

The new plant is already enhancing values in the place. Real estate is jumping up to boom figures, a recent small deal, devoid of special investment features, showing a distinct appreciation in price of fully fifty per cent over last year's offerings. This, too, for dead levels of unimproved prairie land, whose chief attractions appear to be the music of visiting cyclones and the sportive antics of the playful prairie dog.

The above draft is ruled to average newspaper column width.

"B."  
BIOGRAPHY.  
No. 1.

From.....19...., to .....19...., inc.

"D."  
BIOGRAPHY.\*  
Index No. 1.

From.....19...., to .....19...., inc.

Each index will no doubt serve for several numbers of the scrap book to which it pertains.—The Book-keeper.

TRADE SUGGESTIONS FROM UNITED STATES CONSULS.

**British Industrial Depression.**—The Metal Trades.—Since January 1, 1900, the metal trades in this country have experienced a remarkable decline. To describe the difference in the condition of these trades at the beginning and at the end of last year would be to contrast enormous activity and practical stagnation. The decline was not a feature of the entire year—indeed, prices reached the highest point in April—but chiefly of the last six months, the reaction being specially marked in December. The course of prices is instructive, although it does not tell the whole story. Middlesborough foundry pig iron fell from \$16.54 per ton on December 14, 1899, to \$13.62 on December 13, 1900; Scotch warrants per ton, from \$16.25 to \$15.20; hematite warrants, from \$17.76 to \$16.54; South Staffordshire marked bars, from \$48.67 to \$42.58; steel rails, from \$33.33 to \$30.45; steel angles, from \$37.72 to \$35.28; steel ship plates, from \$38.93 to \$32.86; tin plates per box, from \$3.89 to \$3.16. Since the middle of December last, there has been a further depression of prices all around on light orders, although stocks are low in most lines. On January 4, Scotch warrants were \$13.50.

American and German competition became sharply manifest early last summer, but not until autumn did the offers of American iron and steel at reduced prices come upon the market with crushing effect. What made the difficulty worse for British producers was that Germany, having bought largely from America in the spring and summer, became alarmed and resold here at reduced figures and also placed finished iron and steel on this market in competition with American manufacturers. The result now seen is a collapse of the metal trades in Scotland and the north of England. In the Motherwell district, the dullness was felt severely in November, when there was a reduction of 5 per cent in iron-workers' wages and hundreds of men were suspended. Some manufacturers in the Barrow and Middlesborough districts, and also in Sheffield and Manchester, are reported to be restricting their output. In the North of England and in Scotland, about one-third of the furnaces have already been damped down. Two important firms in the iron trade at Birmingham failed last week.

By not a few observers the outlook is regarded as gloomy. The Edinburgh Evening News goes so far as to say editorially:

"The iron and steel trades have gone from us. When the fictitious prosperity, caused by the expenditure of our own government and that of European nations on armaments ceases, half of the men employed in these industries will be turned into the streets. The outlook is appalling. What suffering will have to be endured before the workers realize that there is nothing left for them but emigration. It is useless to pretend that this generation of workmen can ever hope to contend successfully with the Americans under present conditions. What are these conditions? They have cheaper coal and iron ore, improved tools, innumerable labor-saving machines, and above all, the strenuous efforts of the workmen to increase the output. How is it to be expected that our workmen, trained to regard restriction of output as their sheet anchor, can suddenly be made to understand that it is a fatal heresy, and that their only salvation is an increased output at diminished cost?"

In view of the depression of the metal industries, both the daily press and the trade papers are "taking stock" of existing conditions, trying to make clear the causes and the extent of present troubles, and seeking to discover and point out what must be done to bring about a change for the better. It is interesting to see that the press in general blames manufacturers for not adopting labor-saving machinery in all branches of production where it can be introduced, and blames workmen for their undisguised hostility to all labor-saving devices. In this line, The Edinburgh Evening Dispatch says:

"The question of foreign competition in the metal trades is the most serious industrial problem before the country in the new century, and it is so far satisfactory to find that it is engaging much attention. To show how serious it is, we need only quote a few figures. In 1889, the pig-iron production of the United Kingdom amounted to 8,322,824 tons, as against 7,603,642 in the United States. Since that time the States have shot ahead, and in 1899 their production was 13,620,703, against 9,000,000 in the United Kingdom. In steel production the contrast is much greater. In 1890, the United Kingdom produced 3,679,043 tons of steel and the States 4,277,071; in 1899, the respective figures were 5,000,000 and 10,640,000, the States thus producing more than double the quantity produced in the United Kingdom. American exports are increasing at an even greater ratio. In 1890, the States exported iron and steel to the value of \$25,542,000; last

year the value was \$105,690,000.\* Their exports to Great Britain now include pig iron, steel billets, steel rails, steel plates, structural steel, wire rods, wire nails, cast-iron pipes, besides machines of all kinds. In face of facts like these, it will no longer be possible for English engineers to continue the old method of 'one man, one machine,' unless, indeed, they are willing to acquiesce in the gradual extinction of their industry."

