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TAKING A CHANCE.

David said in his haste: "All men are liars." With equal truth and greater deliberation he might have said: "All men are gamblers." There is a fascination in taking a chance that is quite irresistible to most men, especially when the cost of the chance is small compared with the possible outcome; and the greater the promised prize, the less apt men are to think of the overwhelming probability of drawing a blank.

Just now the adventurous spirits of the country are feverish with a desire to get to the Black Hills. They know, or ought to know, that the ills that await the pioneer in that disputed region are blacker and more numerous than the hills; but report says gold is there, and multitudes are bound to have a chance for it, in spite of Uncle Sam, the Sioux, or any other hindrance.

The probabilities are a hundred to one against success in any individual case, even if the precious metal should be found in paying quantity; they are as strongly in favor of sickness, suffering, and violent death to such as win their way there. Yet the possible prize outweighs all the risks, and so dazzles the imagination that it alone is seen.

But these are reckless adventurers, you say. A life of privation and danger is what they specially enjoy. They are constitutional gamblers, and no fair type or illustration of the prudent average man of civilization.

True as to their character, but not true as to their representative character. Judging from their conduct on occasion, we must say that prudent men of business, popularly supposed to calculate the probable success or failure of any new enterprise with the passionless accuracy of a machine, are as likely to take a wild chance for a big prize—quite as likely to overlook the enormous probability that the promised prize is a fiction—as the most adventurous miner on the frontier. The one stakes health, strength, comfort, life, against a fabulous "pile;" the other stakes what is just as dear to him—his cash. Hence we have the familiar saying that the average capitalist can more easily be persuaded to go out of his regular line of business to take hold of a downright swindle (take hold honestly, we mean) than of a legitimate enterprise of reasonable promise. To the latter, he applies his customary business maxims, criticises percentages, and is the more cautious the less he knows of the nature of the proposed undertaking. In the other case, his credulity is in direct proportion to the extravagance of the promise and the depth of his ignorance.

For example, we will suppose that you, courteous reader, are a scientific metallurgist, and that you have wrought out and patented a process for the better separation of the silver from argentiferous galenas. You are in want of capital to

carry out your project, so you go to the Hon. Mr. Mortgage Bond, the well known millionaire, and lay the matter before him. You show him that by the usual processes a considerable percentage of the silver remains in the lead, much to its detriment. You show him that, by your process, which is less costly than those in use, the silver is more completely separated from the lead, giving you a threefold profit, in the cheaper process, in the gain in silver, and in the superior softness of the lead.

"That is all very plausible," he will reply; "but I'm a banker. I don't know anything about metal working. But I do know that schemes like yours never turn out so well as the projectors imagine. Then the risks are very great. You will have to compete with all the wealthy firms already in the business, and they control the markets and the mines. You will have this other difficulty to contend with, and that, and that, and that."

In vain you try to convince him that you will have the inside track: that with a cheaper process and a purer product, you need fear no competition. You can afford to pay more for the ore and so command it; while the demand for pure soft lead is such that you need have no fear of the rivalry of those who supply an inferior quality. Your breath is wasted. The cautious capitalist is shy of patent processes. He looks only at the risks of the undertaking, and resolutely shuts his eyes to the merits which make success highly probable.

But (begging your pardon) suppose you are an arrant swindler, and that, instead of laying before our incredulous capitalist a legitimate enterprise of assured success, you go to him with a cleverly devised fraud: say a scheme for turning lead into gold. You talk glibly and with a great show of learning. You quote from a long list of authorities to prove that the growing opinion of chemical investigators is that all matter is substantially one at bottom: that the different qualities of the so-called elements are the product of varying molecular arrangement. You assure him that such is actually the case; you have demonstrated it by the transmutation of different metals into each other, as for instance gold into iron, iron into silver, silver into lead, and lead into gold. You present him with a brick of gold weighing a pound, and tell him that it is the product of three pounds of lead. Theoretically two pounds of lead are equivalent to a pound of gold, you tell him confidentially, but there is some waste in the process of transmutation.

It needs no argument to show that it is a "big thing," too big for any one man to handle. So you propose to establish a stock company to develop it, the Universal Company of Gold Refiners, of which the Honorable Mortgage Bond shall be president, with the lion's share of profit, in consideration for the capital required to set the project on foot. Of course it would not do to publish the fact that the gold is made on the premises; that would bring down the price of gold with a rush, and disorganize all established values. Secrecy would be essential. But if he had any doubt that the product was really gold, he could easily prove its quality by sending the sample brick to the mint to be tested.

Ten to one, the Hon. Mortgage Bond would bite. It would be too great a prize to miss. He could afford to risk a little on it, and would take the chance.

One more illustration: perhaps a better one for these days of Keelys and the like, not to mention their dupes.

It is well known that, as coal is now burned, the best of engines develop but a small percentage of the actual power of the fuel consumed. Suppose a clever inventor should devise a boiler capable of evaporating a third more water with a tun of coal than any boiler now in use. The supposition is not an extravagant one, and the increase of power could be easily demonstrated. The economy of such an improvement would ensure its ultimate adoption, subject only to the risk of some one's inventing something better; yet the maker of it would find it no easy task to induce men of means to furnish the capital required to put the improvement before the manufacturing public.

But suppose the same man were to get up a perpetual motion of the modern type, call it the Schwindler motor or something of that sort, and have it certified as something transcending all known principles and powers by two or three engineers of easy credulity. There would be no end of newspaper correspondents to write it up in the most eloquent English, with head lines to match. The greatest invention of the age! Unlimited power at nominal cost! No fuel required! Simplicity and safety combined! Power derived by catalysis, evolving the expansive force of nitroglycerin with the precision and gentleness of a jack screw! Explosion impossible!! Power of engine inexhaustible!!!

