THE SECRET OF INDUSTRIAL SUCCESS.

We lately enjoyed reading an article by an eminent English economist, in a leading American review,* in which great problems of success and failure in a world's trade and industry were discussed. As we proceeded through the writer's careful analysis of industrial conditions in all the great nations, and drew therefrom conclusions pointing to the causes of stagnation and depression, we were struck more forcibly than ever before with the fact that success, and the means of its attainment, are essentially the same, whether it be the success of an individual, or of a nation with a population of many millions. There is no discovery in this position; it is old as it is true; and yet we are too prone to look upon national prosperity as something wholly unlike that of an individual—as a grand gift from some higher power, and not as a condition of affairs affected by the same class of causes and influences as those which shape our own life successes. And yet thus it is: the truths of political economy like other great truths cover alike the great and the small in life and action, and bring us to hardship or prosperity according to our deeds.

It is not our purpose to follow the writer in his outline of causes producing the depression which has been felt all over the civilized world. Rather would we take the hint which the writing implies and draw from general and wide-reaching causes some special lessons for individual adoption. It is shown that each of the great nations, which are now struggling under depressed trade and unrequited industry, has, during recent years, undertaken some wild and unwise line of expenditure which has been greater in cost than the surplus earnings of the country, and has trenched upon fixed capital in some manner. Relying upon marks of unusual prosperity, nations have pushed forward extravagant schemes which soon leaped beyond the limits of surplus earnings and beyond immediate productive needs, and thus have burdens settled down heavily upon the people, repressing trade and checking industry. How like the history of many individuals is this chapter from the life of nations? How many instances do we see on all sides where men have refused to make their actual surpluses some measure of their new ventures, but rather have yielded full adherence to enterprises and projects which gratified their fancies or blinded them with the illusive hope of some great and speedy aggrandizement. Following these splendid visions of easy fortunes by fortunate stroke rather than by husbanding of labor's rewards, they have borrowed from every lender, and, as their air castles vanished, they find themselves laden with great weights which they can only discharge by return to the old pathway of diligent labor and self-denying economy. It is a weary work, after one has fed on fancies and dreamed of no labor but the waving of a magical wand, to return to the toil of the plow, the sledge, or even to the tiring monotony of merchandising. And yet the return must be made, and happy is he who soonest takes the hint. For years we have been living in an atmosphere of venture and great undertakings. Thus our whole industrial life has been tinged more or less with refracted light, and not illumined with the clear white gleam of labor and its rewards. During the last few years we have been suffering from the collapse of great hollow ideas which inflated our brains until our skulls seemed nigh to bursting. Now the wrecks of industrial fallacies seem to be clearing away before the returning tide of truth, and there is hope for the return of the good and enduring prosperity of earlier days.

The world's history is a long tribute to the virtues of industry and economy, and a warning against their opposites. The experience of this last era when it shall be written, will but strengthen the old truth. It will point the true course to nations and to individuals. It is a hopeful sign for the future of California's industries that the lesson is being widely learned. The arts of production were never more closely studied than now, for it is a vital point that wastes shall be stopped and effective work promoted. Let our industries now have their proper place in the minds of the people. Let the deluding thrall of specious schemes pass away. Let us come down to the soil, the mineral, the metal, assured that though the steps be hard and the progress slow, we are in the true path which will lead us away from the debris of exploded fallacies into the free open field of honest effort and temperate living. By this sign we shall conquer; and California will ere long be known, not as the land of great illusions, but as the home of a labor-loving, economical and prosperous people—a land living no longer in the memory of an illustrious past, but in the realization of a more glorious present, and cherishing the hope of a future beyond anything we now can know.—*Pacific Rural Press.*

* "The Stagnation of Trade, and its Cause," by Prof. Bonamy Price, in *North American Review*, for June.

THE VELOCITY OF SOUND.—A memoir is published by William W. Jacques, in the February number of the *American Journal of Science and Arts*, on the velocity of very loud sounds. The author gives an account of experiments, made at the United States Arsenal at Watertown, Mass., for the purpose of obtaining automatic measurements of the velocity of sound near a cannon. Behind the cannon—a six-pound brass field-piece—he placed at distances of 10, 30, 50, 90 and 100 feet from its mouth ingeniously-constructed membranes, having an electrical connection with a chronograph capable of recording .00001 of a second. He found that the velocity of the sound was not greatest at the immediate rear of the cannon, but at some distance from it, where it rose to a maximum "considerably above the ordinary velocity, and then fell gradually to about the velocity usually received." When the cannon was turned at right angles to the line of the series of membranes the distance of the maximum velocity of the sound came nearer the cannon. From these facts the author concludes that the velocity of sound is a function of its intensity, and that the experiments upon the velocity of sound in which a cannon is used contain an error, probably due to the bodily motion of the air near the cannon. The employment of a musical note of low intensity is, therefore, recommended to correctly determine the velocity of sound.

