LITERARY INTELLIGENCE.

We have received *The Microscopist's Annual* for 1879, published quite recently and dated 1880. It contains useful tables, rules, formulæ and memoranda, a list of microscopical societies, with officers, etc.; Directory of prominent microscope makers, dealers and importers in America and Europe. We trust that microscopists will patronize this thoroughly practical little work, and as it is issued by the Industrial Publishing Company, of Dey street, New York, at the nominal price of twenty-five cents, its expense can hardly be a bar to its purchase. We understand future numbers will be considerably enlarged.

THE announcement is made of a new bi-monthly magazine called *The Educational Review*, which will be devoted to the science and philosophy of education, in all its departments of thought and discussion. It will be conducted by Mr. Thomas W. Bicknell, whose great experience in educational literature cannot fail to make it a success, and worthy of the great subject it takes in hand.

GENERAL NOTES.

THE French journal, *La Lumiere Electrique*, is to receive the addition of a supplement (having separate pagination) in which will be given a *résumé* of recent discoveries and inventions. For the present, these supplements will be confined to the subject of electric lighting.

IN a new form of telephone-receiver brought before the French Academy by M. Ader, two plates are used, arranged in such a manner that the air can pass through a central hole in one to the other. The result is, much louder tones, the second plate acting as a sort of soundboard.

THE Corporation of Yale College have established a horological laboratory in connection with the Winchester Observatory, with the view of encouraging the manufacture of more refined apparatus for the measurement of time.

IT is reported that Mr. Swan, of Newcastle-on-Tyne, has succeeded in rendering his little electric lamp a success. He uses a carbon thread in a vacuum tube, which supplies a soft and steady light, well adapted for household purposes.

M. DU MONCEL has just published a third edition of his work, entitled "Le Telephone, le Microphone, et le Phonographe," the two previous editions (containing 5,500 copies each) having been exhausted in fifteen months. The numerous recent developments of the telephone and microphone are described, and 48 new engravings are added. The phonograph seems to have made but little progress since its appearance; M. Du Moncel, however, specifies a few improvements of it.

THE House of Lords' Committee have passed the preamble of the Bill for the construction of a subway available for all kinds of traffic, vehicular and passenger, under the Mersey, so as to connect the towns of Liverpool and Birkenhead. The total length will be 1 mile 6 furlongs 6½ chains, and the estimated capital required £500,000, the taking up of which is guaranteed by the Corporations of Liverpool and Birkenhead, the Mersey Dock Board, and the Great-Western Railway, each of whom are prepared to give security for one quarter the cost of construction. The engineers are Mr. John Fowler, of London, and Messrs. Law and Thomas, of Wrexham.

IN a recent note to the Paris Academy, Professor Marangoni gives the results he has arrived at in a study of the swimming-bladder of fishes. He states, first, that it is the organ which regulates the migration of fishes, those fishes that are without it not migrating from bottoms of little depth, where they find tepid water; while fishes which have a bladder are such as live in deep, cold water, and migrate to deposit their ova in warmer water near the surface. Next, fishes do not rise like the Cartesian diver (in the well-known experiment), and they have to counteract the influence of their swimming-bladders with their fins. If some small dead and living fishes be put in a vessel three-quarters full of water and the air be compressed or rarefied, one finds in the former case the dead fish descend, while the living ones rise, head in advance, to the surface. Rarefying has the opposite effect. Fishes have reason to fear the passive influences due to hydrostatic pressure; when fished from a great depth, their bladders are often found to be ruptured. Thirdly, the swimming-bladder produces in fishes twofold instability —one of level, the other of position. A fish, having once adapted its bladder to live at a certain depth, may, through the slightest variation of pressure, be either forced downwards or upwards, and thus they are in unstable equilibrium as to level. As to position, the bladder being in the ventral region, the centre of gravity is above the centre of pressure, so that fishes are always threatened with inversion; and, indeed, they take the inverted position when dead or dying. This double instability forces fishes to a continual gymnastic movement, and doubtless helps to render them strong and agile. The most agile of terrestrial animals are also those which have least stability.

A new process of extracting sugar from molasses has been proposed by M. Gayon. It is based on the destruction of the glucose of molasses by fermentation; the sugar remains unaltered, and is obtained by ulterior crystallization. The ferment employed is a pretty common mould, *Mucor circinelloides*. M. Van Tieghem found it in horsedung, and was the first to describe it. The ferment cells must not be confounded with those of beer-yeast, or *saccharomyces*. They differ in form, and, unlike beer-yeast, this *mucor* is powerless to produce glucosic and alcoholic fermentations of cane-sugar, whereas it acts like all alcoholic yeast on glucose and similar compounds. If, then, the cells of *mucor* be sown in a nutritive solution of cane-sugar and glucose, the latter alone ferments, the sugar remaining unaltered, whereas with beer-yeast *all* ferments. This conclusion was confirmed indirectly by experiments made with a view to ascertain the constitution of the inactive glucose of molasses by saccharimetric observation. M. Gayon has succeeded in fermenting 200 or 300 c.c. of molasses solution, and he remarks that by combining the process with osmosis one might, no doubt, extract, in the dry crystalline state, all the sugar which the glucose and the salts retain in molasses. (The Editor of the *Journal de Pharmacie* observes that it is only exceptionally that glucose exists in molasses in sensible proportion, and it is the salts that prevent crystallisation of the sugar; nevertheless, M. Gayon's researches are of much interest scientifically.)

THE blood of most slaughter-houses is usually dealt with in a primitive manner in open air, and without previous disinfection. This is obviously opposed to hygienic and economic laws. M. Vautelet has lately brought forward a process of treating all organic detritus from slaughter-houses for agricultural purposes. He uses sulphate of alumina, sulphuric acid, and nitric acid in fixed proportions. By addition of sulphuric acid to sulphate of alumina a bisulphate is formed, which, less soluble than the sulphate, quickly causes a complete coagulation of the blood. The *rôle* of the nitric acid is coagulation of the albumin of the blood and formation of nitrate. The matters are thus disinfected, and their fertilising power fully preserved.

THE geological changes which the English Channel has undergone are discussed in a recent communication to the French Academy by M. Hebert (June 7).