Professor A. Corsa subjected the rocks mentioned below, after fine pulverization, to the action of pure water at 65° F. for several days; the weight dissolved was as follows: —

Gneiss, from Ragogna, 0·1250 per cent; porphyritic retinite, from Monte Sieva, 0·0562; perlyte, of Monte Sieva, 0·0624; phonolyte, of Monte Croci, 0·3260; trachyte, of Monte Ortona, 0·0871; granite, of Montorfano (Lago Maggiore), 0·0727; granite, of Baveno (Lago Maggiore), 0·0966.

Professors W. B. and R. E. Rogers found in their experiments (*Amer. Jour. Sci.*, 1848), that under the action of carbonated waters, 0·4 to 1 per cent of the whole weight under digestion dissolved in only 48 hours.

Daubrée exposed orthoclase from Limoges in small fragments in a vessel containing twice as much water by weight revolving at the rate of 2550 meters per hour. The water in 8 days, after revolutions equivalent to a flow of 460 kilometers, contained 2·52 grams of potash per liter, along with 0·03 of alumina and 0·02 of silica. In salt water (water containing 3 per cent of NaCl) there was only a feeble alkaline reaction, incomparably less than with pure water.

Water derives its chemical efficiency through the presence of such impurities as are ready to enter into new combinations. The most common of these foreign materials are carbonic acid (CO_2), humus acids, and alkaline ingredients. When carbonic acid is present one part of calcite will be taken up by 1000 of water; but in this case the material dissolved is not calcium carbonate, but calcium bicarbonate. Again, the presence of soda or potash gives increased solubility to silica in its soluble or opal state, — the state characterizing organic silica.

The least effect from moisture in rocks is diminished resistance to fracture or cohesion. Part of this is due to the lubricating effect resulting from the wetting of the grains, in consequence of which they slide over one another more easily than when dry. On this principle a grindstone is wet before using it. But in the case of wet rocks there is often, perhaps generally, a solution of a minute portion of some ingredient of the rock which becomes solid again on drying. For this reason, sand rocks, whether calcareous or siliceous, gradually harden at surface from alternate wetting and drying.

The more prominent *destructive effects* of water, consequent on its solvent powers, are: the easy erosion of beds of gypsum; the rapid removal of beds of salt; and the injury to animal and vegetable life from encroachments of mineral and marine waters, and to marine life by its concentration on evaporation in shallow basins. The *constructive effects* are: the deposition of salt and gypsum in large beds; and also the local superficial consolidation of rocks alluded to above.

Oxidation and Deoxidation.

On account of the very strong attraction between oxygen and nearly all the elements, and also because this gas is always at hand in air and water, it is the most prominent agent in the world's destructive and constructive chemical changes.