

A Plea for our Physical Life.

BY CHARLES MACKAY.

We do our nature wrong
Neglecting over-long
The bodily joys that help to make us wise;
The ramble up the slope
Of the high mountain cope—
The long day's walk, the vigorous exercise,
The fresh luxurious bath,
Far from the trodden path,
Or 'mid the ocean waves dashing with harmless
roar,
Lifting us off our seat upon the sandy shore.

Kind Heaven! there is no end
Of pleasure as we wend
Our pilgrimage in life's undeviating way,
If we but know the laws
Of the Eternal Cause,
And for his glory and our good o' e;
But intellectual pride
Sets all these joys aside,
And our perennial care absorbs the soul so much,
That life burns cold and dim beneath its deaden-
ing touch.

Welcome, ye plump green meads,
Ye streams and sighing reeds;
Welcome, ye cornfields, waving like a sea!
Welcome the leafy bowers,
And children gathering flowers!
And farewell, for a while, sage drudgery!
What! though we're growing old,
Our blood is not yet cold!
Come with me to the fields, thou man of many
ills,
And give thy limbs a change among the daffodils!

Come with me to the woods,
And as their solitudes
Re-echo to our voices as we go,
Upon thy weary brain
Let childhood come again,
Spile of thy wealth, thy learning or thy woe!
Stretch forth thy limbs and leap—
Thy life has been asleep;
And tho' the wrinkles deep may furrow thy pale
brow,
Show me if thou art wise, how like a child art
thou!

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The Industrial Classes.

Who are they and what are their rights? These are questions which concern every citizen, and we intend to make them the foundation of a few remarks now, and of more hereafter.

If productive industry—an employment of the personal abilities in something useful—be the characteristic of the industrial classes, as we think it is, then all, who are not idlers or mischief-makers, or doers of what is no benefit to themselves or others, belong to those classes.

By a sort of slang phrase, two common among us, the honor of belonging to the great brotherhood of industries would seem to be limited to the production of the material necessities of life, as if man could live by food and clothes alone, as if all who were not employed about these and like things were but drones in the hive of humanity. Those who use language thus seem not to have reflected that in society there are other things to be done, and that they are to be done, if for no higher reasons, that the supply of material wants may become more certain and more economical; as otherwise famine might, as frequently as in former periods, decimate the human race, and the labor of providing material supplies would be as disadvantageously done as when corn was planted with a clam-shell, and cotton was wove in a hand-loom. It is as necessary that some should work the mind, as that others should work the hand.

A high Christian civilization cannot be maintained without a great variety of employments. We grant that the more the cultivated mind and the laboring hand center in the same person the better. But distinctions must exist. The cultivator of the ground never will be the best religious teacher, nor the worker in iron the best teacher of science, nor the philosopher the best cotton spinner. And yet all of these are essential to the best interests of the whole.

We want the cultivator and the mechanic, and we must have the scholar, or we can have none of the others in their perfection. To attempt to get on without him, would be a step towards making such cultivators as planted Cape Cod three hundred years ago, and such spinners as now twist cotton with their fingers in India.

But for the patient investigations of the scholar, and the brain-turning efforts of the inventor, we should now be sending our mails on the head of a punner, as they do in Yucatan; and earning our bread by slower, harder, more uncertain processes than a kind Providence desires we should. The man who grows corn and cotton with a crooked stick is a producer unquestionably. So is he, indirectly, who devises a better way of doing these things. The magnetic telegraph was the result of at least a million experiments on electricity, foolish as they might seem to many—fit only for idlers. But the result was the taming of the lightning—making it do our errands somewhat more expeditiously than the Indian runner of Central America can do them. The thousands of experimenters all over the civilized world contributed to this result.

They were then producers—they produced that which quickens all other productions and enhances their value. So it is with all, who, by research and experiment, always laborious and often expensive, are extending the boundaries of human knowledge; and so it is with those who, taking up what the pioneers in science have discovered, diffuse it among the masses.

All who are busily doing anything which the good of mankind requires to be done, whether it minister to our physical wants or to the higher

wants of our spiritual nature, may be considered as belonging to the industrial classes.

The clergyman—not as a matter of course, not by virtue of his office, but by the exertion of talents suitable to his calling—contributes as much to the world's wealth, saying nothing of its weightier interests, as any other; for he promotes true religion—not religionism—if the result of his labor is to lead men to deal justly, to love mercy, and to walk humbly with God, he cannot fail to render them more efficient, more trustworthy, and if not more enterprising, yet more likely to turn their enterprise into a wise direction.

