

ages, are given, as follows:

Age.	Weight per Bushel.
One day.....	117 lbs.
One month.....	113 "
Two months.....	108 "
Twelve months	103 "

And, as examples of variation in weight due to grinding to different degrees of fineness, the following are quoted: A cement leaving 10 per cent. residue in an 80 mesh sieve weighed 110 lbs. per bushel; one leaving 20 per cent. weighed 116 lbs.; one leaving 25 per cent. weighed 121 lbs., and one leaving 35 per cent. weighed 123 lbs.

The author considers that the chief value of chemical analysis, as capable of application by the average user of cement, lies in the easy detection, by its means, of the presence of sulphur, or magnesia, in dangerous quantity; beyond this, the tests which he regards as of the greatest practical importance are those for (1) Fineness; (2) Soundness; (3) Tensile strength. The economy is referred to of securing a finely ground cement rather than one containing a sensible proportion of a practically inert substance, or of particles the complete hydration of which, in the author's opinion, may be so long delayed as to endanger the integrity of the mass when this hydration finally takes place; at the same time the wisdom is questioned of pushing the demand for fineness to an extreme; firstly, because the manufacturers can meet the demand by using a softer clinker, and, secondly, because of the practical difficulties in the way of testing the exact ful-

filment of such demands. Not more than 10 per cent. residue, by weight, upon a 5-800 mesh sieve, is suggested as a sufficiently exacting test of fineness for practical purposes. The author's experience has given him the utmost confidence in the reliability of the "Prussian" or "Pat Test," in conjunction with "Faija's Steam Test," as applied to Soundness. In discussing the value of tests of tensile strength, the quick development of strength which is exhibited by an over-limed cement is noticed, and an instance is quoted in which strengths of 330 pounds in water and 740 pounds in air were attained by a certain cement, after 28 days; the briquettes, however, afterwards suffered complete disintegration through subsequent hydration of free lime. The indication of real value, it is pointed out, is that of a fair induration after seven days; the exhibition, say, of a tensile strength of 350 or 400 pounds per square inch—with

an increase of strength of at least per cent in 28 days. Attention is called, in paper, to the effect, upon the apparent strength, of the rate at which the scale is loaded in the testing of briquettes; a slow loading from zero upwards generally leads to a lower "breaking weight" than if the test is begun with an initial loading, equivalent, say, to 100 pounds—it is the author's practice to begin with a load of 100 pounds applied in 15 seconds—examples of these variations are given. The difficulty is referred to of carrying out

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