A NEW CEMENT.

Cements in common use are few in number, and their properties are such as to make the builder often turn round and wish that something else were available when he has a special difficulty before him, says the British Clay-Worker. In such cases his inventive faculty is called into play, and he dodges the difficulty by mechanical stays or supports, or else he puts in, with some misgiving, the best he can do with Portland or other cement.

In Germany the difficulty has of course been recognized and grappled with. With such scientific people as the Germans are, it is not to be expected that they would go on in the same old way without hunting about for a panacea which should fill the gap in the available remedies. A well-known expert in such matters claims, recently, to have solved the problem, and to have produced a cement intended to be used in a fused state to fix iron stay-braces in stone and brick-work, or even cast iron, as well as for filling up and repairing fissures in walls, buttresses and foundations. It is also useful for repairing faults in iron-castings, setting machinery and stuffing collar joints of all kinds, and therefore should form a handy substance for keeping in the store-shed of every brick-yard where machinery is employed.

Amongst the properties of this new cement we notice that it fires at a low heat to a watery consistence, whereby it is enabled to penetrate into the narrowest cracks and the smallest holes. Hence, when it cools it expands, and so adheres firmly to stone, brick, metal, or wood. Moreover, it resists the action of acids, moisture and oils, the two latter virtues specially recommending it to clayworkers who wish to repair, quickly and efficiently, slight damage to machinery.

The cement has recently been subjected to some very trying tests in Germany, and an account of these was recently given in the Mittheilungen aus d. Konigh. techn. Veasuchsanstalt zu Berlin, vol. xiii., series (6), pp. 290-302. To those of our subscribers who can read German, a perusal of this lengthy paper would doubtless be valuable. We can, however, only spare space for the main results. We notice that the cement stood a pressure of 4·95 kilogrammes per sq. c.m. when in the form of cubes, and of 10·3 kilogrammes per sq. c.m. when in the condition of flat blocks 10×80×80 c.m. [N.B.—A kilogramme equals 2·205 lbs. avoir., or about 2 1 5 lbs ; a millimetre = ·03937 in., or about 1/25 inch ; a square millimetre = ·00155 sq. in., or rather over 1/500 sq. in.]

The cement is found to make a thoroughly sound packing for collar joints, and atmospheric conditions have little or no influence. It now remains for us to produce something as good or better, or else to adopt this new German cement; it is to be hoped that the former event will result.

ESTIMATING RADIATION.

John H. Mills, in his book, "Heat for the Warming and Ventilation of Buildings," has given a definite formula for figuring radiation, which is as follows

In estimating the size of a radiator for a room allow one square foot of radiating surface for each two feet of glass, one for each 20 square feet of wall exposed, and one for each 200 cubic feet of space to be warmed. The only extra figuring necessitated by the use of this rule is to estimate the amounts of window and wall exposure, which calculation, it would seem, would be well paid for by the extra element of certainty which such calculations would impart to the final estimate of radiation needed. With the more usual method of estimating merely on a ratio basis the results may have been certain enough, but with this rule, which requires but little more attention, a check is furnished for the ratio estimate, which would be well worth the trouble.

Perhaps the best way to work the rule, at least for those who are more accustomed to the ratio method, is to use the two together on such occasions as call for a little extra consideration, first estimating on a ratio basis, and then by the 2-20-200 rule. If the two results approximate it is fair to assume a considerable confidence in the correctness of both; if the results vary a little an average of the two may make a safe determination, while if they are considerable at variance it would look as if it were well to reconsider one or both of the estimates. The final results from the 2-20-200 rule always represent steam surface or water if it is intended to run it at steam temperature. The common practice would, however, probably call for an increase of 25 to 30 per cent. in case the estimate was for a water radiator. This rule does not apply when the heating of any room under consideration involves any feature of ventilation, but it is intended to cover only such cases as come under the ordinary requirements of direct heating from direct radiators.