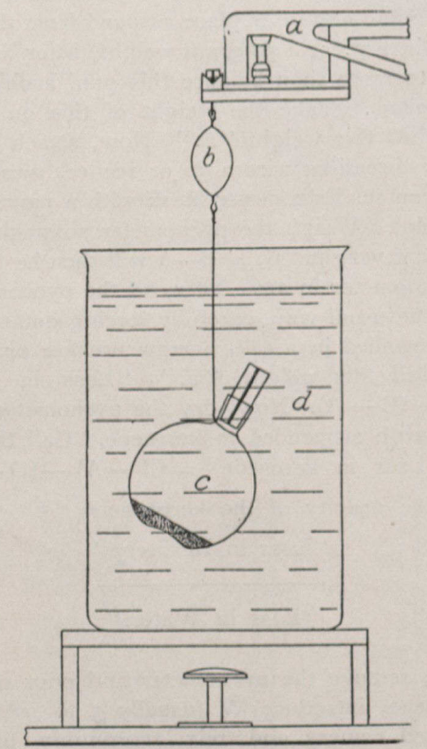
Sample No.	Pycnometer Method.	Suspension Method.
1	3.193	3.190
2	3.088	3.086
3	3.121	3.120
4	3.240	3.241
5	3.135	3.136
6	3.027	3.026

An example of the calculation is given below:—

Weight to balance (A)	11.823
Weight of pycnometer suspended to the above in air (B)	40.825
Weight of pycnometer suspended to the above in water (C)	29.181



AN INTERESTING EXPERIMENT.

Calculating the Specific Gravity of Cement.

"Loss in water" = (B — A) — (C — A) = (40.825 — 11.823) — (29.181 — 11.823) = 11.644.

(The above are permanent results, and provided the same pycnometer or flask is used for each determination need be obtained but once.)

Weight of pycnometer suspended in kerosene (D), 31.662.

"Loss in oil" = (B — A) — (D — A) = (40.825 — 11.823) — (31.662 — 11.823) = 9.163.

Specific gravity of oil =

$$\frac{\text{Loss in Oil}}{\text{Loss in Water}} = \frac{9.163}{11.644} = 0.787.$$

Weight of pycnometer + 10 grams of cement suspended in kerosene (E), 39.152.

Specific gravity of cement =

$$\frac{W \times \text{Sp. Gravity of Oil}}{(W + D) - E} = \frac{10 \times 0.787}{(10 + 31.662) - 39.152} = \frac{7.87}{2.510} = 3.136.$$

PUBLICATIONS REVIEWED.

Portland Cement:—Its Composition, Raw Materials, Testing and Analysis. By Richard K. Meade, B.S., Easton, Pa.; Chemical Publishing Company: Toronto, Canadian Cement and Concrete Review. 385 pages. Price, $3.50.

Mr. Richard K. Meade, B.S., chemist to the Dexter Portland Cement Company, and editor of "The Chemical Engineer," has added a valuable manual to the library of the cement industry, in the shape of his treatise upon Portland cement. Some four years ago he published a small volume entitled "The Chemical and Physical Examination of Portland Cement." In the new book is added a section on the manufacture of Portland cement, for the reason that the chemist who is to intelligently supervise the process of manufacture as well as the chemist who is to report upon the raw materials, and the engineer who is to inspect the product, should have a good general knowledge of the technology of Portland cement.

It was also found necessary to re-write almost the entire section upon the physical testing of cement in order to give special prominence to the uniform methods of testing adopted by the American Society of Civil Engineers, and to the standard specifications of the American Society for Testing Materials. Much new matter has also been added to the section on the analysis of cement and its raw materials. Sections on the experimental manufacture of small lots of cement and on the history of the industry have been included also.

The analytical methods have all been used to some extent in the writer's laboratory, and have been found satisfactory. Comments as to the accuracy and advice as to the best methods of manipulation are found with each method under the heading, "Notes."

The more the cement manufacturer knows of his material the more successful he will be. A good library is one of his essentials. Mr. Meade's book should not be missing from the book-shelf. It is profusely illustrated and contains some useful tables. There is one, for instance, showing the mechanical equipment of some modern Portland cement plants.

Speaking of the time of setting, Mr. Meade says "The rapidity with which a cement sets furnishes us with no indication of its strength. The test is usually made to determine the fitness of the material for a given piece of work. For example, in most submarine work a quick-setting cement is desired, that is, a cement which loses its plasticity in less than half an hour, while for most purposes where sufficient time will be given the cement to harden before being brought into use, a slow-setting cement will usually answer better, or one that sets in half an hour or more. The slow-setting cements can be mixed in larger quantities than the quick-setting, and do not have to be handled so quickly, so that for most purposes where permissible they are used.

The rate of set is determined by a number of things, chief of which are temperature and the percentage of water used in making the mortar:—The higher the temperature the quicker the set and the larger the percentage of water the slower the set. Temperature has a very marked influence, and many cements which are suitable for use in this country could not be used in the tropics. Similarly in the early spring and late fall when the temperature out of doors is from 20° to 30° F. below that indoors, cement which tests up quick in the laboratory may give perfect satisfaction when used at the outside temperature.