The teacher, whether of the young pupil in the primary school, or of the more advanced in the university lecture-room, contributes his full share to the world's most valued resources.

The lawyer does well so long as he transacts our legal business for a fair compensation, and defends our character and property. If he sometimes deals with us more rascally than others would, the fault is his and not of his profession. We do not need that he should do all our legislation. That may be better done by all classes, in about just proportions. But as an interpreter of law, a counsellor in our troubles, a defender of the right, he may be eminently useful, and contribute largely to the general prosperity.

The physician who performs his duty faithfully, adds immensely to the common security and welfare.

The merchant is wanted as a carrier between the producer and the consumer; and so long as he pursues his business on fair and open principles, is eminently useful.

Of those employed in literature and the fine arts, we have only to say that their vocation is far more useful than is generally supposed. What would a nation be without its history, its oratory, its poetry, its architecture, its statues and paintings, its music and its songs?

If we have yet given but little attention to these things, it was only because the time had not come—we had enough to do that was more immediately pressing. A great many are well employed, who are neither working the ground nor its raw productions. It is desirable that a great many should be employed in other callings, as otherwise the farmer could not find a market for his produce, nor the mechanic for his handiwork.

The true policy is, that all branches of industry, all employments suitable for rational beings to be engaged in, should go on hand in hand, as nearly in juxtaposition as soil, climate, and the distribution of mineral wealth permit, and then that commerce should come in to regulate the necessary exchanges. So far as regards those employments not usually denominated industrial, which after all seem to have about as good a right to be so denominated as any other, it is undoubtedly the duty of the State to look after them.

There are minds to be educated, and no State should suffer a child to grow up in ignorance within its borders; there is religion to be sustained, since, beyond all question, the more religion there is the less superstition there will be, and without dictating what every man shall believe and how he shall act religiously—with the largest toleration—the State has here a duty which no other power can perform; there are mines to work, and the State should never permit these to become oppressive monopolies; there are laws to interpret, and its interpreters, quite as often as any others, require the restraints of law; there is commerce to be regulated, and the merchant is a little more apt to be too sharp for his customer than the reverse.

But when we come to the farmer, the mechanic, the laborer, who are directly employed in developing the physical resources of the country, while others are only doing this indirectly, the government has peculiarly a duty to perform. These are the sinews both of war and peace. They are the only direct producers of necessities, luxuries, and wealth. But for the annual result of their labors we should have neither, but starvation instead. They practice exhausting labor; they exercise a large amount of intelligence; and they are pre-eminently virtuous, patriotic, order-loving. Such are their numbers and energy that they could easily overthrow any government that would not do them justice; yet they are always conservative, oftener at their home work than seeking combinations, even for mutual protection.

That the laboring classes should ever combine for a bad purpose, we hold to be an absolute impossibility. Just look at it; the farmers of this country have been denied their rights, more or less, all the time, for two hundred years. Who will say, that so long as the British rule lasted, American farmers were not shamefully abused? Where was their market? Perhaps you will say, all over the world. But for heavy produce what is a market all over the world good for? Why put the producer and the consumer far apart, with a dozen sharpers between? The farmer wants a market near at hand where he can meet the consumer face to face, make his own bargain, take his money in full, and not sacrifice a large per cent. for transportation, and a larger for profits to the between man. The teacher, the clergyman, the doctor, the lawyer, the scholar, the editor, the inventor, the machinist, men of all handicrafts, and above all the manufacturer, must be at hand to consume his produce, at a fair price, and that price not much more than he gets for growing it.

A few years ago we bought all our nails of Great Britain. They were poor things, made to sell. We paid seventeen cents a pound. A slight protection—whether a "revenue tariff" for protection, or a protective tariff for revenue, matters little—enabled American enterprise to make better nails at four cents a pound. That the price might have fallen from other causes is nothing to the purpose. It could not have fallen lower than it did, consequently no one has been injured, while many have been benefited; the machinist found employment, the manufacturer made a small profit, notwithstanding the lowness of the price occasioned by home competition, and the farmer

has ever since sold more produce, and at a little higher price, than if the nails had been made in England.

It is so with the other branches of manufacture. Americans, if enabled to begin—helped over the bar, or in other words, protected against pauper wages abroad—will run such a competition as will insure reasonable prices, and contribute immeasurably to make us truly independent—creators of our own necessities, masters of our own resources, dependent for our supplies on none but ourselves. Protection is not necessarily partial. That on nails benefited the nail maker no more than it did the machinist who constructed his works, nor either more than the farmer who furnished bread and meat to both.

