The Influence of
Mechanical Engineering
on Agriculture

by

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To consider the real progress made in this art and science, we need not go back to the time of the ancient Romans, but only to the old Colonial days. In those days small log-house dotted the not much larger clearings. Not very elegant was the appearance of these homes, although they might be called artistie by the artist of the present day. But those were simpler times when shelter from the storms and protection from the red man were most to be desired. The furniture was plain, home-made, and strong. The large open fire-place lighted the room in the frosty winter twilight, and furnished warmth and means for cooking the food. And on the hooks upon the wall hung the trusty old rifle, which served both as a means of support in supplying food, and as defence against the blood-thirsty Indians.

The lower room served as parlor, sitting-room, dining-room, kitchen, and sleeping-room for the parents, while the children slept in the loft above. Many were the trials of the early settler, but these hardships made a race of strong men and women, men that loved their
home and country so devotedly that they suffered
untold misery that their fields and native land
might be freed from the grasp of the tyrant-
hand. This was a time when even in
advanced England industry was but in its
infancy, while in the Colonies it was in
a small horse state of affairs. Most of
the industry was carried on in the homes. The
settlers made their own clothing, secured their
own food, living mostly upon cultures most
abundantly supplied by nature. Some little
cultivation of the soil was carried on but most
of the food was gotten by hunting and fishing.
The hides of the captured animals were dried
and used for clothing.

But soon the innovating mind of the mecha-
nical engineers began to make itself felt, and
machines after machines were planned, built, and
brought to a good state of perfection until today
we have a vast variety of machinery from the
simple egg-beater to the highly complicated
automatic machines into which the raw rough
materials is fed, and it comes out the finished
product. A good example of this last-
kind of machine is the finishing press into
which is fed the blank sheets of paper.
at the other end comes out the printed paper cut, folded, and counted, ready to send to the citizens very close.

Of all nations our engineer is the most particular about his machine. At midnight by itself doing the finest grade of work, does get as fast as the strength will allow. What care he for an extra ton of coal if it will give the required speed and pace?

Although great advancement has been made in the past, much is still left undone and for the young aspiring minds, there is still much to explore. Mr. Corden stated in the House of Commons that, "our wealth, commerce, and manufacture grow out of the skilled labor men working in metals."

In the commercial history of the last hundred years are three events that have revolutionized our industry. First, the steam engine by James Watt, second, the introduction of the opening post, by Hill which makes it possible today for us to order goods, to receive our mail and a thousand other little things, and the third greatest was the invention of the...."
for the production of cheap steel, which was
innovated by Sir Henry Bessemer and Sir
William Siemens. This was the only
thing Bessemer did, but many other good
and useful inventions were the products of his
industrious brain. Although the steam-engine
and penny-post were of vast importance
before the time of Bessemer, their use could
never have extended so far but for this
invention. Few means have by which the price
of steel was lowered from £300 per ton to
£28 per ton, a price below that thought by
from which the best steel is made. This
great reduction in cost of material makes it
possible to build engines, locomotives and all
different kinds of machines at a much lower price.

Cheap steel also made it possible to
bind together the numerous countries of
the world with bands of steel.

There seems little doubt that
but for the creation of the age of steel
this beautiful Western country would
not be so far advanced as it now is
because the older process of making rail-
road rails of wrought iron was too ex-
ensive that.

Our railroad mileage under
never have been built until the railroads and steamships became common. Without railroads our mail could not be carried so cheaply. Water could not be produced, and in this way our income would be greatly decreased, while the cost of bringing things would so rise that we would have to do without many things that now seem necessary.

Other things of vast importance are now being developed. Electricity once a mystery is now used in many shops as a means of transportation and energy, but the height of its usefulness has not yet been reached. In the near future the means of transportation electrical energy will be so improved and cheapened that the land will be the fluid will be very small indeed, and electricity will become of vast importance in the transmission of energy in lighting, in cooking, its use in welding is just advancing towards perfection. Electrical welding is just as useful to the old way because the heat is greater and can be applied where needed to produce the best effect possible.
It would be hard to say what the future of this force will be. But its advances will no doubt be great, although it hardly looks possible for it to fill the place some think it will, although it is already shortening distance between the farm and the city and bringing them in closer contact.

