the lead, in the act of consolidation, does so to the exclusion of the silver; and the most simple explanation seems to be, that the process is an instance of true crystallization, the homogeneous particles of the lead coming together by their molecular attraction, and repelling the heterogeneous particles of the silver. It is true, that, on account of the constant agitation, no trace of regular form can be seen in the solid mass, but if one of the pots in the act of consolidation, be allowed to remain a few moments at rest, so that a skin forms on the surface, it will be found, on removing carefully a portion of this skin, that it is distinctly crystalline on its under surface; which proves that it is only the agitation which prevents its always exhibiting this structure. It is well known, that when sea water freezes, the ice is nearly fresh, the salt remaining dissolved in the surrounding water; and that salt water requires a lower temperature for freezing than pure water. To this fact the phenomena of the consolidation of lead containing silver appear to be analogous, the fusibility of the lead being somewhat increased by the alloy. It may seem anomalous that lead, when alloyed with a metal, the melting point of which is so high, should be more easily fusible than the pure metal; but we have among metals many analogous circumstances. That such is the case, is further proved by the fact, that when lead containing silver is gradually fused, the first melted portions are richer in silver than the rest. The difference of fusibility is, however, not sufficient to allow of the separation of silver from lead by the ordinary process of eliquation; for in experiments made with the view of ascertaining how far this method might be employed in practice, in which the lead was exposed, on the grating of the reverberatory furnace, to a heat very cautiously increased till some drops of metal came out, it was found that, in lead containing 5 oz. 8 grs. of silver per ton, the first few drops sweated out contained 7 oz. 17 dwts. 9 grs. of silver; and that when two-thirds were drained off, the portion left contained still 3 oz. 13 dwts. 16 grs. of silver per ton. In another experiment, a piece of the same lead, drained very slowly, till reduced to one-fourth or one-fifth of the original quantity, left lead containing per ton 1 oz. 17 dwts. 15 grs. of silver. Brit. Assoc.—Atheneum.

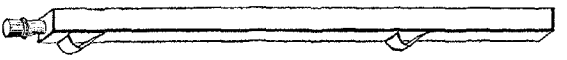
Instrument for Drying Silk in the Loom. By James Ryan.

Silk thread, like all other vegetable or animal substances composed of fine fibres, is hygrometric; that is, when exposed to a damp air, it absorbs moisture, from which it cannot afterwards be freed, except by raising the temperature sufficiently to convert the water into vapour, or to dissolve the water by the action of very dry air. Silk, in contact with damp air on all sides, becomes more moist, and in a shorter time, than similar silk wound into a ball or on a roller. A silk warp while in the loom, and partly woven, is wound on two rollers, the one, that on which the whole warp is first wound, and from which it is unwound and transferred to the second, or cloth roll, in proportion as it has passed through the process of weaving, and is become cloth. The space between these two rollers may be divided into two portions, separated by that part across which the shuttle passes; the portion between this part and the cloth roll being already woven into cloth, and the other being that part of the warp which has been wound off the roll, and is coming up through the harness to the shuttle. This portion is called the porré, and consists of parallel threads exposed, both above and below, to the air. In damp, cold weather, and during the winter generally, when

the weaver leaves off work at night, the air of his workshop becomes colder and damper, till its state nearly approaches to that of the outer air; and, therefore, when the weaver is desirous of beginning his work again in the morning, he finds the porré has become damp; the adjacent threads have, therefore, a tendency to rub hard against one another in making the shed, and the work proceeds heavily and slowly till the fire of his shop has become powerful enough to evaporate the moisture, which often will not be effectually done in less than two hours. Besides the loss of time hence arising, the work done under such circumstances feels loose and spongy, and is very liable to cockle, from certain parts of the threads being more moist than the others during the weaving, especially when two or more kinds of silk are employed in the same warp.

Another disadvantage is, that the brighter dyes now used, especially for spring wear, are many of them so fugitive, that they are much injured by mere dampness, to which they are particularly liable, as they must, of necessity, be woven during the winter. These difficulties and imperfections affect both the weaver and his master in so serious a degree, as to render their removal a matter of no small importance.

Mr. Ryan, after several unsuccessful attempts, at length hit on the simple instrument about to be described, with which he has always obtained the most satisfactory results.



It is a hollow quadrangular prism of tin plate, with a round neck at one end, closed by a cork; the length of the prism is about equal to the length of the porré, and on the under side are two handles to render it more manageable. The prism, being filled with hot water, is applied first to the under, and then to the upper surface of the porré, till, by means of it, all the moisture is evaporated. This is often so considerable as to cause a visible steam while it is passing off. The instrument is then applied to the harness; and the whole is thus made dry, and brought into a state proper for working in from ten to twenty minutes, according to its previous state of dampness.

From the evidence of practical weavers, who have made use of Mr. Ryan's instrument, it appears that the injury caused by dampness, both as regards the work and the more fugitive colours, is not at all exaggerated, and that, by the use of the instrument, they have constantly obtained the advantages attributed to it by the inventor. Ibid.

Centripetal Dial Plate. By C. and J. M'Dowal.

The word *centripetal*, applied by Messrs. M'Dowal to their dial plate, is liable to mislead; it having no reference, as used by them, to centripetal force, but merely implying that the divisions indicating minutes, instead of being placed on the circumference of the plate, (as is the common practice) are arranged in concentric circles, and are reckoned from the outer towards the inner circle.

In the common dial plate, while each of the hour spaces occupies one-