A "Traveler Scot" has contributed to The Edinburgh Evening News an article in which he makes it appear that there is only one solution of the grave problem before certain branches of manufacture in this country, and that is, removal. He says:

"At present, the American iron and steel makers are able to compete with the European manufacturers, not only in South America, Africa, India, Australia, China and Japan, but they are able to take contracts in Great Britain at prices considerably lower than those quoted by British producers. This competition is comparatively new, and some writers seem to think that it is not serious. There seemed to be ground for their belief, at least their argument was plausible, when America was passing through the recent great trade depression, and when the home demand had fallen to small dimensions. Those holding such a comfortable view must be awakening from their dream of security now that the United States is in a most prosperous condition, with a larger home demand than ever, and yet competes more keenly than ever for the contract of the foreign iron and steel trade.

"The question naturally arises, What will the result be? Steel rails are a finished article, but steel billets, angles, and plates are the raw material for many manufactures. Will British manufacturers continue long to handicap their business with the freight, insurance, and transfer charges on their raw material, when they can economize by moving their field of operations to their source of supply? The question of labor is comparatively a small matter, for it is well known that the tendency of labor is to move to where raw material and facilities for its exploitation exist. It appears reasonable to think that the British manufacturer and shipbuilder has before him competition in which he will be handicapped by freight and other charges, and he will have to consider whether he can stand it, or whether he should 'take time by the forelock' and get into a new field before it is well occupied by competitors. If reports in newspapers are true, some British manufacturers have already taken this view of the situation, and are making preparations for a change that bodes no good to Great Britain."

**Technical Education.**—Another engineering deficiency, according to most writers, is the lack of practical instruction in the industrial arts. It is the accepted opinion here that in the matter of technical education, Great Britain is far behind the United States and Germany. On this subject, a correspondent of The Glasgow Herald gives the Scottish public the following information:

"Again, the relation of the man to the master is important. In America it is one of mutual advantage. If a man has shown that he can learn well and work well, he gets every encouragement; he is not as a rule bound down to a fixed wage that any average workman can easily earn, but is paid for what he can do, and facilities are given him to gain further experience. The expense of his technical education is often borne by his employer. The success of this process of mutual advantage is one of the chief reasons why America is the home of inventions and typical land of progress. The leading engineering firms always train their men with the utmost care. They require, first of all, that the would-be apprentice shall be not less than eighteen years of age, and that he shall produce evidence of having had a sound general education, and thereafter they undertake to teach him the whole science of his chosen craft, at machine, at bench, and in every variety of tool work throughout all the different shops.

"No effort seems to be spared to make the conditions of the work acceptable to the workmen. Men and youths are specially told off to carry machine parts from one place to another, and there are laborers who are constantly engaged in keeping the shops clean and free from litter. Labor-saving machinery and automatic machinery are everywhere in evidence, and the general use of these, more especially of automatic machines, is of very great importance. So long as engineers in Great Britain are under the necessity of working one man one machine they have no chance against their American brethren. At the works of the Sturtevant Engineering Company, for example, one man works six lathes, and at the works of the Yost Typewriter Machine Company one man superintends eight automatic machines. At the works of Pratt & Whitney, at Hartford, a man may be seen working at one time a planing machine, a drilling machine, and a shaping machine; another man minding two cutting-off machines; another working five special lathes fitted with stop; and men will willingly work ten turret-head automatic machines at one time. At the Hartford Screw Nail Works, one man will superintend as many as eighteen machines.

"There is yet another reason why the Americans are at present ahead of us. The educational institutions in America are of two kinds: First, there are the large schools, colleges, and universities, like our own, to which the youth goes before entering on his life's work; and, second, there are schools and colleges at which the ordinary workman may study all the arts and sciences bearing on his particular craft, often without paying any fee. In the State of Minnesota, for example, the whole course of education from school to university is free to all. There are throughout the country so many institutions founded by 'captains of industry' for the advancement of technology that almost every workman can find close at hand some such place where he receives all necessary aid for his advancement in the technical knowledge required for his special work.

"The liberality of rich American citizens in the foundation and endowment of such institutions is a potent factor in the educational development of the nation,

and even the most progressive of European countries cannot show such rich provision for the advancement of learning, especially in its application to the industrial arts. Nor is this generosity merely posthumous; it is often accompanied by a living personal interest and control. As examples of it we may particularly mention the Pratt Institute, Brooklyn; the Drexel Institute, Philadelphia; the Armour and Lewis Institutes, Chicago; Webb's Academy for Shipbuilders, New York; the splendid buildings and equipment of the mechanical, physical, and chemical departments of the McGill University, Montreal; the Leland Stanford Junior University, California; and the new University of Chicago. The total value of the property held by such colleges and universities amounts to the enormous sum of £57,727,434, and their total income is nearly £5,000,000."

