While the American plow and our tools for mellowing the soil and sowing the seed, are the best of any in the world, the expenditure of human labor up to the harvesting of the crops, and in the manufacture of butter and cheese, is not essentially less than it was before the great improvements made in some of the most important implements of agriculture. Still there are less men now employed in proportion to the whole population, in producing food, than there were before the year 1852.

The census tables give this reduction at about one-third, as stated by a late writer in the New York *Times*, Alex. Delmar. While the work of haying and harvesting is lessened more than this proportion, yet it is not probable the whole of the labor of the farm is lessened more than one-third The question arises, who is most benefited by this cheapening of the food and raw material for the clothing of the people? The price paid for farm labor, when reduced to the gold value of the money paid, is quite double the price paid for like service thirty years ago So the first benefit of the improvement of machinery inures in this case to the laborer himself For the employer pays more extra compensation to his men than is saved by the improvements in implements. The prices of the products of agriculture are larger than they were thirty years ago, or the producers could not pay the prices now ruling for labor.

But the effect of this doubling of the compensation of agricultural labor and liberating one-third of the persons formerly employed, and giving them to other industries, is felt in all branches of business. The laborer now has money to provide his family with comforts unknown in his mode of life thirty years ago. The immediate consequences of this plenty of money with people who will work, are better education and more independence and elevation of character. Savings Banks have larger deposits, merchants sell more goods, and all branches of business are quickened. But a very serious objection has been made by Mr Delmar, in his articles in the *Times*, to the influences of the improvement of the implements of agriculture, and that is—over production of the grain crops We are told that the population of North America is 52,000,000, and that 16 bushels of the cereals is all that can be consumed in a year by each individual—all branches of consumption being taken into account, including the amount converted into liquors, starch &c , and the amount fed to animals, and he gives the quantity of the cereals produced by this population at 1,725,000,000 bushels in the year 1870, which is 35 1-5 bushels each, and he says that the farmers of United States alone considered, produce 40 bushels per capita of the whole people, which is 2½ times their power of consumption.

This calculation like many others based upon census returns, is manifestly erroneous, for 1870 has been so long past that by this time we should know exactly the effects of such over-production upon the prices of grain. Since 1870, the crops have been reported as good, and by this time there would, by such calculations, be on hand an inconceivably immense quantity of unsaleable grain. For it is now claimed that we export only a very small percentage of the crops produced in this country.

Mr. Delmar says he "learned in his late tour in Europe, in the character of delegate to the Statistical Congress, and from other sources, that the world is to-day producing more bread than it can eat," and he says that "we, as one of the principal grain-producing countries of the world, are large participants in an overdone industry, and the sooner we abandon the policy of endowing agricultural colleges and turn the minds of our children rather to proficiency in mechanics, the better." This is the first that any of us have heard of there being any danger of over-production of food growing out of anything that agricultural colleges are doing.

These alarming figures have frightened the learned Doctor of Divinity who edits the official organ of the most numerous denomination of Protestant Christians of this country into saying: "It is plain that, in a merely commercial sense, agriculture is an overdone form of industry In the parlance of the street, farming does not pay—cannot be made to pay," and that "there is great danger that this superabundance of material wealth, if not employed for some higher purpose, will lead to habits of luxury and dissipation that can result only in the utter demoralization of society."

I cite these speculations of men of figures to show that the improved machines of agriculture are charged with vast responsibilities—even the ruin of the nation by feeding the people too well.

To allay any fears that may have been caused by these alarmists, let us say that there certainly is no such surplus of food, nor has there been, as this manipulator of figures says there was in 1870. For if such an excess of twenty-four bushels per capita had been produced, it must either be stored, with the crops since raised, or exported to other countries. If it was yet here, the prices of grain could not be as high as they are. To export such a surplus, calling the average weight per bushel fifty pounds, would employ 5,700 ships carrying 1,000 tons each, and taking each four loads in a year—for the total weight of such a quantity of grain would not be less than 22,800,000 tons, and would fully tax all the trunk-lines of railroad and all the canals, to the exclusion of all other business from the west to the east.

We have heard much complaint of the high prices that manufacturers of implements and reapers put upon them, and of the resulting too large profits that they receive.

Let us look at this matter and inquire whether the public at large has not received a full compensation for all the profits made by the manufacturers, in the stimulus given by the expected rewards to improve and perfect these machines? The improvement has certainly been very rapid, and great perfection reached in a very short time. To introduce these machines it has been necessary to employ very skilful agents, who, in many cases, have taken their machines into the fields and almost forced them on reluctant buyers, by showing them that they could not afford not to buy. Such agents must be well compensated. But going before this is the great expense attending the construction and perfecting of a machine that is so good as to justify a farmer in its purchase, in cases where he has on hand a machine that is but partly worn, and that but lately was considered as among the best made. And, too, we are to consider the money lost as well as made by men trying to excel all that has gone before them. Very soon the ownership of these inventions will be in the great public, and then the vast benefits that have resulted to the world from the invention of these machines will be further enhanced by free competition in their construction.