Another very important force of the present day is gas. The gasoline engine so much in demand now is a very important machine, and although at present it has many drawbacks we look forward to the time when it will be so perfected as to be of far more economic value than it has been. Today the gasoline engine is made mostly in small horse-power and has an outside use in running small shops where light machinery is used. It is not only used in the city, but the farmer also shares in the benefit and his corn-sheller, feed-mill, and hay-press respond to the strokes of the gas engine.

For work where a constant force is not needed the wind mill is the most economical. Those of the past were crude form and were not built on scientific principles, but under the hand of the mechanic they have been much improved but are still not perfected as they will be in
the future. There has been much experimentating
in this line of work and it has been found that
not the most efficient is the best for the market
because of the expense of making. But as yet
the ideal is not reached. You may ask, what is
that ideal? It is this. A mill that will vary
its stroke as the wind varies; a short stroke in a
low velocity and a long stroke in a high velocity
wind; a mill strong enough to be held secure
to the wind except at very high velocities at which
time it will swing out of the way.

Why was this country once called a desert?
Why are crops so uncertain in the western part
of the state at the present day? Simply because
of the lack of rainfall. But where water can
be found beneath the surface, raised by windmills,
stored in reservoirs, or taken from the streams,
and used for irrigation, the yields have been
very good, because the soil is very good and
all it lacks is enough water applied at the
right time. It has been the engineer who has
made it possible to irrigate. At the present time
not over one third of the amount of water once thought
necessary is used. Irrigation alone is no good,
but if used in co-operation with good scientific
cultivation the results are surprising. I will this
week
the engineer has raised the water, conducted the ditches, and the canals; the farm implements are also the products of his fertile brain. Not only have improvements been made in pumps and water supplies but also in the way of transportation of water. If we go back to the time of the Romans we will find that they spent years in building great aqueducts across valleys, which could be piped now in a few days. The time and expense taken to build an aqueduct and rig must have been great and a cor-

sequence their city water supply must have been very limited, and irrigation impracticable. But at present the cities are well supplied with good systems of water-works. Pipes and are mostly of cast or wrought iron, but a new system of making pipes of cement, which is very good and not at all expensive, and easy to make.

The effect of all this on the production of the colony can hardly be imagined.

As before mentioned new methods of tillage must go hand in hand with irrigation. By keeping the top of the soil cultivated fine, it keeps the moisture in.
soil this cultivation helps irrigation. Many and different products will be raised which this new method will make possible. What could then be raised on an acre than can be raised on five acres at present, not more of the same product, but more of some products that will give better returns. This change will necessitate smaller farms better managed. And thus with the larger returns we need not fear the Malthus theory.

In the future the engineer will be far more important than at the present day. There will be a changed social relation between the city and the country. Already the bicycle and motor-cycle have lessened the distance, and started the good road movement, indeed in this work road building is very necessary. Many forms of roads are built, some that cannot but lead to the fine development of the city. One of the things we need most is a good well built, well regulated road system. Nothing would help the farmer more in making his trips to the city and in the transportation of his produce. As the world advances the relation between
the farmer and engineer will be closer and
closer until the farmer by the use of the
many machines, good roads, and irrigation
plants will have his mind so widened, deepened
that in his work he will find time to enjoy
the beauty of nature, and the farmer closest
will become more intelligent, more social, and
they be a new people. Farms closer together
means more population in the school district;
this means a better school and better roads
and the City and County will be closer together.
The rich of the city will have their beautiful
homes in the country out of the noise and
dust and smoke. New methods and
will make it possible to go from the country
home in the morning to the office in the city
and after the days work is free to return
once more to the quiet country being.

Then will it be necessary for the farmer
to have a better education so that he can
carry on his business run his machinery and
be able to make a living. Then will his
calling be raised above the common standard.