THE AIR WE BREATHE

Much attention is now being paid to the characteristics of the atmosphere in various localities, and under diverse circumstances Analyses show that air in open and exposed localities varies in the amount of oxygen which it contains from 20·4 to 21 0 per cent The most favorable localities, as on the heaths of Scotland, show the latter; while it is necessary to go underground into a mine to find the former Well ventilated mines show about 20 4; while our illy ventilated mines, where it is possible to labor, rarely go below 20 These results are derived from thousands of careful analyses Cavendish made 500 in the course of his enquiries.

The cursory reader may think that the difference between 21, and 20 in the per cent. of oxygen in the atmosphere can have but little importance, and is hardly worth enquiring It is true that the deficiency named is small when considered in figuring, but when we reflect that while 21 represents the largest amount of oxygen ever found in the best natural atmosphere, a candle goes out at 18 50, and life can barely be sustained for a short time at 17·20, the importance of a small per cent. of difference becomes apparent. Even so small a difference as that between 21, and 20 981 is equal to 190 in a million; and if we place impurity in water at that rate it will amount to 13 grains in a gallon. This amount would be considered enormous, if it consisted of putrifying matter or any organic matter usually found in water.

But we drink but a small quantity of water, and with such a percentage we might be several days in swallowing the whole 13 grains; whereas we take into our lungs from 1,500 to 2,000 gallons of air each day. Moreover the blood receives such impurities almost entire, very little being filtered out in its passage to the lungs, while the stomach has powers of disinjection and destruction which render harmless very much of the organic impurities contained in water. But if we take the air found in the pit of the theatre, generally about 20·740 we find the minute analysis becomes a matter of the highest importance.

The senses are bad and inefficient guides to the wholesomeness of air as regards the amount of oxygen and carbonic acid, save when the former is reduced and the latter increased to such an extent that the lungs seem to refuse to expand and the whole vital action is threatened with paralysis. Rooms badly ventilated, which contain less than 20·7 per cent of oxygen are very unwholesome, and the necessity of taking into consideration the proportion of oxygen and carbonic acid in the sanitary inspection of factories and workshops is abundantly evident from the result obtained by Dr. Smith.

Mr. Clemson, a French chemist, made public, in 1856, a theory with regard to the presence of living organisms in the atmosphere, so minute as to be almost or quite unobservable by the best microscope, and which organisms exerted a marked influence on health—in fact were the origin of most diseases to which men are subjected. He also argued that there is phosphoric acid in the air, derived from the successive generations after generations of myriads of these organisms, produced, living and dying in the atmosphere; that such organisms exist and are at work, assimilating from one to the other, preparing food for more perfect organisms, from the microscopic points of life to the most perfect animal existence. He also entertained the idea that the increased fertility of the earth by being broken up and exposed to the atmosphere, was due to the presence of such animalculæ.—*Rural Home.*

If there is a thing which is utterly detestable to look upon by a strict observer and one who has a general knowledge of what is right, it is to see the heads of bolts driven down below the surface of the wood. The bolt has a certain duty to perform, and where that duty is the securing of a piece of iron to wood, or wood to iron, if the head of the bolt sets firmly upon the wood, and the nut is firm upon the iron, it is all that is required; but when we commence to draw upon the bolt until the head sets below the surface of the wood, that moment we commence destroying the fibre of the wood, and aid the premature rotting at that one point; for, no matter how nicely painted, or how neatly puttied up, there will soon be a cavity for the retention of a few drops of water. This alone would be enough to condemn the practice, to say nothing of the other results it produces.

MISCELLANEA

It seems that the old story of "bread with gin in it" is not without foundation according to Mr Thomas Bolas, who writes in the *Chemical News* stating that forty 2lb loaves contain about the same amount of alcohol as a bottle of port

Gardeners have long affirmed that the moon's rays give great activity to the growth of mushrooms M Charbonnier, of Paris, states that he has observed in his aquaria a very remarkable growth of cryptogamus vegetation under the influence of the light of the full mooon.

The cultivation of science spreads steadily A scientific society has recently been established at Buenos Ayres. Mr A Luis Huergo for its first president According to their programme, the members have arranged for carrying out several branches of original research.

It is reported that hemp, when the blossoms are just opened is an infallible preservative of textile fabrics against the attacks of moths. The stalk, with leaves and flowers, is cut when blooming (about July), and dried in the shade. It is said to preserve its properties for several years

It is worthy of note that Mr. E H. Hoskins, of Lowell, Massachusetts, U. S has showed by experiment, that collodion may be usefully employed for the preservation of charred paper Many papers charred in the great fire of Chicago—bank-notes, &c —were treated with collodion, which forms a thin transparent film, and dries in a few minutes The printing or writing can be read through this film.

Perpetual Paste.—The *Journal of Applied Chemistry* says: Dissolve a tea-spoonful of alum in a quart of warm water. When cold, stir in as much flour as will give it the consistency of thick cream, being particular to break up all the lumps; stir in as much powdered rosin as will lie on a dime, and throw in half a dozen cloves to give a pleasant odor. Have on the fire a tea cup of boiling water, pour the flour mixture into it, stirring well at the time. In a very few minutes it will be of the consistency of mush. Pour it into an earthern or china vessel; let it cool; lay a cover on, and put it in a cool place. When needed for use, take out a portion and soften it with warm water. Paste thus made will last twelve months.

To Clean Paint.—A correspondent of the *Country Gentleman* says: Use but little water at once; keep it warm and clean by changing it often. A flannel cloth takes off fly specks better than cotton. Soap will remove the paint; so use but little of it. Cold tea is the best liquid for cleaning varnished paint, window panes and mirrors. A sharp piece of soft wood is indispensable for cleaning out corners. A saucer of sifted ashes should always be at hand to clean unvarnished paint that has become badly smoked; it is better than soap. Never put soap upon glass, unless it can be thoroughly rinsed off, which can never be done to window glass. Wash off the specks with warm tea, and rub the panes dry; then make a paste of whiting and water, and put a little in the center of each pane. Take a dry cloth and rub it all over the glass, and then rub it off with a chamois skin or flannel, and your windows will shine like crystal.

An Anatomical Hint.—Dr. Herman Meyer of Zurich asserts that a shoemaker ought not only to produce a shoe that does not pinch, but a shoe so constructed that it will give to a foot distorted by the pinching it has borne already, a fair chance of a return to its right shape, and full possession of its power as a means of carrying the body onward He says that in measuring a foot for a shoe or boot, the first thing to be considered is the place of the great toe. Upon this toe, in walking, the weight of the whole body turns at every step; in a natural foot, therefore, it is in straight line with the heel A central straight line drawn from the point of the great toe to the middle of its root, if continued, would pass very exactly to the middle of the heel. But, by the misfitting boot usually worn, the point of the toe is pressed inwards, the root outwards. No last, or model of a foot already injured by wearing ill-fitting boots or shoes should ever be made of the exact size of such a foot.