

period of her history. Each succeeding year finds her people elbowing their way more extensively into the foreign trade and successfully competing with the exporters of other countries, and in lines, too, which formerly were entire strangers to them.

"If the American manufacturer desires either to retain or increase his present export trade with Ireland, he should understand that it will be necessary to give it the most careful attention in directions that are comparatively new to him, and I mean by that that his representatives must be prepared to meet the representatives of manufacturers of other countries whose efforts to enlarge their trade are buttressed by the most careful, painstaking, and intelligent methods, which are the outcome of long experience and careful study of their customer's needs and idiosyncrasies.

"In the absence of import duties upon many lines of manufactured merchandise and many products of the soil, and in view of the large population and high standard of living as compared with many other countries, this Kingdom is favored ground for manufacturers of every clime who have merchandise to export and a foreign trade to cultivate. Hence it is that Germany and Belgium, by years of intelligent study of the wants of their prospective customers, have made such inroads upon the home trade of this Kingdom, and, in consequence, have caused so much astonishment and envy among competing manufacturers elsewhere at their success."

THE AMERICAN IRON TRADE UNDER PROTECTION.

Mr. James M. Swank, general manager of the American Iron and Steel Association, has recently published an article in which is contained some very interesting statistics, having reference to the progress of the iron and steel manufacturing industry in the United States under protection, from which we extract the following:

	Total shipments of Lake Superior iron ore.	Production of pig iron in the United States.	Production of all kinds of steel in the United States.	Production of iron and steel rails in the United States.	Production of pig iron in Great Britain.
			Gross tons		
1860.....	114,401	821,223	11,838	185,070	3,826,752
1865.....	236,208	831,770	13,627	318,118	4,825,254
1870.....	330,940	1,665,179	68,750	532,571	5,963,515
1875.....	591,257	2,023,733	389,799	707,000	6,365,462
1880.....	1,993,745	3,835,191	1,247,335	1,305,212	7,749,233
1885.....	2,466,372	4,044,526	1,711,920	976,978	7,415,469
1890.....	9,012,379	9,202,703	4,277,071	1,885,307	7,904,214
1895.....	10,438,268	9,416,308	6,114,834	1,306,135	7,895,675

ELECTRICAL FARMING.

It is a fact, openly commented upon by the Patent Office officials in Washington, that much of the attention of inventors of late has been turned to the adaptation of electricity to farming. The field is a broad one, and judging the probable advance on this line by what has been done on other lines, it enables us to catch a fleeting glimpse of that much heralded institution—the complete electrical farm. The number of electrical farming patents applied for during the last year shows that an electrical farm, pure and simple, may be possessed by anyone in a position to gather the scattered devices together and put them in operation on one plantation.

Discussing this phase of electricity where the subtle fluid may be put to practical use on farms, a writer in the Buffalo Express says that several electrical farms exist at the present time, but they are merely instances of special application the broader application remains to be accomplished. There is, however, no reason why we should not possess a comprehensive electric farm at once. Not only have we a host of mechanical devices such as electric plows, harrows and other soil disturbers, but the fact that the current can be used in lieu of the regulation forcing frame is a possibility in itself of vast importance. Nearly every department of the farm has suggested an idea to the electrical inventor. The fact that the transportation of garden produce to market by trolley cars has been the means of disposing of otherwise unsalable stuff, is an argument of long range, but a forcible one for all that. The possibilities ahead of long distance transmission the procuring of power from artesian wells, the electrical utilization of wind-mills and the now possible method of using the currents or tides of rivers, are all arguments for the despairing ones who can see no way of procuring electric power at first hand.

The procuring of power is, after all, the principal object of the way of electric farming. Remove it and all the other applications are easy enough. There are several methods of obtaining this power within easy reach of every husbandman. The physical aspect of the country will, generally speaking, decide the method to be used in each locality. Long distance transmission of power as pursued now in several mining and lighting plants in the United States is the most feasible method of obtaining an electric current at present. It is, also, where large communities are supplied, the cheapest. The process of obtaining the power is simple enough. A central power plant is located in some spot where coal is easily procurable and the current is sent across country by wire in all directions, or a waterfall is used to operate turbines or water wheels which in their turn operate dynamos from which a current is sent through transformers to any distant point. As currents have already been sent 100 miles we can anticipate the spectacle of the future by supposing an immense power plant to exist in the centre of a farming community, supplying current for every possible farm use and transmitting it to every plantation within a radius of this length. Under such a system a whole State could be supplied with current from a half-dozen plants. Another element of compensation to be found herein is the electric lighting of country highways which would surely follow on a large scale. At Enguibaud, France, less than 30 horse-power is transmitted from a waterfall to a neighboring farm for the purpose of operating an electric plow. The latter is drawn back and forth across the field by cables. The whole installation cost \$5,000 and it is understood that some of the power will be rented out to nearby farmers. At Rostock, Germany, an alternating current of 2,000 volts is transmitted 3.5 kilometres across country where it is transformed to 200 volts and used to work two electric plows. The plows require from 25 to 35 horse-power for the operation and are very successful.

In fact it has been stated that the time is not far distant when farmers of a neighborhood will club together and harness the nearest available waterfall and use it at a minimum cost to supply them with electric light for their houses and power for their farms. The beauty of the system consists in