

## MISCELLANEA.

**BREAKAGE OF GLASS.**—Will one of "ours" say why glass plates, &c., break without pressure or without being touched? They really explode and split in the middle and crack in several directions!—GLASS.

ACCORDING to new experiments by Munchhausen, of Moscow, the specific heat of water taken at unity at 32 deg. is at 212 deg. Fah. 1.0302, as against 1.013 found by Régnault, and 1.11 de-2 terminated by Jamini.

**L. AND N. W. ENGINES.**—Would some one give the dimensions of the L. and N. W. engines—"Courier," "Caithness," "Leviathan," "Monarch," and "Greyhound," or of others of the same description?—TAMERLANE.

THE official report from the Royal Observatory, Greenwich, shows that the greatest pressure of wind during the heavy gale which prevailed last Sunday night was recorded at 25 minutes past 11, when it was 32.6 lb. on the square foot.

THE bakers and pastry cooks of Paris using brick ovens, have been forbidden to burn in their ovens wood which has been painted or impregnated with any metallic salt, as it is believed that the articles of food may be rendered deleterious through the agency of the same.

**A GOOD PLASTIC MATERIAL.**—Five parts of sifted whiting mixed with a solution of one part glue, together with a little Venice turpentine to obviate the brittleness, makes a good plastic material, which may be kneaded into figures of any desired shape. It should be kept warm while being worked. It becomes as hard as stone when dry.

By the use of circular oblique theophores, with a special clock-work for each, F. Requier has succeeded in making an electric lamp which will operate for twenty-four hours. He thinks that the instantaneous obedience of the automatic theophore to its solenoid will enable him to devise a sufficiently intense electric current so as to supply a large number of his lamps.

THE removal of tin from copper vessels coated therewith can be easily accomplished, according to Professor Bottger, by immersing the vessel in a concentrated solution of sesqui-chloride of lime. In a very few moments the tin is removed from the copper, and nothing remains to be done but scour the latter with moistened sand and dilute hydrochloric acid to obtain a perfectly clean surface.

At a recent meeting of the French Academy of Sciences, M. Duplessis called attention to the infection of grain through the agency of floods in water courses. A case was noted of a field of rye which became partially infected with smut, owing to a river having overflowed its banks and covered a field further up stream, which was already infected. The flood has been the means of communicating the disease or fungus.

**RELAXED BOWELS.**—I often find diet recommended such as brown bread, &c., to prevent constipation and its attendants, as if all the danger lay in that direction. I shall be glad if one of "ours" will help me on the other side of the question, and recommend diet suitable for one who is naturally relaxed. I tried many things, but the only thing that has done good service for any length of time is Guinness's stout: this has always been effectual. Will some one explain how it is that stout has served such a purpose?—DIET.

**MOLDS FOR PLASTER CASTING.**—Make a good stiff glue, and add to it its own weight of treacle. If, as sometimes happens, this is too sticky, add more water, and less treacle; if too hard add more water only. Oil the mold before pouring in the plaster. About 2oz. of rosin to 1lb. of beeswax is ample. What are you casting your caps with, wax or metal? If the former, allow the mold to stand in water (not reaching to the surface of the mold) until you see the face is damp. I never knew of metals adhering to plaster. If you are casting with gelatine from plaster molds oil the molds lightly.

**USE OF THE TELEPHONE.**—During a recent visit to Cleveland, says the *American Manufacturer*, we found the telephone in use in a number of offices, and conversation being carried on between them and their manufacturing at distances varying from one to seven miles, this, too, in an ordinary voice, with no particular effort except for distinct pronunciation. The Cleveland Paper Company has fairly domesticated this new discovery in their offices in connection with their different mills. It is also in use by the Standard Oil Company, Union Iron Works, Cleveland Transfer Company, Cleveland Iron Company, Leader Printing Company, Rhodes & Co., and other firms, while orders are being filled as fast as it is found convenient to the work.

