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IF YOU WISH TO BE HAPPY, BE REASONABLE.

Morally, we have no more right to cheat ourselves than we have to practice deception on others. In every profession or business, success depends to a great extent on how one's own status in his profession or business is appreciated by himself. He "must not think more highly of himself than he ought to think," nor go to the opposite extreme by underrating his abilities, and while these remarks apply to men in every occupation, they are now directed more particularly to those who devise new things for the use and benefit of others.

Some inventors are apt to be over-sanguine, and with reason; since no other honorable business yields so large a profit with the same outlay and with as little risk. By some peculiar mental process they induce themselves to believe that an invention is worth thousands or millions of dollars, when the real value may be only hundreds or thousands.

A notion of this kind when adhered to is damaging, and may prevent the inventor from satisfactorily realizing from his labor, whereas by taking a rational view of the case he might gain handsomely.

Two points should be candidly considered by inventors; first, the possible value of an invention, and second, the actual value of capital and influence.

Often, very often, the money invested in promoting an invention, and the business tact and energy which put the invention in commercial shape, are worth far more than the invention itself, and even a first-class invention is greatly increased in value if backed by money and business talent.

Inventors who realize this, and are willing to make reasonable concessions, are most likely to obtain the best returns from their inventions.

Let the inventor for the moment imagine himself to be the other man, the capitalist; would he invest a half million, a hundred thousand, or ten, or even five thousand dollars in such an invention as his own? Let him be honest with himself.

Capital is not invested in patents without the expectation of large returns. Inventors who sell out their interests should not expect all the profits of their invention. This would be like a jobber trying to sell goods at retail prices.

Our advice then to inventors is, "If you wish to be happy, be reasonable."

FARM CHANGES IN ILLINOIS.

An anomalous state of affairs is reported in the farming communities of the State of Illinois. Prospects are encouraging, crops have been comparatively satisfactory of late, and farming lands are steadily increasing in value; yet thrifty and well-to-do land owners, as well as tenant farmers, are moving by scores to Iowa, Nebraska, Kansas and other Western States. The movement, which has been steadily growing for years, is looked upon with some anxiety because of the uncertainty as to what the ultimate result will be.

The introduction of improved methods of farming by the use of machinery of various kinds has made it possible for a man with means and energy to cultivate large tracts—acres by the hundred. Alongside this is another acre-monopolizing tendency on the part of moneyed men to buy up desirable lands and rent them out. These landlords are always ready to add to their holdings, but seldom willing to sell at a reasonable figure. These two tendencies make the lot of the small land owner less desirable than was the case in former years. If the small holder wishes to add to his acres, he finds it quite impossible from lack of means to do so from adjoining farms, and oftentimes from any other land within reasonable distance, at a price within his reach. If, however, he goes to Iowa, Kansas, Nebraska, or other Western States, he finds that he can probably buy five acres for the same amount of money that one would cost in Illinois, and with as many acres at his command as he wishes for, and he finds further that these new acres are as productive as his old ones, that it costs no more to grow his crops, and that transportation rates to market are not appreciably greater. From this point of view the farmer, especially if he has some means, is better off if he leaves Illinois and goes to a State farther west than he would be were he to remain on his old farm.

The cause of the movement westward is evidently not local to Illinois, is not due to worked-out lands, oppressive laws, or other such causes, as much to the improved methods of transportation which practically annihilate distance. But while this westward tendency may be a beneficial thing to those farmers who participate in it, what will be the result in the State of Illinois, which they leave? In the case of a tenant farmer the probability is that another tenant farmer will take his place, although this latter in all probability will be of foreign birth, while the former is more likely of American birth. Land owners who leave Illinois to push westward sell their holdings largely to adjoining farmers who have the means to extend their acreage and who propose to do farming on a more extensive scale, or to landed proprietors who succeed the independent farmer with the tenant farmer.

The question is an old one in Illinois and has had public attention drawn to it at several periods since the organization of the State, but is now assuming a serious phase. The situation is quite different from what it is in New England, where farms have been abandoned for lack of fertility.

IMPROVED TRANSPORTATION.