Protection for other articles has operated in precisely the same way—always increasing the demand for farm produce. Under British oppression, the farmers were the bravest to endure, as they were the bravest to fight, when endurance ceased to be a virtue.

Under our own government they have fared better—have not been compelled to buy pot-metal nails at 17 cts. a pound, and pay for them in veal at 2 cts., or beef at 3 cts., or cheese at 4 cts. a pound; nor to exchange these products at such prices for flimsy India cotton at 50 cts. a yard—have some incentives to action, to enterprise, to rouse up and secure a competency before the last day of life, but yet the full measure of justice has not been measured out to the farmers of this country.

In England the farmer who puts the same energy and intelligence to the business of the farm as the enterprising merchant does to that of the counting room, makes a competency in a few years, and retires, if he chooses, to a quieter life. One reason of this is, that the English spinner, weaver, and a score more, do work for us, and the English farmer has the profit of feeding them the while. Few American farmers are able to cease from the cares and toils of the farm till very late in life. We do not want they should cease from them. It is not for their happiness to do so. Employment, activity, usefulness, are the comfort of life with them, as with everybody else. But we do want that they should be able to let go of the plough, and to rest from severe labor, when old age creeps upon them.

We want they should be able to educate their children as well as any other class, for woe to us when we have no more farmers' sons to stand among others, in the high places of the nation. We want they should be able to dress their daughters, not in finery, but as well as is desirable; so becomingly that they shall not suffer in comparison with the daughters of the merchant and the lawyer.

Our farmers, after pursuing their business twenty or thirty years, ought to be able to relax their exertions somewhat, and yet to live in a style of rural elegance and comfort the rest of their lives. Why are they not? There is more than one reason. The great reason, the one always staring us in the face, one that has borne down the American farmer two hundred years, not always equally, not as severely now as under British rule, but severely yet, is that the makers of his coat, his cravat, his vest, his pants, his wife's dress, his daughter's outfit, and above all, of his crowbar, his drag teeth and his log chain, are in Europe, eating other men's produce, not his, except as a little is lugged to them three or four thousand miles, not enough to say boo about, compared with the capabilities of this vast country.

Some farmers are 'shiftless' (that's just the word we can't help using). They never will get ahead anywhere, nor live (stay) except by depriving their families of the comforts of life. Book knowledge is a stumbling block to them, and they have no other.

But this is not the general character of American farmers. They are enterprising, inquiring, intelligent. They ought to be well-to-do by middle life, to be rich at fifty, to pursue their calling leisurely at sixty, rather from the honorable desire of being useful up to the goal of life, than from any fear of want for themselves, or of not making a reasonable provision for their families. And they would have been—farmers of past generations would long ago have been just what we have described—if manufactures had gone hand in hand with agriculture from the first; that is, if Great Britain, instead of forbidding, had encouraged American handicraft industry, and then if our government had kept a guardian watchfulness over the industrial interests of the country, causing each article of our wants to be manufactured among us a little before that point in a nation's progress when it can be produced here as cheaply as elsewhere.

We hold it to be a self-evident truth, that the time when a nation should begin to produce, or to manufacture any given article, is not the point when it can produce it as cheaply as it can be imported. It is a point a little before this; it is when it can produce it nearly as cheaply; and then is the point at which protection can be introduced advantageously to the producer, injurious to none, and consequently beneficial to all; for whatever benefits a part of the citizens benefits the whole, unless it at the same time injures others, and that on the acknowledged principle that—"If one member rejoice, all the members rejoice with it."

For instance, if the duty on sugar gives prosperity to the Louisiana planter, does not the Massachusetts farmer rejoice in that prosperity, provided he, in the long run, pays no higher for his sugar; and would he not rejoice in the welfare of his co-laborer at the other end of the Union, even if he should temporarily pay a fraction higher? So, if the Massachusetts manufacturer prospers, in consequence of protection on cotton cloth, does not the Louisiana planter rejoice at his prosperity, provided he, in the long run, pays no more for his cotton goods, especially when he considers that this cotton spinning makes an ever-present market for his brother farmer in the other end of the Union, and would he not be willing even to pay a trifle more for his cotton goods, if such should be

the temporary effect of a duty on the foreign articles?

