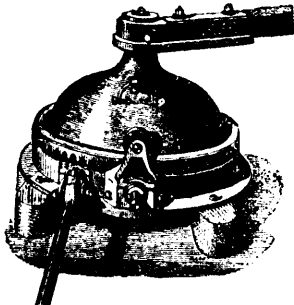


COHEN'S SMALL DRILLING APPARATUS.

The above illustration represents a small drilling machine manufactured by Mr. M. Cohen, of Kirkgate, Leeds, which may be used by fastening it in a vice, or in a wood block, or attached to a small lathe in the ordinary way. It is a well-made and nicely-finished little tool, and is one which will be found very useful for a variety of purposes, and especially useful to amateurs. Its construction, as will be seen from the illustration, is an improvement upon those hitherto made. Each machine is provided with six small drills, and its remarkable cheapness, and evident usefulness, should secure for it a large sale. Our readers will hardly credit that they can receive it post free for one shilling sterling.



IMPROVED PATENT PONY AND HORSE GEAR.

A useful improvement on the common means of transmitting power has been patented by Messrs. John Williams & Son, of the Phoenix Iron Works, Rhuddlan, near Rhyl. It will be shown, with other productions of the firm, at the forthcoming Agricultural Show, at Islington. The general shape of the machine is shown in the annexed cut. It is described by the makers as a new patent pony gear with dome wheel and intermediate motion encased inside of same, making it a very safe and compact implement, and it is said to be well adapted for driving small food-preparing machines, churns, pumps, &c. The diameter of the driving wheel is 2 feet 5 inches, a larger size being 2 feet 8 inches in diameter. The gear is fitted with two speeds, each making six-and-thirty revolutions to one of the pony. In days like these, when the necessity of using appliances for economising manual labor is so universally felt, owners of farm stock will doubtless find it to be true economy, though it may seem costly at first, to possess themselves of machines like this, the action of which, if kept in good working order, is uniform, and may therefore be depended upon.

We may note that the chaff and turnip cutters of these makers—described in our columns some time ago—have been very successful in this year's competition. Silver medals at Preston and gold medals at Antwerp, with a special medal for chaff-cutters at Edinburgh, last July, are honors worthily conferred upon a firm which always aims at keeping up the high character long ago obtained by sound and good work.

CUCA AS A STRENGTH SUSTAINER.

In many callings it is occasionally necessary for a man to put forth extra exertion for protracted periods of time; as, for example, a sailor during a storm, a soldier on a forced march, an engineer in case of accident or impending disaster. Frequently, at such times, it is impossible to procure or to prepare suitable food for the increased demands of the system, or to obtain the sleep which both body and mind require. Yet it is desirable, perhaps imperative, that both body and mind shall be kept up to their best working capacity. In every part of the world and in all stages of civilization, men have discovered means more or less efficient, more or less harmful, for meeting such emergencies; and one of the hardest lessons of human life and experience has been to learn how to use such aids to endurance without abusing them. Even the most useful and least harmful of them—tea, coffee, wine, tobacco, and the rest—are mischievous if not worse when used habitually or in excess; while others, like the various alcoholic beverages, are apt to disturb what is so essential in critical emergencies, the proper action of the brain. It is natural and proper, therefore, that those who recognize the practical need of the race for what may be called special foods, should take a lively interest in the demonstration of means for securing the good results aimed at by all of them, with the least possible physical and mental risk. The latest claimant for this responsible position is the leaf so long used by the mountaineers of South America—*cuca*; and perhaps the most instructive test of its virtues thus far made is to be credited to the Toronto Lacrosse Club, a company of intelligent gentlemen, most of them occupying high social and professional positions, and all of sedentary occupation. The latter point is important, since men of indoor life are not the most favorable subjects for occasionally putting forth violent and protracted physical effort; while the matter of intelligence is not less important in determining the value of their estimate of the aid received by the use of *cuca*.

In the spring of 1876 several of the members of the club began to use *cuca* as a strength-sustainer, with results so satisfactory that nearly all the "first twelve" used the leaves during all their important matches. There were ten in number, and some of them lasted for several hours. The club, it will be remembered, held the championship of the world and maintained it throughout against all comers, Indians as well as whites.

Their practice was to serve out to each man at the beginning of a match about a drachm or a drachm and a half of the *cuca* leaves, to be chewed in small portions during the progress of the game, the saliva to be swallowed. The effect, the experimenters report, was a sensible increase in muscular force and an almost entire exemption from fatigue. The pulse was increased in frequency, and perspiration was augmented; but no mental effect was observed beyond the natural exhilaration of contest and vigorous exercise. There were no subsequent disagreeable effects; and no alkaline matter was used with the leaves, as is the practice in Peru.

On one occasion, in midsummer, the thermometer marking 110° in the sun, a match was played with a club of mechanics and other out-door workers, of sturdy build and in fine condition. The *cuca* chewers came out of the game as elastic and apparently as free from fatigue as when they began, while their opponents were thoroughly exhausted.

The experience of the past season, so far as reported, substantially confirms that of the preceding year. Nearly every member of the club is confident that the *cuca* has been of