decide the question whether these metals were primitive ingredients or secondary impregnations. Since such metallic traces occur in both the eruptive and the sedimentary rocks, but cannot possibly be in both cases primitive, it is probable that they are in both cases secondary. There is then in this case, notwithstanding the connection of the ore-veins with the dykes, no proof that they were formed by the leaching of the country-rock. If the vein material (as is very likely) was derived from eruptive rocks, these were situated much deeper than the eruptive rock disclosed down to 3,600ft. below the surface, or 1,640ft. below sea-level.

The Cambrian sandstone basin of Pzribram is unsymmetrical; one side dips gently north-west, the other (next to the fault) slightly south-east. In the latter part, which is also more highly metamorphosed, lies the bonanza or rich ore-ground, which therefore starts from the intersection of the great structural fault with the zone of eruptive rocks—in other words, from the point relatively nearest to the barysphere.

In the steeply-dipping sandstone series certain strata are petrographically characteristic; and, when these are traced to the intersecting dykes, it becomes clear that the latter (and hence the ore-veins also) are fissure-faults. Thus Fig. 39, a section through the Franz Joseph shaft, shows dislocations of the strata (adinole beds) as great as about 656ft.

It should be added that the dykes present different kinds of eruptive rock, and that they are generally decomposed in the neighbourhood of the ore-veins— a result naturally to be attributed to the action of the mineral springs; also, that stratified rocks show, near the granites, a contact-metamorphosis which has converted them into hornstone. This phenomenon recalls the Hartz, especially the St. Andreasberg district.

(*c*.) *Ore-veins wholly within Large Eruptive Formations.*

Hungary.—If we turn to Hungary, we find many veins wholly included in eruptive rocks. One of the best known districts is that of Schemnitz, which presents in geological conditions the nearest analogue of the Washoe district and the Comstock Lode in Nevada.

In both cases various eruptives, principally Tertiary, such as diorite, andesite, trachyte, and rhyolite, ranging to basalt, are spread over a Mesozoic (mainly Triassic) foundation. The north and south extension of these masses and of the ore-veins they contain is alike in both districts. The number of veins at Schemnitz is very large, and they exhibit a very great variety of filling. In some of them so-called "ore-columns"—*i.e.*, specially rich ore-channels (chimneys or shoots)—have been recognised. Those in the Grüner vein, according to M. V. Lipold, are short horizontally, but much prolonged in the direction of their pitch obliquely on the dip of the vein. In other ore-veins—*e.g.*, in the Spitaler master-lode, which is about 131ft. wide, and has been traced for five miles; also in the Bieber and other veins—the ore-bodies are said to have covered large areas of the vein-sheet. The ore richest in gold is reported to be the so-called *zinnopel*, a crust consisting of jasper, with pyrite, chalcopyrite, and galena, which surrounds fragments of an earlier quartz crust.

In the trachyte range of Vihorlat Gutin, which runs north-west and south-east, approximately parallel with the Hungarian boundary, there is a series of gold- and silver-mining districts containing occasional large veins with numerous small ones. Among the former are those of Nagybánya and Felsöbánya, where several domes of trachyte or of andesite, breaking through the late Tertiary "*Congerien*" strata, are in turn traversed by large veins, which split up near their outcrops, so as to exhibit in vertical cross-section a fan-shaped arrangement.

Further east is the Kapnik mining district, containing a series of separate veins; then comes Rota, similar in character; and finally (over the line in Transylvania) the district of Oláhlápos-bánya, the veins of which are partly in the eruptive rock, partly in the old Tertiary strata which it traverses.

Throughout the range silver-ores predominate, occasionally with a considerable gold-value. In the eastern portion copper-ores appear.

The Dacian Goldfield.—In south-western Transylvania, in the Dacian gold district, all the gold-mines are grouped in connection with four separate eruptive zones of recent origin. The main rock of the region is Cretaceous sandstone, with occasional exposures of Jurassic and Triassic strata, the latter of which include heavy outflows of melaphyre, and also masses of crystalline rocks. The recent eruptives, comprising porphyry, diorite, andesite, basalt, &c., occur in a triangle, the base of which is formed by the widest range, the Cietrasian, which strikes north-west and south-east, and in which are the mines of Nagyag, Mugura, Füzesd, Boiza, and Ruda. In a second approximately parallel range are the mines of Faczebaja and Almás; in a third, those of Vulkoj and Verespatak; and in a fourth, forming the apex of the triangle, those of Offenbánya.

These mines, which are for the most part very ancient (Pre-Roman), will be treated fully in a monograph now in course of preparation. In the whole Dacian gold district the predominant deposits are fissure-veins, sometimes represented by mere "knife-blade" seams, continuous for short distances only. In some places, as in the celebrated Verespatak district, other types of deposit are represented, the ores of which, however, also occur in spaces of discission—namely, in eruptive breccias—between the related fragments, in the form which elsewhere have been called typhonic masses; but these are ore-bearing only where they are in contact with the ore-veins. The same is true of the conglomerates into which these breccias sometimes pass, and in which the ore takes the place of the interstitial cement. For further elucidation we show in Fig. 41 a breccia, and in Fig 42 a conglomerate. In both these specimens the rock is quartz porphyry with quartz crystals of pea-size. In Fig. 41 the interior of the fragments is considerably decomposed, whereas the exterior shows a thin layer either of undecomposed rock or of material subsequently impregnated with silica from the open interstices, and thus made capable of resistance. Sometimes the porphyry is found to be traversed by a complex network of fissures, filled, except as to some wider spaces of intersection, with a clastic mass like sandstone. The interstices of the conglomerate, Fig. 42 (except the spaces containing crusts of manganese spar and quartz), are filled with a clastic cement, mostly silicified into hornstone.