discover not only their distinctive colors, but their characteristic internal structure. Titaniferous iron is an admirable example of the advantage of this method. Seen with transmitted light, that mineral appears in black, structureless grains or opaque patches, though frequently bounded by definite lines and angles. But with reflected light, the cleavage and lines of growth of the mineral can then often be clearly seen, and what seemed to be uniform black patches are found in many cases to inclose bright brassy kernels of pyrite. Magnetite also presents a characteristic blue-black color, which distinguishes it from the other iron-oxides.

Transmitted Light.—It is, of course, with the light allowed to pass through prepared slices that most of the microscopic examination of minerals and rocks is performed. A little experience will show the learner that, in viewing objects in this way, he may obtain somewhat different results from two slices of the same rock according to their relative thinness. In the thicker one, a certain mineral or rock, obsidian for example, will appear perhaps brown or almost black, while in the other what is evidently the same substance may be pale yellow, green, brown, or almost colorless. Triclinic felspars seen in polarized light give only a pale milky light when extremely thin, but present bright chromatic bands when somewhat thicker.

Polarized Light.—By meaus of polarized light, an exceedingly delicate method of investigation is made available. We use both the Nicol-prisms. If the object be singly-refracting, such as a piece of glass, or an amorphous body, or a crystal belonging to some substance which crystallizes in the isometric or cubic system (or if it be a tetragonal, hexagonal or rhombohedral crystal, cut perpendicular to its principal axis), the light will reach our eye apparently unaffected by the intervention of the object. The field will remain dark when the axes of the two prisms are at right angles (crossed Nicols), in the same way as if no intervening object were there. Such bodies are *isotropic.*[56] In all other cases, the substance is doubly-refracting and modifies the polarized beam of light. On rotating one of the prisms, we perceive bands or flashes of color, and numerous lines appear which before were invisible. The field no longer remains dark when the two Nicol-prisms are crossed. Such a substance is *anisotropic.*

[56] But the effect of pressure may give weak color-tints in glasses and in cubic crystals.