

LOCK MAKING AND LOCK BREAKING.

At the Goldsmiths' Institute, New Cross, Mr. H. W. Chubb delivered a lecture on "Locks." Having dealt with his subject historically and shown designs of beautiful German and Italian workmanship, he caused to be thrown on the screen a series of views, some of which excited much interest. In the first place was displayed, by means of moving slides, the working of Chubb locks, one of which the lecturer had previously exhibited to the audience, and had shown, by way of indicating its delicate construction, that it could not be worked by a key differing from the proper one by only the hundredth part of an inch in a small detail. Next he illustrated the mechanism of "detectors," which not only defeat the designs of the pick lock, but retain evidence of his ineffectual industry. Among the photographs shown by the lantern was one of a strong room, 50 feet long and weighing 40 tons, made for a Scotch bank. Its door was $4\frac{1}{2}$ inches thick, and this, Mr. Chubb said, was perhaps a record for England, though in America solid steel doors of over 8 inches in thickness were known. In that country, it appears, lock-makers have even more formidable antagonists than are to be met with on this side of the Atlantic. Nitro-glycerine having been poured into keyholes and locks thereby blasted, the expedient has been adopted of a door that has no hole or chink of any sort on its face. Then how, it would be asked, was the lock turned? As could be seen from one of Mr. Chubb's views, there is an ingenious combination of clocks and springs on the inner side of the door, which will only open at a time that was appointed when it was shut. The lecturer also threw some light on burglarious methods in this country. A photograph was shown of the sets of tools taken from an hotel thief who was caught on premises in Covent Garden, and Mr. Chubb drew special attention to two of his implements. One was a pair of long nosed pliers, useful for turning a key that has been left in its place after the door had been locked from the inside. The other was a long thin rod having a hinge in the middle, so that, after the instrument has been inserted through a keyhole, the front portion drops at right angles, and becomes a lever for drawing back door bolts. Concerning the exquisite workmanship and materials of the equipment of three house-breakers surprised in a city post-office Mr. Chubb had much to say, "though why," he added, "they should have provided themselves with such splendid tools I do not know, for the ordinary post-office safe might be opened with a stout sardine-knife."

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RULES FOR CONCRETE WORK.

The following is taken from a paper in the Journal of the Association of Engineering Societies, having the title "Concrete Construction on the Illinois and Mississippi Canal," by Mr. J. W. Woermann, and reprinted in the Engineering Record, (Jan. 11). These rules were compiled by Capt. W. L. Marshall

"(a) All massive concrete-work should be divided into sections by vertical planes at right angles to the longest dimensions or on approximately radial lines, if curved to determine in advance the planes of weakness along which cracks due to contraction in setting or to changes in temperature shall take place.

"(b) These sections must be built in successive horizontal layers, as thin as practicable, each layer being well rammed in place before the previously-deposited layer shall have had time to partially set. This rule calls for continuous work, from base to coping, day and night, if necessary, and the work must be rubbed smooth on the top surface and completed without cessation of operations.

"(c) There must be no definite plane or surface of demarcation between the facing and the concrete backing, but the facing and the backing must be deposited in the same horizontal layers and rammed in place at the same time. As far as practicable, the matrix or mortar of the concrete should be homogeneous from face to back of wall. It is permissible to increase somewhat the proportion of cement in the mortar near the face, in order to give greater strength, but the cement must be the same as in the concrete mass. No mixture of cement and lime, of cements different qualities, should be made. Di-

verse cement concretes should be connected by dovetails.

"(d) No plastering or finishing of surfaces, other than sifting sand and cement on the surfaces, if too wet, and rubbing hard with a float, is allowable, or any practice that develops planes or surfaces of weakness other than the vertical planes already noted.

"(e) The concrete or mortar shall be mixed with no more water than they will carry without quaking in ramming; they shall be deposited immediately after mixing; and shall be kept well shaded from the sun and supplied with water, at least at the surface, until well set."

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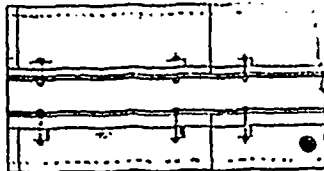
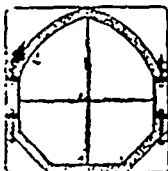
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