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## OUR NEW VOLUME.

Eighteen years ago the SCIENTIFIC AMERICAN was commenced under the belief that such a publication was desirable and would be beneficial to our mechanics and artisans. Since then twenty-two volumes of it have been issued, and this number is the first of the twenty-third, or the ninth volume of the new series. It was commenced under many adverse circumstances, but it has been successful beyond anticipation, and has advanced from a weekly journal of four pages to one of sixteen. In a very enlarged sense it has been educational in its influence. The notices, descriptions and illustrations of new inventions and discoveries which have been presented through its columns have stimulated the inventive genius of our country, resulting in an increase of improvements in mechanism and manufactures without a parallel in history.

Although the past two years have been checkered with scenes of violence, excitement and change, the circulation of the SCIENTIFIC AMERICAN has continued large, and the last volume has never been surpassed for beauty and amplitude of illustrations. We commence this volume with the continued determination to keep our readers fully advised of all that is occurring in science, invention and the practical arts. Critical discussions, timely suggestions, useful receipts and notices of discoveries at home and abroad, will be furnished as usual, and every effort will be made to render our new volume superior, if possible, to any of its predecessors.

The publication of such a journal involves a great expense, and demands severe labor, extended information and careful research; therefore, to enable us to conduct it, we require the generous support of a large number of subscribers. Hitherto this has been given with a heartiness which has rendered our labors and efforts pleasant and encouraging. We rely upon our readers for a continuance of their patronage, and an exercise of their influence among friends to extend its circulation. No inventor, mechanic or manufacturer can keep pace with the improvements of the day unless he consults its columns. The subscription for it has been usually held by its readers to be among their most profitable and satisfactory investments.

## AGRICULTURAL MACHINES.

The benefits which have been conferred upon our farmers and our whole people by improved agricultural machines cannot be computed by mere dollars and cents. In conversation, a few days since, with a most intelligent Western farmer he told us that manual labor was so scarce in the country last autumn, that but for horse-rakes, mowers and reaping machines, one half of the crops would have been left standing on the fields. This year the demand for reapers has been so great that manufacturers will not be able to fill all their orders. Farming is comparatively "child's play" to what it was twenty years ago, before mowing, reaping and other agricultural machines were employed. The severe manual toil of mowing, raking, pitching and cradling is now performed by machinery operated by horse-power, and man simply oversees the operations and conducts them with intelligence.

## STEAM FOR AGRICULTURAL PURPOSES.

The application of steam to the business of farming has not been as general in this country as we could wish. Neither, from present appearances, are we very sanguine that it will become popular. We are at a loss to account for this very general indifference of our farmers on what would seem a matter of vital importance. In some of the rocky and sterile regions of the Northern States there are doubtless good reasons against the adoption of steam plows and cultivators of all kinds, yet in the Western States, and on the fertile prairies, and rich alluvial bottoms of the Mississippi valley, where the undulations of the surface are slight, it is a matter of astonishment that the advantages of steam are so persistently lost sight of.

In England this subject has received more consideration, for, as a foreign journal justly remarks, "steam cultivation means good wages and cheap, because abundant, food. It is a question of putting more into the earth and taking more out of it. It is a question of greatly increasing the corn-producing power of the land; of more live stock and cheaper meat. Yet it is calculated that, up to the present time, the steam power applied to agriculture does not exceed 50,000 horse-power." That is in the United Kingdom, as we understand it, and in relation to the last assertion we venture to remark that not the fiftieth part of that power is in use in this country for the purpose alluded to. We cannot point to a single part of the Northern States where land is cultivated or worked by steam. What is the reason thereof? Are steam plows required? Agriculturists have only to mention such a want to have it supplied by the ready wits and talent of our inventors. We fear that our farmers are not sufficiently enterprising and alive to the advantages likely to accrue from a substitution of the all-powerful steam for the laborious and tedious process of breaking land by the old methods; and it is a matter for no little regret that there should be 50,000 horse-power at work on farms in Great Britain, while we have not a tithe of that amount. It is estimated that one horse will devour daily the food of seven men; we have, therefore, only to calculate the number of horses employed in farm work to ascertain the amount of grain that might be turned into the markets of the world instead of into horse-flesh. All the steam plows that could stand between here and the Rocky Mountains would not consume the sustenance of a babe, and the land now devoted to oats might be given to wheat, to the general and indeed certain advancement of the interests of the community.