**The Coal Question.**—Whatever the British manufacturer may think about the various difficulties which expert economic writers find confronting him at this time, I am of opinion that the fuel question disturbs him more than anything else. He may not give due weight to the technical advice and notes of warning which come from his able instructors in the public press, but he cannot shut his eyes to the meaning of \$3.50 coal. For a year or more, the item of fuel has been a heavy burden to iron and steel makers and to all other manufacturers. They might suffer their recent and present embarrassments with equanimity, if the future offered a better prospect. Coal has fallen somewhat and may fall somewhat more. But will it ever be cheap again? This, I take it, is the gravest question before the majority of British manufacturers. All coal deposits in Great Britain are known, and there are few fields that have not been worked for a long period. Prominent mining engineers predict that the workable seams of coal in Scotland will be practically exhausted in twenty-five years and that the best of the coal in several English counties will not last longer than 1930. For ten or fifteen years, production has been increasing at a rapid rate. In 1900, the output in Great Britain was considerably more than 200,000,000 tons, of which nearly one-fourth was exported.

Three years ago the president of the Institute of Mining Engineers, at the annual meeting in London, strongly advocated an export duty of 12 cents per ton on coal. Nothing came of this proposition. It apparently awakened no interest among manufacturers. The high prices of coal that have prevailed during the past eighteen months have served to attract earnest attention to the fuel question which has long been discussed by mining engineers. An indication that the subject has at last excited lively concern outside of the circle of mining experts is found in the action recently taken by the council of the South of Scotland Chamber of Commerce. At the half-yearly meeting of the council, in Galashiels, December 24, resolutions to be submitted by members of the chamber for discussion at the annual meeting of the Associated Chambers of Commerce in London, in March next, were considered. Among the resolutions proposed and adopted was the following:

"Resolved, That as the future of Great Britain lies in the power of its manufacture, it is expedient that the question of the continued exportation of coal should be considered and a decision arrived at."

In the remarks which were offered before the vote of approval, the opinion was expressed that this country "was making a great mistake in exporting so much coal." One member, Mr. C. J. Wilson, the mover of the resolution, said that "before many years the price of coal will be very much higher."—Rufus Fleming, Consul at Edinburgh.

**Irish Demand for Coal-Discharging Apparatus.**—Acting Consul-General Westacott writes from London, February 1, 1901:

I am in receipt of an inquiry for names of American firms supplying machinery and appliances for the mechanical discharge of coal from ships. Any firm wishing to communicate on this subject should address the secretary of the Londonderry port and harbor, Londonderry, Ireland.

**How to Sell Goods in Germany.**—Consul Hughes reports from Coburg, January 21, 1901:

I have already called attention to the necessity of sending bright salesmen, with a thorough knowledge of German, if we wish to introduce American goods into this country. This is especially true of the grocery and notion lines, which, if properly introduced, would find a well-paying market. Most American concerns prefer to send their goods through the German middleman, with the result that their sales are not large and the German market is flooded with worthless and impractical imitations of first-class American goods. It is useless to simply show goods in one large city; where the display will do the most good is in the small cities and towns. As an illustration of how goods introduced in this way will sell, an agent from Charleston, S. C., came here with peanuts and pop corn. He had been told that he would do no business here, as the place was too small; but he sold out his stock in just three hours and had to telegraph for extra supplies.

INDEX TO ADVANCE SHEETS OF CONSULAR REPORTS.

- No. 970. February 25.—Flour in China—German Steamships for American Trade—Finances in Guadeloupe.
- No. 972. February 27.—Manufacture of Coconut Butter in Mannheim—Production of Sugar in Spain—Electrical Railway Development in Germany—Stamped Documents in Russia—Decline in German Textile Industry—Acetylene Search Lights in Sweden
- No. 973. February 28.—Electric Tramways in Cardiff—Electric Lighting for German Ships—Mineral Development of Nova Scotia—Electric Street Railway in Mannheim—American Electric Trams in Auckland—Commercial Oxygen.
- No. 974. March 1.—German Interest in Central America—Fraudulent Canned Goods in Mexico—Fisheries of Canada—Gaslight vs. Electricity—Gas and Electric Light in Canada—Duties in the Canary Islands.
- No. 975. March 2.—Minerals in the Ural Mountains—Hog Bristles in China—German Optical and Plate Glass Industry—German Mining Syndicate in Spain—Nobel Peace Prize—Electrical Works in Amsterdam.

The Reports marked with an asterisk (\*) will be published in the SCIENTIFIC AMERICAN SUPPLEMENT. Interested parties can obtain the other Reports by application to Bureau of Foreign Commerce, Department of State, Washington, D. C., and we suggest immediate application before the supply is exhausted.

\* The period of time covered will both serve memory and facilitate search.

\* Note by the Bureau of Foreign Commerce.—In the fiscal year ending June 30, 1900, our exports of iron and steel were valued at \$121,858,344.