**WOOD PRESERVATIVE.**—A new cheap coating for wood, which is very adherent even when exposed to the weather, consists in simply brushing the surface with a solution of persulphate of iron of 2° to 2½° Beaume. The blue-grey tint which this acquires on drying changes to an agreeable brown when linseed oil varnish is applied.

**RECLAMATION OF THE ZUYDER ZEE.**—Active preparations are going on for the commencement of the long-projected work of draining the Zuyder Zee. A dam nearly 25 miles long is to be carried across the gulf, and upon this pumping machines of 10,000 horse-power are to be placed, capable of discharging 6,500,000 cubic meters of water daily from the inclosed sea. It is estimated that the work will occupy 16 years, and that it will cost 335,000,000 francs. The scheme, if completed, will form one of the greatest engineering feats of the world.—*Engineering News*.

**LEMONADE.**—Loaf sugar 2lb., tartaric acid ½oz., essence of lemon 30 drops; essence of almonds, 20 drops. Dissolve the tartaric acid in two pints of hot water, add the sugar, and lastly the lemon and almond; stir well, cover with a cloth, and leave until cold; put two tablespoonfuls into a tumbler, and fill up with cold water. This drink, it is said, will be found much more refreshing and more palatable than either ginger-beer or lemonade, and costs only 30 cents for ten pints. The addition of a very little bicarbonate of potash to each tumblerful just before drinking will give a wholesome effervescing drink.

**ENGLISH ROADS.**—The English, at all events, says a letter-writer, know how to make roads. Their wood pavements are magnificent. London has set the fashion of wood, and Liverpool is beginning to follow it; but there are no pavements in the States to touch these wooden roads of England. They are laid on foundations which in some cases have been solidifying since the days of the Romans. On these foundations they lay macadam and cement several feet deep, and then come blocks of pine, laid with mosaic-like accuracy. There is a piece of wood pavement of this kind in Oxford street, London, which has not been repaired for over two years, and it looks as substantial and perfect as when it was first laid down. The average price of this kind of pavement is about \$4 per square yard, and the companies keep it in order for two years without charge, and then guarantee it for 15 years at an annual charge of 25 cents per square yard for maintenance, which enables the pavers to relay the road, if necessary, after eight or ten years.

**PRESERVATION OF FOOD IN TINS.**—The following extract from the "Report on Food Preservation," prepared by order of the Council of the Society of Arts, and to be found in the journal of the Society for 1873, may be of service to "Dr. S.!"—"We now come to the fourth process of preserving mentioned—viz., the expulsion of atmospheric air. This is effected by the application of heat to the substances to be preserved when placed in tins or other receptacles. Without entering into a scientific controversy as to whether the true theory of this process of preservation by applied heat may not be that the 'microscopic germs' which are alleged to cause putrefaction are destroyed, we shall take it for granted that the oxygen gas is entirely expelled by the heat, not only from the receptacle itself, but also from the substance placed within it. That this is the case may be deduced from the fact that the tins containing the preserved food show a concave depression on top and bottom, and some even collapsed sides—an evidence that a perfect vacuum has been obtained, as is also the audible rush of external air into the tins when the opening knife is first inserted. The breakages also of earthenware and glass jars, the former of which were formerly extensively used in this process, tend to establish the same conclusion. But, however this may be, it really matters not. It is certain that the preservation of both animal and vegetable substances in a cooked state by this process is perfect, the only objection being that, in the majority of instances, an over-cooking seems almost inevitable or unavoidable. The process may be thus briefly described:—The meat, fish, poultry, or vegetables are put into tins of various sizes and then placed in 'baths,' which are raised to a temperature considerably above that of boiling water by having chloride of calcium dissolved in them. A small orifice is left in the upper cover of the tin to permit the escape of steam, air, &c., or being hermetically closed, they are entirely immersed in the baths, being let down into them by means of iron frames or 'gridirons' supported and lowered or raised by cranes. In some cases only common salt is added to the water in the baths instead of calcium chloride: or, lastly, steam ovens may be employed. But the object and the result are in all these cases the same."