It may be urged against the adoption of steam power that it is costly, and beyond the reach of men of ordinary fortune. We think this objection can be fully met and overcome by the organization of local interests, so that a machine would be the joint stock property of farmers in the vicinity. The same plan is now pursued very generally in the case of mowers, reapers, and other costly tools, and the principle could well be adopted in this case. A company has been formed for this purpose in Great Britain, and it now lets out steam cultivators to farmers at a nominal sum, allowing the user to pay a certain amount annually until he has purchased it. In this way the farmer becomes the owner of a valuable apparatus which he may be said to have bought out of itself, or rather with the profits he gained in its use.

We cannot say how such a plan would work in this country, but it would be for the interest of those manufacturing such machinery to try and introduce the system. Induce farmers to use portable engines for hauling gang-plows, or for elevating hay with the power-forks now so generally in use. The engines could stand in one corner of a field and by means of a long rope and pulleys add materially to the effectiveness of the apparatus. So also with stump-pulling; a small portable steam engine would be just as manageable and for more effective than all the tugging and straining at levers, winches, or whatever the mechanical power through which force is transmitted to the obstinate roots or to the unwieldy hay. Steam cultivation offers a profitable field for research to inventors and manufacturers. Sooner or later all the work of the world must be done by steam, as

much of it already is; and it is no argument to say that the means to apply it are not at hand. Agriculturists have only to make their wants known, and, our word for it, there will be enough steam plows produced to till the whole surface of the globe every hour in the day.

## AMERICAN SILK MANUFACTURES.

Next to food, the clothing of a people is the most important physical consideration, especially in changeable climates subject to severe cold. Hitherto fabrics composed of cotton, wool, silk and flax—pure and mixed—have formed the staple of our clothing, and for these the annual expense incurred has been prodigious. Woolen and cotton cloths have been manufactured upon an extensive scale at home for many years, but thus far the silk and linen cloth used have been imported from abroad. The value of imported silk goods has ranged from twenty to twenty-five millions of dollars annually for several years past; that of flax from five to seven millions. The present civil war, though an undesirable evil, appears to evolve some good results in the establishment of new manufactures among us. The high tariff and advanced rate of exchange have been operating to produce such results. Some qualities of silk cloth are now being manufactured, for the first time, competing successfully with similar styles imported from France. We lately examined several pieces of silk manufactured by Cheney & Brothers, at Hartford, Conn., and used by Walker & Penman, Leonard street, this city, for making trimmings of ladies dresses, and we consider these new products valuable acquisitions to our textile manufactures. They are woven in power looms, and the day is not far distant, we think, when we shall be manufacturing various qualities of silks equal in every respect to those produced in the looms of Lyons. We thus judge because in the same factory at Hartford, pongee handkerchiefs and sewing silk have been manufactured for several years, and the latter surpasses in quality the best that is made in Europe. It is preferred for use on sewing machines on account of its strength, uniformity of twist, and beauty of finish. Printed as well as plain dyed silk pieces are made at the above establishment, and the demand for these fabrics is fully greater than can be conveniently supplied at present. Great convenience has been experienced by several of our merchants in obtaining desirable colors of this class of goods to meet immediate demands, instead of having to forward orders to France. We conclude that silk cloth has now become one of our home staple manufactures.

Several years ago, the cultivation of the mulberry tree, for the purpose of raising silk, was entered upon by thousands of our people under a feverish excitement which raged for one or two seasons. It was one of those speculative manias which occasionally inflict communities with day-dreams of prospective wealth, ending with gloomy disappointment. This was not because silk cannot be raised in almost every section of our country, but because it could not be raised as a raw material to be sent to France, and compete successfully with the cheap raw silk of China and Southern Europe. But as we have now the prospect of a home market for raw silk, this beautiful product may yet be cultivated in our country with fairer hopes of profitable success. The subject is at least worthy of renewed consideration and further experiment.

## PECULIARITIES OF PETROLEUM BENZINE.

When petroleum is distilled at a low temperature a light limpid liquid is obtained which has received the name of benzine. It is different in its chemical properties from the benzole of distilled coal-tar naphtha, and is about as volatile as an ether—its density being 0.715. It boils at a temperature between 140° and 150° Fah., and it has now become a valuable article in the arts, being used extensively as a substitute for turpentine in mixing paints, and it is also employed for the removal of grease, &c., from light kid gloves, silks and woolen fabrics. It dissolves india-rubber, asphaltum, some resins, tallow, fatty oils, paraffine, stearic acid and wax, but it is not a powerful solvent of amber, copal or shellac. Iodine dissolves in it, producing a red color; bromine is dissolved in it with a slight explosion, and