

it, as it was considered a white clay, or some sort of soft native cement. Near Whycocomagh several years ago, a mineral, now admitted to closely resemble magnesite, was uncovered in a search for iron ore, but as, at that time, the name was unfamiliar and its uses and properties not known to the prospectors, it attracted no more than a passing notice. The question may have been asked, "What is it?" and as there was none to answer, nothing more was said or done in reference to it. Its value now being known the probability is that the numerous by times prospectors will include magnesite as a mineral worth looking for. Or it may be that the Steel companies may employ skilled prospectors to search for the mineral.

The following description of Magnesite, its nature and uses, is by Fletcher Hamilton, and was contributed by him to a publication named "Foot Notes" whose main purpose is to give description of the rarer and less known minerals:—

"Magnesite is a natural carbonate of Magnesium, and when pure contains 52.4 per cent. C. O. (Carbon dioxide), and 47.6 per cent. Mg. O (magnesia). It has a hardness of 3.5 to 4.5 and specific gravity of 3.0 to 3.12. It is both harder and heavier than calcite (calcium carbonate) and also contains a higher percentage of C. O. 2, as Calcite has but 44 per cent.

Most of the California Magnesite is comparatively pure, and is ordinarily a beautiful, white, fine-grained rock with a conchoidal fracture resembling a break in porcelain. The Grecian Magnesite is largely of this character, while the Austrian varieties usually contain iron so that they become brown after calcining. The Washington Magnesite, one of the most recent developments, resembles dolomite and some crystalline limestones in physical appearance. Its color varies through light to dark gray and pink.

In California, the known magnesite deposits, with a single exception (a sedimentary deposit in Kern County) are associated with Serpentine areas. The Washington deposits are stated to be associated with extensive strata of dolomite limestones."

"Uses—The principal uses at the present time include the following:—

"In refractory linings for basis open hearth steel furnaces, copper reverberatories and converters, bullion and other metallurgical furnaces; in the manufacture of paper from wood pulp; and in making flooring, wainscoting, tiling, sanitary kitchen and hospital finishing, etc. In connection with building work it has proved particularly efficient as a flooring for steel railroad coaches, on account of having greater elasticity and resilience than Portland cement. For refractory purposes the magnesite is "dead-burned"—i.e.—all or practically all of the C. O. 2 is expelled from it. For cement purposes it is left "caustic" i.e. from 5 per cent. to 10 per cent of C. O. 2 is retained. When dry caustic magnesite is mixed with a solution of magnesium chloride (Mg. Cl 2) in proper proportions, a very strong cement is produced, known as oxychloride or sorel cement. It is applied in a plastic form, which sets in a few hours as a tough, seamless surface. It has also a very strong bonding power, and will hold firmly to wood, metal or concrete as a base.

It may be finished in a very smooth, even surface, which will take a good wax or oil polish. As ordinarily mixed there is added a certain proportion of wood flour, cork, asbestos, or other filler, thereby adding to the elastic properties of the finished product. Its surface is described as "warm" and quiet, as a result of the elastic and non-conducting character of the composite material. The cement is usually coloured by the addition of some mineral pigment to the materials before mixing as cement."

The desirable qualities of flooring material (cost not considered) are listed for purposes of analysis or comparison under eighteen heads as follows:—Cleanliness (sanitary qualities), quietness, immunity from slipperiness, appearance, waterproof character, plasticity, warmth (thermal insulation) life (immunity from deterioration by age) acid-proof character, alkali-proof character, fire resistance, elasticity, crushing strength, structural strength (rupture) immunity from expansion and contraction and lightness. The importance of these several qualities varies with the varying requirements to be met. For instance, in some places, as in hospitals, cleanliness is one of prime consideration; in other places immunity from abrasion might be one of the principal requisites. As to most of these qualities the conclusion is reached that magnesite cement affords one of the most satisfactory flooring materials for use in kitchens, laundries, toilets and bath rooms, corridors, large rooms or halls in public or other buildings, including hospitals, factories, shops and restaurants."

There is no doubt that the material is steadily coming into more general recognition and favor for these uses. For a few special uses it is more or less disqualified; as an instance, it is not suited for construction of swimming tanks or for conditions of permanent wetness, since under constant immersion it gradually softens, although it is said to stand intermittent wetting and drying, and is recommended for shower baths. Naturally it is not acid-proof, and not wholly alkali-proof, which might be a disadvantage in its use for laboratory floors and tables; but these are rather special requirements. Its cost per square foot is given as 25 to 33 cents, depending on area which is estimated to be lower than marble, cork, rubber, clay, or mosaic-tile, slate or terrazzo, although more expensive than wood asphalt, linoleum, or Portland Cement.

When unsuccessfully used, the causes of failure are ascribable to uncertain climatic changes, lack of uniformity in mixtures used, lack of care on the part of those handling the materials, possible deterioration of materials used through exposure (either before or after mixing) lack of proper preparation of foundations on which the material is to be laid, and, as a very important factor, experience or non-experience in the manipulation, or actual laying and troweling of the material. Data concerning the character and quality of filler and colour added to the commercial preparations, are naturally guarded as trade secrets by the firms already in the business. The examination and standardization of the raw materials used, and of acceptable filler materials, and the establishment of standard proportions for the mixtures would seem to be about the only satisfactory way of attacking the problem.