To interested enquirers, Mr. Schwindler could frankly say that he made no secret of his sublime invention, being confident that a grateful public would see him suitably rewarded for the stupendous benefaction he was about to confer on humanity at large. He would call the motive power of his miraculous engine expansive glycerin, not nitroglycerin, but something still more powerful, yet absolutely controllable. Its power would be developed by the passage of the glycerin over a certain compound of metals known only to himself, by which the bland liquid would be converted by catalytic action into cold vapor of enormous tension: the vapor, having done its work, to be discharged into a receiver enclosing another combination of metals whose opposite catalytic power would reconvert it into liquid glycerin without loss of substance. Once charged—and a gallon of commercial glycerin would suffice for a thousand horse power engine—the generation of power would be perpetual, without additional expense. Combining superior economy with absolute safety, the Schwindler motor could not fail to supersede all others, the Keely motor not excepted.

And there would be no lack of men eager to take a chance

in a scheme so promising. What if it does fly in the face of all experience? Haven't we rail ways, telegraphs, steam navigation, and a score of brilliant achievements that were once as incredible to the conceited professors of Science who thought they knew everything?

It is the gambler's delusion in another form. The magnitude of the promised prize hides the multitudes of blanks.

It is useless to tell those infatuated with the dream of impossible riches that the marvelous projects which achieved success were the legitimate outcome of scientific investigations, and always in harmony with the previously discovered laws of Nature. The swindler's victims will know nothing of such things. They are not amenable to sober reason. There's a big prize in view, and they are determined to "go" for it.

THE KEELY MOTOR DECEPTION.

We continue to receive hundreds of newspapers from all parts of the country, containing the most fulsome endorsements of this most puerile deception. Nothing more lamentably exhibits the general lack, in this country, of elementary scientific education, than the editorial comments upon this subject by many of the papers. With very few exceptions, the writers are unable to perceive why the Keely chimera may not be true, the general line of argument and thought being that, inasmuch as modern discovery has heretofore revealed and produced inventions quite as startling as anything assumed by Keely and his abettors, therefore it may be that what he claims is well founded; and it is unwise, imprudent, to throw doubts upon his statements, especially when they are so thoroughly supported by other persons of reputed intelligence and veracity. To all of which it is a sufficient reply to say that any inventor who pretends to get something out of nothing, or to produce more force or more substance out of a given quantity of materials than they possess, is a deceiver, no matter how many respectable people join hands, like the Keelyites, to support the deception.

"People," says Keely, "have no idea of the power in water, I mean that can be drawn out of it. I purpose to run a train of thirty cars from Philadelphia to New York at the rate of a mile a minute, out of as much water as you can hold in the palm of your hand."

Both of these statements are incorrect. Estimating approximately, the power in water, or the power that it can be made to furnish, whether in liquid or vaporic form, is perfectly well known. Four thousand gallons of water, falling one foot in a minute, furnish one horse power. One sixteenth of a horse power is furnished by one cubic inch of water, if converted into vapor at the ordinary atmospheric pressure. To run a train of thirty cars from Philadelphia to New York, at the velocity of sixty miles per hour, would require not far from two hundred barrels of water and over two tons of coal.

These are among the elementary facts pertaining to motive engineering, which no Keelyite can set aside; and which, if they were kept in mind by editors, would enable them to perceive at a glance the grossness of the present deception.

In further illustration of the need of better educational training among our business men, as a protection against stock-jobbing deceptions wrought and maintained in the name of Science, we give in another column a few gems from the most recent declarations of Keely. These were lately made to the correspondent and reporter of *Inter-Ocean*. We also give extracts from the statements of some of Keely's chief assistants, showing the rise, progress, and management of the deception. The price of the Keely stock, which at one time was very high, is beginning to ebb, and in a short time all the beautifully engraved stock certificates will doubtless find their way into the cellars of the rag and paper dealers.

THE NEW PHYLLOXERA REMEDY.

We took occasion recently to announce the discovery, by M. Dumas, of an efficient phylloxera remedy, in the alkaline sulpho-carbonates, a class of salts which hitherto have been more objects of scientific curiosity than available for any beneficial employments. As the vine growers in this country are directly interested in the result of M. Dumas' very important investigation, we propose briefly to review the nature of the above chemicals, in giving below a few facts, for which we are indebted to *La Nature*, relative to the researches of the well known French chemist.

Everybody is familiar with the potashes, sodas, and the lime of commerce. If in these substances the oxygen contained be replaced by sulphur, the sulpho-carbonates of potassium, of sodium, of calcium, and its analogue, the sulpho-carbonate of barium, are obtained. Of these, the salt most utilized at present is the sulpho-carbonate of potassium, made by calcining sulphate of potassium with carbon, forming by reduction a monosulphide of potassium. A saturated solution of the latter is made in water, and sulphide of carbon added, when, after prolonged agitation, a reddish orange liquid, marking 37° to 40° on the Baumé areometer, is obtained.

While the sulphide of carbon is by itself an efficient insecticide, it offers disadvantages through its volatility, injurious vapors, etc., which neutralize its benefits. The sulpho-carbonates on the other hand have no disagreeable odor, are not dangerous to handle, are not inflammable, and are unalterable in the soil. When in contact with acids, however, even if these be the weakest, and especially when acted upon by the moist carbonic acid which arable earth imbibes, the salts are transformed into carbonates, and disengage sulphide of carbon and hydrosulphuric acid in vapors, both of which, and especially the first, are highly poisonous. To combat the phylloxera, such gases, as experiment has proved, are the only effectual means. It is necessary not merely to poison the insects upon the vines and roots, but to render