

**Encaustic Tiles.**

Encaustic or inlaid tiles consist of three distinct parts—the body, the inlaid pattern, and the back. The body is composed of ordinary fireclay, similar to that used for the diaper tiles, and is worked up into a plastic mass, which is moulded in iron moulds under a screw press. These moulds have raised patterns, which produce an indented or *intaglio* pattern upon the surface of the tile. The tiles thus formed are allowed to become dry, and the indented pattern is filled up by pouring over the surface of the tile a thick milk or slip composed of the white clays of Dorset and Devon, so much used in making earthenware, to which is added some pigment if colored patterns are to be introduced. Sometimes, where polychromatic patterns are desired, different colored slips are used, and poured into the parts of the pattern intended for each.

When partially dry, the surface is scraped even, until the face of the original tile or buff colored clay makes its appearance, when the indented pattern alone will be filled with the finer stained clays. If the tile thus prepared were fired, the body would contract more than the pattern, and the tile would be bent, and perhaps the latter fractured. It is hence necessary to apply a coating of the same fireclay used for the pattern to the back, to counteract this difference of contractibility; and as this clay, when hard burned, would not adhere well to the cement employed in laying them down, the back is pierced by a number of holes by means of projections in the mould, into which the soft cement is able to penetrate and form a solid bond.

The Alhambra tiles are formed upon the same principle as the ordinary encaustic tiles, with this difference, that in the former fusible pigments are used instead of colored clay slips. This is the technical difference; but it must be confessed that there is a beauty of design and a harmony of color in the true Alhambra tiles which are still more characteristic of them, and which it is extremely difficult to equal. The majolica tiles are not so much distinguished by form as by the colored glazes with which they are covered; thus we may have indented or plain *tesserae* covered with a monochrome glaze, or large tiles with foliated or arabesque indented patterns glazed, but not filled up, with different colored enamels. The great peculiarity of majolica colors is their softness and depth, which is the result of the soft enamel pigments employed. The Dutch tiles are true earthenware.—*Prof. Sullivan, in The Architect.*

