

creased. If there is a large quantity of fine sand handy, obtain a coarse sand and mix the two sands together in equal parts; this mixture is as good as coarse sand alone.

Sometimes fine sand *must* be used, because no other can be obtained; but in such an event an additional amount of cement must be used—sometimes as much as double the amount ordinarily required. For example, in such a case, instead of using a concrete 1 part of cement, 2 parts sand, and 4 parts stone, use a concrete 1 part cement, 1 part sand, to 2 parts stone.

Besides being coarse, the sand should be clean, i.e., free from loam, clay and vegetable matter. "But," you say, "how shall I tell whether the sand is what you call clean?" Here is a simple test—pick up a double handful of moist sand from the bank, open the hands, holding them with the thumbs up, and rub the sand lightly between the hands, keeping them about $\frac{1}{2}$ inch apart allowing the sand to slip quickly between them. Repeat this operation five or six times, then rub the hands lightly together, so as to remove the fine grains of sand which adhere to them, and examine to see whether or not a thin film of sticky matter adheres to the fingers; if so, do not use the sand, for it contains loam.

A further test is to scrape some of this matter from the fingers on the end of a penknife and take a little of it between the teeth. If it does not feel gritty or sharp, it indicates vegetable loam, which is bad. Do not use this sand, or if no other can be obtained, test it further to make sure that there is not sufficient loam present to prevent the cement from getting thoroughly hard.

The sand for the test given above must be moist, just as it comes from the bank. When dry, the dirt will not stick to the fingers, hence this test cannot be used. Some idea can be obtained, however, by the appearance of the sand, even if it is dry. If it looks "dead" (an appearance which is caused by the particles of dirt sticking in little lumps to the grains of sand, sometimes also making the grains of sand stick together in little bunches when picked up), it is almost a sure sign of vegetable matter, and the sand should not be used. Fine roots in a sand will also indicate the presence of vegetable matter.

Having discovered that the sand you contemplate using is not clean, and provided you cannot readily obtain any that is clean, you may use what you have, provided you wash it in the following manner:—

Build a loose board platform from ten to fifteen feet long, with one end a foot higher than the other. On the lower end and on the sides, nail a board 2 in. x 6 in. on edge, to hold the sand. Spread the sand over this platform in a layer three or four inches thick, and wash it