

The Great Depression in Manufacturing Industries.

The effect of the prevailing monetary stringency or general depression in trade on manufacturing industries throughout the country becomes a matter of interest at this time, in view of the numerous reports of the closing of manufacturing establishments.

The earlier stage of the squeeze in credits, as is usually the case, was seen in the extreme liquidation in Wall Street, and the second phase, in logical order, has been and is being observed in its effect on manufacturing industries.

Returns have been received concerning nearly 800 establishments, nearly all of which are of more or less prominence, and all of which have closed their doors for one cause or another since June 1. The report likewise includes the best available information concerning the discharge of the number of employes of silver mining companies in the far West, as well as of employes rendered idle by the shutdown of iron ore mines. So far as changes of the character referred to at a few of the larger business centers are concerned, many reports by trade unions or statistical bodies having access to such data have been employed.

A summary of the results of the investigation shows that no fewer than 463,000 industrial, building trades and mining employes have been thrown out of work within the period specified, due to the absolute closing of the establishments at which they were engaged or the shutting down of work at the mines.

Of this large aggregate no fewer than 80,000, or 17 per cent, were engaged in the production or the manufacture of iron and steel; 55,000, or 12 per cent, in woolen, silk and cotton mills or in the manufacture of clothing; 50,000, or 11 per cent, in leading lines in building trades at a few of the larger cities; 44,000, or 9.5 per cent, in silver mining and allied industries, and 41,000, or 9 per cent, in coal mining and coke producing. Of the aggregate of these five classes, 270,000, it is possible that as high a proportion as 30 per cent are customarily idle for a short time at this season of the year.

It is noteworthy that out of the approximate aggregate of 800 establishments reported shut down about 79 per cent declared this action is taken because of the prevailing "depression in general trade," a "lack of orders," "stringency in the money market," or "inability to make usual discounts due to tight money," while only 6 per cent state that the shutdowns are due to usual vacations at this season of the year, or owing to the necessity for making repairs or for taking inventories. Strikes or wages disputes are given in explanation of the closing down of only 2 per cent of the establishments reported, while failures in business or other embarrassments, fires or other disasters, account for the shutdown of about 3 per cent of the concerns reported. Less than 1 per cent state in so many words that shutdowns are owing to "impending tariff changes."

When it is realized that this report, complete as it may be, is quite incomplete so far as the country at large is concerned, even with respect to manufacturing establishments which have wholly closed down for one reason or another, and that it takes no account of the thousands of reductions of working forces in other manufacturing establishments, in commercial houses, or by transportation organizations, large and small, it becomes plain to the casual observer that there are in all probability no fewer than 800,000 or 900,000 idle employes of manufacturing, commercial and other enterprises at this time who were nearly if not all actively employed three or four months ago, and that not more than from one-sixth to one-fifth of this aggregate may fairly be said to have been out of work during the past two months owing to the "customary mid-summer shutdowns," or to the necessity for repairs or to taking of inventories, even though the not infrequent mid-summer wages dispute in the iron and steel industries be taken into account.—*Bradstreet's.*

Promethium.

This is an alloy containing 60 per cent of copper, 38 per cent of zinc, and 2 per cent of aluminum. These metals are melted together and sodium or other metallic flux capable of oxidation at the temperature of the mixture is stirred in. The quantity used should be sufficient to flood the surface of the mixed metals. The sodium increases the tenacity of the alloy and prevents deterioration by exposure to air or sea water. The degree of hardness may be varied by varying the proportions of the ingredients. The alloy is termed "promethium" or "titanic metal."