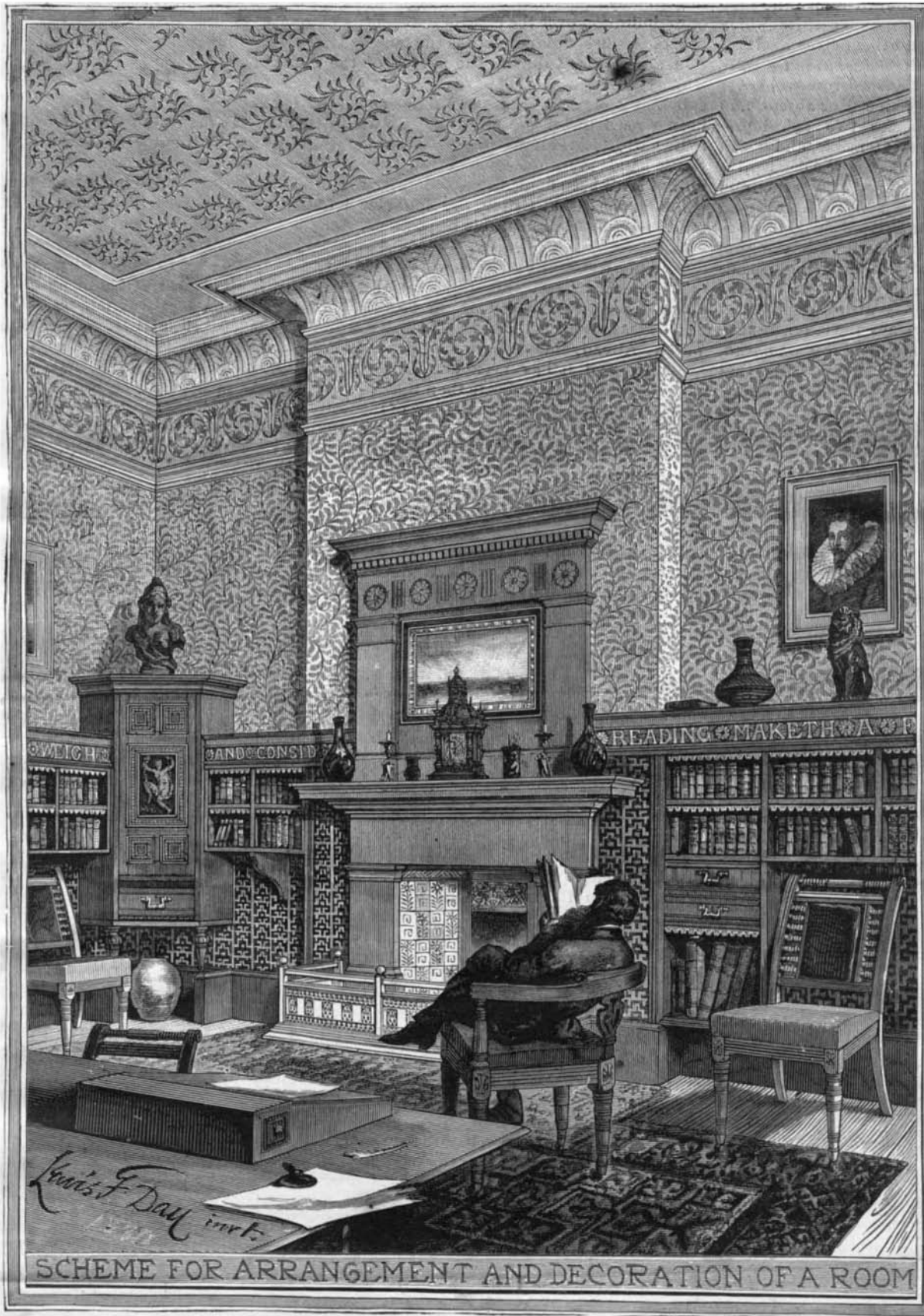
**Guthrie's Telephone.**

A contribution to the telephone controversy comes from Leesburg, Ohio, where it is reported that Mr. J. T. Guthrie experimented on the transmission of speech by electricity long before Bell received his now famous telephone patent of 1876. It is stated that Mr. Guthrie has now perfected a new form of telephone quite different from any previous device. A patent has recently been granted to him for a telephone which is operated by a direct instead of an induced current of electricity, as in other telephones. This instrument is not affected by the weather. The intensity of the current is regulated by a turn of the key. It is cheap, and applicable to any telegraph wire. The ticking of a watch is dis-

tinged over a three mile circuit, and speech is stated to be possible over a distance of a thousand miles. It is shortly to be given an extended test.

**FURNITURE AND DECORATIONS OF A LIBRARY.**

Spring and summer are the seasons of the year usually selected for remodeling and decorating our dwellings, and it is believed that illustrations of the interior of houses which are decorated with taste and furnished in harmony with the painting will be acceptable to a great many of our readers. Our engraving this week represents a library, in which it will be observed that nice harmony prevails in the decorations, mantel piece, and furniture. The excellent illustration sets forth



SCHEME FOR ARRANGEMENT AND DECORATION OF A ROOM

the room and its contents so clearly that any description that might be added would be superfluous.

**Safety Devices for Rifle Ranges.**

Experiments were lately made at Wormwood Scrubs with Mr. Morris' firing screens, which are designed to enable marksmen to practice even in populous neighborhoods. The invention is based upon the idea of stopping "wide" bullets soon after they leave the rifle; and this is accomplished by making the rifleman fire through an aperture in a small screen from a narrow platform inclined to suit men of different stature. Some twenty feet from this screen is a second, in which is an embrasure opening into a short gallery fitted with iron plates or curtains inside which stop the erring bullets. Beyond this is a third screen, with an aperture in it about six feet square, so that the marksman at the firing point looks through these screens, and sees very little except the target at which he is to shoot. The experiments proved successful.

**Slate for Roofing and School Slates.**

In Northampton County, Pa., in the neighborhood of Easton, the industry of cutting out slate for roofing, as well as the school slates which one becomes acquainted with so early in life, seems to be steadily growing; other quarries are also worked for this purpose in Vermont and on the Pacific slope, and suitable slates are likewise to be found in many parts of the country, but nowhere else has the industry shown such steady growth as in the section named.

The requisite kind of argillaceous or clay slate is found among the metamorphic rocks, passing into mica slate, and splits with ease into large smooth plates, of a uniform hardness, a dull luster, and in color a blackish gray, bluish black, bluish or reddish brown, purplish or greenish. When fresh from the quarry, it splits even more easily than pine timber. The slate is removed from the quarry in great blocks, which are landed on trucks and shoved along a track to shanties, where the splitters split them as if they were wood, and with far more accuracy. They are cut into sizes for roofing purposes with great expedition and dexterity. Those of fine quality are used for school slates. It is interesting to watch the work in one of the shanties. The splitter, with his mallet and broad steel chisel, sits on a block, and, taking a slab of slate between his legs, drives in his chisel a little way at one end. He moves it a little with firm, gentle pressure, and you can see the split begin to start as straight as a die. He repeats the operation at the other end. Then he drives his chisel in the middle and easily pries the slab in halves. The split pieces are split and split again until they are of the required thickness. As fast as they are split, a man who stands by the splitter takes the slates and runs them through the dressing machine. This is a cast iron form set on five legs, with a steel extension piece or arm about four feet long. Suspended over this is a steel knife, which is attached to a spiral steel spring and worked by the foot of the dresser. A gauge board guides his eye, and he puts his slate against it, presses his foot on the treadle, and down comes the knife, cutting the edge clean and straight. He makes the four edges straight and lays the slate in piles according to size. Just as fast as

his foot can work, a good dresser keeps his machine going. The splitter and dresser work together, and are paid according to the quantity they turn out. Diamond saws are also used. They have a reciprocating motion, and make 140 strokes per minute. They cut only one way, however, and are lifted by a cam for the return stroke, a constant stream of water clearing the diamond teeth of the accumulated slate dust. The planers are similar to those used for planing iron, and the polishing bed is a disk of cast iron fourteen feet in diameter, making thirty revolutions per minute.

**NOISELESS ANVILS.**—If it is desirable to set up an anvil so that its use will make the least possible noise, set the anvil on a block of lead, or make a putty ledge around the anvil upon the wooden block,  $\frac{1}{2}$  in. clear all round, 1 in. high. Raise the anvil clear of the block  $\frac{1}{2}$  in., by any means available, pour in the lead until it rises above the bottom of the anvil; or set the anvil on a good bed of sand held in a box.