binations still more energetic, that is to say, in which we may reasonably expect more heat to be produced by the new combination than would be destroyed or abstracted by the proposed decomposition. Chemistry, however, (unaided by electric agency,) affords no means of suddenly breaking the union of two elements, and presenting *both* in an uncombined state. A certain analogy to such disunion, however, and its consequences, may be traced in the sudden expansion of condensed gases from a liquid state into vapor, which is one of the most powerful sources of cold known.

(355.) The dilatation of bodies by heat forms the subject of that branch of science called pyrometry. There is no body but is capable of being penetrated by heat, though some with greater, others with less rapidity; and being so penetrated, all bodies (with a very few exceptions, and those depending on very peculiar circumstances) are dilated by it in bulk, though with a great diversity in the amount of dilatation produced by the same degree of heat. Of the several forms of natural bodies, gases and vapors are observed to be most dilatable; liquids next, and solids least of all. The dilatation of solids has been made a subject of repeated and careful measurement by several experimenters; among whom, Smeaton, Lavoisier, and Laplace, are the principal. The remarkable discovery of the unequal dilatation of crystallized bodies by Mitscherlich has already been spoken of (266.). That of gases and vapors was examined about the same time by Dalton and Gay-Lussac, who both arrived independently at the conclusion of an equal dilatability subsisting in them all, which constitutes one of the most remarkable points in their history.

(356.) The dilatation of air by heat affords, perhaps, the most unexceptionable means known of measuring degrees of heat. The thermometer, as originally constructed by Cornelius Drebell, was an air thermometer. Those now in common use measure accessions of heat not by the degree of dilatation of air but of mercury. It has been shown, by the researches of Dulong and Petit, that its indications coincide exactly with that of the air