Robert Owen, in 1818, tried to protect young children from overwork, the widow argument appeared. When Lord Shaftesbury put an end to the employment of boys as chimney-sweeps, she was brought to the front again. She appeared again at the time of the mines regulations and the Education Act, and now it is the sweating system; but, as the poor widow argument was brushed aside before, so she hoped now it would not be suffered to prevail. Mrs. Webb closed her address with an eloquent appeal to the women of England to take up this great reform, second only to the temperance cause, and allow no peace to their members of Parliament or to Mr. Asquith until something was done. In answer to questions, Mrs. Webb said she should like to abolish married women's work, except for their own families, since she considered the wife's earnings had an effect as pernicious as the giving of outdoor relief—they inevitably pulled down either the husband's industry or his wages. Why should the wife as well as the husband spend her days in drudgery? Her work was to raise the standard of comfort in the home, and improve her husband's and children's minds by her intelligent interests." Perhaps Mrs. Sydney Webb would have more sympathy with the "poor widow" had she not been the daughter of wealthy parents who endowed her richly, thereby preventing the contingency of her occupying that terrible position. We women are so apt to judge the world from our own particular circumstances.

—Science Notes.—

THE VALUE OF SUGAR AS A FOOD.

According to the now discarded theory of Liebig, proteid or nitrogenous food material, and that only, was utilised in producing muscular activity; while carbohydrates, by their oxidation and consequent conversion into water and carbon dioxide, provided for the warmth of the body. Voit and Pettenkofer showed, in contradiction to this theory, that the consumption of carbohydrates produced not only heat, but muscular energy. Proteid is necessarily the food of muscle, and, therefore, a man with a great development of muscle requires more proteid food than a man who is muscularly feeble; or, in other words, a man must have proteid food in proportion to his muscular mass, and a navvy requires more animal food than a clerk, because he has so many more pounds of muscle rather than because he does harder work. On this account it is reasonable to provide more meat in the diet of a prisoner doing hard labour than in that of one who is not considered fit for such labour. Contrary, however, to the expectation founded on Liebig's theory, it has been shown that nitrogenous waste varies very little whether an animal undergoes great muscular exertion or almost none, and therefore the body requires little, if any, more proteid food when working hard than when resting. On the other hand, the amount of carbohydrate required during work and during rest, varies very greatly.

With regard to sugar, it has been further shown that blood passing through a contracting muscle loses four times as much sugar as while passing for the same period through a muscle at rest. With the view of practically testing the value of sugar as a food to support the muscular energy of the body, Dr. Vaughan Harley has recentiy undertaken a series of experiments on himself in the Physiological Laboratory at Turin. He performed a certain amount of work each day, lifting two weights with the middle fingers of the right and left hands respectively. He repeated these exercises every two hours until fatigue set in, lifting a weight every two seconds; multiplying the weight by the total height to which it was raised he obtained an expression of the amount of work done. While performing this carefully estimated work, the Doctor varied his diet from day to day; on one occasion he fasted, only drinking water, for twenty-four hours; on another occasion, 17½ozs. of sugar was taken in an equal quantity of water. On these two occasions he "exercised" at precisely the same hours of the day until fatigued, and the results show that the right hand performed 61 per cent., and the left hand 76 per cent. more work on the day when sugar was taken than on the day without sugar.

On two other days, Dr. Harley took a frugal breakfast of coffee, milk and rusks, to which he added on one occasion 7ozs. of sugar. The result of this addition was to raise the work done by the right hand by 39 per cent., and that of the left 6 per cent. He further succeeded in increasing the amount of work done by 8·4 per cent. for the right hand, and 16·5 for the left, by taking 8½oz. of sugar with a luncheon consisting of beef-steak, with vegetables, omelette, bread, a quarter bottle of red Italian table wine, and a cup of black coffee. The work done after this luncheon, accompanied by sugar, was, of course, compared with that done after a similar luncheon without sugar.

Dr. Harley's experiments certainly entail an amount of self-sacrifice that many persons would feel themselves unequal to, and the results are very valuable. There appear to be variations in the amount of work done, which are probably independent of the sugar consumed; for instance, the left hand gains more than the right by sugar taken with water only, and also by sugar with a full meal; whereas when sugar was taken with a frugal meal the right hand gains more than six times as much as the left. Notwithstanding these variations, however, Dr. Harley has proved sugar to be of very great value in sustaining the muscular energy of the body, and considering its low price it obviously should not be treated as a luxury.

Notes on Art.

THE GRAFTON GALLERIES.

At the Grafton Galleries in this Exhibition a very difficult task has been attempted in contrasting the different modes of work adopted at the present day in various countries. We are thus enabled to see, side by side, the rough, hard, but conscientious, work of the Germans; the frivolous, somewhat tricky manipulation of the French school; and the Belgian, which has often the good solid draughtsmanship of the German with much of the materialism of the French without its grace. For instance, there is in No. 29, *The Tea Rose*, by E. Duez, of Paris, a picture which is unusually bad for a London Exhibition, and yet characteristic

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