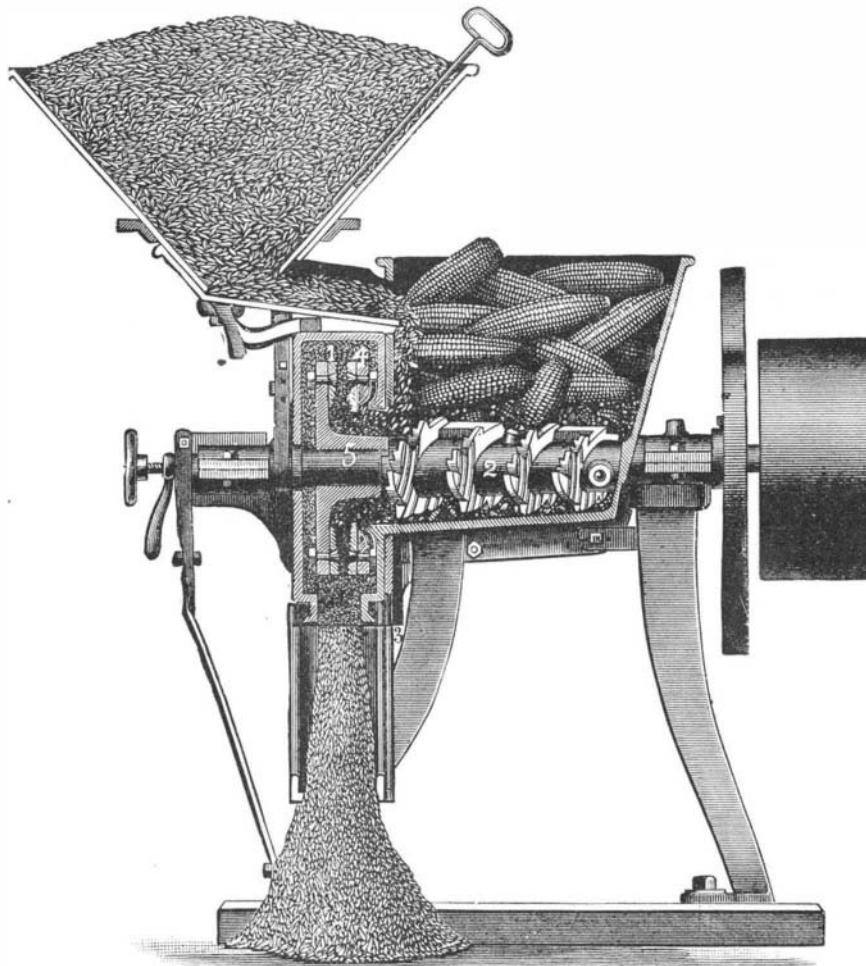
THE QUAKER CITY GRINDING MILL AT THE EXPOSITION.

In section E of the Agricultural annex at the Columbian Exposition may be seen one of the widely known Quaker City grinding mills, manufactured by A. W. Straub & Co., of Philadelphia, for grinding corn and cobs, feed and table meal. The concern was established a quarter of a century ago, and these mills have been brought to a high degree of perfection, the most recent improvement being the adoption of a thrust ball bearing for the back end of the spindle. This improvement can be added, when desired, to the mills already out. In the illustration the machine is shown in section grinding oats to lubricate the disks,



while grinding corn and cobs and mixing the product. The cobs fall at one end and slide at the other into the case around the "drunken" circular saws, which cut the cobs into three or four sections, the teeth on the sides sawing the sections fine, when they pass through the mill with the corn.

The double reduction grinding disks, an enlarged section of one of which is shown in the small view, are cast of steel and readily interchangeable. The conveyor flights upon the sawtoothed inner edge act like a fan to draw cool air and grain into the mill at a very low speed, the grain being first cut fine, then rolled, mashed and mellowed, so that it enlarges nearly one-third in bulk. In the picture, the location of the grinding disks is indicated at 1, the training ring, 4, being on a universal joint, free to move every way, except to revolve with the running disk. The crushing saws, 2, are formed on a sleeve cast fast with lead to the spindle, 5, which is of steel. The degree of fineness is regulated by turning a small hand wheel on the end of the temper screw, and there



THE WORLD'S COLUMBIAN EXPOSITION—THE QUAKER CITY GRINDING MILL.

are three discharge spouts with tin covers, allowing the desired one to be opened, either side or downward.

Agriculture in France.

