

public work well, they must take it as a life's duty, as men do; and must remember that their responsibility does not begin and end with the performance of that work, but with its execution in the best possible manner; and this they can only achieve, if they adopt all reasonable measures to counteract the special disadvantages to which they are subjected.

Medical Matters.

MAKING AIR.



ONE great practical drawback to the employment of the diving-bell has been the difficulty of supplying the diver with sufficient air; so that even under the best present method the latter is obliged to return to the surface at frequent intervals. The attention of a well-known French physiologist was drawn to this fact, and he has, for some months past, been studying the problem, and has recently published the remarkable results at which he has arrived. His assumption was that the nitrogen in the air remains practically unaltered, after being breathed—the oxygen only being consumed; and experiments confirmed the hypothesis. It is well known that, roughly speaking, there is 79 per cent. of nitrogen to 21 per cent. of oxygen, in the air. The problem, therefore, was to determine how fresh supplies of oxygen could be manufactured so as to combine with the residual nitrogen and so form fresh air—so as to supply a man, say in a sealed diving-bell, far down under the sea, with constant atmospheric assistance. The two difficulties of course were not only how to form the necessary oxygen, but also how to remove from the confined air the carbonic acid gas exhaled from the lungs, and which, if left, would speedily asphyxiate the inmate of the diving bell. It is now reported that a chemical compound has been discovered which "clears the vitiated air of impure gases produced by respiration, and furnishes automatically the requisite quantity of oxygen"; so that six or eight pounds' weight of this substance, it is estimated, would enable a man to live for at least twenty-four hours in a sealed diving bell. If these assertions are substantiated, a most important discovery has evidently been made, because the applications to which the new substance could be placed would be of the greatest practical utility.

THE VALUE OF SUGAR.

THEORETICALLY, it has been known for a very long time, that cane sugar is a most valuable article of nourishment, and, that, in some respects, it is even superior to fat. They are fortunately able to do things in Germany—from the Kaiser on his throne to the smallest of its hundred thousand bureaucrats—which not only increase the gaiety of nations, but add to the general stock of knowledge. So statements as to the nutritive value of sugar having been made, it was determined in Germany to test the facts; and during the last Army manoeuvres, the medical officers were directed to select ten men, chosen from among the least vigorous, in each company, to be experimented upon. These were ordered to eat a given quantity of sugar every day, and this was probably carried out without any serious reluctance on the part of the experimented. Another ten men selected from each company were not allowed to take anything beyond the regular service rations. The amount of sugar supplied to the first squad of men was gradually increased, and it was found that their weight increased proportionately more than that of the men to whom sugar was denied; while the former also were evidently in better health and more vigorous than before. They moreover suffered less from thirst, bore the fatigue of the manoeuvres better, and were more alert, than their comrades. It is therefore proposed that sugar should be added to soldiers rations, either as a supplementary allowance, with a view of improving the men's daily supplies; as an integral part of the men's reserve store of provisions, and of the supplies for fortresses, hospitals, and ships; or as a temporary allowance for strengthening men, and renewing their vigour on the march. As there no longer seems to be any doubt as to the high nutritive and tonic value of sugar, it should occupy a more prominent place in our nourishment. If it is specially beneficial in combating and resisting fatigue, it would evidently be found valuable not only for soldiers, but also for others subject to exhausting physical labour, and for growing boys and girls in general. It affords nearly, if not quite, the same stimulus as alcohol, without the danger associated with the latter; it has, furthermore, the advantage of being a food of the first order, as, unlike fats, sugar contains a sufficient amount of oxygen for the complete oxidation of its hydrogen.

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