It is common to say that but for the improved implements of agriculture, farming could not be carried on. This is a hasty statement, and is not true—for the business of food raising must of necessity always go on. People will consume food and wear clothes, and they will pay whatever sum may be found necessary by actual trials to cause somebody to do the work required to produce food and raiment, and this work will necessarily be sufficiently remunerative to make it pay even in the parlance of the street—and we assure the editor of the *Christian Advocate* and all other anxious men, that farming is sure to pay, and perhaps it is the only business that is sure to pay, as long as human events remain as they are. It is true it takes some brains to win in a business where there is so much competition, and the rewards of the best industry and the highest skill and best economy in the use of the most improved implements, are not so great as to make our over-production of material wealth entirely demoralize the nation; and finally it is safe to say that if no machine had been improved within this generation, the necessary food for all the people would have been produced, though at a much greater cost of human labor, and either that labor would not have been as well paid as it is now, or the prices of its products would have been much higher than they are now. The inventors and manufacturers of agricultural machinery may safely be allowed to go on improving, and the policy of endowing agricultural colleges may safely be allowed without fear of ruin or demoralization.

Farmers' Grindstones.

Premising that the grit is of the right kind for an axe or a scythe, a good grindstone will be set to run smoothly and perfectly true; its face will be neither hollow nor round, and the water supply fresh, and not more than for the occasion. The water-trough, being often made a part of the frame or bed, should be provided with an outlet for water, that the stone may not be left standing to *soak* therein, by which one side becomes softer and heavier, from which cause it runs with irregular speed and wears, unequally. Water is indispensable to protect the temper of the tools, and to keep the grain of the sandstone clean from the small particles of sand and steel detached by friction.

In applying the tool to be ground, the pressure must be varied in proportion to the width of the tool; and the effect will be very much varied by the direction and speed of the stone, being more when moving toward than from the tool. In the latter case, however, the edge is more liable to catch, and thereby to damage both itself and the face of the stone, while in the former, a wire-edge is thrown up as soon as the bearing or convexity of the tool is ground off, and only an experienced hand may safely practice it Stop short of this point, and finish by changing the angle of contact of tool with the stone. But in grinding chisels and plane-irons, when the edge is formed by one plane and one bevelled side, there is a kind of traverse motion to be kept up, which contact over the whole of both surfaces preserves them nearly straight and plane The finishing edge, as of finer tools, seen on new knives, razors, &c., is brought out by a finer stone, where the tool is held at a more obtuse angle.

The difficulty of applying a rest to a portable grindstone (as to a lathe) exists in the uncertain wear and unequal use of its surface, by which the true cylindrical form is soon lost. To avoid this, a lateral motion must be given to the tool, utilizing the whole face of the stone, which is especially necessary in applying the face of a common or a broad-axe, as well as a plane-iron, and, as may be apparent to any one, in grinding carpenter's gouges, a cape-chisel, or, indeed, any metal-worker's tools. It was well said "show me the grindstone, and I will tell you the character of the shop;" and it may be said the character of the workmen is thus shown elsewhere, even on a farm.

With one who has had but little practice in setting tools the common error is in not holding them flat enough to the stone (whether grindstone or oil-stone), and thereby producing a convex side, and at the same time being liable to "check" the stone and turn the tool—perhaps worse, wound himself. For this, practice is the only remedy. With a little ingenuity, a rest is always possible to be applied, but the efficiency is in most cases very doubtful. Better trust to the wrist and right hand as a movable chuck, while the fingers of the left hand placed on the upper face of the tool will control its pressure, and be the guide-rest. Don't forget to leave the stone out of water, as well as to dry the tool, if not even to oil it when laid aside.

The grinding or setting of a cutting-tool may be simple enough; yet there is but one way of doing it perfectly, that the cutting edge formed by a definite angle of two surfaces shall be exactly reproduced. There is a knack in perceiving when this edge has come, and in not over-doing, or producing the turned or wire-edge, which practice only can acquire. From a knife this can be removed by drawing across the thumb nail; from other tools, by rubbing across a piece of soft wood. But a greater difficulty from repeated sharpening, is to avoid in time the formation of two convex surfaces, which would be better if flat, or even concave slightly, as when the tool is new. Even a new axe is never convex all the way to the edge, but within a sixteenth af an inch of the edge takes from each face a special bevel, which is the edge.

Straight-edged tools, like chisels, when being set on the oil-stone, are best held in such a manner that the motion of the hands is nearly at right angles to the line of the cutting edges. Concave faces are produced by stones shaped for the purpose, but they do not come within common use.—*Cor. Country Gentleman.*

PROTECTION OF IRON FROM RUST.—The following mixture is stated to be an excellent brown coating for protecting iron and steel from rust. Dissolve two parts crystallized chloride of iron, two parts chloride of antimony, and one part tannin, in four parts water, and apply with a sponge or rag, and let dry. Then another coat of the paint is applied, and again another, if necessary, until the color becomes as dark as desired. When dry, it is washed with water, allowed to dry again, and the surface polished with boiled linseed oil. The chloride of antimony must be as nearly neutral as possible.—*Engineer.*

HYDRAULIC RAM FOR RAISING WATER.—The following rule may be found useful for calculating the power of a hydraulic ram. *Theoretically*, the number of gallons per minute delivered would equal the number of gallons per minute passed through the ram, multiplied by the height in feet of the available head, and divided by the height in feet of the point at which it is required to deliver. The *actual performance* of a well-proportioned ram when new and in perfect order should be about 60 per cent. of this quantity; but for an average can hardly be reckoned at more than 50 per cent. If the water is liable to be dirty at times, it should be passed through a filter before going through the ram. With clean water I have found the "pulse" valve required renewal or refacing after about twelve months' constant work, and the brass "ball clack" to "rising main" after about six months; but this would vary with the size and the height to which the water was thrown. In my case the height was 109ft.—*Field.*