The inauguration of cable traction on the great thoroughfare of this city, involving the transfer of a line of cars distributed over many miles of the most important artery of the city, shows a new condition of things brought about by the new demands of our increased population. It is but a few years since horse cars were introduced upon Broadway. The storm of protest which they raised and the questionable methods used to obtain possession of the street are in the minds of all. The property owners objected, but the road was put down. It proved of the greatest benefit to all. Now, with larger cars propelled by steam power, in place of the overburdened horses, the Broadway Railroad appears in a better light than ever. In other streets of our city the devotion of two thoroughfares to steam transit will soon be seen. A cable line will run on the natural surface directly under an elevated road. Some day may yet see a three-storied transportation established—tunnel, surface, and elevated.

While this and other cities have been progressing, the country has not been idle. The centralization of power and its distribution by the trolley system have inaugurated a cheap and rapid transportation system for suburban and even rural districts. The country roads have been invaded by the trolley. The vigor of the movement of the day in favor of cheap transportation is here emphasized. In spite of the effects upon horses in frightening them, the country roads on all sides are presented to electric traction companies if they will only put down electric roads.

The cause of the extensive introduction of this class of road is not only to be found in the advantage of centralized generation and power. It is not only the wonderful adaptability of electricity for distributing power that has made the trolley road a winner in competition with the old established steam roads. A single car run at frequent intervals, independent of a published time table, in point of convenience far surpasses the fewer scheduled trains of steam roads. But the free gift to these companies of streets and roads ready graded and prepared for their use is the reason of their existence. Having no extensive right of way to acquire and exempt from the necessity of filling, excavating and bridge building on their line, they possess an enormous advantage in capitalization over the steam railroad.

Simultaneously with the above the movement for good roads has mounted into a national issue. All over the country are heard the calls for better roads. The State of New Jersey, many districts of which are famous for their macadamized ways, is admitting the trolley cars upon these expensive roads. In this there is a measure of inconsistency, unless an adequate breadth of macadamized surface be preserved for the use of teams. The ideal road has been claimed to be a Telford or macadam strip with a trolley line on each side. This provides for those who wish to pay fare, while the farmer can transport his product by the old-fashioned way. It is a self-evident fact that horses must become accustomed to the trolley car.

Already local steam roads have been most seriously affected by the competition with trolley roads. A few years will see the suburbs of all our cities gridironed with these roads. The local business will leave the steam roads. The old mud and sand roads will be soon replaced in these districts by improved Telford and macadamized surfaces. In the cities horse cars will soon be as much a thing of the past as are the omnibuses now. The next generation will only be able to wonder how its ancestors continued to exist under the regime of slow horse cars in the cities, infrequent and expensive train service in the suburbs, with unridable roads as connecting links throughout the country districts.

The Largest Lake Steamer.

The steamship S. S. Curry, which recently has been launched at Bay City, Mich., is to be the largest steamer on the great lakes, but unlike the type of lake steamers which has become so familiar, she will have her machinery amidships instead of well aft. Recent experiences have quite conclusively demonstrated the fact that in vessels of large size constructed on the so-called lake lines, sufficient stability has not been secured. Immense carrying capacity is quite invaluable, from a shipper's standpoint, but lake construction has gone to the extreme of sacrificing stability to carrying capacity. This new vessel is 378 feet 6 inches over all, 45 feet in breadth, and of light enough draught to enable her to pass through the "Soo" canal. The engines will be triple expansion and steam will be used at a pressure of 170 pounds. She is of steel and was built by F. W. Wheeler & Co., West Bay City, Mich.

**Modern Projectiles.**

The change from the old-fashioned cast iron balls to the accurate projectiles now required in gunnery is something remarkable. The projectiles made for the United States government by the Carpenter Steel Company, at Reading, Pa., are cast in moulds double the size of the finished shell. They are then hammered into shape in dies and machined, after which they are hardened by secret processes to proper temper and finally finished to exact dimensions, plugs being fitted in to fill the bored-out base of the chamber. If the shells are then truly concentric and balanced, two of each lot are fired at a hardened plate made of open hearth steel, this plate, which is backed by 3 feet of live oak backing, being one and a quarter times the thickness of the shell fired. If the shell penetrates the plate and backing without suffering injury, the lot from which it is selected is accepted. The steel used by the company in making projectiles is a special grade of chrome steel, and is of high tensile strength, the test pieces frequently averaging 110 tons to the square inch, with about 7 per cent elongation.