The fifth and last volume of the reports of the United States commissioners to the Universal Exposition held at Paris, in 1889, has recently been distributed from the State Department. It is a profusely illustrated volume of 900 pages, and constitutes the report of Professor C. V. Riley, as expert commissioner for the eighth group and representative of the Department of Agriculture, on the agricultural phases of the Exposition. The volume is divided into two parts, the first devoted to agriculture, vine cultivation and wine making, use-

ful and injurious insects, field trials of implements, and stock shows, while the second part is a history of the agricultural exhibit and agricultural products of the United States. In the preparation of the first part of the report Professor Riley was aided by Messrs. Amory Austin and C. L. Marlatt, while the second part, in addition to Professor Riley's reports on the international congress of agriculture held during the Exposition, and upon injurious and beneficial insects in the United States, contains reports by experts, mostly connected with the Department of Agriculture, upon such topics as the meat industry of the United States, associated dairying in New England, the leather production of America, tobacco, viticulture, vegetables, cereals, etc. Some 219 cuts and 77 plates are included in the two parts of the volume.

The chapters in the first half of the report upon the agronomy and agricultural statistics of France and her methods and appliances for agricultural instruction are of great interest and value to the agriculturists of this country, as exhibiting the wise liberality with which the French republic fosters agriculture and the generous provision which the state makes for instruction in the science, many features of her system, Professor Riley thinks, being well worthy of our imitation. The Minister of Agriculture in France is a cabinet officer, and liable to frequent change, in common with the other ministers of the state; but his chief subordinate, the Director of Agriculture, is practically a permanent officer, the present (1889) incumbent having held the office for some 20 years. Three other directors also report to the Minister of Agriculture, charged respectively with forestry, the stud (Haras) and waterworks. There are also various councils, committees and commissions for the consideration of technical affairs, such as the superior commission upon the phylloxera, the consulting committee upon epizootic diseases, etc.

Agricultural instruction is provided for by the National Agronomic Institute at Paris, three national schools of agriculture, one national school of horticulture, twenty-seven practical agricultural schools, seven farm schools, thirteen primary agricultural schools, ninety departmental professorships of agriculture and courses in normal schools, professorships of agricultural chemistry in various faculties of science, seventeen courses of agriculture in lycées, colleges, primary schools, etc., and fifty-six agronomic stations and agricultural laboratories. This generous provision puts agricultural instruction within the reach of almost all, and the recently instituted order of the *Merite Agricole* is held up to all sincere agriculturists as a goal to be striven for only second to the historic decoration of the Legion of Honor.

That the extent to which scientific agriculture is fostered in France is not exaggerated is shown by the magnitude of the agricultural interest. With a population (in 1886) of a little over thirty-eight millions, the capital employed in agriculture in France exceeds 100,000,000,000 of francs or about 20,000,000,000 of dollars. The figures are almost inconceivably large, and only intelligible when it is remembered that the great majority of the holdings of land in France are very small, and that therefore the closest cultivation is practicable or rather necessary. Of 5,670,000 holdings in France, 2,167,000 occupy less than one hectare (1 hectare equals 2.47 acres), while only 30,000 occupy over 100 hectares (247 acres), almost half the holdings being thus less than three acres in extent. A comprehensive exhibit of the appliances for agricultural instruction in France was made at the Exposition, and other countries made similar but less comprehensive exhibits of the same subject. All of these the report gives a succinct account, but the greater part of the chapter on this subject is devoted to France, and deservedly so, for, says the author, "probably in no other country in the world has agriculture received greater attention from the government."

The second part of the volume forms an exhibit of certain phases of agriculture in the United States, each chapter written by an expert. The monographs composing this part of the report were translated into French for distribution during the Exposition, and their preservation in English in this permanent form is to be highly commended, since they form the most complete and modern treatise upon American scientific agriculture we have seen. The volume has an appendix of several pages devoted to expert opinion from French and English newspapers on the American exhibit, showing a high degree of appreciation of it. The report as a whole is a most valuable contribution to agricultural literature, and many of its chapters might with advantage be reprinted separately for special distribution.