

every piece of granite? Which mineral gives granite its prevailing color? When a rock is studied, I should give talks on its uses. The child will look at the next granite tombstone or wall, to see if it is the kind he had in school. He will endeavor to learn something of the methods of quarrying, cutting and polishing—in fact will take an interest in one phase of industrial life that he had not thought of before.

The use of granite as a building stone suggests marble and sandstone, which are used for similar purposes. Let us study their properties, and then their origin. Is marble harder or softer than granite? Would it be more easily cut? How is it affected by dilute acids? There are certain acids in small quantities always present in the air. Decaying vegetable matter gives off *humus* acids, which, in presence of moisture, attack marble. This may be seen in old tombstones overgrown with vines, where the lettering is partly or wholly obliterated. Is marble, then, so durable as granite? In manufacturing cities, more acid is thrown into the air than is normally present. Would it be advisable to use marble for building purposes in such cities? Would granite be better? Would sandstone have any advantages over either? Is it easily affected by acids? Is it cheaper or more easily worked than granite? Fine-grained sandstone is better than coarse-grained, for it will not absorb so much water, which would cause chipping in the winter. Iron pyrites is injurious to sandstone, for, by weathering, it stains the stone and leaves it porous.

Now, for the origin of these stones, we shall return to granite again, and, in learning these two, we shall incidentally learn a few others. Granite, on weathering, breaks up into fragments of quartz and feldspar. The former grinds to sand, and the latter to clay. Since the clay is more finely divided, water will separate it from sand. These are washed into the sea in different layers; finally, by pressure and cementing material, the sand becomes compressed into sandstone and the clay into shale. Through further influence of heat and pressure, the sandstone becomes quartzite, and the shale, slate. These few facts can be elaborated by the up-to-date teacher, who will probably know where beds of some of these rocks are visible. Their dip will be explained in teaching the immediate origin of granite and other eruptive rocks.