**ROLLING CHAIRS AT THE EXPOSITION.**

One of the first things to catch the eye of a visitor to the Exposition after a sweeping view, taking in the grounds and buildings as a whole, will be the rolling chairs, which are seen on every side. Not only invalids and ladies, but the tired world in general patronize these conveyances. These chairs, which are 2,400 in number, are provided by the Columbian Rolling Chair Company, and are the only surface conveyances allowed within the grounds. The rates are 75 cents per hour for single and \$1 per hour for double chairs, with attendants to perform the manual labor, or if your wife or friend desires your attendance alone, you guiding and propelling the vehicle, the chair may be rented at the rate of 40 cents per hour for single or 60 cents per hour for double chairs. The attendants are all physically capable young men, from the various colleges, who wear a neat blue uniform. Our illustration is from the *American Jeweler*, and was made from an instantaneous photograph.

**The Erie Canal Celebration of 1825.**

The *Express*, Albany, says: "Magnificent as was the naval review, it had no more significance, nor possibly was it more interesting to the spectators of to-day, than the celebration which took place there in November, 1825, was to the people at that time. It was then that the first canal boat from the Erie canal reached New York. It had as passengers Governor De Witt Clinton and other State officials, and its most precious merchandise was two casks of water from Lake Erie. The boat left Buffalo October 26, and though there were no railroads, telegraphs or telephones then, the fact of its departure was made known in the city one hour and a half later. This was done by means of cannon placed at regular intervals along the entire route of the canal and the Hudson River. The firing of cannon in Buffalo announced the starting of the boat, and one cannon after another repeated the salute, until the last one was heard in New York 90 minutes after the first one was fired in Buffalo. There was great rejoicing. The boat was towed out to Sandy Hook, and the water from Lake Erie was solemnly poured into the Atlantic Ocean, together with water from the Ganges, the Indus, the Nile, the Seine, the Rhine, the Danube, the Orinoco, the La Plata, and other great waterways. Naval vessels of the United States and England took part in the demonstration. The Salamagundi Club is now arranging to take relics of that particular canal boat to the Chicago Fair, and proposes that water from the Atlantic be, in like fashion, poured into Lake Michigan."

**Trional as a Hypnotic.**

We announced some time ago the introduction of this substance as a hypnotic. It is of the same family group as tetronal and sulphonal, but contains three ethyl groups instead of four in tetronal and two in sulphonal. Dr. Krauss, of Buffalo, in a recent number of the *New York Medical Journal*, describes his results with the drug as very encouraging, although he has used it in only small doses (from eight to ten grains) without repetition of the dose. The patients were all suffering from nervous diseases—such as Graves' disease, epilepsy, neurasthenia, trifacial neuralgia etc.—and in all of them, fifteen in number, except in those in whom peripheral nerve irritation was present, the results were gratifying. In the cases of the patients suffering from neuralgia the combination of trional with acetanilide was followed by sleep. A case of prurigo is the only one in which failure has to be recorded. No bad results followed the use of the drug, and the only apparent objection to its use in the United States is the fact that its producers have patented it and so made it less accessible for ordinary use.—*Lancet*.



The attendance at the Exposition during the month of May as officially reported was over 1,000,000 paid admissions. This gave the Exposition a gross income from this source of about \$500,000, although some allowance is to be made for admission of children, as those from six to twelve years of age only pay twenty-five cents. In addition to this source of income there was considerable return from concessions. While the returns were comparatively small during May, the expenses were much larger than they will be during any other month that the Exposition is open. The reduction in the working forces has made a difference of perhaps \$5,000 a week, so that it is roughly estimated that during the following weeks the necessary running expenses will not be over \$15,000 a week, and possibly not over \$12,000.

Thousands of people crowded recently in the evening at the Electrical Palace to witness the unveiling of the tower of light, which is by far the grandest display



COLUMBIAN EXPOSITION—A COMFORTABLE WAY OF SEEING THE SIGHTS.

in electric illumination so far as one piece is concerned that could well be imagined.

The model war vessel State of Illinois was also delayed in being formally opened. This exhibit, which is made by the United States navy department, is a very attractive one for people who have never visited the sea coast and have not seen the steel cruisers which have been illustrated in the columns of the *SCIENTIFIC AMERICAN*. This model man-of-war is constructed after the pattern of the cruiser Oregon. On the evening of the day it was opened the vessel was electrically illuminated and the search lights added greatly to the effectiveness of the illumination. Strong light was thrown upon the vessel from the powerful search lamp stationed on the northeastern corner of the promenade on the roof of the Manufactures and Liberal Arts building.

