in the vugs there is sometimes also manganese or brown spar. The radial appearance of the crusts in the drawing is evidently due to the position of the crystals perpendicular to the wall-surfaces, and is, as a rule, observable in all such cases. The same figure from Weissenbach has been used by A. Daubrée also, as an instance of a *filon brècheform;* but the several crusted rock-fragments are separated by heavy lines, which make the representation not only incorrect but incomprehensible.

The phenomenon may be most generally illustrated by Fig. 18, which represents a section through a gold specimen from the Kratontza ore-body at Verespatak, which is intended to be published in my monograph on the occurrence of gold in Transylvania—a series of parallel sections in colour. Four pebbles, three of quartz-porphyry and one of mica-slate, are regularly crusted with (1) a thin zone of hornstone; (2) a thin crust of pyrite, composed of several layers no thicker than paper; (3) hornstone, in which occurs (4) a zone, 0·2in. in average thickness, of fine aggregates of native gold, extending often into the next following crust (5) of quartz, containing scattered clouds of hornstone. The series ends in this specimen (6) with open central druses. But other specimens from the same deposit show also minute crusts of manganese-spar.

Fig. 11, representing the occurrence of cinnabar in the deeper workings at Sulphur Bank, is an interpretation of the description and sketch given by Le Conte. Fragments of sandstone and slate with somewhat rounded edges are regularly surrounded with crusts of cinnabar, which fill the space between, up to the central druse. Sometimes crusts of hydrated silica and pyrite appear also. Fig. 10 is a picture of a rich portion of the surface-workings of 1874. The basaltic country-rock is thoroughly cut up by irregular seams, which have disintegrated it to a shaly mass. In the seams, especially where they come together, larger spaces have been formed, often filled with decomposed country-rock, often showing separate crusts of cinnabar and opal, with a central druse. The porous material of rock and filling is impregnated with native sulphur.

Fig. 19 shows the filling of a space of dissolution, at Raibl. It is a diagram from the accurate picture in my monograph upon the deposit. A nucleus of limestone is surrounded by innumerable fine crusts of wurtzite, and more compact, but less regular, layers of galena.

Fragments of earlier mineral crusts, which have been in some way separated from their original position, are often found surrounded by mineral crusts of later origin. An example is shown in Fig. 20, representing boiler-scale from one of the Przibram pumping-plants. Here fragments of dislocated scale, about 0·08in. in diameter, are enveloped in later, thin crusts, and thus united to a breccia. The mass consists chiefly of fibrous gypsum, the fibres of which stand perpendicular to the surfaces to which they are attached.

Figs. 21 and 22 present a very distinct example, in which earlier mineral crusts, together with adhering pieces of country-rock, are surrounded by recent crusts. These figures are taken from the valuable treatise of I. Ch. Schmidt, and refer to Zellerfeld in the Harz, whence A. von Groddeck also has obtained very interesting illustrations of vein-filling.

A more complicated example from the Katrontza ore-body at Verespatak can be got where very rough ancient crusts of black hornstone and parti-coloured quartz have been cemented together by deposits of later quartz and manganese spar to a compact mass, with some central druses. Similar conditions will be seen to obtain in the so-called pipe-ores of Raibl, Figs. 25 to 28.

The variable relation between the diameter of the nucleus and the thickness of the surrounding crust naturally contributes greatly to the variety of the resulting appearances. In the pisolitic formation, for instance, the crust is many times thicker than the nucleus.

In some cases the kernels are individual crystals. I. Ch. L. Schmidt describes pisolitic forms from Warstein, in Westphalia, the kernel of which is a crystal of yellow *eisenkiesel*, about 0·2in. in diameter, showing prismatic and dihexahedric faces, and covered first with a thin, white coating, upon which are crusts of coarsely fibrous *eisenkiesel*. The edges of these are gradually rounded, until egg-shaped spheroids, about 0·5in. in diameter, are formed, touching each other at single points, and leaving interspaces, which are either filled entirely with granular *eisenkiesel*, or contain residual vugs lined with transparent, finely crystalline quartz.

Fig. 24 represents the geologically important occurrence of crusted kernels of native gold from the Màtyas Kiraly Mine at Verespatak. Minute aggregates of native gold are systematically surrounded by distinct, beautifully pink to carmine, thin crusts of rhodonite or rhodochrosite. So long as the kernels were completely separated, or were kept suspended by the disturbance traversing the cavity, these crusts were deposited entirely around each. After they had become fixed, later deposits of the same sort covered them; then followed carbonates of lime and iron; and finally came the quartz, the beautiful water-clear crystal-tips of which project into the central druses.

The occurrence of gold in manganese spar is not rare at Verespatak; ornaments cut from this material are pretty widely sold. The figure represents a piece cut for a brooch, which is in my wife's possession. It is specially interesting, also, as showing that the gold was not derived from