NOTE ON HÆMOCYANINE.—Hæmocyanine is the name given to a new substance obtained from the blood of the devil fish, *Octopus vulgaris*. The liquid portion of the blood of this animal contains an albuminous liquid substance which forms, with oxygen, a stable compound of a dark blue color. In vacuo, by contact with living tissue, or when kept in closed vessels, dissociation and generation of oxygen ensue. This substance seems to perform the part of the hæmoglobin in the blood of warm-blooded animals. It is evaded with oxygen in the respiratory organs of the animal, carries it through the arterial system into the capillaries and tissues. The venous blood of the octopus is colorless, the arterial blood dark blue. These changes of color are the consequences of respiration. On laying open the main artery of the head, we find the blood circulating through the same to be blue as long as the animal breathes under water. As soon as taken out of the water the blood loses its color at once. Hæmocyanine may be easily obtained from the blood by dialyzing the plasm formed by the blood for three or four days. Hereby the salts and other diffusible substances are removed. The remaining liquor is filtered and evaporated, whereby the hæmocyanine is obtained as a blue, gelatinous mass.—*Comptes Rendus.*

STARCH soaked for a year in a cold saturated solution of common salt is gradually converted into glucose.

NEW INVENTIONS.

We publish descriptions of the following new inventions, obtained through Dewey & Co.'s *Mining and Scientific Press* Patent Agency, San Francisco:

STEAM BOILER.—M. N. Laufenberg, S. F. Dated, May 20th. This improvement in boilers, consists in a novel construction of the boiler and fire-box, and the parts relating thereto, so that the inventor obtains more heating and tube surface, utilizes a certain portion of the fire-box without decreasing its capacity, and prevents the clogging of the tubes, by inducing certain draft currents in the fire-box depending upon its peculiar shape, the grate and draft openings. While the engine is applicable to all kinds of boilers and furnaces, it is especially applicable to those where it is intended to use straw and and other light fuels which the draft has a tendency to carry into and against the ends of the flues so as to clog them. The objects described the inventor accomplishes by extending the tubes into the upper part of the fire-box, and securing them into a tube sheet which depends from the crown sheet, at a point between the front and rear walls of the fire-box, said tube sheet extending across the fire-box so as to be united with the side walls, while the plate beneath the tubes is made in the form of an arch so as to concentrate and intensify the flame at that point, and also for the purpose of preventing deposits beneath the tubes. In combination with this construction, Mr. Laufenberg employs a peculiar partial grate, having a draft opening or space at the rear and a plate in front, extending a short distance back from the door so as to direct the currents of air and assist the combustion.

FIRE LIGHTER.—Chas. E. Thompson, Stockton. Dated May 20th. This invention relates to a device for lighting the fires of engines, being more particularly intended to be applied to steam fire-engines where it is necessary to start the fire quickly. The improvements consist in mounting on a suitable bar under the grate of the boiler a cup containing certain chemicals, and placing in said cup a glass vial of liquid which when mixed with the chemicals in the cup will generate a flame to light the kindlings in the fire-box. Levers are arranged to be operated from either end of the engine by means of cords, so that at the proper moment, by operating a lever, the glass vial containing the liquid will be broken and the liquid be mixed with the chemicals so as to generate a flame.

SECURING BOOT STRAPS.—C. W. Lane, Aurora, Nev. Dated May 6th. This is a improved method of securing the straps to boot legs so that they can be more permanently and strongly fastened, and it consists in the employment of a metal clasp or rivet passing through the strap and legging and firmly binding them together.

HAY-BURNING COOK STOVES.—M. L. Wood, once a superintendent of the U. L. & E. road, has invented a hay-burning cook stove, to consume the straw and grass of Western prairies. Six pounds of such material will burn 56 minutes and create heat equal to the consuming of 20 pounds of hard coal.

SALYCILIC ACID AS A PRESERVATIVE OF WATER.—A German scientist has preserved drinking water containing much organic matter for three years by adding one grain of salycilic acid to one pint. The water was kept in a stoppered bottle which was opened from time to time, and it tasted perfectly fresh at the end of the three years.—*Amer. Jour. Pharmacy.*

ABOUT 4,000,000 tons of rails are required yearly to replace worn out stock on the railroads now existing.