The fine display of machinery which is made by German manufacturers in the Palace of Mechanic Arts was speeded up on June 1. The exhibit made by the Germans in this department is really very fine, both in the quality and extent. Next to the United States the German exhibit is the most interesting. It includes an excellent showing of electric and power machinery, wood-working machinery, etc. The Mexican exhibit in the extreme southwestern corner of the Manufactures and Liberal Arts Palace is most creditable to that country. It includes specimens of native manufactures, such as clothing, pottery, carvings and the like. Cotton and woolen goods made in Mexico are also shown. Much work is that of the native Indians.

Two State buildings have been dedicated with con-

siderable ceremony, those of Kentucky and California. The Kentucky building is purely a club house, but the opening ceremonies were quite elaborate, because in connection with them was the unveiling of a monument to Daniel Boone. The California building is one of the largest State buildings on the grounds. In appearance it is far ahead of most of the State buildings; in fact, California has made a much finer display than any other State excepting possibly Illinois. The building is a reproduction of the old mission station at Santa Barbara. Much taste has been displayed in laying out the grounds around the building. Inside there is a splendid display of the products of the State.

On June 1 the Children's building at the Exposition was formally opened with appropriate exercises. The scheme of erecting the building and arranging its use was the work of the ladies connected with the Exposition management. There was no money, however, that could well be used for this purpose, and the first question was to raise the funds. Some of the generous ladies of Chicago held a grand bazaar and in other ways secured more than enough money to carry out the idea. There has been collected in this building a great variety of toys, playthings, books and all devices adapted to the purpose of entertaining and educating children. The Japanese took much interest and sent many contributions. A *creche*, with a checking system, so to speak, is established, so that women who wish to attend the Exposition, and have no particular means of caring for their young children, can bring them to this building and have them properly looked after. Another line of usefulness shows the different systems of educating children in the kindergarten work and in kitchen gardening. Every facility is at hand for accomplishing these and other lines of work for educating children. The roof of the building is arranged as a sort of playground, and in the center of the building on the first floor is a gymnasium where the children indulge in calisthenic exercises. Sloyd and physical culture are included in the work. This building is located between the Woman's building and the north end of the Horticultural building.

As to musical entertainments, the programme during the month of May included twenty free popular concerts, twelve symphony concerts, three musical festivals and three chamber concerts. The programme for June includes four Russian concerts, Handel's "Messiah," Bach's "St. Matthew's Passion," concert by the Exposition festival orchestra of 150 pieces, Gounod's "Third Mass," three grand festivals of 1,500 voices and 200 instruments with eminent soloists, Brahms' "A German Requiem," concert by the Brooklyn Arion Society, Handel's "Messiah," Bach's "St. Matthew's Passion."

**A GENERAL GLIMPSE AT THE EXPOSITION.**

A correspondent gives his impressions as follows: The facilities for reaching the Fair grounds are at the present time more than sufficient to carry the visitors. The elevated railroad is in fine running order, and takes the passengers directly into the grounds; but the running time is rather long, owing to the distance and the number of stations. The steamers also require a long time to make the trip; but if the visitor's time is limited, the World's Fair express trains on the Illinois Central offer a quick and cheap method of reaching the grounds. The open cars are familiarly called "cattle cars," but they will prove very acceptable during the heated term.

The 64th Street gate is, in many respects, the most pleasant entrance to the grounds, and is the nearest entrance for the Administration and Manufactures buildings. The visitor buys his ticket at the little ticket booth and passes through the turnstile. As there are turnstiles for passes, workmen, and children, as well as the regular ticket gate, there may be some trouble in finding the proper gate the first visit. Once past the turnstile, and the visitor will make his first acquaintance with a unique feature of the Exposition—the Columbian guard, who is without the power of making an arrest, for they can only summon the patrol wagon, which carries a city policeman, and who is without a club for defense, though they have a preposterous little sword. Still the guard's uniform is pretty, and they serve to give a little color to the scene. The guards are polite, and on the whole do not deserve one-half the fun poked at them by the papers, which, in many cases, is the result of ill-nature on the part of reporters. It appears to have been the aim of the directors to put everybody in uniform. The guards are dressed in blue, as are also the sellers of the official guide. The official catalogue boys have a distressingly bright red uniform, while the guides are habited in gray, and the chair pushers (a handsome body of young men) in a light blue uniform, which ladies would describe as fetching. Every one connected with the Fair must march, and it is very amusing to see the ticket takers leaving the turnstiles and marching two by two with their big tin boxes. The central railroad station, near the 64th Street entrance, is a large structure, and

(Continued on page 374.)