And so again, if a little extra protection of iron would bring great prosperity to the States of Pennsylvania and Missouri, would not the whole Union rejoice in it, provided all the Union could get its iron rails, its ploughs, and its log chains quite as cheaply in proportion to their goodness? And yet such would undoubtedly be the result of a little stiffer protection of iron—immigration would be quickened, there would be an increased demand for farm produce, and every consumer of iron would get the article as well as now, price and quality considered.

Protection on any article whatever is protection to the farmer, provided it does not much enhance the price. We wish our farmers would think of these things. It may become necessary for them to go to Congress before all will be righted. As stated in our last, we like that modesty which makes them say, "We do not want office for ourselves." But let them consider whether the good of the country does not require that they should have it?

The lawyers are good in their place. They have often done us good service, and we do not remember that one of them has ever injured us. But as legislators, we think it would be well to have a heavy spicing of farmers and mechanics with them, or if they claim to be the more spicy, let the solid material be made up from the industrial classes, and let a few of them come in as the spicing.

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Vegetable Physiology.

The Germination of Seeds.—The well matured seed contains in itself the embryo of a new plant, together with sufficient food for it to feed upon, till it shall have time to push its roots into the soil, and its leaves into the air, to draw thence nourishment for itself.

The embryo exhibits, through a good microscope, the perfect form of the future plant, whether tree, shrub or vine. It has but to energe itself in the directions already commenced in the parent seed, to become a full grown plant. It consists of a plumule and a radicle. In whatever position the seed be placed in the soil, the radicle shoots downward, to form the future root; and the plumule springs upward, enlarging itself into the stem and branches.

Seeds, if kept cool and away from air and moisture, will preserve their vitality for thousands of years; and then, if thrown into favorable circumstances, will germinate and send up vigorous plants. Some have disputed this, but facts show it beyond a doubt. It should be considered here that the food, on which the embryo is to grow into a young plant, and on which it depends entirely in the first stage of its growth, is contained in the parent seed, and consists of starch, gluten and albumen.

Moisture, warmth, air and a partial absence of light are essential to germination. When these conditions are supplied, the first change observed is a swelling, an enlargement of the seed. There is also formed early, within the seed, a minute portion of vinegar. As cider, by fermentation, tends to become vinegar, and actually becomes such, the seed is transformed into vinegar, or acetic acid. The object of this pretty clearly is, that the vinegar—acetic acid—may combine with bases immediately around and below the seed and form acetates, which we know to be very soluble, and many be regarded as a sort of pap for the infant, while yet it can neither reach after, nor could digest stronger food.

About the same time with the formation of vinegar, another substance is formed in the seed, called diastase. This substance, diastase, is known to have the power of transforming starch into sugar. That this is the object of its formation, there can be no doubt, for it actually performs this office. In a dry kernel of wheat there is no sugar. There is starch, a substance with which all are acquainted; there is gluten, a tough, stringy substance, which remains about one's teeth after chewing wheat a long time; and there is albumen, a liquid substance, similar to the white of an egg; but there is no sugar.

If you taste a grain of wheat before it is put into the ground, you perceive no sweetness; but if you taste it after germination has commenced, you find it sensibly sweet. Diastase has then been formed; and it has done its office; it has transformed the starch into sugar. But why? The answer is plain. Starch, as every housekeeper knows, is insoluble in cold water; and only partially soluble in hot, forming with it, not a limpid solution, but only a thick, semi-transparent jelly. Sugar, on the other hand, dissolves perfectly in either cold or warm water, and forms with it a limpid solution, just adapted to the tender organs of the infant plant, when first it puts forth its rootlets to feel after food.

It is manifest, therefore, that the formation of vinegar and diastase in the germinating seed is a provision of that Being, who is wonderful in working, for the express purpose of furnishing nutriment to the plant, at a period when it could not otherwise obtain suitable food. If the husbandman will show a like care to give his young plants a vigorous start into life, he will prove himself a co-worker with the great Architect of all things. His plants will take care of themselves by-and-by.

By a prudent forecast, in preparing the soil and selecting the time, he should take care for their infancy. More than is generally considered depends upon the setting out of a plant on its summer's career;—not that, by due care of its infancy, it can be made so powerful that it will contend successfully with poke and pig-weed for the food of the soil; or that it will resist the encroachments of horned-cattle and swine; but if well started, it will draw for its productiveness, more largely than it otherwise would, from the soil and the air.

A portion of that which makes our crops grow is at our own disposal. Another portion is in