was by the first glass, and among these four rays thus obtained, there are two which are parallel in direction, equal in intensity and have traversed the same thicknesses of air and glass, and thus give interference fringes. These fringes are broad, luminous and perfectly steady; they may be directed either horizontally, vertically, or obliquely, and what is valuable, they may be so dilated as to give flat tints. In this arrangement there are required, neither a perfectly adjusted narrow slit, nor carefully regulated mirrors, nor lens to view the fringes; the apparatus is reduced to two glasses illuminated by a lamp, and the fringes are seen by the naked eye, spreading themselves out in the image of the glass like the colored rings in the double lens of Newton.

If an opaque body is now placed near to the path of the light, one of the rays may graze its surface, while the other passes at a distance, and if any physical modification is taking place in contact with this body, it is indicated by a deformation of the fringes at the edge of the shadow of the body.

In his note, M. Jamin then describes some applications of his apparatus. When a metal is plunged into water or a saline solution, it is, if oxidizable, always attacked and the fringes deformed. When an electric current is passed through a conducting solution, the chemical decomposition alters the density of the liquid in contact with the electrodes, and the optical phenomenon is changed. By these means we may follow all the chemical phenomena due to the passage of an electrical current.

If the poles of a powerful electro-magnet are placed in a solution of sulphate of iron, the solution is modified, the salt of iron is attracted by the magnet, and the water repelled; the action progressively increases, and the salt of iron finally crystallizes on the poles.

Finally, if a crystal of alum be plunged into a saturated solution of the same salt, the crystal grows by successive additions of the salt, and it may be seen that it attracts the particles of salt from a distance, and consequently augments the density of the solution in its own vicinity, but in actual contact, the index of refraction diminishes, either because the molecules of alum are precipitated upon the salt, and weaken the solution, or in consequence of the disengagement of heat by the crystallization.

*Indestructible Printing on Metallic Plates.** By Dr. J. LOTSKY.

Messrs. Adams and Gee, printers, of London, have found that metallic plates, of the thickness of ordinary sheet tin, may be printed upon with the usual printing type, if the plates be first coated with a whitish composition—the secret of the inventors. If sheets thus printed upon be afterwards subjected to a certain japanning process, an even lustrous surface is produced, which cannot be acted upon except by a sharp steel instrument. The cost of preparing the printed sheets is small.

It requires no great consideration in order to discover that this invention is of a very important character. In the first place, it is evident, that printed metallic sheets of the above description may be substituted with

* From the Lond. Mech. Mag., Nov., 1835.

great advantage for the mounted paper lessons employed for class teaching in schools, which, from the rapidity with which they become worn, are costly apparatus in all public educational establishments. Moreover, as these durable printed sheets may be prepared very economically, the number of class lessons employed may be greatly increased; and, further, these plates may also be used for maps, diagrams, tables, &c.

In the second place, I venture to suggest that important moral effects might be produced in every country by the circulation of such plates bearing extracts from the highest class of literature, and even well selected quotations from the Bible itself. I am aware that maxims and precepts printed upon paper are already in extensive circulation; but, from the destructible nature of the fabric on which they are impressed, I believe they do not assume that importance which would be attached to them were they produced upon a lasting material, and in an artistic style. The lessons which might thus be perpetuated, and kept continually before the mind of youths in particular, might well be expected to counteract some of the evil effects of modern worthless and injurious paper literature, which, from its ephemeral character, has a natural tendency to degenerate.

Again, printed metallic plates of the kind under notice will certainly be substituted, and that with great advantage, for out-door notices, advertisements, &c. Much difficulty is at present experienced, and much trouble occasioned, from the fact that information of great interest and importance to the public is inaccessible, in consequence of the want of a method of so publishing such information that the expense of frequent renewal (which in the case of long printed statements would be very great) shall not be incurred. The invention under consideration supplies such a method. Other applications of the invention will suggest themselves to the reader. For my own part, I believe it capable of such applications as, if mentioned here, would probably be considered extravagant.

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*Moulding Slag Bricks and Coping Stones.**

A communication on the question of slag bricks has been made to the *Society of Arts Journal*, by Mr. Hyde Clarke. He says:—In the South Wales districts the copper works supply slag bricks and coping stones to some extent, the smelters receiving a small fee for moulding. Some of the slag bricks are used even in the copper works. This is the case likewise in the works of the Mexican and South American Smelting Company, at Herradura, Caldera, and Tongoy, in Chili, where the walls of the ore-yards, and even the ash-pits and foundations of some of the furnaces are made of these materials. Rough slag is turned to account in making embankments near some of the Welsh and Lancashire Works, but is very porous. The moles at Herradura and Caldera are filled in with rough slag, and parts of the Tongoy and Herradura works are built on what was lately shore, but now land reclaimed from the Pacific by being covered with slag. One objection to slag bricks, which are otherwise cheap, is their brittleness.

* From the *Lond. Civ. Eng. and Arch. Jour.*, Jan., 1856.